1.4.2

Preliminary Assessments and Site Inspections Report Upper Columbia River Mines and Mills Stevens County, Washington TDD: 01-02-0028

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Region 10

START-2

Superfund Technical Assessment and Response Team

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PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS REPORT
UPPER COLUMBIA RIVER MINES AND MILLS
STEVENS COUNTY, WASHINGTON

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LIST OF ACRONYMS

Acronym	Definition
AST	aboveground storage tank
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CES	Cascade Earth Sciences
CLP	Contract Laboratory Program
cfs	cubic feet per second
COCs	contaminants of concern
CRM	Casting Residue Mound
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
DNR	Washington State Department of Natural Resources
DQOs	data quality objectives
E & E	Ecology and Environment, Inc.
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
ESAT	Environmental Services Assistance Team
ESP	electrostatic precipitate
gpm	gallons per minute
GPS	global positioning system
HDPE	high-density polyethylene
HRS	Hazard Ranking System
IDW	investigation-derived waste
Lake Roosevelt	Franklin D. Roosevelt Lake
μg/L	micrograms per liter
mg/kg	milligrams per kilogram
msl	mean sea level
MS/MSD	matrix spike/matrix spike duplicate
NW	Northwest
PAs	preliminary assessments
pesticide/PCBs	chlorinated pesticide/polychlorinated biphenyls

LIST OF ACRONYMS (CONTINUED)

Acronym	Definition
PPE	probable point of entry
QA/QC	quality assurance/quality control
%R	percent recovery
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
RPD	relative percent difference
SIs	site investigations
SOW	statement of work
SQAP	sampling and quality assurance plan
SQL	sample quantitation limit
SVOCs	semivolatile organic compounds
START	Superfund Technical Assessment and Response Team
TAL	Target Analyte List
TDD	Technical Direction Document
TDL	target distance limit
TM	Task Monitor
TOC	total organic carbon
WESTON	Roy F. Weston, Inc.
XRF	X-ray fluorescence

PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS REPORT
UPPER COLUMBIA RIVER MINES AND MILLS
STEVENS COUNTY, WASHINGTON

1. INTRODUCTION

The United States Environmental Protection Agency (EPA) has tasked Ecology and Environment, Inc. (E & E) to provide technical support in investigating potential sources of contamination to the upper Columbia River project area. The upper Columbia River project area is defined for this investigation as the portion of the Columbia River beginning at approximately river mile (RM) 675 near Inchelium, Washington, extending upstream to the U.S.-Canada border at approximately RM 745 (Figure 1-1). The Columbia River is the principal inflow to Lake Roosevelt and contributes about 90 percent of the flow from a large drainage area in Canada and the United States (Figure 1-2).

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) activities conducted for this project included preliminary assessments (PAs) and site investigations (SIs) for 39 mine and mill sites in Stevens County, Washington (Figures 1-3 and 1-4). The PAs and SIs were conducted under the authority of CERCLA of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986. A list of the 39 mine and mill sites visited in Stevens County are presented in Table 1-1. Table 1-1 identifies mine and mill sites which the Confederated Tribes of the Colville Reservation petitioned the EPA for assessment under CERCLA (Cawston 1999; Passmore 2000). The remaining mine and mill sites listed in Table 1-1 were identified by the EPA based on the location of the mine and/or mill relative to tributaries that empty into the upper Columbia River (project area) and available information regarding volume of ore produced.

A detailed discussion of related field activities conducted at 21 mine and mill sites visited in Pend Oreille County can be found in the *Lower Pend Oreille River Mines and Mills Preliminary Assessments and Site Investigations Report* prepared by E & E for EPA, dated April 2002.

The PAs and SIs are phases in the site assessment process for determining whether a site has released, is releasing, or has the potential to release, hazardous substances, pollutants, or contaminants into the environment and whether it requires further detailed investigation and/or response action that is authorized by CERCLA. The assessment process does not include extensive or complete site characterization, contaminant fate determination, or quantitative risk assessment.

The objectives of the PAs and SIs are to.

- Identify potential sources of contamination to the upper Columbia River project area;
- Determine whether the mines or mills are releasing, or have the potential to release hazardous constituents into the environment;
- Document the threat or potential threat to public health or the environment posed by the mines or mills;
- Assess the need for additional detailed investigation and/or response action at the mines or mills; and
- Determine the potential for placement of each mine or mill on the National Priorities List.

Field activities were conducted through a combined effort involving Superfund Technical Assessment and Response Team (START)-2 contractor firms, E & E and Roy F. Weston, Inc. (WESTON). Sampling activities were conducted at 18 of the 39 mine and mill sites visited in Stevens County. E & E conducted sampling at mines and mills where potential sources of contamination were identified and possible impacts to receptors via the surface water migration pathway were observed. In addition, the soil exposure pathway was evaluated for the Deep Creek Mine and the LeRoi/Northport Smelter. E & E activities were conducted under START-2 Contract No. 68-S0-01-01 and Technical Direction Document (TDD) No. 01-02-0028. WESTON collected sediment samples in tributaries to the upper Columbia River and mine and mill-specific background samples as determined necessary by the EPA. WESTON activities were conducted under START-2 Contract No. 68-S0-01-02 and TDD No. 01-02-001-A.

Activities conducted as part of this investigation include reviewing existing mine and mill-specific information, regional characteristics, collecting receptor information within the mine or mill's range of influence, conducting visits to the mine and mill sites, executing the sampling plan, and producing this report.

In accordance with the sampling and quality assurance plan (SQAP), attempts were made to conduct in-situ field screening of metals concentrations at potential contaminant sources using X-ray fluorescence (XRF) equipment. Due to field conditions, the instruments exceeded operating temperatures on several occasions. It was determined that the equipment was not able to function properly in a high temperature environment and its use was discontinued. A memo presenting the results of the limited XRF screening conducted is included in Appendix D.

Section 2 of this document includes a discussion of the regional operations and waste characteristics Section 3 provides a description of the field activities conducted by E & E and WESTON. Quality assurance/quality control (QA/QC) criteria are included in Section 4. Reporting criteria, reporting methods, and background sample analytical results are discussed in Section 5. Mine and mill locations, descriptions, and START-2 site visits are discussed in Section 6. Section 7 provides a discussion of contaminant sources, potential targets/receptors and sampling results associated with each mine and mill site sampled. Mine/mill-specific findings and recommendations are summarized in Section 8. References are provided in Section 9. Photographic documentation is provided in Appendix A. Copies of START-2 and EPA logbooks are provided in Appendix B. Global positioning system (GPS) coordinates are provided in Appendix C. Data quality assurance review memorandums and analytical data forms are provided in Appendix D. The data for the samples collected in the Kettle River are provided in Appendix E. Historical site maps of LeRoi/Northport Smelter are provided in Appendix F. The Northport city wells analytical data are provided in Appendix G. The trip report prepared by WESTON is provided in Appendix H. The analytical results of routine monitoring at the City of Addy municipal water supply wells is provided in Appendix I.

Table 1-1

MINES AND MILLS VISITED
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

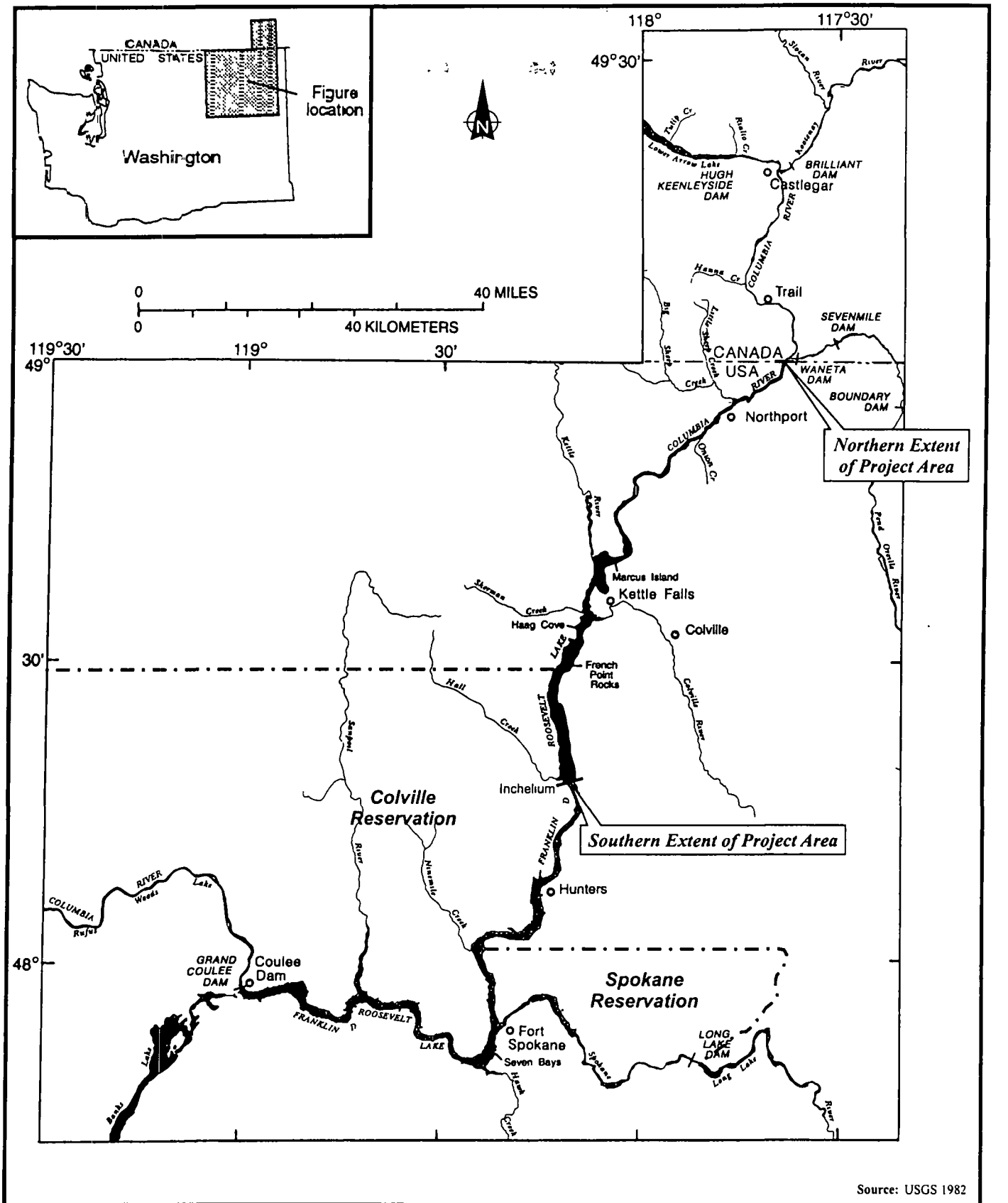
Mine/Mill Name	Latitude			Longitude			S	T	R
Daisy Mine	48	22	45 80	118	4	42 60	7	33N	38E
L-Bar/Northwest Magnesite*	48	15	21.94	117	43	6 25	23	32N	40E
Northwest Alloys*	48	21	26 00	117	50	54 00	14	33N	39E
Napoleon Mine/Mill*	48	44	12 10	118	06	4.32	3	37N	37E
First Thought Mine*	48	53	2 04	118	09	32	18	39N	37E
Lottie Mine	48	51	53.28	118	01	15 24	19	39N	38E
Homestake No. 1 Mine	48	52	06.96	118	01	18 84	19	39N	38E
Antelope Mine	48	52	04 80	118	01	05.88	19-20	39N	38E
Hubbard Mine	48	55	15.96	117	52	03 72	32	40N	39E
New Leadville Mine	48	44	08 52	117	52	33 60	3	37N	39E
R J. Mine	48	43	54 84	117	52	31.80	3	37N	39E
Van Stone Mine/Mill*	48	45	38 16	117	45	23.76	33	38N	40E
Hope and Twin Cabins Mine	48	53	09 96	118	01	37 92	7 and 18	39N	38E
St. Crispin Mine*	48	56	30.99	117	47	7 47	25	40 N	39E
Northport Mill*	48	56	31 08	117	45	15 66	29	40 N	40E
LeRoi/Northport Smelter*	48	55	23 16	117	46	02.28	33	40N	40E
Black Rock Mine/Mill	48	52	13 45	117	42	22 12	24	39N	40E
Great Western Mine	48	52	06.24	117	41	48.48	24	39N	40E
Last Chance Mine/Mill*	48	51	59.40	117	41	56 40	24	39N	40E
Deep Creek Mine*	48	51	48.96	117	42	54 36	26	39N	40E
Copper King Mine	48	46	51.60	117	39	12.24	20	38N	41E
Sierra Zinc Mine/Mill*	48	46	28.20	117	40	06 24	20	38N	41E
Magma Mine	48	46	00.48	117	38	25.08	28	38N	41E
Farmer Mine	48	50	59 28	117	37	17 40	34	39N	41E
Maki Mine	48	50	45.60	117	36	00 00	35	39N	41E
Electric Point Mine/Mill*	48	52	56.28	117	32	29 04	17-18	39N	42E
Gladstone Mine/Mill*	48	53	12.48	117	32	35 16	18	39N	42E
Lucky Four Mine	48	52	51 60	117	32	33 00	18	39N	42E
Red Top Mine	48	56	35.88	117	33	52.20	25	40N	41E
Anderson Calhoun Mine/Mill*	48	55	09.84	117	35	28 68	2	39N	41E
Lucile Mine	48	57	01.08	117	33	12 24	30	40N	42E
Iroquois Mine	48	57	06 12	117	32	22 92	30	40N	42E
Silver Queen Mine	48	32	56.90	118	06	57 60	11	35N	37E
Melrose Mine	48	56	44.52	117	38	45.96	28	40N	41E
Lakeview Mine	48	57	51 84	117	32	57 12	19	40N	42E
Jackson Mine	48	57	35 64	117	34	08 04	24	40N	41E
Frisco-Standard Mine	48	59	34 80	117	26	39 48	12	40N	42E
Myeerah Mine	48	59	26 16	117	27	14 76	11	40N	42E
United Treasure Mine	48	59	21 48	117	27	51 12	11	40N	42E

Source Maptech, 2001, Andover, Massachusetts.

* Mine/mill sites petitioned by The Colville Confederated Tribes to the EPA for assessment under CERCLA

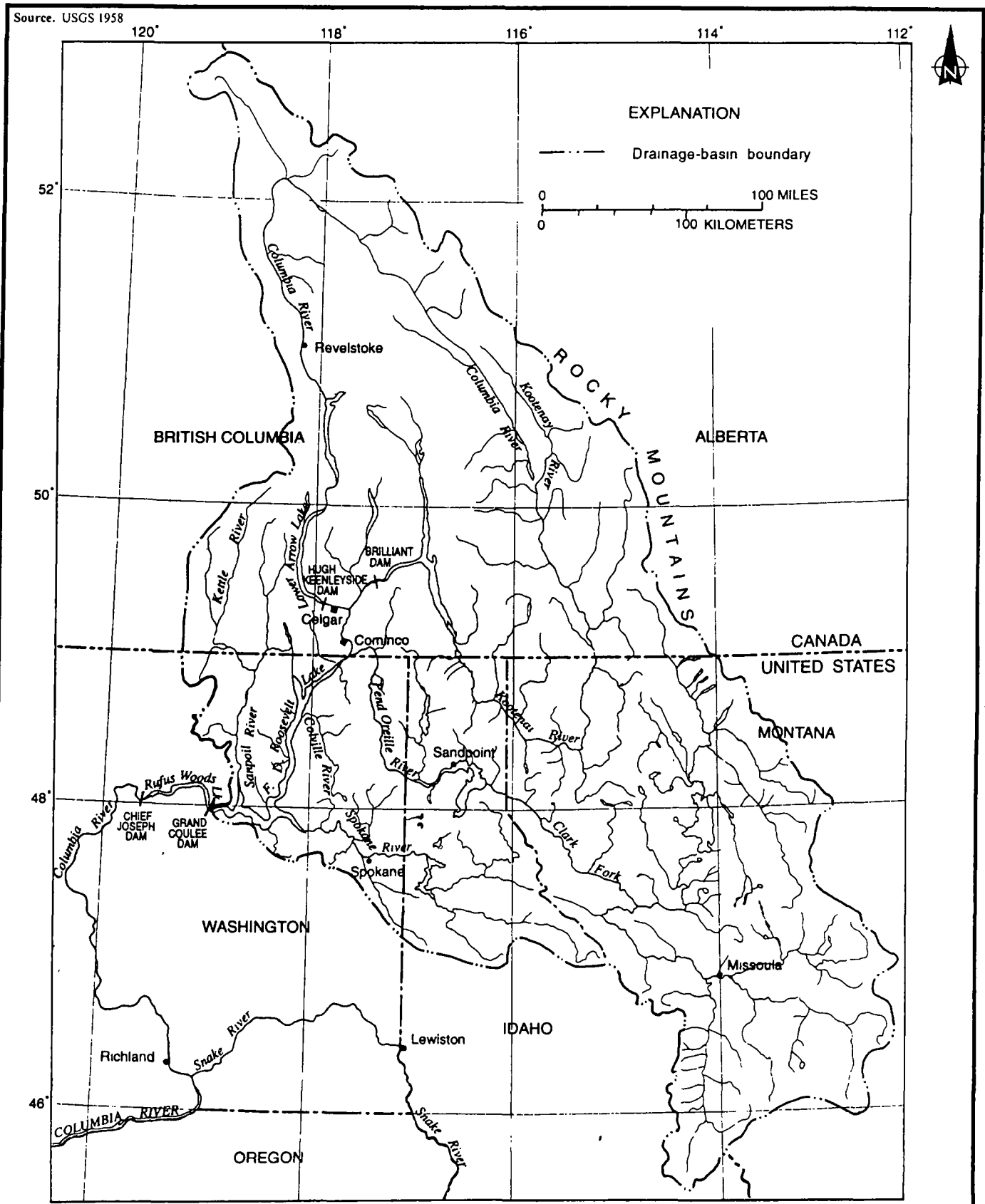
Key

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
EPA = United States Environmental Protection Agency
S = Section
T = Township
R = Range
E = East
N = North
RM = River mile
TDL = Target Distance Limit



Source: USGS 1982

ecology and environment, inc. International Specialists in the Environment Seattle, Washington	UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS Stevens County, Washington	Figure 1-1 UPPER COLUMBIA RIVER PROJECT AREA		
		Date 10-4-02	Drawn by. AES	10 START-2\01020028\fig 1-1



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

UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
AND SITE INSPECTIONS
Stevens County, Washington

Figure 1-2
LAKE ROOSEVELT
DRAINAGE BASIN

Date	Drawn by	
10-4-02	AES	10 START-2\01020028\fig 1-2

Source: Weston 2002.

EXPLANATION

Streams

Town

Ferry County

Stevens County

Kettle Falls

Colville

Silver Queen Mine

Daisy Mine

Inchelium

Map Extent

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

0 7,000 14,000
Approximate Scale in Feet

UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 1-3
MINES AND MILLS LOCATIONS
LOWER PROJECT AREA

Date:	Drawn by:	
10/4/02		10:START-2\01020028\fig 1-3

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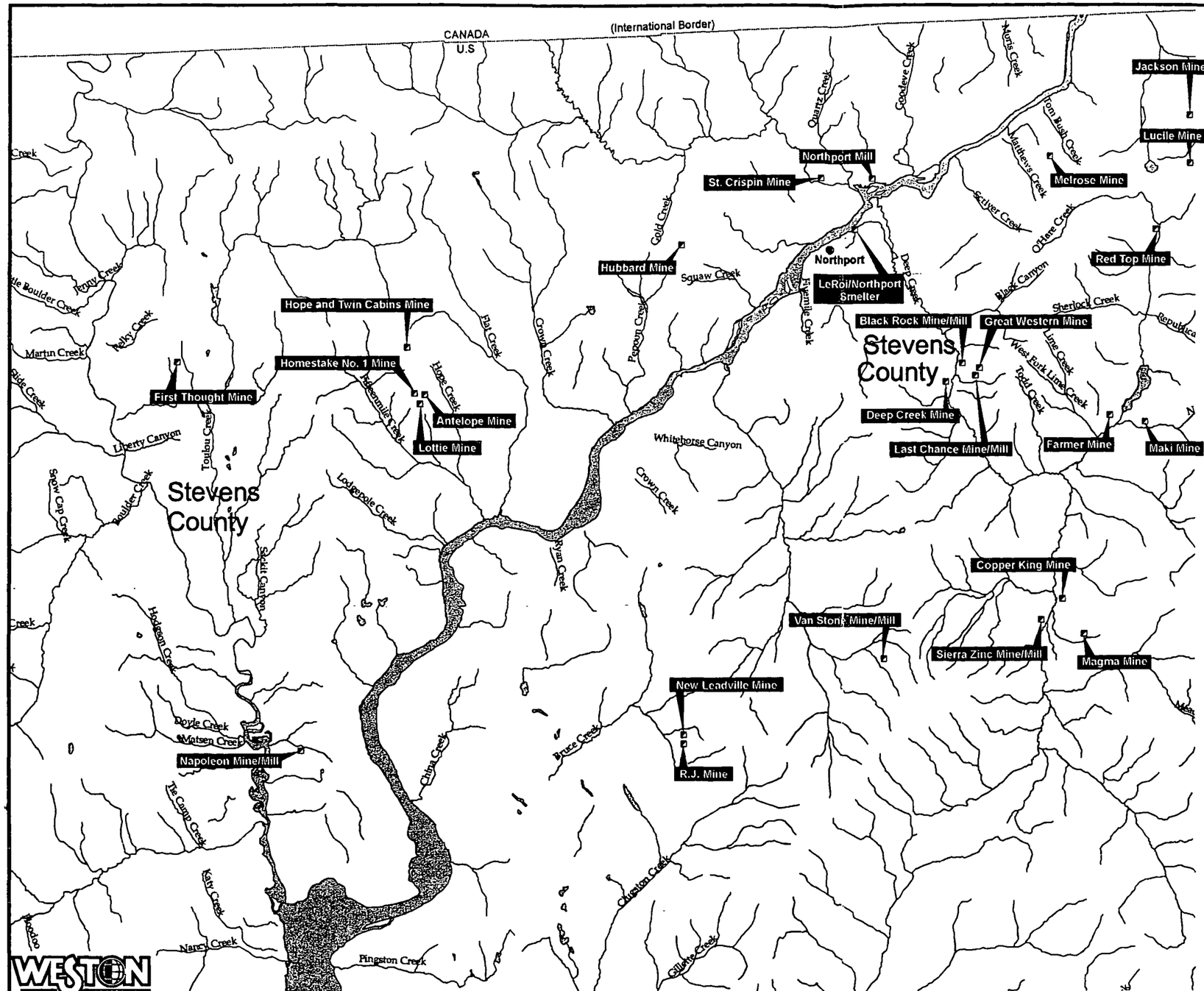
intentionally left blank.

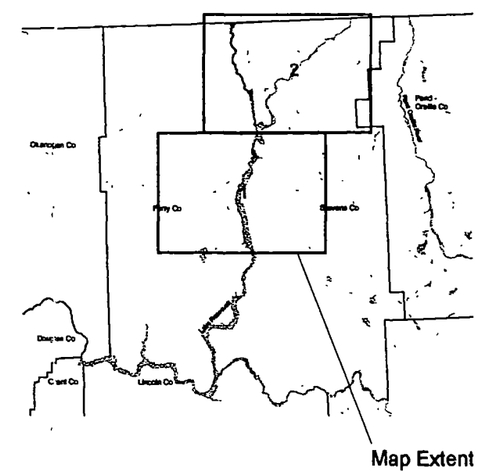
Source: Weston 2002



EXPLANATION

Streams

Town



Map Extent

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

0 7,000 14,000
Approximate Scale in Feet

UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 1-4
MINES AND MILLS LOCATIONS
UPPER PROJECT AREA

Date:	Drawn by:	
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2. BACKGROUND

2.1 MINE/MILL OWNERSHIP

Property owners and/or representatives for the mines/mills visited are identified in Section 6. Consent for access to each mine and mill sites visited was obtained prior to conducting the visits.

2.2 REGIONAL OPERATIONS AND WASTE CHARACTERISTICS

2.2.1 Historic Mining

The mining district surrounding the towns of Colville, Chewelah, Addy, and Northport in Stevens County, Washington dates back to the 1880s (Battien 1998). Stevens County's Embry Camp is the oldest mining district in the state. The Chewelah mining district was one of the earliest to be discovered and put into production. Stevens County produced the most gold in the state of Washington from 1905 to 1908 and again in 1922. The county led the state in the number of producing mines in 1928. By 1962, a geological survey stated that Stevens County produced half of the minerals of the state of Washington. (Battien 1998)

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3. FIELD ACTIVITIES AND ANALYTICAL PROTOCOL

A SQAP for the upper Columbia River PAs and SIs was developed by the START-2 prior to performing the field sampling (E & E 2001). The SQAP describes the sampling strategy, sampling methodology, and analytical program used to identify potential hazardous substance source areas and impacts to potential targets. With few exceptions, field activities were conducted in accordance with the approved SQAP. Deviations from the SQAP are described when applicable. Field activities were conducted in coordination with United States Department of the Interior Bureau of Land Management, United States Department of Agriculture Forest Service, and Washington State Department of Ecology (Ecology) staff.

The field event was conducted from June 17 to 30 and September 9 to 15, 2001. Sampling was conducted at 18 of the 39 mines and mills visited. Sampling was conducted at those mines and mills where potential sources of contamination were identified and where possible impacts to receptors via the surface water migration pathway were observed. In addition, the soil exposure pathway was evaluated for the Deep Creek Mine and the LeRoi/Northport Smelter. Possible receptors of contamination that were identified were also sampled.

As described in the SQAP, potential contaminant sources may include tailings piles/ponds, waste rock piles, adits, and stained soil areas surrounding improperly stored or disposed drums and containers. Potential receptors/targets may include wetland areas, fisheries, surface water intakes, sensitive environments, etc. as defined in the EPA Hazard Ranking System (HRS); Final Rule. The contaminants of concern (COCs) include Target Analyte List (TAL) metals, chlorinated pesticide/polychlorinated biphenyls (pesticide/PCBs), and semivolatile organic compounds (SVOCs). Total organic carbon (TOC) data was also collected for sediment samples.

A total of 203 soil/sediment samples and 13 surface water samples were collected by E & E and analyzed under the EPA Contract Laboratory Program (CLP) for TAL metals. Sixty-eight soil/sediment and two surface water samples were also analyzed under the EPA CLP for pesticide/PCBs. Thirty-four soil/sediment and two surface water samples, were analyzed for SVOCs. A total of 20 sediment samples were submitted to a commercial laboratory for TOC analysis. WESTON collected a total of

120 sediment samples and 5 surface water samples Table 3-1 provides a summary of sample collection information.

Sample types and the methods of collection are described below A discussion of sample results is contained in Sections 6 and 7. Photographic documentation of the PAs and SIs field activities are contained in Appendix A.

Information pertinent to WESTON's related sampling activities involving the collection of mine and mill-specific background samples is included in Appendix H.

3.1 SAMPLING METHODOLOGY

Sampling for surface soil, surface water, and sediment followed the standard operating procedures contained in Appendix A of the SQAP (E & E 2001). Grass, leaves and other vegetative material, rocks and other debris unsuitable for analysis were removed from soil samples before being placed into the sampling containers. Surface soil and sediment samples were homogenized in dedicated plastic bowls (except for pesticide/PCBs analysis) prior to placement in sample jars. Dedicated plastic spoons and scoops were used to extract, homogenize, and place sample material into sample containers (except for pesticide/PCBs analysis). Dedicated steel bowls and steel spoons were used for the collection and homogenization of pesticide/PCBs samples.

Water samples were collected by hand dipping a 1-liter polyethylene bottle sample container into the water at well-mixed locations within the stream, or by using an unused sample container as a scoop to obtain water samples in areas of low flow. An aliquot of each sample was tested in the field for temperature and pH. After preservation, pH was checked again to ensure that the appropriate pH level had been achieved.

All samples were stored on ice in coolers continuously maintained under chain-of-custody. Vehicles were locked if the sampling team had to walk out of visual range. Sample coolers from all teams were moved into a single occupied location (motel room) each evening to ensure custody control and to re-ice as needed.

3.1.1 EPA CLP Surface Soil Samples

A total of 159 surface soil samples, including 9 background samples, were collected. Soil samples were discrete grab samples collected from potential source and background areas. Surface soil samples were collected from 0 to 6 inches below ground surface (bgs). Samples were analyzed for TAL

metals. A portion of samples also were analyzed for pesticide/PCBs (42 samples) and SVOCs (12 samples).

3.1.2 EPA CLP Sediment Samples

A total of 44 sediment samples, including 9 background samples, were collected as outlined in the text of the SQAP (E & E 2001). Sediment samples were collected from below the apparent water line from 0 to 8 inches below the sediment surface in order from most downstream locations to most upstream locations. Samples were analyzed for TAL metals. Twenty-six samples also were analyzed for pesticide/PCBs, SVOCs (22 samples), and TOC (20 samples).

3.1.3 EPA CLP Surface Water Samples

A total of 13 surface water samples were collected prior to collecting co-located sediment samples and from the most downstream locations to the most upstream locations. Water samples were analyzed for TAL metals. A portion of samples also were analyzed for pesticide/PCBs (two samples) and SVOCs (two samples).

3.2 ANALYTICAL PROTOCOLS

All samples collected were shipped off-site for chemical analysis, with the exception of field measurement for pH. Analytical methods applied to E & E samples consisted of: EPA CLP TAL metals, EPA CLP pesticide/PCBs, EPA CLP SVOCs, and EPA SW-846 TOC. These analyses were applied to samples collected from suspected sources or targets in varying combinations based on the SQAP. Laboratories performing the analyses are noted in Section 4. Analysis applied to mine and mill-specific background samples collected by WESTON were based on the approved SQAP; *Upper Columbia River/Lake Roosevelt Expanded Site Inspection Sampling and Quality Assurance Plan*, TDD No. 01-02-0001-A, EPA Contract: 68-S0-01-02, prepared for the EPA Region 10 by WESTON, May 2001.

3.3 GLOBAL POSITIONING SYSTEM

Trimble™ Pathfinder Professional XL GPS survey units and data loggers were used by the START-2 to approximate the horizontal location coordinates of sample points. Except as noted for specific sample locations, the units provided three-dimensional differentially-corrected sample coordinates with ± 1 meter accuracy. Due to the combination of the mountainous terrain and limited

satellite coverage over this area, the GPS units were often operating in no more than two-dimensional mode.

Sample coordinates were plotted onto a digitized map and then incorporated into geographic information system databases to develop a station/sample location map. The START-2 was not able to obtain accurate GPS coordinates at some locations due to mountainous terrain. These station locations were estimated on the sample location map based on field observations. GPS coordinates by sample point are provided in Appendix C. WESTON GPS coordinates are found in Appendix H.

3.4 INVESTIGATION-DERIVED WASTE

Investigation-derived waste (IDW) generated during the sampling effort consisted of used personal protective clothing and disposable sampling equipment. IDW was disposed of as non-hazardous solid waste at a municipal landfill. No IDW generated by the START-2 remains in the project area.

e 3-1

SAMPLE COLLECTION AND ANALYTICAL SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
Daisy Mine															
01374161	01090426	DTPP01SD	J0KH0	MJ0KH0	SD	0-6	HZ	09/10/01	15.55	X	X	X			Sand 50%, silt 40%, gravel 10% All subangular, light gray to brown, trace organics.
01374162	NU	DTAD01SW	NU	MJ0KH1	SW	-	HZ	09/10/01	16:30	X					-
01374164	NU	DTTP01SS	NU	MJ0KH3	SS	0-6	HZ	09/10/01	17:10	X					Silty soil, 5 inch gravel - subangular, light brown
01374165	NU	DTTP02SS	NU	MJ0KH4	SS	0-6	HZ	09/10/01	17:25	X					Silt 60%. Sand 15% very fine to medium grained gravel 25% subangular - angular, light gray to brown
01374166	NU	DTTP03SS	NU	MJ0KH5	SS	0-6	HZ	09/10/01	18:25	X				X	70% sand, very fine to medium grained 15% silt 15% gravel, angular to subangular, light gray, brown, trace organics
L-Bar/Northwest Magnesite															
01374101	01090401	LBDT01SD	J0KC1	MJ0KC1	SD	0-8	RL	09/10/01	14.30	X	X	X		X	Dark brown to black. Lots of organic material - silty clay, roots, plant debris
01374102	01090402	LBDT02SD	J0KC2	MJ0KC2	SD	0-8	RL	09/10/01	15:00	X	X	X		X	Organic rich, wet, hydrogen sulfide odor, dark brown/black.
01374103	01090403	LBDT03SD	J0KC3	MJ0KC3	SD	0-8	RL	09/10/01	15 30	X	X	X		X	Dark brown to black Lots of organic matter
01374110	01090410	LBPP01SD	J0KD1	MJ0KD1	SD	0-8	RL	09/11/01	9:10	X	X	X		X	Silty sand, brown, chunks of clay material
Northwest Alloys															
01374105	01090405	NAPP01SD	J0KC5	MJ0KC5	SD	0-8	RL	09/10/01	17 15	X	X	X		X	Fine sand with little gravel.
01374106	01090406	NACK01SD	J0KC6	MJ0KC6	SD	0-8	RL	09/10/01	17 45	X	X	X		X	Gravelly sand and poorly sorted
01374107	01090407	NADT01SD	J0KC7	MJ0KC7	SD	0-8	RL	09/10/01	18 15	X	X	X		X	Silt, very fine sand
Napoleon Mine/Mill															
01374112	NU	NPAD01SW	NU	MJ0KD3	SW	-	JS	09/12/01	9 45	X					Clear, no odor.
01374113	01090412	NPPP01SD	J0KD3	MJ0KD4	SD	0-8	JS	09/11/01	10:05	X	X	X		X	Silty loam, light brown, subangular to angular, trace organics.

Table 3-1

SAMPLE COLLECTION AND ANALYTICAL SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
Van Stone Mine/Mill															
01254312	NU	VSTP21SS	NU	MJ0EW6	TL	0-6	AJ	06/22/01	12·20	X					Gray, fine and sandy.
01254313	NU	VSPP01SD	NU	MJ0EW7	SD	6-8	AJ	06/22/01	12:50	X					Dark gray, fine, moist sandy
01254314	NU	VSPP02SD	NU	MJ0EW8	SD	6-8	AJ	06/22/01	13 25	X					Dark gray, fine, moist sandy
01254315	NU	VSTP01SS	NU	MJ0EW9	SS	0-6	AJ	06/22/01	14·40	X					Gray sand and soil, fine, dry
01254316	NU	VSTP02SS	NU	MJ0EX0	SS	0-6	AJ	06/22/01	15·15	X					Dark gray/brown, dry, fine soil
01254317	NU	VSTP03SS	NU	MJ0EX1	SS	0-6	AJ	06/22/01	15 30	X					Dark gray, dry, fine soil.
01254318	NU	VSTP04SS	NU	MJ0EX8	SS	0-6	AJ	06/22/01	15·45	X					Fine, dry, gray, sandy.
01254319	NU	VSTP05SS	NU	MJ0EX3	SS	0-4	AJ	06/22/01	15 50	X					Brown, fine, dry soil.
01254320	NU	VSTP06SS	NU	MJ0EX4	SS	0-6	AJ	06/22/01	16:00	X					Brown, fine, dry soil
01254321	NU	VSTP07SS	NU	MJ0EX5	SS	0-6	AJ	06/22/01	16·10	X					Brown, fine, dry soil and tailings
01254322	NU	VSTP08SS	NU	MJ0EX6	SS	0-6	AJ	06/22/01	16:15	X					Very fine, brown, dry soil
01254323	NU	VSTP09SS	NU	MJ0EX7	SS	0-6	AJ	06/22/01	16:20	X					Dark brown, fine, dry soil.
01254324	NU	VSSS01SS	NU	MJ0F12	SS	0-6	AJ	06/23/01	9:15	X	X			X	Moist, brown, fine soil.
01254325	NU	VSSS02SS	NU	MJ0EX9	SS	0-6	AJ	06/23/01	9·40	X	X			X	Moist, brown, fine soil with small pebbles
01254326	NU	VSSS03SS	NU	MJ0EY0	SS	0-6	AJ	06/23/01	10·10	X	X			X	Dark brown, moist, coarse sand.
01254327	NU	VSSS04SS	NU	MJ0EY1	SS	0-6	AJ	06/23/01	10·45	X	X				Dark green, very fine, dry.
01254328	NU	VSSS05SS	NU	MJ0EY2	SS	0-6	MW	06/23/01	10.47	X	X				Brown, dry, fine to coarse soil
01254329	NU	VSSS06SS	NU	MJ0EY3	SS	0-6	AJ	06/23/01	11:30	X	X			X	Brown, dry, fine to coarse soil
01254330	NU	VSSS07SS	NU	MJ0EY4	SS	0-6	AJ	06/23/01	11·35	X	X			X	Moist brown with some coarse soil
01254331	NU	VSTP10SS	NU	MJ0EY5	SS	0-6	AJ	06/23/01	13:35	X					Moist brown soil and small rocks.
01254332	NU	VSTP11SS	NU	MJ0EY6	SS	0-6	AJ	06/23/01	13·45	X					Fine, brown, dry, soil
01254333	NU	VSTP12SS	NU	MJ0EY7	SS	0-6	AJ	06/23/01	13·50	X					Fine, brown, dry, soil.
01254334	NU	VSTP13SS	NU	MJ0EY8	SS	0-6	AJ	06/23/01	14·20	X					Fine gray/brown, dry soil.
01254335	NU	VSTP14SS	NU	MJ0EY9	SS	0-6	AJ	06/23/01	14·25	X					Fine gray/brown, dry soil.
01254336	NU	VSTP15SS	NU	MJ0EZ0	SS	0-6	AJ	06/23/01	14.00	X					Fine, slightly moist, brown soil
01254337	NU	VSTP16SS	NU	MJ0EZ1	SS	0-6	AJ	06/23/01	14:40	X					Fine, gray, dry soil
01254338	NU	VSTP17SS	NU	MJ0EZ2	SS	0-6	AJ	06/23/01	14:45	X					Fine, brown, dry soil with small pebbles
01254339	NU	VSTP18SS	NU	MJ0EZ3	SS	0-6	AJ	06/23/01	14.05	X					Fine, brown, dry soil with small pebbles
01254340	NU	VSTP19SS	J0EZ4	NU	SS	0-6	AJ	06/23/01	15:45		X				Dark gray, fine, moist sandy
01254341	NU	VSTP20SS	J0EZ5	NU	SS	0-6	MW	06/23/01	15:45		X				Dark gray, fine, moist sandy
01254196	NU	VSWP01SS	NU	MJ0GJ5	SS	0-6	NA	06/23/01	10 40	X					Coarse sand with gravel, tan Dry no odor
01254197	NU	VSWP02SS	NU	MJ0GJ6	SS	0-6	NA	06/23/01	11:05	X					Tan/gray fine sand and gravel. Dry no odor
01254198	NU	VSWP03SS	NU	MJ0GJ7	SS	0-6	NA	06/23/01	11:50	X					Tan/gray sandy gravel Dry no odor
01254199	NU	VSWP04SS	NU	MJ0GJ8	SS	0-6	NA	06/23/01	12 15	X					Tan sandy gravel. Dry no odor

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SAMPLE COLLECTION AND ANALYTICAL SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
Van Stone Mine/Mill (continued)															
01254200	NU	VSWP05SS	NU	MJ0GJ9	SS	0-6	NA	06/23/01	12.40	X					Gray fine sand with gravel and rocks Dry no odor.
01254201	NU	VSWP06SS	NU	MJ0GK0	SS	0-6	NA	06/23/01	13:35	X					Gray fine sandy silt. Dry no odor
01254202	NU	VSWP07SS	NU	MJ0GK1	SS	0-6	NA	06/23/01	13:55	X					Gray fine sand with gravel Dry no odor
01254203	NU	VSWP08SS	NU	MJ0GK2	SS	0-6	NA	06/23/01	14:15	X					Light tan fine sand/silt with gravel Dry no odor
01254204	NU	VSWP09SS	NU	MJ0GK3	SS	0-6	NA	06/23/01	14.40	X					Light tan fine sand/silt with gravel Dry no odor.
01254205	NU	VSWP10SS	NU	MJ0GK4	SS	0-6	NA	06/23/01	15·15	X					Tan fine sand with gravel Dry no odor
01254206	NU	VSWP11SS	NU	MJ0GK5	SS	0-6	NA	06/23/01	15:35	X					Tan/gray very fine sand/silt and trace gravel
01254207	NU	VSWP12SS	NU	MJ0GK6	SS	0-6	NA	06/23/01	15:55	X					Coarse gray sand with gravel. Dry no odor
01254360	NU	VSSP01SW	NU	MJ0FJ9	SW	-	RN	06/23/01	10:50	X					No odor, moss particles, murky color
01254361	NU	VSPP03SD	J0FK0	MJ0FK0	SD	6-8	RN	06/23/01	11·20	X	X				Gray sand/gravel.
01254362	NU	VSMW01SW	NU	MJ0FK1	SW	-	RN	06/23/01	11·40	X					Clear.
01254363	NU	VSMW01SD	J0FJ1	MJ0FK2	SD	6-8	RN	06/23/01	11 45	X	X				Silty sand to fine gravel, gray to light brown, slight odor
01254364	NU	VSPP04SD	J0FJ2	MJ0FK3	SD	6-8	RN	06/23/01	13:50	X	X				Dark brown, medium to course sand with some silt
LeRoi/Northport Smelter															
01264431	NU	NSSL01SD	NU	MJ0GP0	SD	0-6	CG	06/28/01	13.15	X					Dark brown to black medium sand
01264432	NU	NSSL02SD	NU	MJ0GP1	SD	0-6	CG	06/28/01	13·50	X					Dark brown to black medium sand
01264433	NU	NSSL03SD	NU	MJ0GP2	SD	0-6	CG	06/28/01	14·10	X					Mixed brown and black sand medium to fine
01264434	NU	NSSL04SD	NU	MJ0GP3	SD	0-6	CG	06/28/01	14 20	X					Mixed brown and black sand medium to fine
01264435	NU	NSSL05SD	NU	MJ0GP4	SD	0-6	CG	06/28/01	14 30	X					Black medium to fine sand well sorted
01264436	NU	NSSL06SD	NU	MJ0GP5	SD	0-6	CG	06/28/01	15 15	X					Brown fine sand and silt with brick fragments
01264437	NU	NSSL07SD	NU	MJ0GP6	SD	0-6	CG	06/28/01	15.30	X					Brown fine to very fine sand
01264438	NU	NSSL08SD	NU	MJ0GP7	SD	0-6	CG	06/28/01	15:45	X					Brown fine to very fine sand
01264439	NU	NSSL09SD	NU	MJ0GP8	SD	0-6	CG	06/28/01	16 25	X					Brown fine to very fine sand
01374182	NU	NSSL01SS	NU	MJ0KK0	SS	0-6	HZ	09/13/01	9.25	X					No odor, silty loam, very rocky, dry, light brown
01374183	NU	NSSL02SS	NU	MJ0KK1	SS	0-6	HZ	09/13/01	10·45	X					85% sand, very fine to medium grained 15% silt, medium brown subangular Sandy reddish slag pieces and yellowish stain
01374184	NU	NSSL03SS	NU	MJ0KK2	SS	0-6	HZ	09/13/01	11:00	X					85% sand, very fine to medium grained 15% silt, medium brown subangular Sandy reddish with yellowish stain
01374185	01090430	NSDT01SD	J0KJ1	MJ0KK3	SD	0-8	JS	09/13/01	12 05	X	X	X		X	Light brown, subangular sand very fine to medium very coarse grained
01374186	01090431	NSPP01SD	J0KJ2	MJ0KK4	SD	0-8	JS	09/13/01	12 30	X	X	X		X	Silty, saturated, light brown

Table 3-1

SAMPLE COLLECTION AND ANALYTICAL SUMMARY
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STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
Black Rock Mine/Mill															
01254160	NU	BRWP01SS	NU	MJ0GE9	SS	0-6	NA	06/19/01	17:25	X					Light brown medium sand with gravel
01254161	NU	BRWP02SS	NU	MJ0GF0	SS	0-6	NA	06/19/01	17:30	X					Light brown/gray medium sand/gravel
01254162	NU	BRWP03SS	NU	MJ0GF1	SS	0-6	NA	06/19/01	17:40	X					Light brown sand/gravel
01254163	NU	BRMS01SS	NU	MJ0GF2	SS	0-6	NA	06/19/01	18:00	X					Light brown loamy sand
01254164	NU	BRMS02SS	NU	MJ0GF3	SS	0-6	NA	06/19/01	18 05	X					Light brown loamy sand
Great Western Mine															
01254177	NU	GWWP01SS	NU	MJ0GG6	SS	0-6	NA	06/21/01	11:20	X					Brown course sand/gravel. Dry no odor.
01254178	NU	GWWP02SS	NU	MJ0GG7	SS	0-6	NA	06/21/01	11 30	X					Brown/orange coarse sand gravel. Dry no odor
Last Chance Mine/Mill															
01254165	NU	LCMS01SS	NU	MJ0GF4	SS	0-6	NA	06/20/01	10 10	X					Medium brown fine loamy sand with trace gravel
01254166	NU	LCMS02SS	NU	MJ0GF5	SS	0-6	NA	06/20/01	10 25	X					Medium brown fine sandy with gravel
01254167	NU	LCMS03SS	NU	MJ0GF6	SS	0-6	NA	06/20/01	10:35	X					Medium brown/orange fine sand
01254168	NU	LCPP01SD	NU	MJ0GF7	SD	0-8	NA	06/20/01	10.45	X					Gray/brown/black medium sand with gravel, wet organic odor
01254169	NU	LCTP01SS	NU	MJ0GF8	SS	0-6	NA	06/20/01	11:30	X					Fine sand/silt medium brown, dry, no odor
01254170	NU	LCTP02SS	NU	MJ0GF9	SS	0-6	NA	06/20/01	11·40	X					Fine sand/silt medium brown slightly orange
01254171	NU	LCTP03SS	NU	MJ0GG0	SS	0-6	NA	06/20/01	11:45	X					Loose sand with gravels medium brown
01254172	NU	LCAD01SW	NU	MJ0GG1	SW	-	DW	06/20/01	13·15	X					Clear water no odor
01254173	NU	LCPP02SD	NU	MJ0GG2	SD	0-8	DW	06/20/01	13:25	X					Brown black medium sand/silt. Wet no odor
01254174	NU	LCWP01SS	NU	MJ0GG3	SS	0-6	NA	06/20/01	13·55	X					Brown fine sand/silt Dry no odor
01254175	NU	LCWP02SS	NU	MJ0GG4	SS	0-6	NA	06/20/01	14.10	X					Brown fine sand/silt Dry no odor
01254176	NU	LCWP03SS	NU	MJ0GG5	SS	0-6	NA	06/20/01	14 20	X					Brown fine sand/silt Dry no odor.
Deep Creek Mine															
01254251	NU	DCWP01SS	NU	MJ0EN5	SS	0-6	CG	06/20/01	10·00	X					White, quartz like, rocky
01254252	NU	DCWP02SS	J0EN6	MJ0EN6	SS	0-6	CG	06/20/01	10.14	X	X				White quartz like.
01254253	NU	DCWPO3SS	J0EN7	MJ0EN7	SS	0-6	CG	06/20/01	10 20	X	X				White quartz like
01254254	NU	DCWP04SS	J0EN8	MJ0EN8	SS	0-6	CG	06/20/01	10 28	X	X				White quartz like.
01254255	NU	DCTP01SS	J0EN9	MJ0EN9	SS	0-6	CG	06/20/01	10:38	X	X				Fine, light brown, dry soil
01254256	NU	DCTP02SS	J0EP0	MJ0EP0	SS	0-6	CG	06/20/01	10 44	X	X				Fine, light brown, dry soil.
01254257	NU	DCTP03SS	J0EP1	MJ0EP1	SS	0-6	CG	06/20/01	10:50	X	X				Fine, light brown, dry soil
01254258	NU	DCTP04SS	J0EP2	MJ0EP2	SS	0-6	CG	06/20/01	14·13	X	X				Fine, light brown, dry soil.
01254259	NU	DCTP05SS	J0EP3	MJ0EP3	SS	0-6	CG	06/20/01	14:15	X	X				Fine, light brown, dry soil
01254260	NU	DCTP06SS	J0EP4	MJ0EP4	SS	0-6	CG	06/20/01	14 18	X	X				Fine, light brown, dry soil
01254261	NU	DCTP07SS	J0EP5	MJ0EP5	SS	0-6	CG	06/20/01	11 25	X	X				Fine, light brown, dry soil, with white quartz like rocks
01254262	NU	DCTP08SS	J0EP6	MJ0EP6	SS	0-6	CG	06/20/01	11:35	X	X				Fine, light brown, dry soil, with white quartz like rocks
01254263	NU	DCTP09SS	J0EP7	MJ0EP7	SS	0-6	CG	06/20/01	11 45	X	X				Fine, light brown. dry soil, with white quartz like rocks

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SAMPLE COLLECTION AND ANALYTICAL SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
Deep Creek Mine (continued)															
01254264	NU	DCTP10SS	J0EP8	MJ0EP8	SS	0-6	CG	06/20/01	12:03	X	X				Fine, dry
01254265	NU	DCTP11SS	J0EP9	MJ0EP9	SS	0-6	CG	06/20/01	12:07	X	X				Fine, dry
01254266	NU	DCTP12SS	J0EQ0	MJ0EQ0	SS	0-6	CG	06/20/01	12:07	X	X				Fine, dry.
01254267	NU	DCWP05SS	NU	MJ0EQ1	SS	0-6	CG	06/20/01	12 43	X					White, quartz like.
01254268	NU	DCTP13SS	J0EQ2	MJ0EQ2	SS	0-6	CG	06/20/01	13 26	X	X				Light brown, fine dry soil with some white quartz like rocks
01254269	NU	DCTP14SS	J0EQ3	MJ0EQ3	SS	0-6	CG	06/20/01	13:39	X	X				Light brown, fine dry soil with some white quartz like rocks
01254270	NU	DCTP15SS	J0EQ4	MJ0EQ4	SS	0-6	CG	06/20/01	13 31	X	X				Light brown, fine dry soil with some white quartz like rocks
01254271	NU	DCAD01SW	NU	MJ0EQ5	SW	-	MW	06/20/01	13 45	X					No odor, clear.
01254272	NU	DCTP16SS	J0EQ6	MJ0EQ6	SS	0-6	CG	06/20/01	13:49	X	X				Fine slightly moist, brown soil
01254273	NU	DCTP17SS	J0EQ7	MJ0EQ7	SS	0-6	CG	06/20/01	13 50	X	X				Fine, slightly moist, brown soil
01254274	NU	DCTP18SS	J0EQ8	MJ0EQ8	SS	0-6	CG	06/20/01	13 53	X	X				Fine, slightly moist, brown soil
01254275	NU	DCSD01SD	NU	MJ0EQ9	SD	0-6	CG	06/20/01	15:15	X					Moist fine brown sediment with gold fleck
01254276	NU	DCSW01SW	NU	MJ0ER0	SW	-	CG	06/20/01	15:15	X					Clear water no odor
Copper King Mine															
01254156	NU	CKWP01SS	NU	MJ0GE5	SS	0-6	NA	06/19/01	14.15	X					Fine orange/brown sand with trace gravel and pyrite
01254157	NU	CKWP02SS	NU	MJ0GE6	SS	0-6	NA	06/19/01	14:25	X					0-3 inches fine orange sand 3-6 inches fine gray sand
01254158	NU	CKAD01SW	NU	MJ0GE7	SW	-	NA	06/19/01	15.00	X					Clear water no odor.
01254159	NU	CKPP01SD	NU	MJ0GE8	SD	0-8	NA	06/19/01	15 15	X					Light brown medium sand with gravel
Sierra Zinc Mine/Mill															
01254277	NU	SZTP01SS	NU	MJ0ER1	TL	0-6	GG	06/21/01	10 30	X					Black/gray silt.
01254278	NU	SZTP02SS	NU	MJ0ER2	TL	0-6	GG	06/21/01	10 35	X					White/medium sand
01254279	NU	SZTP03SS	NU	MJ0ER3	TL	0-6	GG	06/21/01	10 40	X					Beige fine sand/clay, moist.
01254280	NU	SZTP04SS	NU	MJ0ER4	SS	0-6	GG	06/21/01	10 52	X					Dark gray, fine, dry sand
01254281	NU	SZTP05SS	NU	MJ0ER5	SS	0-6	GG	06/21/01	10:54	X					Dark gray, fine, moist sand
01254282	NU	SZTP06SS	NU	MJ0ER6	SS	0-6	GG	06/21/01	10 56	X					Black, fine, moist soil
01254283	NU	SZTP07SS	NU	MJ0ER7	SS	0-6	GG	06/21/01	10:58	X					Gray, lumpy, clayey, dry soil.
01254284	NU	SZTP08SS	NU	MJ0ER8	SS	0-6	GG	06/21/01	11:00	X					Muddy, gray, fine, moist soil
01254285	NU	SZTP09SS	NU	MJ0ER9	SS	0-6	GG	06/21/01	11 04	X					Coarse, gray, slightly moist soil
01254286	NU	SZTP10SS	NU	MJ0ES0	SS	0-6	GG	06/21/01	11 11	X					Brown, fine, dry soil.
01254287	NU	SZTP11SS	NU	MJ0ES1	SS	0-6	GG	06/21/01	11 13	X					Brown, fine, dry soil
01254288	NU	SZTP12SS	NU	MJ0ES2	SS	0-6	GG	06/21/01	11.16	X					Moist, brown, clayey with pebbles
01254289	NU	SZTP13SS	NU	MJ0ES3	SS	0-6	GG	06/21/01	12 24	X					Gray, moist clay
01254290	NU	SZTP14SS	NU	MJ0ES4	SS	0-6	GG	06/21/01	12 27	X					Gray, moist clayey soil
01254291	NU	SZTP15SS	NU	MJ0ES5	SS	0-6	GG	06/21/01	12 29	X					Gray, moist clayey soil

Table 3-1

SAMPLE COLLECTION AND ANALYTICAL SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
Sierra Zinc Mine/Mill (continued)															
01254292	NU	SZTP16SS	NU	MJ0ES6	SS	0-6	GG	06/21/01	12:33	X					Light gray, slightly moist, clayey soil
01254293	NU	SZTP17SS	NU	MJ0ES7	SS	0-6	GG	06/21/01	12:35	X					Gray and black, slightly moist, clayey soil
01254294	NU	SZTP18SS	NU	MJ0ES8	SS	0-6	GG	06/21/01	12.37	X					Gray, dry clayey soil.
01254295	NU	SZTP19SS	NU	MJ0ES9	SS	0-6	GG	06/21/01	12.41	X					Gray, dry clayey soil.
01254296	NU	SZTP20SS	NU	MJ0ET0	SS	0-6	GG	06/21/01	12.43	X					Gray, dry clayey soil
01254297	NU	SZTP21SS	NU	MJ0ET1	SS	0-6	GG	06/21/01	12.45	X					Gray/brown, dry, clayey soil
01254298	NU	SZAD01SW	NU	MJ0ET2	SW	-	GG	06/21/01	13:39	X					Clear, no odor.
01254299	NU	SZWP01SS	J0ET3	MJ0ET3	SS	0-6	GG	06/21/01	14:00	X	X				Brown, dry fines.
01254300	NU	SZWP02SS	J0ET4	MJ0ET4	SS	0-6	GG	06/21/01	14 05	X	X				Brown, dry fines.
01254301	NU	SZWP03SS	J0ET5	MJ0ET5	SS	0-6	GG	06/21/01	14 10	X	X				Gray, fine, dry sand
01254302	NU	SZWP04SS	NU	MJ0ET6	SS	0-6	GG	06/21/01	14:22	X					Gray, fine, dry sand
01254303	NU	SZWP05SS	NU	MJ0ET7	SS	0-6	GG	06/21/01	14:25	X					Gray, fine, dry sand
01254304	NU	SZWP06SS	NU	MJ0ET8	SS	0-6	GG	06/21/01	14:28	X					Gray, fine, dry sand.
01254305	NU	SZWP07SS	NU	MJ0ET9	SS	0-6	GG	06/21/01	14:33	X					Light brown fine, dry sand
01254306	NU	SZWP08SS	NU	MJ0EW0	SS	0-6	GG	06/21/01	14 36	X					Light brown, fine, dry, small rocks
01254307	NU	SZWP09SS	NU	MJ0EW1	SS	0-6	GG	06/21/01	14 39	X					Gray, sandy, fine, dry with rocks
01254308	NU	SZWP10SS	NU	MJ0EW2	SS	0-6	GG	06/21/01	14 44	X					Gray and black, sandy, dry soil.
01254309	NU	SZWP11SS	NU	MJ0EW3	SS	0-6	GG	06/21/01	14:47	X					Gray and black, sandy, dry soil.
01254310	NU	SZWP12SS	NU	MJ0EW4	SS	0-6	GG	06/21/01	14:50	X					Brown fine, dry soil with rocks.
01254311	NU	SZMS01SS	J0EW5	MJ0EW5	SS	0-6	GG	06/21/01	14:55	X	X				Black, fine, slightly moist, sandy with lumps
Electric Point Mine/Mill															
01254185	NU	EPWP01SS	NU	MJ0GH4	SS	0-6	NA	06/22/01	12.45	X					Fine/medium tan sand with gravel
01254186	NU	EPWP02SS	NU	MJ0GH5	SS	0-6	NA	06/22/01	12 50	X					Fine/medium tan sand with gravel
01254187	NU	EPWP03SS	NU	MJ0GH6	SS	0-6	NA	06/22/01	12 58	X					Fine/medium tan sand with gravel
01254188	NU	EPMS01SS	NU	MJ0GH7	SS	0-6	NA	06/22/01	13.10	X					Fine medium brown sandy silt
01254189	NU	EPMS02SS	NU	MJ0GH8	SS	0-6	NA	06/22/01	13:15	X					Fine medium brown slightly red sandy silt
01254190	NU	EPMS03SS	NU	MJ0GH9	SS	0-6	NA	06/22/01	13:25	X					Fine medium brown slightly red sandy silt
01254191	NU	EPWP04SS	NU	MJ0GJ0	SS	0-6	NA	06/22/01	14:15	X					Fine medium brown slight red sand with trace gravel
01254192	NU	EPWP05SS	NU	MJ0GJ1	SS	0-6	NA	06/22/01	14:25	X					Light brown/tan sand with some gravel
01254193	NU	EPTP01SS	NU	MJ0GJ2	SS	0-6	NA	06/22/01	14:35	X					Fine medium light brown sand/silt
01254194	NU	EPTP02SS	NU	MJ0GJ3	SS	0-6	NA	06/22/01	14:40	X					Brown/orange fine sand silt Dry no odor
01254195	NU	EPTP03SS	NU	MJ0GJ4	SS	0-6	NA	06/22/01	14 45	X					Brown/tan fine sand with gravel

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SAMPLE COLLECTION AND ANALYTICAL SUMMARY
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STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
Gladstone Mine/Mill															
01254179	NU	GLTP01SS	NU	MJ0GG8	SS	0-6	DW	06/21/01	16:10	X					Fine brown/orange sand/silt. Dry no odor
01254180	NU	GLTP02SS	NU	MJ0GG9	SS	0-6	NA	06/21/01	16 22	X					Fine brown/orange sand/silt Dry no odor
01254181	NU	GLTP03SS	NU	MJ0GH0	SS	0-6	NA	06/21/01	16 30	X					Fine brown silty sand with some orange Dry no odor
01254182	NU	GLMS01SS	NU	MJ0GH1	SS	0-6	NA	06/21/01	16 35	X					Fine/medium red/brown sand No odor
01254183	NU	GLMS02SS	NU	MJ0GH2	SS	0-6	NA	06/21/01	16 45	X					Medium brown sand/gravel with many rocks No odor
01254184	NU	GLMS03SS	NU	MJ0GH3	SS	0-6	NA	06/21/01	16 55	X					Brown/orange fine sand with trace gravel
Red Top Mine															
01254153	NU	RDWP01SS	NU	MJ0GE2	SS	0-6	NA	06/18/01	15 50	X	X				Light brown fine sand with trace gravel Dry, no odor.
01254154	NU	RDWP02SS	NU	MJ0GE3	SS	0-6	NA	06/18/01	16 00	X	X				Light brown fine sand with trace gravel Dry, no odor
01254155	NU	RDWP03SS	NU	MJ0GE4	SS	0-6	NA	06/18/01	16 10	X	X			X	Medium brown fine sand with gravel Dry, no odor
Anderson Calhoun Mine/Mill															
01374167	NU	ANAD01SW	NU	MJ0KH6	SW	-	HZ	09/11/01	15 25	X					20 sec to fill 1 L bottle Teal color, no odor
01374168	NU	ANSS01SS	J0KH1	MJ0KH7	SS	0-6	HZ	09/12/01	9 30	X	X			X	Stained soil black, oily odor, rocky, sandy. near palette 50% gravel, angular to subangular, gray 50% sand, very fine to very coarse.
01374169	NU	ANSS02SS	J0KH2	MJ0KH8	SS	0-6	HZ	09/12/01	9:40	X	X			X	Stained soil black 70% silt 25% sand, very fine to very coarse gravel. 5% gravel (subangular) light brown to gray
01374170	NU	ANTP01SS	NU	MJ0KH9	SS	0-6	HZ	09/12/01	10 45	X					100% silt, gray.
01374171	NU	ANTP02SS	NU	MJ0KJ0	SS	0-6	HZ	09/12/01	11.00	X					100% silt, gray
01374172	NU	ANTP03SS	NU	MJ0KJ1	SS	0-6	HZ	09/12/01	11.05	X					100% silt, light gray.
01374173	NU	ANTP04SD	NU	MJ0KJ2	SD	0-6	HZ	09/12/01	11:10	X					100% silt, dark brown to black.
01374174	NU	ANTP05SD	NU	MJ0KJ3	SD	0-6	HZ	09/12/01	11:20	X					100% silt, dark brown to black
01374175	NU	ANTP06SD	NU	MJ0KJ4	SD	0-6	HZ	09/12/01	11.45	X					100% silt, dark brown to black
01374177	01090428	ANCK01SD	J0KH4	MJ0KJ6	SD	0-8	HZ	09/12/01	14.00	X	X	X		X	100% silt, light brown to gray, trace organics.
01374178	01090429	ANPP01SD	J0KH5	MJ0KJ7	SD	0-6	HZ	09/12/01	15:10	X	X	X		X	95% silt. 5% sand, subangular, saturated organic odor, black, dark color.
01374179	NU	ANSS03SS	J0KH6	MJ0KJ8	SS	0-6	HZ	09/12/01	13:15	X	X			X	Sand 50%, very fine to very coarse grain size, brown Silt 20%, light gray to brown. Gravel 30% very angular to subangular
01374180	NU	ANSS04SS	J0KH7	MJ0KJ9	SS	0-6	HZ	09/12/01	13 25	X	X			X	Sand 55%, very fine to very coarse grain size 45% gravel to cobbles Trace silt, medium gray to brown with trace organics

Table 3-1

SAMPLE COLLECTION AND ANALYTICAL SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
Iroquois Mine															
01254356	NU	IRAD01SW	NU	MJ0FJ5	SW	-	RN	06/22/01	13.50	X	X			X	Clear, no odor, no turbidity
01254357	NU	IRAD02SW	NU	MJ0FJ6	SW	-	RN	06/22/01	14:25	X					Clear, no odor
01254358	NU	IRWP01SS	NU	MJ0FJ7	SS	0-6	RN	06/22/01	14 40	X					Gray, sandy, slight organic odor, lots of small pebbles
01254359	NU	IRWP02SS	NU	MJ0FJ8	SS	0-6	RN	06/22/01	14 55	X					Dark gray, sandy gravel
Melrose Mine															
01254151	NU	MLPP01SD	NU	MJ0GE0	SD	0-8	NA	06/18/01	12:10	X	X			X	Brown sand with trace gravel and trace organic
01254152	NU	MLAD01SW	NU	MJ0GE1	SW	-	NA	06/18/01	12:20	X	X			X	No odor to the water, clear
Background															
01264251	NU	BK01SS	J0EZ6	MJ0EZ6	SS	0-6	MW	06/24/01	8:00	X	X				Brown, dry, fine soil.
01264275	NU	BK04SS	NU	MJ0F21	SS	0-6	MW	06/28/01	10.10	X					Black, fine, silty soil
01264276	NU	BK05SS	NU	MJ0F22	SS	0-6	MW	06/28/01	11.30	X					Brown, dry, fine soil
01264279	NU	BK06SS	NU	MJ0F25	SS	0-6	MW	06/28/01	13:45	X					Brown, dry, fine soil
01264280	NU	BK07SS	NU	MJ0F26	SS	0-6	MW	06/28/01	15 05	X					Brown, dry, fine soil
01264281	NU	BK08SS	NU	MJ0F27	SS	0-6	MW	06/28/01	15:45	X					Brown, dry, fine soil
01374181	01090427	ANBK01SD	J0KH3	MJ0KJ5	SD	0-6	HZ	09/12/01	15.45	X	X	X		X	98% sand, very fine to coarse grained, subangular Trace 2%gravel, brown
01374189	NU	ANBK02SS	NU	MJ0KK7	SS	0-6	HZ	09/13/01	14 35	X					Brown color, organic material fine light no cobble
01374163	NU	DTBK01SS	NU	MJ0KH2	SS	0-6	HZ	09/10/01	16:55	X					Sandy soil, trace organics
01374104	01090404	LBBK01SD	J0KC4	MJ0KC4	SD	0-8	RL	09/10/01	16 15	X	X	X		X	Dry, hard mud with rootlet holes, fine grained, less organic content, silty.
01374111	01090411	LBBK02SD	J0KD2	MJ0KD2	SD	0-8	RL	09/11/01	10:00	X	X	X		X	Brown, fine to course sand with gravel
01374108	01090408	NABK01SD	J0KC8	MJ0KC8	SD	0-8	RL	09/10/01	18.30	X	X	X		X	Gravelly sand
01374109	01090409	NABK02SD	J0KC9	MJ0KC9	SD	0-8	RL	09/11/01	8 05	X	X	X		X	Blue-green, silty clay/clayey silt, firm
01374187	01090432	NSBK01SD	J0KJ3	MJ0KK5	SD	0-8	JS	09/13/01	13 00	X	X	X		X	20% gravel off white color, max 7-8 mm subangular 20% silt, 60% sand - very fine to fine grained
01374188	NU	NSBK02SS	NU	MJ0KK6	SS	0-6	JS	09/13/01	13.15	X				X	Silty loam light brown to gray
01374114	01090413	NPBK01SD	J0KD4	MJ0KD5	SD	0-8	JS	09/12/01	10 45	X	X	X		X	Light brown, 20% very fine to medium size gravel 20% gravel 60% silty sand, angular to subangular
01374223	NU	KRBK01SD	J0KK9	MJ0KK9	SD	0-8	MT	09/12/01		X	X			X	Sandy silt, dark brown.
01374224	NU	KRBK02SD	J0KL0	MJ0KL0	SD	0-8	MT	09/12/01		X	X			X	Brown sand.

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SAMPLE COLLECTION AND ANALYTICAL SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
WESTON Samples															
01224158	NU	RS001	JX556	MJ0981	RS		SMF	05/31/01	0830	X	X				
01224159	NU	RS002	JX557	MJ0982	RS		SMF	05/31/01	0900	X	X				
01234135	NU	RS003	JX792	MJ0BJ3	RS		SMF	06/08/01	0800	X	X				
01264071	NU	RS004	JX830	MJ0BQ4	RS		KB	06/27/01	0700	X	X				
01204013	NU	RW001	JX428	MJ08Y5	RS		SMF	05/15/01	1120	X	X		X	X	Clear, colorless, no odor
01204108	NU	TB001	JX547	NU	TB		SMF	05/14/01	1145				X		
01204109	NU	TB002	JX549	NU	TB		SMF	05/14/01	1000				X		
01234079	NU	TS001	NU	MJ0BJ7	SD	0-2	SMF	06/05/01	1000	X					0% gravel, ~5% sand, 90% silt, ~5% clay Dry, medium brown Rootlets are common, no slag, no odor
01234080	NU	TS002	NU	MJ0BJ5	SD	0-0 5	SMF	06/05/01	1045	X					0% gravel, <1% sand, 100% silt, 0% clay Light brown, dry Organics (rootlets, woody fragments) ~20% of sample
01234053	NU	TS003	NU	MJ09E4	SD	0-3	KB	06/03/01	1500	X					0% gravel, 30% fine sand, 65% silt, 0%clay, brown, no odor or slag, no organics, no debris
01234081	NU	TS004	JX570	MJ0BJ6	SD	0-2	SMF	06/05/01	1145	X	X	X			0% gravel, 30% very fine sand, 70% silt, <1% clay Saturated, medium brown at surface, dark gray to black underneath Organics include rootlets, twig fragments, insect casings, and fines Moderate "sewage" smell
01234052	NU	TS005	JX559	MJ09E6	SD	0-2	KB	06/03/01	1315	X	X	X			0% gravel, 90% fine to medium sand, 10% silt, 0% clay Grayish brown, no odor, no slag, some twigs, no debris
01234082	NU	TS006	NU	MJ0BJ7	SD	0-2	SMF	06/05/01	1245	X					0% gravel, 60% sand, 40% silt, <1% clay Saturated, medium grayish brown. No odor ~10% organics (rootlets and wood fragments) No slag
01234054	NU	TS007	JX558	MJ09E5	SD	0-4	KB	06/04/01	1430	X	X	X			5% gravel, 75% fine sand, 20% silt, 0% clay, light brown, no odor or slag, scattered roots, no other debris
01234083	NU	TS008	NU	MJ0BJ8	SD	0-1	SMF	06/05/01	1400	X					0% gravel, 15% very fine sand, 85% silt, 0% clay Dry, medium grayish brown Organic debris includes rootlets, twigs, and woody fragments. Organics make up ~10% of sample. No odor, no slag
01234055	NU	TS009	NU	MJ09E8	SD	0-3	KB	06/04/01	1645	X					0% gravel, 100% sand, 0% silt, 0% clay, brown, no odor or slag, occasional twigs, no other debris
01234058	NU	TS010	NU	MJ09E7	SD	0-3	KB	06/04/01	1550	X					20% fine gravel, 80% fine coarse sand, 0% silt, 0% clay Brown, no odor or slag, scattered roots, no other debris
01234084	NU	TS011	NU	MJ0BJ9	SD	0-2	SMF	06/05/01	1445	X					0% gravel, 10% very fine sand, 80% silt, 10% clay. Dry, grayish brown. Organics (rootlets, wood and bark fragments) make up ~ 20% of sample No odor, no slag
01234051	NU	TS012	NU	MJ09F0	SD	0-3	KB	06/03/01	1045	X					0% gravel, 40% sand, 60% silt, 0% clay Dark brown, no odor, no slag, scattered roots, charcoal

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STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
WESTON Samples (continued)															
01234056	NU	TS013	NU	MJ09E9	SD	0-4	KB	06/04/01	1245	X					0% gravel, 75% coarse to fine sand, 25% silt, 0% clay, grayish brown, no odor or slag, occasional roots/twigs, no other debris.
01234057	NU	TS014	NU	MJ09F1	SD	0-3	KB	06/04/01	1400	X					0% gravel, 90% coarse to fine sand, 10% silt, 0% clay, light brown, no odor or slag, occasional twigs, no other debris
01234050	NU	TS015	NU	MJ09F2	SD	0-2	KB	06/03/01	0935	X					0% gravel, 60% sand, 40% silt, 0% clay Dark brown, no odor, no slag, twigs, pine needles, no debris.
01234096	NU	TS016	NU	MJ0BK8	SD	0-1	SMF	06/05/01	1545	X					0% gravel, 50% very fine to coarse sand, 50% silt, <1% clay. Dry, medium grayish brown 10% organics including rootlets and grass detritus, no odor, no slag
01234097	NU	TS017	NU	MJ0BK9	SD	0-1	SMF	06/05/01	1630	X					0% gravel, 20% very fine sand, 80% silt, 0% clay Dry, light grayish brown 10% organics, including rootlets and woody fragments, no odor, no slag
01234098	NU	TS018	NU	MJ0BL0	SD	0-1	SMF	06/06/01	0945	X					0% gravel, 10% very fine sand, 80% silt, 10% clay Dry, medium grayish brown 10% orgnaic debris, including twig framents and rootlets. No odor, no slag
01234085	NU	TS019	NU	MJ09F3	SD	0-2	SMF	06/06/01	1030	X					20% gravel (granules up to 1 cm), 65% fine to coarse sand, 15% silt, 0% clay Dry, medium grayish brown to dark grayish brown No odor, no slag <5% organics (rootlets and woody fragments)
01234059	NU	TS020	NU	MJ09F4	SD	0-2.5	SMF	06/03/01	1030	X					0% gravel, 10% sand, 50% silt, 40% clay, H_2S odor. Dark gray, moist, some plant material
01234060	NU	TS021	NU	MJ09F5	SD	0-1 5	SMF	06/03/01	1100	X					0% gravel, 20% fine to very fine sand, 55% silt, 25% clay Dry, light brownish gray Some plant debris, no odor, no slag.
01234099	NU	TS022	JX571	MJ0BL1	SD	0-2	SMF	06/06/01	1100	X	X	X			0% gravel, 60% very fine to medium sand, 30% silt, 10% clay. Saturated Medium-dark reddish brown Some rootlets No odor, no slag observed
01234100	NU	TS023	NU	MJ0BL2	SD	0-1 5	SMF	06/06/01	1245	X					0% gravel, 10% fine to very fine sand, 90% silt, 1% clay Saturated Medium grayish brown Abundant organics including rootlets and leaf debris and fines No odor, no slag
01234101	NU	TS024	NU	MJ0BL3	SD	0-3	SMF	06/06/01	1300	X					<1% gravel (granules), 30% very fine sand, 65% silt, <5% clay. Dry, light brownish gray Organics including rootlets and woody fragments make up ~5% of sample No odor, no slag

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SAMPLE COLLECTION AND ANALYTICAL SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
WESTON Samples (continued)															
01234102	NU	TS025	NU	MJ0BL4	SD	0-5	SMF	06/06/01	1330	X					0% gravel, 65% fine to coarse sand, 35% silt, 0% clay Dry, light grayish brown Organic debris including bark, rootlets, and twig fragments ~1" long comprise 40% or more of the sample as a whole
01234061	NU	TS026	NU	MJ09F6	SD	0-2	SMF	06/03/01	1300	X					10% fine gravel, 40% fine-coarse sand, 50% silt, 0% clay, dark brown, saturated, abundant fine organic particles No slag. Algae odor
01234064	NU	TS027	NU	MJ09F7	SD	0-2	KB	06/04/01	1200	X					0% gravel, 35% fine sand, 65% silt, 0% clay, dark brown, no odor or slag, scattered twigs, no other debris
01234086	NU	TS028	NU	NJ09F8	SD	0-2	SMF	06/06/01	1415	X					0% gravel, 60% sand, 40% silt, <1% clay Saturated, medium brown. No odor ~5% organics (woody fragments) No slag.
01234062	NU	TS029	NU	MJ09F9	SD	0-1	SMF	06/03/01	1345	X					40% flat, angular gravel (1/4" 1/2"), 30% fine to coarse sand, 30% silt, <1% clay. Medium gray Small insects, some organics, no slag, no odor, dry
01234087	NU	TS030	NU	MJ09G0	SD	0-1 5	SMF	06/06/01	1515	X					0% gravel, 65% fine to medium sand, 20% silt, 15% clay Dry to moist, medium grayish brown Organic material makes up ~20% of sample (rootlets, leaf debris, woody material)
01234103	NU	TS031	JX572	MJ0BL5	SD	0-8	SMF	06/06/01	1600	X	X	X			0% gravel, 100% fine to very fine sand, 0% silt, 0% clay Highly organic, largely mossy and other plant debris, like peat moss in appearance Dry, medium to dark grayish brown No slag
01234112	NU	TS032	NU	MJ0BM4	SD	0-2	KB	06/07/02	0915	X					5% fine gravel, 80% medium to fine sand, 15% silt, 0% clay. Dark brown, no odor or slag, occasional woody debris
01234063	NU	TS033	NU	MJ09G1	SD	0-2	SMF	06/03/01	1450	X					0% gravel, 10% very fine sand, 80% silt, 10% clay Very dark grayish brown, highly organic, saturated Strong S odor, some insect "shells", no slag Fine organics, apparently from moss
01234113	NU	TS034	NU	MJ0BM5	SD	0-3	KB	06/07/01	1000	X					0% gravel, 100% medium sand, 0% silt, 0% clay, light brown, no odor or slag, no organics, no other debris
01234128	NU	TS035	NU	MJ0BK8	SD	0-4	SMF	06/09/01	1500	X					<1% gravel (granules), 60% very fine sand, 35% silt, <5% clay Moist, dark grayish brown Minor amounts of plant detritus No odor, no slag
01234129	NU	TS036	JX793	MJ0BK9	SD	0-6	SMF	06/09/01	1530	X	X	X			<1% angular gravel, 5% very fine sand, 65% silt (including clods), 30% clay Dry, grayish brown "Soil" odor, no slag Organics include rootlets, 10-15% of sample
01234067	NU	TS037	NU	MJ09G2	SD	0-4	KB	06/04/01	0930	X					0% gravel, 100% fine sand, 0% silt, 0% clay Grayish brown No odor or slag, scattered roots, no debris

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EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
WESTON Samples (continued)															
01234068	NU	TS038	JX560	MJ09G3	SD	0-3	KB	06/04/01	1030	X	X	X			10% gravel, 70% fine sand, 20% silt, 0% clay, brown, no odor or slag, scattered roots, no other debris.
01234114	NU	TS039	NU	MJ0BM6	SD	0-2	KB	06/07/01	1030	X					5% fine gravel, 95% medium to fine sand, 0% silt, 0% clay Light brown, no odor or slag No organics or other debris
01234071	NU	TS040	NU	MJ09G6	SD	0-3	KB	06/06/01	1200	X					0% gravel, 100% fine sand, 0% silt, 0% clay, light brown, no odor or slag, no organics, no other debris
01234115	NU	TS041	NU	MJ0BM7	SD	0-2	KB	06/07/01	1130	X					0% gravel, 60% medium sand, 40% silt, 0% clay Brown, no odor or slag, no organics, no other debris.
01234116	NU	TS042	NU	MJ0BM8	SD	0-1	KB	06/07/01	1300	X					0% gravel, 50% fine sand, 50% silt, 0% clay, dark brown, no odor or slag, no organics or other debris
01234072	NU	TS043	NU	MJ09G7	SD	0-4	SMF	06/04/01	1015	X					0% gravel, 70% sand, 30% silt, ~1% clay, no odor, medium brown, dry Sand is predominantly coarse - medium Organics from soil horizon include woody fragments and rootlets
01234106	NU	TS044	JX573	MJ0BL8	SD	0-4	KB	06/06/01	1500	X	X	X			0% gravel, 90% fine sand, 10% silt, 0% clay Light brown, no odor or slag, occasional roots and woody debris
01234075	NU	TS045	JX564	MJ09H0	SD	0-7	SMF	06/04/01	1830	X	X	X			1% gravel (granules 1 cm long), <5% fine-very fine sand, 90% silt, 5% clay Moist, dark brown Rootlets, no odor, abundant organics, some woody debris
01234076	NU	TS046	JX565	MJ0BJ1	SD	0-1.5	SMF	06/04/01	1745	X	X	X			<1% gravel, 40% sand, 60% silt, 0% clay Saturated, medium grayish brown, very slight organic odor, organic matter including rootlets, leaves and fine organics, and woody pieces, twigs
01234077	NU	TS047	JX566	MJ0BJ2	SD	0-2	SMF	06/04/01	1715	X	X	X			~`1% gravel, 15% sand (medium to coarse), 40% silt, 44% clay Strong sewage odor, saturated, very dark gray Organic matter including rootlets
01234073	NU	TS048	JX562	MJ09G8	SD	0-2	SMF	06/04/01	1105	X	X	X			20% gravel (granules up to 1 cm), 80% sand (fine to coarse), trace silt, 0% clay Multi-colored grains, saturated. No obvious slag, no odor
01234117	NU	TS049	NU	MJ0BM9	SD	0-2	KB	06/07/01	1645	X					0% gravel, 100% coarse to fine sand, 0% silt, 0% clay Brown, no odor or slag, scattered roots, no other debris
01234136	NU	TS050	NU	MJ0BJ4	SD	0-3	SMF	06/09/01	1730	X					<1% gravel, 70% very coarse to very fine sand, 20% silt 10% clay Wet, dark gray, no odor
01234118	NU	TS051	NU	MJ0BN0	SD	0-3	KB	06/07/01	1600	X					0% gravel, 70% medium to fine sand, 30% silt, 0% clay Dark brown, no odor or slag, occasional roots/pine needles, no other debris

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SAMPLE COLLECTION AND ANALYTICAL SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
WESTON Samples (continued)															
01234104	NU	TS052	NU	MJ0BK6	SD	0-4	KB	06/07/01	1500	X					0% gravel, 100% coarse sand, 0% silt, 0% clay Brown, no odor or slag, scattered roots, no other debris Bottom inch of material sampled consisted of 70% sand, 30% silt, dark brown
01234119	NU	TS053	NU	MJ0BN1	SD	0-2	KB	06/07/01	1430	X					0% gravel, 85% medium to fine sand, 15% silt, 0% clay, brown, no odor or slag. No organics or other debris
01234120	NU	TS054	NU	MJ0BN2	SD	0-2	KB	06/07/01	1400	X					0% gravel, 100% coarse to fine sand, 0% silt, 0% clay Light brown, no odor or slag, no organics or other debris
01234078	NU	TS055	NU	MJ0BJ3	SD	0-1	SMF	06/04/01	1300	X					0% gravel, 90% sand (very fine to fine), ~5% silt, ~5% clay Medium brown/grayish brown, saturated, no odor Some fine black particulates, but not obvious slag Black organic particles also
01234107	NU	TS056	JX574	MJ0BL9	SD	0-1 5	KB	06/06/01	1645	X	X	X			0% gravel, 80% fine sand, 20% silt, 0% clay Light brown, no odor or slag, scattered roots and woody debris
01234108	NU	TS057	JX791	MJ0BM0	SD	0-3	KB	06/06/01	1600	X	X	X			0% gravel, 80% coarse to fine sand, 20% silt, 0% clay Grayish brown, no odor or slag, scattered woody debris
01234109	NU	TS058	NU	MJ0BM1	SD	0-4	KB	06/06/01	1400	X					0% gravel, 100% medium to fine sand, 0% silt, 0% clay Grayish brown, no odor or slag, occasional woody twigs, no other debris
01234121	NU	TS059	NU	MJ0BJ1	SD	0-5	SMF	06/09/01	1645	X					10% gravel, 70% fine to coarse sand, 10% silt, 10% clay: Moist, dark brownish gray, slight sulfur odor, no slag, some shell material
01234065	NU	TS060	NU	MJ09F8	SD	0-1	KB	06/06/01	0900	X					15% fine gravel, 75% coarse and fine sand, 10% silt, 0% clay, brown, no odor or slag Occasional pine needles, no other debris
01234110	NU	TS061	NU	MJ0BM2	SD	0-3	KB	06/06/01	1245	X					5% fine gravel, 90% coarse to fine sand, 5% silt, 0% clay Dark brown, no odor or slag, occasional woody twig material, no other debris
01234111	NU	TS062	NU	MJ0BM3	SD	0-7	KB	06/06/01	1130	X					0% gravel, 90% medium to fine sand, 0% silt, 10% clay Dark brown, no odor or slag, frequent wood and charcoal fragments, no other debris
01234123	NU	TS063	JX803	MJ0BK3	SD	0-4	KB	06/08/01	1615	X	X	X			2% fine gravel, 10% coarse sand, 20% medium sand, 68% fine sand, 0% silt, 0% clay Gray, no odor or slag. Frequent pine needles, no other debris
01234127	NU	TS064	JX807	MJ0BK7	SD	0-3 5	SMF	06/08/01	1120	X	X	X			5% gravel, 75% fine sand, 20% silt, <1% clay Dry, grayish brown with abundant light cream-colored coarse sand and granules "Soil" odor, no slag Organics including rootlets and small woody pieces make up 20% of sample

Table 3-1

SAMPLE COLLECTION AND ANALYTICAL SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
WESTON Samples (continued)															
01234125	NU	TS065	JX805	MJ0BK5	SD	0-1	SMF	06/08/01	1130	X	X	X			<1% gravel, 60% very fine to fine sand, 40% silt, <1% clay Damp, "soil" odor. Grayish dark brown Organics include rootlets, ants, twig fragments (1" long, 5 mm thick). No slag
01234126	NU	TS066	NU	MJ0BK6	SD	0-1 5	SMF	06/08/01	1245	X					0% gravel, 40% very fine sand, 55-60% silt, <5% clay Saturated, grayish brown surface, dark gray beneath H_2S odor Some rootlets and small worm.
01234066	NU	TS067	JX567	MJ09G0	SD	0-2	KB	06/05/01	1345	X	X	X			10% fine gravel, 90% coarse to fine sand 0% silt, 0% clay, brown, no odor or slag. Occasional twigs, no other debris
01234088	NU	TS068	NU	MJ0BK0	SD	0-1	KB	06/06/01	1030	X					10% fine gravel 75% coarse to fine sand, 15% silt, 0% clay Brown, no odor or slag, occasional twigs, no other debris
01234092	NU	TS069	NU	MJ0BK4	SD	0-3	KB	06/05/01	1320	X					5% fine gravel, 95% medium sand, 0% silt, 0% clay Light brown, no odor or slag, scattered roots and twigs, no other debris
01234089	NU	TS070	NU	MJ0BK1	SD	0-8	KB	06/05/01	1530	X					0% gravel, 90% fine sand, 10% silt, 0% clay Dark brown, no odor or slag, occasional twigs, no other debris
01234090	NU	TS071	NU	MJ0BK2	SD	0-2	KB	06/05/01	1600	X					0% gravel, 85% medium to fine sand, 15% silt, 0% clay, brown, no odor or slag Occasional twigs, no other debris
01234091	NU	TS072	JX568	MJ0BK3	SD	0-3	KB	06/05/01	1430	X	X	X			10% fine gravel, 90% coarse to fine sand 0% silt 0% clay, brown, no odor, slightly magnetic possibly slag occasional twigs, no other debris
01234093	NU	TS073	NU	MJ0BK5	SD	0-3	KB	06/05/01	1145	X					0% gravel, 100% fine to medium sand, 0% silt, 0% clay Brown, no odor or slag, occasional organics no other debris
01234094	NU	TS074	NU	MJ0BK6	SD	0-5	KB	06/05/01	1100	X					15% fine gravel, 75% coarse and fine sand. 10% silt, 0% clay, grayish brown, no odor or slag No organics no other debris.
01234095	NU	TS075	JX569	MJ0BK7	SD	0-2	KB	6/5/011	0945	X	X	X			0% gravel, 100% fine to medium sand, 0% silt, 0% clay Light brown, fine-grained black magnetic material. possible slag, occasional twigs, no other debris
01214101	NU	TS076	NU	MJ0952	SD	0-1	SF	05/21/01	1715	X					Silt with sand and clay 0%gravel 20% sand 40% silt 20% clay Tan brown, dry, no odor, no slag, roots and plant material
01214103	NU	TS077	NU	MJ0953	SD	0-1	SF	05/22/01	1045	X					0% gravel, 5% sand, 10% silt, 85% organic matter dark brown, roots, leaves
01214105	NU	TS078	NU	MJ0954	SD	0-1	SF	05/22/01	1345	X					15% gravel 50% sand, 35% silt dark brown no odor roots and bulbs (small)

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SAMPLE COLLECTION AND ANALYTICAL SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
WESTON Samples (continued)															
01214107	NU	TS079	NU	MJ0955	SD	0-1	SF	05/22/01	1455	X					15% gravel, 50% sand, 35% silt, dark brown, no odor, roots and bone fragment, dry
01214109	NU	TS080	NU	MJ0956	SD	0-1	SF	05/22/01	1550	X					Trace to 0% gravel, 60% fine sand, 30% silt, 10% clay, mica, some organic debris, no odor or stain
01214111	NU	TS081	NU	MJ0957	SD	0-1	SF	05/22/01	1705	X					0% gravel, 30% fine sand, 60% silt, 10% clay, lots of organics - leaves, roots, decaying smell
01214113	NU	TS082	NU	MJ0958	SD	0-1	SF	05/22/01	1735	X					Trace to 0% gravel, 30% fine sand, 40% silt, no odor, roots, etc
01214115	NU	TS083	NU	MJ0959	SD	0-2	SF	05/23/01	1100	X					Trace to 0% gravel, 40% fine sand, 30% fine silt, 30% organics
01214117	NU	TS084	NU	MJ0960	SD	0-2	SF	05/23/01	1220	X					0% gravel, 95% sand, 5% or less silt, light tan brown, no odor, some organics (root, leaves)
01214119	NU	TS085	NU	MJ0961	SD	0-0 5	SF	05/23/01	1410	X					60% organics, 10% sand, 30% silt, trace clay, dark brown organics (roots, plants), no odor
01214121	NU	TS086	NU	MJ0962	SD	***	SF	05/23/01	1445	X					
01214123	NU	TS087	NU	MJ0963	SD	0-1	SF	05/23/01	1555	X					10% gravel, 60% fine sand, 30% silt, light tan brown, organics (roots/leaves/sticks), dry
01214125	NU	TS088	NU	MJ0964	SD	0-1	SF	05/23/01	1640	X					0% gravel, 60% sand, 35% silt, 5% clay, dark brown organics (roots, leaves) no odor
01214129	NU	TS089	NU	MJ0968	SD	0-2	SMF	05/23/01	1645	X					1% gravel, 90% sand, 10% silt, 0% clay, highly organic soil (no slag).
01234137	NU	TS090	JX795	MJ0BJ5	SD	0-3	SMF	06/08/01	1645	X	X	X			<5% gravel (angular granules), 85% predominantly angular very coarse to very fine sand, 10% silt, <1% clay Saturated, dark grayish brown Organics including rootlets, leaf debris, insect shells, and fines make up 20% or less of sample
01234143	NU	TS091	NU	MJ0BJ2	SD	0-6	SMF	06/08/01	1545	X					0% gravel, 70% sand, 30% silt, <1% clay Moist, medium brown, no odor, no slag Organics including rootlets and fine humus material make up 50% of sample.

Table 3-1

SAMPLE COLLECTION AND ANALYTICAL SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
WESTON Samples (continued)															
01234138	NU	TS092	JX796	MJ0BJ6	SD	0-1	SMF	06/08/01	1500	X	X	X			0% gravel, 60% coarse to very fine sand, 30% silt, <10% clay Saturated Medium brown to dark grayish brown Minor organics as rootlets and woody fragments, but abundant fine organics No odor, no slag
01214127	NU	TS093	NU	MJ0967	SD	0-2	SMF	05/24/01	1215	X					0% gravel, 50% sand, 40% silt, 10% clay, moist, medium-dark brown, highly organic, no slag
01214131	NU	TS094	NU	MJ0969	SD	0-2	SMF	05/24/01	1300	X					1% gravel as granules, 40% fine sand, 50% silt, 10% clay, moist, grayish brwon, 2% organics No slag
01214133	NU	TS095	NU	MJ0970	SD	0-2	SMF	05/24/01	1345	X					0% gravel, 60% sand, 40% silt, 0% clay, saturated, medium grayish brown , ~10% organics, no slag
01234139	NU	TS096	JX797	MJ0BJ7	SD	0-5	KB	06/08/01	1145	X	X	X			5% fine gravel, 20% coarse sand, 25% medium sand, 40% fine sand, 10% silt, 0% clay Brown, no odor or slag, occasional roots, no other debris
01214135	NU	TS097	NU	MJ0971	SD	0-3	SMF	05/24/01	1615	X					0% gravel, 40% sand, 40% silt, 20% clay Medium-dark gray, saturated Cow manure and woody organics, and grass No slag
01214137	NU	TS098	NU	MJ0972	SD	0-3	SF	05/24/01	1530	X					
01234140	NU	TS099	JX798	MJ0BJ8	SD	0-4	KB	06/08/01	1300	X	X	X			0% gravel, 2% coarse sand, 15% medium sand, 80% fine sand, 3% silt, 0% clay. Dark brown, no odor or slag, occasional twigs and roots, no other debris.
01214139	NU	TS100	NU	MJ0973	SD	0-1.5	SF	05/24/01	1435	X					0% gravel, ~60% organics, 30% sand, 10% silt, dark brown, roots, plant material
01234141	NU	TS101	JX799	MJ0BJ9	SD	0-4	KB	06/09/01	1030	X	X	X			3% fine gravel, 10% coarse sand, 50% medium sand, 27% fine sand, 10% silt, 0% clay Brown, no odor or slag, 1% leaf debris, moss, and thin twig fragments No other debris
01214141	NU	TS102	NU	MJ0974	SD	0-1	SF	05/24/01	1325	X					0% gravel, 20% sand, 80% silt, light tan brown, roots and grasses, no odor.
01214143	NU	TS103	NU	MJ0975	SD	0-3	SF	05/24/01	1145	X					0% to trace gravel, 85% fine sand, 15% silt, all white limestone fragments, tan brown, wet, no odor, little organics.
01234142	NU	TS104	JX800	MJ0BK0	SD	0-2	KB	06/09/01	0930	X	X	X			1% fine gravel, 70% fine sand, 25% silt, 5% clay Dark brown, no odor or slag, scattered roots and small plants 1% of sample, no other debris
01234122	NU	TS105	JX802	MJ0BK2	SD	0-4	KB	06/08/01	1000	X	X	X			5% fine gravel, 15% medium sand, 80% fine sand, 0% silt, 0% clay Light brown, no odor or slag occasional roots, no other debris
01224153	NU	TS106	JX552	MJ0976	SD	0-2	SMF	05/31/01	1345	X	X	X			10% gravel (granules), 50% very fine to very coarse sand, 40% silt, 0% clay Dry, grayish brown minor plant material No observed slag

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SAMPLE COLLECTION AND ANALYTICAL SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
WESTON Samples (continued)															
01224152	NU	TS107	NU	MJ0977	SD	0-4	SMF	05/31/01	1300	X					10% gravel (granules), 50% very fine to fine sand, 30% silt, <10% clay. Dry, grayish brown, abundant rootlets and plant material. No observed slag. Some mollusc shells
01224156	NU	TS108	JX553	MJ0978	SD	0-4.5	SMF	05/31/01	1545	X	X	X			0% gravel, 50% sand, 40% silt, 10% clay Moist, dark grayish brown, abundant roots and plant organics, no odor, no observed slag
01224161	NU	TS109	JX554	MJ0979	SD	0-3	SMF	06/01/01	1100	X	X	X			5% gravel, 55% very coarse to very fine sand, 30% silt, 10% clay Saturated, brownish gray Some rootlets and organics No odor, no slag
01224165	NU	TS110	JX555	MJ0980	SD	0-8	SMF	06/01/01	1330	X	X	X			1% gravel, 85% sand, 13% silt, 1% clay High organic debris content and peat. No slag observed
01264068	NU	US001	JX827	MJ0BQ1	SD	0-3	KB	06/27/01	0900	X	X	X			10% fine gravel, 20% coarse sand, 40% medium sand, 25% fine sand, 5% silt, 0% clay. Brown, with lighter clasts Occasional woody debris (5%) No odor or slag or other debris
01264050	NU	US005	JX810	MJ0BN3	SD	0-3	KB	06/25/01	0945	X	X	X			3% fine gravel, 5% coarse sand, 57% medium sand, 25% fine sand, 10% silt, 0% clay Dark brown, no odor, slag, organics, or other debris
01264051	NU	US006	JX811	MJ0BN4	SD	0-3	KB	06/25/01	1315	X	X	X			10% fine gravel, 30% coarse sand, 45% medium sand, 10% fine sand, 5% silt, 0% clay Grayish brown, no odor, slag, organics, or other debris.
01264054	NU	US007	JX814	MJ0BN7	SD	0-4	KB	06/25/01	1445	X	X	X			0% gravel, 0% coarse sand, 20% medium sand, 30% fine sand, 40% silt, 10% clay). Brown, no odor, no slag Scattered roots, no other debris
01264055	NU	US008	JX815	MJ0BN8	SD	0-6	KB	06/25/01	1500	X	X	X			0% gravel, 75% fine sand, 20% silt, 5% clay Reddish brown, no odor or slag. Occasional roots, no other debris
01264053	NU	US009	JX813	MJ0BN6	SD	0-8	KB	06/25/01	1300	X	X	X			0% gravel, 5% coarse sand, 0% medium sand, 75% fine sand, 20% silt, 0% clay Brown No odor, no slag Occasional roots, no other debris
01264059	NU	US010	JX819	MJ0BP2	SD	0-4	KB	06/25/01	1215	X	X	X			15% fine gravel, 45% coarse sand, 30% medium sand, 10% fine sand, 0% silt, 0% clay. Brown, no odor, slag, organics, or any other debris
01264062	NU	US011	JX822	MJ0BP5	SD	0-10	KB	06/26/01	1615	X	X	X			0% gravel, 0% sand, 95% silt, 5% clay Dark brown, slight organic odor, no slag. 25% organic material as roots and leaves No other debris
01264060	NU	US012	JX820	MJ0BP3	SD	0-1	KB	06/26/01	1230	X	X	X			0% gravel, 10% coarse sand, 50% medium sand, 35% fine sand 5% silt, 0% clay Brown No odor, no slag no organics, no other debris
01264058	NU	US013	JX818	MJ0BP1	SD	0-4	KB	06/26/01	1000	X	X	X			10% fine gravel, 10% coarse sand, 40% medium sand, 35% fine sand, 5% silt, 0% clay Brown, no odor, no slag No organics or any other debris

Table 3-1

SAMPLE COLLECTION AND ANALYTICAL SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	E & E Sample ID	Station Location ID	CLP Organic No.	CLP Inorganic No.	Matrix	Depth	Sampler	Date	Time	TAL Metals	Pesticide/ PCBs	TOC	VOCs	SVOCs	Description
WESTON Samples (continued)															
01264069	NU	UW001	NU	MJ0BQ2	SW	0	KB	06/27/01	0930	X					
01264052	NU	UW004	NU	MJ0BN5	SW	0	KB	06/25/01	1345	X					
01264063	NU	UW005	NU	MJ0BP6	SW	0	KB	06/26/01	1600	X					
01264061	NU	UW006	NU	MJ0BP4	SW	0	KB	06/26/01	1245	X					
01264066	NU	UW007	NU	MJ0BP9	SW	0	KB	06/27/01	1645	X					

Key

AD = Adit water
AJ = Al Johnson
AN = Anderson Calhoun Mine/Mill
BK = Background
BR = Black Rock Mine/Mill
CG = Charlie Gregory
CK = Copper King Mine
CK = Creek
CLP = Contract Laboratory Program
CS = Columbia River sediment
CW = Columbia River surface water
DC = Deep Creek Mine
DT = Daisy Mine
DT = Ditch
DW = Dan Weiss
E & E = Ecology and Environment, Inc
EP = Electric Point Mine/Mill
EPA = United States Environmental Protection Agency
GG = Guy Gregory
GL = Gladstone Mine/Mill
GW = Great Western Mine
H_2S = hydrogen sulfide
HZ = Howard Zorzi
ID = Identification
IR = Iroquois Mine
JS = Jessica Spiegel
KB = Kevin Broom
LB = L-Bar Northwest Magnesite
LC = Last Chance Mine/Mill
ML = Melrose Mine
MS = Mill soil
MT = Monica Tonel
MW = Mine pit water
MW = Mark Woodke
NA = Northwest Alloys
NA = Neil Amick
No = Number.
NP = Napoleon Mine/Mill
NS = LeRoi Northport Smelter
NU = Not used.
PCBs = Polychlorinated biphenyls
PP = Probable point of entry.
RD = Red Top Mine
RL = Ralph Lambert
RN = Renee Nordeen
RS = Rinsate of sampling equipment
S = sulfur
SD = Sediment
SF = Sonia Fernandez
SL = Slag
SMF = Susan FitzGerald
SS = Stained soil
SS = Surface soil
SVOCs = Semivolatile Organic Compounds
SW = Surface water
SZ = Sierra Zinc Mine/Mill
TAL = Target Analyte List
TB = Trip blank
TOC = Total Organic Carbon
TP = Tailings pile
TS = Tributary sediment (downstream sampling location)
US = Tributary sediment/soil (upstream/upland sampling location)
UW = Upland surface water
VOCs = Volatile Organic Compounds
VS = Van Stone Mine/Mill
WESTON = Roy F. Weston Inc
WP = Waste rock pile

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 Organic Analyses* (EPA 1999) and in the *Contract Laboratory Program Statement of Work for Inorganic Analyses* (EPA 2000b). These QC requirements or equivalent requirements found in the analytical methods were followed for analytical work on the upper Columbia River Mines and Mills PAs and SIs project. This section describes the QA/QC measures taken and provides an evaluation of the usability of data presented in this report. The QA/QC data memorandums regarding the samples collected by WESTON can be found in the *Upper Columbia River/Lake Roosevelt Expanded Site Inspection Sampling and Quality Assurance Plan*, TDD: 01-02-0001-A, EPA Contract: 68-S0-01-02. Prepared for the EPA Region 10 by WESTON, May 2001.

All samples were collected following the guidance of the SQAP (E & E 2001) and the Sample Plan Alteration Forms for the field activities. Soil and water TAL metals analyses were performed at Sentinel, Inc., Huntsville, Alabama, a CLP laboratory, following CLP statement of work (SOW) ILM04.1. Soil SVOC and pesticide/PCBs analyses were performed at the EPA's Manchester Environmental Laboratory, Port Orchard, Washington, following EPA SW-846 Methods 8270 (SVOC analysis) and 8081/8082 (pesticide/PCBs analysis). Soil and water pesticide/PCBs analyses were performed at Envirosystems, Inc., Columbia, Maryland, a CLP laboratory, following CLP SOW OLM04.2. Soil and water SVOC and pesticide/PCBs analyses were performed at Mitkem Corporation, Warwick, Rhode Island, a CLP laboratory, following CLP SOW OLM04.2. Soil SVOC and pesticide/PCBs analyses were performed at Laucks Testing Laboratories, Inc., Seattle, Washington, a CLP laboratory, following CLP SOW OLM04.2. Sediment TOC analyses were performed by the E & E, Analytical Services Center, Lancaster, New York, a START-subcontracted commercial laboratory, following the Lloyd Kahn method. Soil field screening for copper, lead, and zinc was performed in the field by Environmental Services Assistance Team (ESAT) personnel following ESAT guidelines.

Data from the CLP laboratories were reviewed and validated by EPA and/or ESAT chemists. Data from the START-subcontracted commercial laboratory were reviewed and validated by E & E chemists Data qualifiers were applied as necessary according to the following guidance:

- *EPA* (1990) *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures*;
- *EPA* (1994a) *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*; and
- *EPA* (1999a) *Contract Laboratory Program National Functional Guidelines for Organic Data Review.*

In the absence of other QC guidance, method-specific QC limits were also utilized to apply qualifiers to the data. Copies of the data QA memoranda are included in Appendix D.

4.1 SATISFACTION OF DATA QUALITY OBJECTIVES

The following EPA (1994b) guidance document was used to establish data quality objectives (DQOs) for this project:

- *Data Quality Objectives Process for Superfund, Interim Final Guidance*, EPA 600-R-96-055.

The EPA Task Monitor (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 fieldwork produced sufficient data that meets the DQOs stated in the SQAP (E & E 2001). A detailed discussion of accomplished project objectives is presented in the following sections.

4.2 QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

QA samples included rinsate blank samples. Trip blank samples were not collected as volatile organic compound analyses were not performed. Rinsate blank samples collected from sample collection equipment were submitted for the project. QC samples included matrix spike/matrix spike duplicate (MS/MSD) samples for organic analyses or MS/duplicate samples for inorganic analyses at a rate of one MS/MSD or 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 all commercial laboratory samples. A total of 161 sample results (approximately 1.5% of the data) were qualified as estimated quantities (J or UJ) based on laboratory duplicate QC outliers. The DQO for precision of 85% was met.

4.3.2 Accuracy

Accuracy measures the reproducibility of the sampling and analytical methodology. Laboratory accuracy is defined as the surrogate spike percent recovery (%R) for each SVOC or pesticide/PCBs analysis or the MS %Rs for all fixed laboratory analyses. The surrogate %R values were reviewed for all appropriate sample analyses. No sample results were qualified based on surrogate QC outliers.

The MS %R values were reviewed for all MS/MSD analyses. A total of 463 sample results (approximately 4.4% of the data) were qualified as estimated quantities (J) based on spike QC outliers. A total of 161 sample results (approximately 1.5% of the data) were rejected (R) based on spike QC outliers. Overall, the project DQO for accuracy of 85% 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 29 sample results (approximately 0.2% of the data) were rejected (R), therefore the project DQO for completeness of 90% 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 of 85% 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 QUALITY ASSURANCE/QUALITY CONTROL PARAMETERS

The laboratory data also were reviewed for holding times and laboratory blank samples. These QA/QC parameters are summarized below. In general, the laboratory and field QA/QC parameters were considered acceptable.

4.4.1 Holding Times

A total of 4 sample results (approximately 0.04% of the data) were qualified as estimated quantities (J or UJ) based on holding time outliers.

4.4.2 Laboratory Blanks

All laboratory blanks met the frequency criteria. The following potential COCs were detected in the laboratory blanks resulting in qualifications:

SVOCs:	bis(2-ethylhexyl)phthalate; and
TAL Metals:	aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, selenium, sodium, silver, thallium, vanadium, and zinc.

Four SVOC results and 361 TAL metals results were qualified based on laboratory blank contamination. Associated sample results less than five times positive blank contamination (10 times for common laboratory contaminants) were qualified as not detected (U). Associated sample results less

than five times the absolute value of negative TAL metals blank contamination were qualified as estimated quantities (J or UJ). Two TOC results were also qualified as not detected (U) based on laboratory blank contamination. See Appendix D for results that were qualified based on laboratory blank contamination.

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5. ANALYTICAL RESULTS REPORTING AND BACKGROUND SAMPLES

This section describes the reporting criteria and reporting methods applied to EPA CLP analytical results presented in Sections 6 and 7 of this report. A discussion of background sample locations and results also is provided. A list of all samples collected for laboratory analysis is presented in Table 3-1.

5.1 ANALYTICAL RESULTS EVALUATION CRITERIA

Analytical results presented in the summary tables in Sections 6 and 7 show all analytes detected above laboratory detection limits in bold type. Analytical results indicating significant concentrations of contaminants in source samples (Section 6) with respect to background concentrations are shown underlined and in bold type. Similarly, analytical results indicating elevated concentrations of contaminants in target samples (Section 7) with respect to background concentrations also are underlined and in bold type. For the purposes of this investigation, significant/elevated concentrations are defined, using Table 2-3 of the EPA HRS model criteria for observed releases or observed contamination (significant or elevated concentrations) as follows.

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

The analytical summary tables present all detected analytes, but only those detected analytes (specifically arsenic, cadmium, lead, mercury, and zinc) at potential sources or in targets meeting the significant/elevated concentration criteria are discussed in the report text. All detected concentrations are discussed for background samples, including those concentrations which were qualified as estimated because they were detected below the SQL (JB). Because both tailings and waste rock are unique soil

waste matrices placed on surface soil, analytical results of the tailings and waste rock samples collected were compared to the results for background surface soil. The background surface soil samples consisted of native soil.

Two sediment samples were collected from the Kettle River (KRBK01SD and KRBK02SD). KRBK01SD was collected near the Box Canyon-Deep Creek Road along the Kettle River. KRBK02SD was collected along the bank of the Kettle River just south of the U.S.-Canada border. Since these samples were collected outside the project study area they will not be discussed in this report. However, analytical results for these two samples are provided in Appendix E.

Analytical results are qualified as estimated (J) when the analyte is positively identified as either present or absent based on the QC data provided by the laboratory. The associated numerical value is the approximate concentration of the analyte in the sample. Additional qualifiers were applied when necessary to indicate potential bias of estimated quantities including low, unknown, high, or when the result was estimated because it was below the SQL:

B = The detected concentration is below the method reporting limit/CRDL, but is above the instrument detection limit;

H = The numerical result is likely biased high, above the actual concentration;

L = The numerical result is likely biased low, below the actual concentration;

K = The bias of the numerical value is unknown; and

Q = The detected concentration is below the method reporting limit/CRQL, but is above the method detection limit.

For comparison purposes, the SQL is provided in parenthesis for background results that are qualified because they are below the SQL. When samples were diluted for reanalysis at a laboratory, the dilution results were considered for evaluation and are provided in the tables. For target locations, only those analytes that also were detected in a source at the mine and mill sites were evaluated to determine whether their concentrations were elevated. All hazardous substances detected using EPA CLP results at target locations and meeting evaluation criteria can be used to document an observed release from the source at the mines and mills to the target.

Based on the EPA Region 10 policy, evaluation of the common earth crust elements (aluminum, calcium, iron, magnesium, potassium, and sodium) is generally employed only in water mass tracing, which is beyond the scope of this report. For this reason, these elements and results will not be discussed in this report, but are presented in the analytical results summary tables when detected.

5.2 BACKGROUND SAMPLES

Background samples were collected for each of the naturally occurring medium from which samples were collected. Those media are surface soil and sediment. A background surface water sample is not presented in this report since all surface water sample results discussed are from sources of contamination which do not require comparison to background concentrations. Results for the appropriate background sample(s) appear as the first column(s) in the analytical results summary tables in Sections 6 and 7 for comparison against source or target results.

5.2.1 Background Surface Soil

5.2.1.1 Sample Locations

Mine and mill-specific background surface soil samples were collected for the Daisy Mine (DTBK01SS; Figure 6-2), the LeRoi/Northport Smelter (NSBK02SS; Figure 6-17), the Anderson Calhoun Mine/Mill (ANBK02SS; Figure 6-38), and the Van Stone Mine/Mill (US007, US008, and US009; Appendix H).

DTBK01SS was located approximately 60 feet north and upgradient from Daisy Mine. NSBK02SS was collected south of the LeRoi/Northport Smelter. ANBK02SS was located east and upgradient of the Anderson Calhoun Mine/Mill. US007, US008, and US009 were collected upgradient of the Van Stone Mine/Mill.

In addition, six background surface soil samples (BK01SS and BK04SS through BK08SS) were collected from locations within the general project area (Figure 5-1). Sample locations are listed in Table 3-1. BK01SS was located south of the Comfort Inn in Colville. BK04SS was located approximately 2.2 miles on Black Canyon Road, upgradient of mining activity. BK05SS was located approximately 200 yards off the unnamed road leading toward residences south of Deep Creek Mine. BK06SS was located approximately 1.5 miles upgradient from Magma Mine and near the unnamed road. BK07SS was located along Silver Creek Road. BK08SS was located upgradient from Iroquois Mine.

The surface soil samples were collected from 0 to 6 inches bgs. The matrix of the samples appeared similar to that of the native soil observed at the mines and mills.

For those mines and mills were site-specific background soil samples were unobtainable due to accessibility and safety concerns, background analyte concentrations for those mine and mill sites were established using the highest analyte concentration from all background soil samples collected. These assignments were determined by the EPA TM. Refer to Table 5-1.

Background concentrations of TAL metals, pesticide/PCBs, TOC, and SVOCs will be compared to source and target sample concentrations, as described in Sections 6 and 7. The purpose of the comparison is to determine if concentrations of substances found in source and target samples are significant/elevated with respect to background concentrations as defined, using the EPA HRS model criteria.

5.2.1.2 Sample Results

Refer to Table 5-1 and 5-3 for E & E and WESTON sample results, respectively.

5.2.2 Background Sediment

5.2.2.1 Sample Locations

Seven background sediment locations were sampled within the project area. Sample locations are listed in Table 3-1.

LBBK01SD was located downstream of the confluence of Logan Road ditch and the unnamed ditch adjacent to L-Bar/Northwest Magnesite and reflects background concentrations for the West Ditch sampled at L-Bar/Northwest Magnesite. LBBK02SD was located on the Colville River near the Burlington Railroad and U.S. 395 and reflects background concentrations for the probable point of entry (PPE) sample to surface water at L-Bar/Northwest Magnesite (Figure 6-4).

NABK01SD was located on Stensgar Creek approximately 60 feet west of the confluence of Stensgar Creek and the Columbia River and reflects background concentrations for Stensgar Creek and the ditch sampled near Northwest Alloys. NABK02SD was located approximately 30 feet south of the confluence of Stensgar Creek and the Colville River and reflects background concentrations for the Colville River sampled near Northwest Alloys (Figure 6-6).

NPBK01SD was located upstream and upgradient in the unnamed creek near Napoleon Mine/Mill and reflects background concentrations for the unnamed creek sampled at Napoleon Mine/Mill (Figure 6-8).

NSBK01SD was located south of the LeRoi/Northport Smelter along the unnamed creek near Northport-Waneta Road and reflects background concentrations for the unnamed creek sampled at the LeRoi/Northport Smelter (Figure 6-17).

The analytical results of a sediment sample collected in May of 2001 by Ecology at Lower Arrow Lake in Canada (sample number 01198040) will be used to establish background concentrations for the sediment samples collected along the Columbia River (Figure 6-18).

ANBK01SD was located approximately 200 yards south of the Anderson Calhoun Mine/Mill on the unnamed creek which flows through the site. ANBK01SD reflects background concentrations for the unnamed creek sampled at the Anderson Calhoun Mine/Mill (Figure 6-38).

For those mine and mill sites where site-specific background sediment samples were unobtainable due to accessibility and safety concerns, background analyte concentrations were established using the highest analyte concentration from all background sediment samples collected. These assignments were determined by the EPA TM. Refer to Table 5-2.

Sediment samples were collected at the following locations by WESTON (Appendix H):

- Tributary to Tom Bush Creek and Melrose Mine (US001);
- Unnamed tributary to Onion Creek and Van Stone Mine/Mill (US005);
- Unnamed tributary to Onion Creek and Van Stone Mine/Mill (US006);
- Unnamed tributary to Onion Creek and Van Stone Mine/Mill (US010);
- Tributary to Black Rock Mine/Mill, Great Western Mine, and Last Chance Mine/Mill approximately 1 mile upgradient and across Deep Creek Mine (US011);
- Deep Creek South Fork approximately 7 miles upstream for Copper King Mine and Sierra Zinc Mine/Mill (US012); and
- Unnamed tributary to Deep Creek (US013).

5.2.2.2 Sample Results

Refer to Table 5-2 and 5-3 for E & E and WESTON sediment sample results, respectively.

Table 5-1

SURFACE SOIL BACKGROUND SAMPLES
ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374163	01374188	01374189	01264251	01264275	01264276	01264279	01264280	01264281	
CLP Inorganic ID	MJ0KH2	MJ0KK6	MJ0KK7	MJ0EZ6	MJ0F21	MJ0F22	MJ0F25	MJ0F26	MJ0F27	
CLP Organic ID	NU	NU	NU	J0EZ6	NU	NU	NU	NU	NU	Highest
E & E Sample ID	NU	NU	NU	NU	NU	NU	NU	NU	NU	Background
Station Location	DTBK01SS	NSBK02SS	ANBK02SS	BK01SS	BK04SS	BK05SS	BK06SS	BK07SS	BK08SS	Concentration
Sample Depth (inches)	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	
TAL Metals (mg/kg)										
Aluminum	18100	4810	16400	14200	11100	13500	9330	10200	11500	18100
Antimony	1.9 JB (12 7 SQL)	1.5 JB (15.1 SQL)	2.8 JB (13.1 SQL)	0.62 UJK	3.4 U	1.3 U	1.2 U	1.3 U	2.1 U	1.5 JB (15 1 SQL)
Arsenic	68.2	2.6 JL	8.3 JL	6.9	7.3	2.4 JB (2.5 SQL)	1.1 JB (2.3 SQL)	4.9	7.1	68.2
Barium	168	194	470	265	548	273	93.4	108	109	548
Beryllium	0.89 JB (1.06 SQL)	0.09 JB (1.3 SQL)	0.31 JB (1.1 SQL)	0.62 JB (1.0 SQL)	0.38 JB (1.4 SQL)	0 48 JB (6.3 SQL)	0.32 JB (1.2 SQL)	0.34 JB (1.2 SQL)	0.45 JB (1.1 SQL)	0 48 JB (6 3 SQL)
Cadmium	4.8	1.3	3.4	0.06 U	7.8	0 47 JB (6.3 SQL)	0.05 U	0.48 JB (1.2 SQL)	0.61 JB (1.1 SQL)	7.8
Calcium	5420	90500 JK	8210 JK	24300	4500	3290	1140 JB	91600	118000	118000
Chromium	13.9	17.6	16.5	29.0	20.9	16.1	5.6	13.8	13.0	29.0
Cobalt	14.7	2.9 JB (12 6 SQL)	6.0 JB (10.9 SQL)	10.1 JB (10.3 SQL)	9.3 JB (14.1 SQL)	8.6 JB (63 SQL)	3.0 JB (11.8 SQL)	6 9 JB (12.2 SQL)	7.4 JB (11.4 SQL)	8 6 JB (63 SQL)
Copper	55.2	17.3	11.8	31.0 JL	47.4 JL	9.4 JL	7.5 JL	20.0 JL	22.1 JL	55.2
Iron	25200	7690	19602	24700	23400	17800	9490	18000	16800	25200
Lead	183	57.0	152	17.4	27.5	27.8	6.8	24.6	28.0	183
Magnesium	4110	3520	4160	11700	5470	4020	1540	17900	8060	17900
Manganese	1070	152	922	597	370	1370	151	354	1160	1370
Mercury	0.06 JB (0 11 SQL)	0.06 U	0.05 U	0.05 U	0 07 U	0.06 U	0.05 U	0.06 U	0 06 U	0 06 JB (0 11 SQL)
Nickel	16.1	8 0 JB (10.1 SQL)	14.4	33.8	58.4	14.3	4.9 JB (9.4 SQL)	21.1	16.4	58.4
Potassium	1300 JK	897 JB	11660	2930	2610	2770	1000 JB	1690	1900	11660
Selenium	1.5 JL	1.1 JB (1.3 SQL)	0.74 U	0 70 U	2.4 U	0.86 U	0.79 U	0.83 U	0.78 U	1.5 JL
Silver	6.7	0.57 JB (2.5 SQL)	1 3 JB (2.2 SQL)	0.91 JB (2.1 SQL)	1 6 JB (2.8 SQL)	0 75 U	0.46 JB (2.4 SQL)	0 63 JB (2.4 SQL)	0.54 JB (2.3 SQL)	6.7
Sodium	129 JB	255 JB	201 JB	216 JB	318 JB	369 JB	269 JB	377 JB	3308 JB	3308 JB
Thallium	1.1 U	1.3 U	1.1 U	0.80 UJK	1.4 U	1.3 U	1.2 U	1.2 U	1.2 U	1.4 U
Vanadium	41.9	13.8	27.4	51.2	50.8	22.9	18.2	26.4	16.6	51.2
Zinc	462	60.9	835	115 JH	502	110	30.1	81.8	75.5	835

Table 5-1

SURFACE SOIL BACKGROUND SAMPLES
ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374163	01374188	01374189	01264251	01264275	01264276	01264279	01264280	01264281	
CLP Inorganic ID	MJ0KH2	MJ0KK6	MJ0KK7	MJ0EZ6	MJ0F21	MJ0F22	MJ0F25	MJ0F26	MJ0F27	
CLP Organic ID	NU	NU	NU	J0EZ6	NU	NU	NU	NU	NU	Highest
E & E Sample ID	NU	NU	NU	NU	NU	NU	NU	NU	NU	Background
Station Location	DTBK01SS	NSBK02SS	ANBK02SS	BK01SS	BK04SS	BK05SS	BK06SS	BK07SS	BK08SS	Concentration
Sample Depth (inches)	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	
Pesticide/PCBs (µg/kg)										
4,4'-DDD	NU	NU	NU	3.5 U	NU	NU	NU	NU	NU	3 5 U
4,4'-DDE	NU	NU	NU	3.5 U	NU	NU	NU	NU	NU	3.5 U
4,4'-DDT	NU	NU	NU	3.5 U	NU	NU	NU	NU	NU	3.5 U
Aldrin	NU	NU	NU	1.8 U	NU	NU	NU	NU	NU	1 8 U
Alpha-BHC	NU	NU	NU	1.8 U	NU	NU	NU	NU	NU	1.8 U
Alpha-Chlordane	NU	NU	NU	1.8 U	NU	NU	NU	NU	NU	1 8 U
Aroclor-1016	NU	NU	NU	35 U	NU	NU	NU	NU	NU	35 U
Aroclor-1221	NU	NU	NU	71 U	NU	NU	NU	NU	NU	71 U
Aroclor-1232	NU	NU	NU	35 U	NU	NU	NU	NU	NU	35 U
Aroclor-1242	NU	NU	NU	35 U	NU	NU	NU	NU	NU	35 U
Aroclor-1248	NU	NU	NU	35 U	NU	NU	NU	NU	NU	35 U
Aroclor-1254	NU	NU	NU	35 U	NU	NU	NU	NU	NU	35 U
Aroclor-1260	NU	NU	NU	35 U	NU	NU	NU	NU	NU	35 U
Beta-BHC	NU	NU	NU	1 8 U	NU	NU	NU	NU	NU	1 8 U
Delta-BHC	NU	NU	NU	1 8 U	NU	NU	NU	NU	NU	1 8 U
Dieldrin	NU	NU	NU	3.5 U	NU	NU	NU	NU	NU	3 5 U
Endosulfan I	NU	NU	NU	1.8 U	NU	NU	NU	NU	NU	1 8 U
Endosulfan II	NU	NU	NU	3.5 U	NU	NU	NU	NU	NU	3 5 U
Endosulfan Sulfate	NU	NU	NU	3.5 U	NU	NU	NU	NU	NU	3 5 U
Endrin	NU	NU	NU	3.5 U	NU	NU	NU	NU	NU	3 5 U
Endrin Aldehyde	NU	NU	NU	3.5 U	NU	NU	NU	NU	NU	3 5 U
Endrin Ketone	NU	NU	NU	3.5 U	NU	NU	NU	NU	NU	3 5 U
Gamma-BHC(Lindane)	NU	NU	NU	1.8 U	NU	NU	NU	NU	NU	1.8 U
Gamma-Chlordane	NU	NU	NU	1.8 U	NU	NU	NU	NU	NU	1 8 U
Heptachlor	NU	NU	NU	1.8 U	NU	NU	NU	NU	NU	1 8 U
Heptachlor Epoxide	NU	NU	NU	1.8 U	NU	NU	NU	NU	NU	1 8 U
Methoxychlor	NU	NU	NU	18 U	NU	NU	NU	NU	NU	18 U
Toxaphene	NU	NU	NU	180 U	NU	NU	NU	NU	NU	180 U

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

Key:

AN	= Anderson/Calhoun Mine/Mill.
B	= The reported concentration is between the instrument detection limit and the contract required detection limit.
BK	= Background.
CLP	= Contract Laboratory Program.
DT	= Daisy Mine.
E & E	= Ecology and Environment, Inc.
EPA	= United States Environmental Protection Agency.
H	= High bias.
ID	= Identification.
J	= The analyte was positively identified. The associated numerical value is an estimate.
K	= Unknown bias.
L	= Low bias.
mg/kg	= Milligrams per kilogram.
µg/kg	= Micrograms per kilogram.
NS	= LeRoi/Northport Smelter.
NU	= Not utilized.
PCBs	= Polychlorinated biphenyls.
SQL	= Sample quantitation limit.
SS	= Surface soil.
TAL	= Target Analyte List.
U	= The analyte was not detected. The associated numerical value is the contract required detection limit.

Table 5-2

SEDIMENT BACKGROUND SAMPLES
ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374104	01374111	01374108	01374109	01374114	01374187	01374181	
CLP Inorganic ID	MJ0KC4	MJ0KD2	MJ0KC8	MJ0KC9	MJ0KD5	MJ0KK5	MJ0KJ5	
CLP Organic ID	J0KC4	J0KD2	J0KC8	J0KC9	J0KD4	J0KJ3	J0KH3	Highest
E & E Sample ID	01090404	01030411	01090408	01090409	01090413	01090432	01090427	Background
Station Location	LBBK01SD	LBBK02SD	NABK01SD	NABK02SD	NPBK01SD	NSBK01SD	ANBK01SD	Concentration
Sample Depth (inches)	0-8	0-8	0-8	0-8	0-8	0-8	0-6	
TAL Metals (mg/kg)								
Aluminum	20200	3960	2080	13100	6980	2740	4070	20200
Antimony	1.3 JB (12.3 SQL)	0.85 JB (14.9 SQL)	0.71 U	0.86 U	1.0 JB (12.8 SQL)	0.73 UJL	2.1 U	0 85 JB (14.9 SQL)
Arsenic	12.1	2.8	1.1 UJK	4.3 JK	13.0	1.2 UJL	2.7 JB (3.3 SQL)	13.0
Barium	450	63.0	34.0 JB (48.8 SQL)	205	83.2	145	101	450
Beryllium	0.63 JB (1.0 SQL)	0.10 U	0.08 U	0.45 JB (1.49 SQL)	0.23 JB (1.07 SQL)	0.03 JB (1.3 SQL)	0.27 U	0.45 JB (1.49 SQL)
Cadmium	3.4	0.05 U	0.05 U	0.06 UJK	0.04 UJK	0.26 JB (1.3 SQL)	1.2 JB (1.7 SQL)	3.4
Calcium	39600	5740	2730	4940	56700	90700 JK	109000	109000
Chromium	32.3	6.8	5.4	24.7	22.0	7.6	9.9	32.3
Cobalt	11.9	4.7 JB (12.4 SQL)	2.2 JB (12.2 SQL)	10.5 JB (14.9 SQL)	5.9 JB (10.7 SQL)	1.7 JB (12.6 SQL)	2.6 JB (16.7 SQL)	11.9
Copper	69.3	6.5	2.8 JB (6.1 SQL)	21.3 JK	47.6	6.8	6.9 JB (8.3 SQL)	69.3
Iron	27900	10200	5590	27900	20300	6560	9200	27900
Lead	124	4.5	2.0	13.8	13.1	16.6	15.3 JK	124
Magnesium	33500	3720	1430	6940	4660	2600	3780	33500
Manganese	673	144	91.7	507	293	87.3	239	673
Mercury	0.10 JB (0.102 SQL)	0.06 U	0.06 U	0.07 U	0.05 U	0.06 U	0.08 U	0.10 JB (0.102 SQL)
Nickel	31.9	7.0 JB (9.9 SQL)	3.6 JB (9.8 SQL)	25.4	18.9	4.1 JB (10.1 SQL)	10.8 JB (13.4 SQL)	31.9
Potassium	3920 JK	603 JB	605 JB	2550 JK	899 JB	485 JB	410 JB	3920 JK
Selenium	0.70 UJL	0.84 UJL	0.83 UJL	1.0 U	0.72 UJL	0.86 U	1.4 JB (1.7 SQL)	1 4 JB (1.7 SQL)
Silver	1.5 JB (2.04 SQL)	0.74 JB (2.5 SQL)	0.30 U	1.8 JB (3.0 SQL)	1.1 JB (2.1 SQL)	0.15 U	1.0 U	1.8 JB (3 0 SQL)
Sodium	597 JB	162 JB	151 JB	229 JB	155 JB	175 JB	557 JB	597 JB
Thallium	1.0 U	1.3 U	1.2 U	1.5 U	1.1 U	1.3 U	0.67 U	1.5 U
Vanadium	47.4	10.9 JB (12.4 SQL)	8.9 JB (12.2 SQL)	36.9	25.8	14.6	15.9 JB (16.7 SQL)	47.4
Zinc	239	26.5	10.8	78.2	62.2	26.4	76.3	239

Table 5-2

SEDIMENT BACKGROUND SAMPLES
ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374104	01374111	01374108	01374109	01374114	01374187	01374181	
CLP Inorganic ID	MJ0KC4	MJ0KD2	MJ0KC8	MJ0KC9	MJ0KD5	MJ0KK5	MJ0KJ5	
CLP Organic ID	J0KC4	J0KD2	J0KC8	J0KC9	J0KD4	J0KJ3	J0KH3	Highest
E & E Sample ID	01090404	01030411	01090408	01090409	01090413	01090432	01090427	Background
Station Location	LBBK01SD	LBBK02SD	NABK01SD	NABK02SD	NPBK01SD	NSBK01SD	ANBK01SD	Concentration
Sample Depth (inches)	0-8	0-8	0-8	0-8	0-8	0-8	0-6	
Pesticide/PCBs (µg/kg)								
4,4'-DDD	3.5 U	4.0 U	3.8 U	5.3 U	3.6 U	4.2 U	5.1 U	5.3 U
4,4'-DDE	3.5 U	4.0 U	3.8 U	5.3 U	3.6 U	4.2 U	5.1 U	5.3 U
4,4'-DDT	3.5 U	4.0 U	3.8 U	5.3 U	3.6 U	4.2 U	5.1 U	5.3 U
Aldrin	1.8 U	2.1 U	2.0 U	2.7 U	1.9 U	2.2 U	2.6 U	2.7 U
Alpha-BHC	1.8 U	2.1 U	2.0 U	2.7 U	1.9 U	2.2 U	2.6 U	2.7 U
Alpha-Chlordane	1.8 U	2.1 U	2.0 U	2.7 U	1.9 U	2.2 U	2.6 U	2.7 U
Aroclor-1016	35 U	40 U	38 U	53 U	36 U	42 U	51 U	53 U
Aroclor-1221	71 U	82 U	78 U	110 U	74 U	86 U	100 U	110 U
Aroclor-1232	35 U	40 U	38 U	53 U	36 U	42 U	51 U	53 U
Aroclor-1242	35 U	40 U	38 U	53 U	36 U	42 U	51 U	53 U
Aroclor-1248	35 U	40 U	38 U	53 U	36 U	42 U	51 U	53 U
Aroclor-1254	35 U	40 U	38 U	53 U	36 U	42 U	51 U	53 U
Aroclor-1260	35 U	40 U	38 U	53 U	36 U	42 U	51 U	53 U
Beta-BHC	1.8 U	2.1 U	2.0 U	2.7 U	1.9 U	2.2 U	2.6 U	2.7 U
Delta-BHC	1.8 U	2.1 U	2.0 U	2.7 U	1.9 U	2.2 U	2.6 U	2.7 U
Dieldrin	3.5 U	4.0 U	3.8 U	5.3 U	3.6 U	4.2 U	5.1 U	5.3 U
Endosulfan I	1.8 U	2.1 U	2.0 U	2.7 U	1.9 U	2.2 U	2.6 U	2.7 U
Endosulfan II	3.5 U	4.0 U	3.8 U	5.3 U	3.6 U	4.2 U	5.1 U	5.3 U
Endosulfan Sulfate	3.5 U	4.0 U	3.8 U	5.3 U	3.6 U	4.2 U	5.1 U	5.3 U
Endrin	3.5 U	4.0 U	3.8 U	5.3 U	3.6 U	4.2 U	5.1 U	5.3 U
Endrin Aldehyde	3.5 U	4.0 U	3.8 U	5.3 U	3.6 U	4.2 U	5.1 U	5.3 U
Endrin Ketone	**4.0**	4.0 U	3.8 U	5.3 U	3.6 U	4.2 U	5.1 U	**4.0**
Gamma-BHC(Lindane)	1.8 U	2.1 U	2.0 U	2.7 U	1.9 U	2.2 U	2.6 U	2.7 U
Gamma-Chlordane	1.8 U	2.1 U	2.0 U	2.7 U	1.9 U	2.2 U	2.6 U	2.7 U
Heptachlor	2.0 U	2.1 U	2.0 U	2.7 U	1.9 U	2.2 U	2.6 U	2.7 U
Heptachlor Epoxide	1.8 U	2.1 U	2.0 U	2.7 U	1.9 U	2.2 U	2.6 U	2.7 U
Methoxychlor	18 U	21 U	20 U	27 U	19 U	22 U	26 U	27 U
Toxaphene	180 U	210 U	200 U	270 U	190 U	220 U	260 U	270 U

Note Bold type indicates sample concentration is above the detection limit.

Key

AN	= Anderson/Calhoun Mine/Mill
B	= The reported concentration is between the instrument detection limit and the contract required detection limit.
BK	= Background.
CLP	= Contract Laboratory Program.
E & E	= Ecology and Environment, Inc.
EPA	= United States Environmental Protection Agency.
ID	= Identification.
J	= The analyte was positively identified. The associated numerical value is an estimate
K	= Unknown bias.
KR	= Kettle River
L	= Low bias.
LB	= L-Bar
mg/kg	= Milligrams per kilogram.
µg/kg	= Micrograms per kilogram.
NA	= Northwest Alloys.
NP	= Napoleon Mine.
NS	= Northport Smelter
NU	= Not utilized
PCBs	= Polychlorinated biphenyls.
SD	= Sediment
SQL	= Sample quantitation limit.
TAL	= Target analyte list.
U	= The analyte was not detected. The associated numerical value is the contract required detection limit.

Table 5-3

ROY F. WESTON, INC. BACKGROUND SEDIMENT SAMPLES
ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01264068	01264070	01264073	01264075	01264050	01264051	01264054	01264055	01264053	01264059	01264062	01264060	01264058
CLP Inorganic ID	MJ0BQ1	MJ0BQ3	MJ0BQ5	MJ0BQ7	MJ0BN3	MJ0BN4	MJ0BN7	MJ0BN8	MJ0BN6	MJ0BP2	MJ0BP5	MJ0BP3	MJ0BP1
CLP Organic ID	JX827	JX829	JX831	JX832	JX810	JX811	JX814	JX815	JX813	JX819	JX822	JX820	JX818
WESTON Sample ID	BK-150-SD	BK-152-SD	BK-153-SD	BK-155-SD	BK-130-SD	BK-131-SD	BK-134-SD	BK-135-SD	BK-133-SD	BK-139-SD	BK-142-SD	BK-140-SD	BK-138-SD
Station Location	US001	US002	US003	US004	US005	US006	US007	US008	US009	US010	US011	US012	US013
Sample Depth (inches)	0-3	0-2	0-4	0-2	0-3	0-3	0-4	0-6	0-8	0-4	0-10	0-1	0-4
TAL Metals (mg/kg)													
Arsenic	**6.7**	1.5 JB	0.47 U	**2.6**	1.9 JB	1.3 JB	**4.5**	**7**	1.5 JB	0.51 U	2 4 UJK	1 2 JB	0 89 JB
Cadmium	**46.2 JK**	0.35 JB	0.05 UJK	**0.38 JB**	0.06 JB	0 05 UJK	**0.28 JB**	**3.3 JK**	0 05 UJK	0.05 UJK	1 7 JB	0 05 UJK	0 05 UJK
Lead	**20.3**	**6.4**	**5**	**14.8**	**2.7**	**8**	**19.2**	**139**	**8.4**	**5.4**	**16.1 JK**	**3.3**	**6.4**
Mercury	0 08 U	0.08 U	0.06 U	0.06 U	0.07 U	0 06 U	0.07 U	0.07 U	0.06 U	0 06 U	R	0 06 U	0 06 U
Zinc	**1880**	**60**	**49**	**54.7**	**18.3**	**20**	**135**	**901**	**80.6**	**32.3**	**42.0 JK**	**18.3**	**41.2**

Note Bold type indicates sample concentration is above the detection limit.

Key

B = Detected inorganic concentration is below the method reporting limit/Contract Required Detection Limit (CRDL) but is above the instrument detection limit.
BK = Background
CLP = Contract Laboratory Program
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The analyte was positively identified The associated numerical value is an estimate.
K = Unknown bias.
mg/kg = Milligrams per kilogram.
R = The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria Any reported value is unusable. Resampling and/or reanalysis is necessary for verification
SD = Sediment
TAL = Target Analyte List
U = The analyte was not detected The associated numerical value is the contract required detection limit
WESTON = Roy F Weston, Inc

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 SIXTH AVENUE
SEATTLE, WA 98101

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File #: 1.4.2
Site Name: Upper Columbia River

Preliminary Assessments and Site Inspections Report
Figure 5-1: Surface Soil Background Sample Location Map

6. MINES AND MILLS, LOCATIONS/DESCRIPTIONS, START-2 VISITS

This section identifies the mines and mills visited by EPA and the START-2 personnel as part of this field event. The mines and mills are presented in order of location relative to the upper Columbia River and its tributaries, beginning near Inchelium, Washington, continuing upstream along the river to the U.S.-Canada border. Mine and mill location, historical information, description, and ownership information are presented for each mine and mill. This section also presents field observations for the START-2 contractor and/or EPA personnel during the visits (Figures 6-1 through 6-42). For the 18 mines and mills where sampling was conducted, analytical results are presented in this section.

6.1 DAISY MINE

6.1.1 Mine Location

Latitude:	48° 22' 45.80"N
Longitude:	118° 4' 42.60"W
Legal Description:	SW¼ Section 7, Township 33N, Range 38E
CERCLIS ID:	WAN001002371
County:	Stevens
Contact:	Martha J. Kernohan, CPL Boise Cascade Corp. Mineral Resources 1111 West Jefferson St. Boise, Idaho 83728-0001 (208) 384-7529

6.1.2 Historical Information

The Daisy Mine is a former copper, lead, gold, and silver mine (Derkey et al. 1990). The mine is located 25 miles west of Addy near the summit on Huckleberry Mountain, Washington (Battien 1998). The mine also is reported to have produced between 1916 and 1935 (Derkey et al. 1990). It is reported that the presence of arsenic prompted the closure of the mine (Battien 1998). The mine claim was located in 1887, but with almost impassable roads and lack of transportation the claim was not developed

until 1905 when J.J. Browne and W.E. Seelye of Spokane took over the property (Battien 1998). Historical ownership from this time to the present is unknown.

6.1.3 Mine Description/Features

The Daisy mine is located on the west slope of the Huckleberry Range in the Kettle Falls mining district. Alternate names are Daisy-Tempest and Silver Mountain. The mine consisted of 16 claims and additional property encompassing approximately 580 acres. The mine deposit consists of at least four quartz veins from a few inches to 12 feet in width cut by a series of argillites and quartzites intruded by diorite. The mine is developed by four adits and a shaft. (Huntting 1956)

6.1.4 START-2 Mine Visit

On September 10, 2001, the START-2 visited the Daisy Mine and conducted a visual inspection of the property and surrounding area (Figure 6-1; Appendix A, Photos 43-1 through 43-21; Appendix B, Team 2 Phase 2, Pages 2 through 7). The mine area contained a tailings pile measuring 150 feet at the base, 30 feet in height with a slope of approximately 35%, and a depth of approximately 45 feet. A storage shed was located north of the tailings pile measuring 10 feet by 10 feet. East of the tailings pile and dirt road were an old office building, an outhouse, and a shed. North of the tailings pile and storage shed were the remnants of a building or shed. West of the remnants a shaft was located measuring 10 feet by 10 feet by unknown depth. A wet area originating from the shaft extended south approximately 25 feet. A depression south of the wet area was noted where potential pooling of water from the shaft would occur; continuing on to flow into a ditch (PPE 1), through a culvert, and into Magee Creek located southwest of the site. The overland distance from the shaft to the creek is approximately 70 feet. Access to the mine is unrestricted. Logging occurs in the vicinity of the mine. No livestock grazing was noted in the vicinity of the mine.

6.1.5 Sampling Locations

Sample locations are depicted in Figure 6-2. Three tailings samples (DTTP01SS, DTTP02SS, and DTTP03SS) were collected from the tailings pile adjacent to Daisy Mine Road. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of silty sand. No odor or staining was noted during sample collection.

One surface water sample (DTAD01SW) was collected from the shaft. The sample was collected within the overland surface water drainage route identified by the START-2. The sample was collected to determine potential contamination associated with this source. The sample was clear. No odor or staining was noted during sample collection.

A sediment sample (DTPP01SD) was collected at PPE 1 in the ditch near the culvert on the southern portion of the mine area.

6.1.6 Analytical Results

6.1.6.1 Surface Soil Sample Results

The START-2 collected three surface soil samples from tailings for TAL metals analyses. Arsenic was detected at a significant concentration of 233 milligrams per kilogram (mg/kg). Significant concentrations ranged from 0.42 mg/kg to 2.9 mg/kg for mercury. Refer to Table 6-1 for complete data results.

6.1.6.2 Surface Water Sample Results

The START-2 collected one surface water sample from the shaft water for TAL metals analysis. Analytes detected in DTAD01SW include arsenic (95.3 micrograms per liter [μg/L]), cadmium (7.1 μg/L), lead (5.2 μg/L), and zinc (829 μg/L). Copper and mercury were not detected.

6.1.6.3 Sediment Sample Results

The START-2 collected one sediment sample from PPE 1 for TAL metals, pesticide/PCBs, and TOC analyses. No elevated concentrations were detected. Refer to Table 6-2 for complete data results.

6.2 L-BAR/NORTHWEST MAGNESITE

6.2.1 Plant Location

Latitude:	48° 15' 21.94"N
Longitude:	117° 43' 6.25"W
Legal Description:	Section 23, Township 32N, Range 40E
CERCLIS ID:	WAD097824577
County:	Stevens

Contact: Ozzie Wilkinson
Northwest Alloys, Inc.
P.O. Box 115
1560 A Marble Valley Road
Addy, Washington 99101-0115
(509) 935-3369

Northwest Magnesite Contact: William and Richard Brauner (magnesite residue pile only)

6.2.2 Historical Information

L-Bar/Northwest Magnesite is located approximately two miles south of Chewelah, Washington on the west side of U.S. Highway 395, and lies on the south bank of the Colville River (CH2MHill 2001a, Ecology 2001). Northwest Magnesite is a former magnesite plant created in 1916 by American Mineral Production Company (Battien 1998). Shipments of crude magnesite from Stevens County averaged 700 tons daily (Battien 1998). The plant was closed down in 1968 (Battien 1998).

L-Bar/Northwest Magnesite includes an industrial area covering approximately 80 acres and an adjoining 17-acre agricultural field located between the industrial area and the Colville River in the Colville River valley (Ecology 2001). An above-grade magnesite residue pile, approximately 30 feet deep and 17 acres in area, is found to the west (Ecology 2001). Two ditches, the Main Ditch and the West Ditch, run through the site. Both ditches previously discharged into the Colville River.

L-Bar/Northwest Magnesite and the adjacent parcel to the south have been associated with magnesium processing since the 1930s. Large quantities of magnesite ore were processed and flue dust and other materials were stockpiled on site until 1967. In the mid-1970s, the facility was converted to recover magnesium from a magnesium processing byproduct commonly referred to as flux bar. Flux bar was supplied primarily by Northwest Alloys, Inc., from their magnesium plant near Addy, Washington, and sold to the site owners. The magnesium recovery facility was owned and operated by Phoenix Resources Recovery, Inc., from 1977 to 1986. L-Bar Products, Inc., operated the facility from 1986 to 1991 when it closed down due to insolvency (CH2MHill 2001a). More than 100,000 tons of materials (under a covered pile, in buildings, and on top of the magnesite pile) remained at the site after closure (Ecology 2001).

Ownership of a majority of the L-Bar property was transferred from the L-Bar Bankruptcy Trustee to Northwest Alloys, Inc., in May 2000. The transfer included all former L-Bar Products, Inc., real estate except those portions lying under the south half of the magnesite residue pile, which were retained by the L-Bar trustee, and later transferred to Richard and Maxine Brauner. The north half of the magnesite pile and the underlying property is owned by William Brauner. Easements are in place in the

existing deeds that grant Northwest Alloys, Inc., and its agents access to the magnesite pile for purposes of groundwater monitoring and future remedial actions, if needed. (CH2MHill 2001a)

Since 1995, discharge from the Main Ditch has stopped as a result of actions taken by Northwest Alloys, Inc. In response to an Emergency Enforcement Order issued by Ecology in 1994, Northwest Alloys, Inc., constructed a water retention structure that eliminated direct discharge of Main Ditch surface water to the Colville River. (Ecology 2001)

In 1995, Ecology and Northwest Alloys, Inc., entered into an Agreed Order to conduct interim actions, a remedial investigation (RI), and a feasibility study. Interim actions conducted included: management of stored waters in the evaporation pond (through land application in the North Field during the summer months) and the removal and disposal of approximately 65,000 tons of flux bar and flux bar residue from atop and around the magnesite residue pile. (Ecology 2001)

Findings in the RI completed in 1998 show that flux bar and flux bar residue materials are the primary source of ammonia, chloride, and total dissolved solids detected in the shallow groundwater, soils, and in surface water in two on-site ditches. The shallow groundwater is not a drinking water aquifer; however, it discharges to the Colville River which has been categorized by Ecology as a Class A (excellent) surface water body. The West Ditch also discharges to the Colville River. River sampling showed a slight increase in ammonia and chloride concentrations when comparing upstream to downstream results. However, Class A surface water criteria have not been exceeded in the river. (Ecology 2001)

Ecology prepared a draft Cleanup Action Plan that became final in June 2000. The cleanup actions selected by Ecology are source removal, monitoring, and institutional controls. With source removal, contaminants in groundwater, surface water, and soils are expected to be reduced over time through natural attenuation. (Ecology 2001)

6.2.3 Plant Description/Features

The magnesite pile is believed to consist predominantly of magnesium carbonate derived from Finch, Red Marble, and Keystone quarries several miles west of the site. Processed (washed and crushed) magnesite ore was delivered to the Northwest Magnesite reduction facility via a 5-mile-long aerial tramway. Electrostatic precipitate (ESP) dust from the site and perhaps other materials were hydraulically placed into portions of the existing magnesite stockpile. A Washington State Department of Transportation aerial photo of the site in July 1966 shows the placement of the ESP dust by flume discharge from the plant into a dike retaining pond system in the pile area. (CH2MHill 1998)

In addition to magnesite processing, a fireproof fiber-board product called Thermax was manufactured at the site before L-Bar operations commenced. The Thermax fiber boards consisted of shredded cottonwood impregnated with magnesite. Little is known about the operation; however, many of the older L-Bar buildings are constructed of Thermax. Thermax debris is found as a waste material mixed into the magnesite stockpile. (CH2MHill 1998)

Past operating practices and inadequate storage of flux bar and flux bar residue have resulted in elevated levels of mostly chloride and ammonia in shallow groundwater and surface water. Most of the materials remaining on the plant have continued to leach salts and ammonia into shallow groundwater and surface water in two ditches. (Ecology 2001)

To date, 140,000 to 150,000 tons of flux bar related material has been removed from the property. There is an estimated 30,000 to 40,000 tons of material still is present on site. Removal of this material and backfilling are tasked to be complete by 2002. These activities are being conducted under an Agreed Order with Ecology (Wilkinson 2002).

Results from the *Draft Interim Action Materials Characterization Report* (1996) produced by Cascade Earth Sciences (CES) for Northwest Alloys Inc. showed the magnesite residue pile contained elevated levels of some trace metal and semi-metallic constituents including arsenic, boron, cadmium, copper, selenium, and zinc. Concentrations of these constituents in the magnesite residue pile were elevated in comparison to both regional background soil levels for eastern Washington and to levels measured in L-Bar flux bar residue. (CH2MHill 1998)

Sediment samples were collected during Phase I of the RI from six locations: three in the Main Ditch, two in the West Ditch, and one from the Logan Road ditch south of the property. Review of trace metals analytical results demonstrated that barium, manganese, and selenium concentrations in the Main Ditch sediment samples exceeded the concentrations detected in the background sample collected from the Logan Road ditch south of the property. Trace metals results from the West Ditch samples were similar to Main Ditch samples in that background concentrations were exceeded for barium, manganese, and selenium. Background concentrations of arsenic and copper also were exceeded. Concentrations of these metals were less than 2 times background levels except for selenium, which was approximately seven times background. (CH2MHill 1998)

6.2.4 START-2 Visit

On September 10 and 11, 2001, the START-2 visited L-Bar/Northwest Magnesite and conducted a visual inspection of the property and surrounding area (Figure 6-3; Appendix A, Photos 40-1 through

40-22 and 41-8 through 41-11; Appendix B, Team 1 Phase 2, Pages 3 through 7, 9 and 10). The property consisted of six buildings including primary crushing and storage, maintenance and repair shop, magnesium recovery and storage (the cooling beds area was demolished in 1994), secondary crushing and butler storage, office and laboratory, and storage bunkers. Six exterior product storage silos are south of the storage bunkers. The buildings contain process equipment and flux bar residue products in various stages of development and storage. The complete list of materials and the building plans showing material locations can be found in the *Draft Interim Action Materials Characterization Report* produced by CES in 1996. (CH2MHill 1998)

Other significant features include three lined ponds (the evaporation, holding, and sanitary lagoon) and the covered flux bar residue pile north of the buildings. The area around the buildings is paved with asphalt to control dust and divert surface water runoff to collection ditches for discharge to the holding pond. If the holding pond becomes full, it is equipped with an overflow that allows discharge to the Main Ditch. Stormwater contained in the holding pond is being discharged to the Colville River under an Ecology-approved stormwater management permit (PPE 2). Underground and overhead utility lines are distributed throughout the site. No registered underground storage tanks are present on the property. (CH2MHill 1998)

No logging occurs in the vicinity of the plant. Farmland is located adjacent to the property.

6.2.5 Sampling Locations

Sample locations are depicted in Figure 6-4. Two sediment samples were collected in the West Ditch. Sediment sample LBDT03SD was collected from PPE 1 and sediment sample LBDT02SD was collected from PPE 2.

6.2.6 Analytical Results

6.2.6.1 Sediment Sample Results

The START-2 collected one sediment sample from PPE 1 (LBDT03SD) and one sediment sample from PPE 2 (LBDT02SD) for TAL metals, pesticide/PCBs, and TOC analyses. No analytes were detected at elevated concentrations in these samples. Refer to Table 6-3 for data results.

6.3 NORTHWEST ALLOYS

6.3.1 Plant Location

Latitude:	48° 21' 26.00"N
Longitude:	117° 50' 54.00"W
Legal Description:	Section 14, Township 33N, Range 39E
CERCLIS ID:	WAD094626868
County:	Stevens
Contact:	Ozzie Wilkinson Northwest Alloys, Inc. P.O. Box 115 1560 A Marble Valley Road Addy, Washington 99101-0115 (509) 935-3369

6.3.2 Historical Information

Northwest Alloys is a former magnesium plant in Addy, Washington, covering approximately 240 acres (Northwest Alloys, Inc. 1992). The plant is located in Colville Valley which is drained by the Colville River. The Colville Valley is bordered by rugged, mountainous terrain. Access to the plant is restricted. In the early 1970s, Northwest Alloys, Inc., a wholly owned subsidiary of the Aluminum Company of America decided to develop a plant for the production of ferrosilicon, magnesium, and silicon in Addy, Washington (DNR 1983). Construction began in 1973 and production began in 1976 (DNR 1983). Plant operations were discontinued in September 2001 due to economic considerations affecting domestic magnesium production.

6.3.3 Plant Description/Features

The plant produced magnesium and ferrosilicon partially from raw material quarried on the property. Waste products generated were either recycled, sold as product or thread, or buried on site. None of the wastes were regarded as hazardous under the Resource Conservation and Recovery Act (RCRA) but were classified as regulated wastes under Ecology Dangerous Waste Regulations. (E & E 1988)

The magnesium was sold to the aluminum industry as an alloying ingredient and to the steel industry as a desulphurization agent. Ferrosilicon was used internally as a reducing agent in magnesium production. Northwest Alloys, Inc., employed the Magnetherm (Aluminathermic) process which depended upon the reaction between calcined dolomite (a mixture of calcium dioxide and magnesium

oxide) and the silicon content of ferrosilicon. The reaction took place in a liquid slag formed from the reaction of the calcium and silicon byproducts. Alumina was needed in the process to reduce the melting point of the slag and to depress unwanted secondary reactions. Aluminum was used for the same purpose and was also a supplemental reductant. (E & E 1988)

The major raw material, dolomitic limestone, was quarried from a deposit adjacent to the plant. A second raw material, pure aluminum shot, aluminum skim, or alumina, was brought in by rail. Ferrosilicon, the third material used, was produced on site from locally mined quartzite or was brought in. (E & E 1988)

Quarried dolomite was crushed, washed, screened, and stockpiled. Because water and carbon dioxide in the dolomite will reduce magnesium production efficiency, it was necessary to calcine the dolomite to reduce the water and carbon dioxide to a minimum. The calcining operation was carried out in a rotary kiln in which the dolomite traveled counter-current to hot combustion gases in the kiln. (E & E 1988)

The calcined dolomite, plus ferrosilicon and aluminum or alumina, was fed from bins to the batch-operated magnesium reduction furnaces. The furnaces were operated under vacuum and were totally enclosed. The magnesium, produced as a vapor, rose from the furnace into a condenser and was collected and solidified in crucibles. (E & E 1988)

The used condenser-crucible assembly was taken to a cleaning area and disassembled. The condenser and connecting pipes were cleaned and prepared for reuse. The crucible was removed and transported to the metal service area where the magnesium was remelted, refined, cast into ingots, and shipped out by rail or truck. (E & E 1988)

In 1979, Northwest Alloys, Inc., began to fill the excavated south quarry with waste products of which 10% were regulated wastes. The regulated wastes were sandwiched between layers of low-permeability slag in the landfill. The south landfill/quarry was estimated to be filled to capacity by 1990, at which time the west quarry would be utilized for waste disposal. Prior to 1980, Northwest Alloys, Inc., disposed of their regulated wastes on the ground at the south portion of the facility. (E & E 1988)

The plant was designed as a zero-discharge facility. All cooling water was recirculated and perimeter dikes contained and treated all surface water runoff (E & E 1988).

During the late 1970s, and into the 1980s, various non-hazardous production byproducts from the plant operations were placed into three shallow, soil-lined repositories in a portion of the site referred to as the Northwest (NW) Quadrant area. The three repositories include the Sealed Pit, Casting Residue

Mound (CRM), and North Waste Area. Some of the solid waste materials that were placed into the repositories were chloride and ammonia bearing, and/or displayed an elevated pH. Since 1995, Northwest Alloys, Inc., has conducted a series of characterization and monitoring activities within and around these repositories under the Model Toxics Cleanup Authority, Voluntary Cleanup Program, as administered by Ecology's Industrial Section. A focused hydrogeologic investigation in 1995 identified chloride and ammonia in shallow groundwater immediately adjacent to the waste repositories in the NW Quadrant area and adjacent to the wastewater storage ponds at the southern end of the plant. In 1999, Northwest Alloys, Inc., began the excavation and removal of approximately 25,000 tons of waste material as part of its ongoing voluntary cleanup actions. The wastes were shipped off-site to a non-hazardous subtitle D landfill in Roosevelt, Washington. In 2000, Northwest Alloys, Inc., installed a RCRA-compliant liner system as an engineering upgrade for a previously unlined stormwater storage pond. The contents of the two wastewater storage ponds have been transferred to the lined pond. The two wastewater ponds are now empty and available for storage of stormwater. Also in 2000, removal actions at the Sealed Pit were completed with soil removal conducted along Marble Valley Road. (Northwest Alloys, Inc. 2001)

In 2001, excavation and removal of material from the CRM was conducted and characterization sampling of the North Waste Area was performed (Northwest Alloys, Inc. 2001).

Removal of waste materials from the North Waste Area is ongoing. Other activities planned for 2002 include additional soil removal at the CRM and backfilling of the CRM and Sealed Pit areas. Closure of the RCRA Part B Landfill located on the property is also underway. (Wilkinson 2002)

Terrain is flat in the southern half of the site and hilly in the northern half. Mining and filling operations have changed the topography of the site over its operational history. Artificial fill covers much of the NW Quadrant. Native grade is observed along the western margins of the plant, along Marble Valley Road. Presently, ground elevations in the NW Quadrant of the plant site range from about 1650 to 1665 feet above mean sea level (msl). (CH2MHill 2001b)

Groundwater contamination by inorganic compounds has been documented below an on-site quarry used for disposal of wastes. The contamination appears limited in extent and no present-day migration of contaminants to drinking water aquifers appears likely. (E & E 1988) Analytical results of routine monitoring conducted at the City of Addy municipal water supply wells is provided in Appendix I.

Two surface water features, the Colville River and Stensgar Creek, are present within the immediate vicinity of the Northwest Alloys' Addy plant. The Colville River is located about 500 feet

east of the plant site and Stensgar Creek is located about 1,000 feet south of the plant. Surface water runoff from the NW Quadrant area generally is to the west and south. (CH2MHill 2001b)

6.3.4 START-2 Visit

On September 10, 2001, the START-2 visited Northwest Alloys and conducted a visual inspection of the property and surrounding area (Figure 6-5; Appendix A, Photos 40-23 through 41-7; Appendix B, Team 1 Phase 2, Pages 7 through 9). The current facility layout and surrounding areas are shown in Figure 6-5. The plant is contained within gates and hillsides. There is no overland flow from the site directly into the Colville River due to topography and surface water runoff controls. A potential overland flow exists via a series of road side ditches on the southern portion of the plant. The overland flow potentially flows through these ditches to a ditch leading from the road on the south end of the property south towards Stensgar Creek (PPE 1). Stensgar Creek, located south of the plant, contains brown trout. Stensgar Creek Feeds into the Colville River. The terrain is flat in the southern portion of the property and hilly in the northern portion.

6.3.5 Sampling Locations

Sample locations are depicted in Figure 6-6. NADT01SD was collected in the ditch approximately 25 feet north of the confluence of the ditch and Stensgar Creek (PPE 1).

6.3.6 Analytical Results

6.3.6.1 Sediment Sample Results

The START-2 collected one sediment sample from PPE 1 (NAD01SD) for TAL metals analyses. Elevated concentrations of arsenic (4.9 mg/kg), copper (18.7 mg/kg), lead (7.5 mg/kg), and zinc (47.9 mg/kg) were detected in this sample. Refer to Table 6-4 for complete data results.

6.4 NAPOLEON MINE/MILL

6.4.1 Mine/Mill Location

Latitude:	48° 44' 12.10"N
Longitude:	118° 06' 4.32"W
Legal Description:	NW¼ Section 3, Township 37N, Range 37E
CERCLIS ID:	WAN001002391
County:	Stevens

Contact: Martha J. Kernohan, CPL
Boise Cascade Corp.
Mineral Resources
1111 West Jefferson St.
Boise, Idaho 83728-0001
(208) 384-7529

6.4.2 Historical Information

The Napoleon Mine/Mill is a former copper, gold, and iron mine/mill in the Northport mining district, Washington (Derkey et al. 1990). The mine is reported to have produced in 1907-1910, 1913-1917, and 1938-1955 (Derkey et al. 1990). A mill was built in 1910 to extract gold (Battien 1998). The mine/mill was owned in 1915 by British Columbia Copper Company (Battien 1998). Historical ownership information from the time the facility began operation to the present is unknown.

6.4.3 Mine/Mill Description/Features

The Napoleon Mine/Mill consists of two claims. The exposed formation is part of the Mission argillite. The ore minerals are magnetite, limonite, pyrite, and pyrrhotite. Occasional small quantities of chalcopyrite are present. The ores were mined to a considerable extent and shipped to the smelter at Greenwood, British Columbia, where it was used as a flux. The property is developed by three main tunnels and a large glory hole. The highest workings in the glory hole are at an elevation of 2,650 feet. These workings are all connected with stopes and raises. A one-mile aerial tramway was built from the mine to the bunkers at the railroad along Kettle River. (Weaver 1920)

6.4.4 START-2 Mine/Mill Visit

On September 12, 2001, the START-2 visited the Napoleon Mine/Mill and conducted a visual inspection of the property and surrounding area (Figure 6-7; Appendix A, Photos 41-12 through 41-17; Appendix B, Team 1 Phase 2, Pages 11 and 12). The mine/mill area consisted of an adit measuring 5 feet by 4 feet located south of the dirt road entrance. There was no evidence of tailings or waste rock present on the property. The adit discharge flowed across the dirt road, down the hillside approximately 120 feet, before entering an intermittent creek (PPE 1). Iron staining was present on the soil and the dirt road. There was no adit discharge at the time of the visit. Access to the mine/mill was restricted by a locked gate. No logging or livestock grazing was noted in the vicinity of the property.

6.4.5 Sampling Locations

Sample locations are depicted in Figure 6-8. One surface water sample (NPAD01SW) was collected from the adit. The sample was collected within the overland surface water drainage route identified by the START-2. The sample was collected to determine potential contamination associated with this source. The sample was clear. No odor was noted during sample collection. Iron staining was present on the soil and the dirt road identifying the drainage pathway to the intermittent creek.

PPE 1 (NPPP01SD) was collected at the confluence of the adit discharge and the intermittent creek.

6.4.6 Analytical Results

6.4.6.1 Surface Water Sample Results

Analytes detected in NPAD01SW include lead (11.3 μg/L) and zinc (937 μg/L).

6.4.6.2 Sediment Sample Results

The START-2 collected one sediment sample from PPE 1 (NPPP01SD) for TAL metals, pesticide/PCBs, and TOC analyses. Copper was detected in this sample at an elevated concentration of 207 mg/kg. Refer to Table 6-5 for complete data results.

6.5 FIRST THOUGHT MINE

6.5.1 Mine Location

Latitude:	48° 53' 2.04"N
Longitude:	118° 09' 32"W
Legal Description:	Section 18, Township 39N, Range 37E
CERCLIS ID:	WAN001002374
Contact:	Bill Campbell Western Continental, Inc. P.O. Box 14006 Spokane, Washington 99214

6.5.2 Historical Information and Mine Description/Features

The First Thought Mine is a former gold and silver mine located in the Orient district, Washington. The mine was located in 1896 and was an almost continuous shipper from 1904 to 1910. It is estimated that the mine produced slightly over 40,000 tons of ore. The chief values of the ore were in

gold. The property is developed by three tunnels driven into the mineralized zone, a shaft, and drifts. The mineralized portion contains finely disseminated crystals of pyrite which carry the gold values. (Weaver 1920)

6.5.3 START-2 Mine Visit

On September 12, 2001, the START-2 visited the First Thought Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 1 Phase 2, Pages 12 through 14). The area consisted of waste rock piles, a dilapidated house, and a possible shaft with an opening measuring approximately 5 feet in diameter (Appendix A, Photos 41-18, 41-20, 41-21). The shaft and dilapidated house were located on the east side of the property. Waste rock piles were located approximately 200 feet west of the shaft. A road and cow pasture were located on the south side of the property. A creek flows through the pasture. The START-2 observed boxes containing samples of soil borings. Some of the boxes were marked either Shell, F.T., PF, BC, or Boise Cascade (Appendix A, Photo 41-19). The START-2 did not observe any overland drainage routes from the waste rock piles to surface water. Access to the mine was unrestricted. No residents or potential receptors were observed on the property. No samples were collected at the First Thought Mine.

6.6 LOTTIE MINE

6.6.1 Mine Location

Latitude:	48° 51' 53.28"N
Longitude:	118° 01' 15.24"W
Legal Description:	Section 19, Township 39N, Range 38E
CERCLIS ID:	WAN001002384
County:	Stevens
Contact:	United States Department of the Interior Bureau of Land Management Spokane District Office 1103 N. Fancher Spokane, Washington 99212-1275 (509) 536-1200

6.6.2 Historical Information and Mine Description/Features

The Lottie Mine is a former copper, gold, and silver mine located in the Fifteen Mile Creek district, Washington. The mine was located in 1898 and was developed by a 50-foot shaft, open cut

work, and trenching for a distance of over 500 feet along the course of the vein. The ore minerals are chalcopyrite, pyrite, and pyrrhotite which are said to assay in copper, gold, and silver. About 50 tons of ore are said to have been mined. (Weaver 1920)

6.6.3 START-2 Mine Visit

On June 18, 2001, the START-2 visited the Lottie Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 2 Phase 1, Pages 2 and 13). The START-2 observed two log structures and a waste rock pile near these structures (Appendix A, Photos 21-6, 21-7 and 21-8). The waste rock pile was mixed with soil and measured approximately 30 feet by 15 feet by 3 feet deep (Appendix A, Photo 21-5).

An upper road was located approximately 500 feet northwest from the log structures. The upper area consisted of two waste rock piles. One waste rock pile measured an estimated 60 feet by 30 feet by 10 feet deep (Appendix A, Photo 29-18). The other waste rock pile measured approximately 15 feet by 15 feet by 4 feet deep. The START-2 did not observe any overland drainage routes from the waste rock piles to surface water. Access to the mine was unrestricted. No residents or potential receptors were observed on the property. No samples were collected at the Lottie Mine.

6.7 HOMESTAKE NO. 1 MINE

6.7.1 Mine Location

Latitude:	48° 52' 06.96"N
Longitude:	118° 01' 18.84"W
Legal Description:	Section 19, Township 39N, Range 38E
CERCLIS ID:	WAN001002378
County:	Stevens
Contact:	United States Department of the Interior Bureau of Land Management Spokane District Office 1103 N. Fancher Spokane, Washington 99212-1275 (509) 536-1200

6.7.2 Historical Information and Mine Description/Features

The Homestake No. 1 Mine is a former copper, gold, silver and mine situated in the Northport district, Washington. The mine is part of the Electric Point property. (Huntting 1956)

6.7.3 START-2 Mine Visit

On June 24, 2001, the START-2 visited the Homestake No. 1 Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 2 Phase 1, Page 13). The area consisted of shafts and two waste rock piles (Appendix A, Photos 29-5 through 29-15). One waste rock pile measured an estimated 300 to 400 cubic yards. The START-2 did not observe any overland drainage routes from the waste rock piles or shafts to surface water. Access to the mine was unrestricted. No residents or potential receptors were observed on the property. No samples were collected at the Homestake No. 1 Mine.

6.8 ANTELOPE MINE

6.8.1 Mine Location

Latitude:	48° 52' 04.80"N
Longitude:	118° 01' 05.88"W
Legal Description:	Sections 19-20, Township 39N, Range 38E
CERCLIS ID:	WAN001002368
County:	Stevens
Contact:	William Inglis 551 Austin Street, Suite 1103 Coquitlam, British Columbia V3K6R7 Canada

6.8.2 Historical Information and Mine Description/Features

The Antelope Mine is a former copper and gold mine located in the Orient district, Washington. The mine claim, located in 1898, is reported to have produced 50 tons of ore (Huntting 1956). Bedrock outcrops are largely covered with deposits of glacial drift, but where exposed are a part of the Jumbo volcanic formation. A vein, averaging in width from two and one-half to four feet, consists of chalcopyrite, pyrite, and pyrrhotite. Small quantities of melanterite are present in vein pockets. (Weaver 1920)

6.8.3 START-2 Mine Visit

On June 24, 2001, the START-2 visited the Antelope Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 2 Phase 1, Page 13). The mine was accessed by a Forest Service road and is situated approximately 50 feet from the end of the road. The area consisted of

a shaft and a waste rock pile (Appendix A, Photos 29-3 and 29-4). The shaft opening measured 15 feet by 10 feet and the waste rock pile measured approximately 40 feet long by 40 feet wide by 2 feet deep. The START-2 did not observe any overland drainage routes from the shaft or waste rock pile to surface water. No residents or potential receptors were observed on the property. No samples were collected at the Antelope Mine.

6.9 HUBBARD MINE

6.9.1 Mine Location

Latitude:	48° 55' 15.96"N
Longitude:	117° 52' 03.72"W
Legal Description:	E½ Section 32, Township 40N, Range 39E
CERCLIS ID:	WAN001002380
County:	Stevens
Contact:	Colville National Forest 765 South Main Colville, Washington 99114

6.9.2 Historical Information and Mine Description/Features

The Hubbard Mine is a former copper, gold, lead, silver, and zinc mine situated at the head of Squaw Creek, Washington. The mine was reported to be owned by Bruder Mining Company, Hubbard Mining Corporation (1945), and Mines Management, Inc. (1949). Historical ownership information from the time the facility began operations to the present is unknown. The ore deposit consists of sulfides concentrated in small bunches in a quartz vein from 10 to 12 feet wide in phyllite. (Huntting 1956)

6.9.3 START-2 Mine Visit

On June 24, 2001, the START-2 visited the Hubbard Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 2 Phase 1, Page 14). A waste rock pile, three shafts, a log structure, and former housing were observed on the property (Appendix A, Photos 29-23, 29-24, and 30-1 through 30-5). The waste rock pile measured approximately 40 feet by 40 feet by 20 feet deep. The START-2 did not observe any overland drainage routes from the waste rock pile to surface water. Access to the mine was unrestricted. No residents or potential receptors were observed on the property. No samples were collected at the Hubbard Mine.

6.10 NEW LEADVILLE MINE

6.10.1 Mine Location

Latitude:	48° 44' 08.52"N
Longitude:	117° 52' 33.60"W
Legal Description:	SE¼ Section 3, Township 37N, Range 39E
CERCLIS ID:	WAN001002392
County:	Stevens
Contact:	United States Department of the Interior Bureau of Land Management Spokane District Office 1103 N. Fancher Spokane, Washington 99212-1275 (509) 536-1200

6.10.2 Historical Information and Mine Description/Features

The New Leadville Mine is a former lead mine located in the Bossburg mining district, Washington. An alternate name is the Yo Tambien Mine. The mine produced prior to 1924 (Huntting 1956). The ore body is irregular in shape and has been stoped to a considerable extent near the surface (Jenkins 1924). Historical ownership information from the time of patent to the present is unknown.

6.10.3 START-2 Mine Visit

On June 20, 2001, the START-2 visited the New Leadville Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 3 Phase 1, Pages 11 and 12). The mine area consisted of two adits, a waste rock pile, building debris, a collapsing building, and remnants of rail lines (Appendix A, Photos 10-17 through 10-22). Adit 1 appeared to flow into adit 2. Adit 1 was located approximately 39 feet southwest from the collapsing building. Adit 2 was located approximately 23 feet south and 20 feet west from adit 1. The drainage route from adit 2 was dry. A pH reading of 6 was measured at the discharge from adit 1. The waste rock pile, located approximately 53 feet from adit 1, measured an estimated 25 feet long by 40 feet wide by 5 feet deep. Remnants of rail lines were observed above adits 1 and 2. The START-2 did not observe any overland drainage routes from the adits or waste rock pile to surface water. Access to the mine was unrestricted. No residents or potential receptors were observed on the property. No samples were collected at the New Leadville Mine.

6.11 R.J. MINE

6.11.1 Mine Location

Latitude:	48° 43' 54.84"N
Longitude:	117° 52' 31.80"W
Legal Description:	Section 3, Township 37N, Range 39E
CERCLIS ID:	WAN001002395
County:	Stevens

6.11.2 Historical Information and Mine Description/Features

The R.J. Mine is a former lead and silver mine located in the Northport mining district, Washington (Weaver 1920). The mine was located in 1900 (Battien 1998). Mine formation is a bluish-white limestone forming a high bluff on the east side of Clugston Creek. Veins in the form of replacement deposits occur in fracture zones and contain galena with silver. The property has been developed by several open cuts, shallow shafts, and short tunnels (Weaver 1920). Historical ownership information from the time of patent to the present is unknown.

6.11.3 START-2 Mine Visit

On June 20, 2001, the START-2 visited the R.J. Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 3 Phase 1, Page 13). The START-2 observed a waste rock pile and a flowing adit (Appendix A, Photos 11-1 and 11-4). Adit flow was estimated to be 2 to 5 cubic feet per second (cfs) and was drained by a 10-inch diameter polyvinyl chloride pipe extending approximately 50 feet and ending abruptly (Appendix A, Photo 11-1 and 11-3). Discharge continued to flow an estimated 150 feet before infiltrating the ground. Inside the adit a spray painted sign read "ORMC 154465 Eureka Surprise" (Appendix A, Photo 11-2). The distance of the adit from the waste rock pile is approximately 88 feet. The waste rock pile measured approximately 46 feet tall by 90 feet wide by 20 feet deep. The area at the base of the waste rock pile was dry and vegetation was growing on the pile. The START-2 did not observe any overland drainage routes from the adit or waste rock pile to surface water. Access to the mine was unrestricted. No residents or potential receptors were observed on the property. No samples were collected at the R.J. Mine.

6.12 VAN STONE MINE/MILL

6.12.1 Mine/Mill Location

Latitude:	48° 45' 38.16"N
Longitude:	117° 45' 23.76"W
Legal Description:	E½ Section 33, Township 38N, Range 40E
CERCLIS ID:	WAD980834808
County:	Stevens
Contact:	Equinox Resources (Washington) Inc. c/o Mano River Resources Inc. Suite 600 890 West Pender Street Vancouver, British Columbia V6C 1K4 Canada (604) 689-1700 fax (604) 687-1327

6.12.2 Historical Information

The Van Stone Mine/Mill is a former cadmium, lead, and zinc mine/mill located on the upper portion of Onion Creek near Northport, Washington (Derkey et al. 1990). The mine is reported to have produced in 1930, 1937, 1942, and 1952-1956 (Derkey et al. 1990). Production to the end of 1956 was 2,242,960 tons of ore milled, yielding 10,700 tons of lead concentrates and 120,000 tons of zinc concentrates (Mills 1977).

George Van Stone claimed and worked the mine/mill until 1926 (Battien 1998). Hecla Mining Company acquired the property in 1926, and Van Stone Mining Company took over in 1930 (Battien 1998). Willow Creek Mines of Nevada operated the mine/mill from 1938 to 1942 (Mills 1977). In 1950, American Smelting and Refining of Salt Lake City bought the claims and the surrounding land (Battien 1998). The property was operated intermittently by Asarco, Inc., during the 1950s and 1960s (Beacon 1999). In 1972, Callahan Mining Corporation acquired the mill and mine property (Mills 1977). Equinox Resources, Inc., acquired the property in 1990 and placed it back into production in 1991 (Beacon 1999). The operations were suspended in late 1992 due to low metal prices and have been under care and maintenance since January 1993 (Beacon 1999). Equinox Resources, Inc., filed a preliminary Reclamation and Closure Plan with the Washington State Department of Natural Resources (DNR) prior to the reopening of the mine/mill in 1991. Under current legislation, Equinox Resources Inc., is required to file a revised Reclamation and Closure Plan (Beacon 1999). The Reclamation and Closure Plan present two possible outcomes; closure of existing operations without additional mining,

and closure following the mining and processing of additional known ore reserves (Beacon 1999). The objective of the Reclamation and Closure Plan is to provide a systematic approach to decommissioning the Van Stone Mine/Mill and returning all disturbed lands associated with the mine/mill operations (post-1971) to a mixed land use capability. The mixed land use classification is defined as consisting of a combination of forest lands, open space lands, shrub and grasslands, wetlands, wildlife habitat, talus slopes, and agricultural lands (Beacon 1999).

6.12.3 Mine/Mill Description/Features

The Van Stone Mine/Mill is on the east side of the Columbia River and southwest of Northport, Washington. Geologic setting includes deposition of heavy minerals in river gravels. Production was from two open pits a few hundred feet south of the south margin of the Spirit pluton. The ore deposit is within the middle dolomite unit of the Metaline Limestone, approximately 200 feet from the overlying upper limestone unit at its closest point. (Mills 1977)

Rock was removed from the mine, crushed on site, and the usable material trucked off site for further processing. Fine-grained tailings were carried in a slurry via an elevated wooden flume first to the old tailings pile, and later to a large tailings pile located in Sections 29 and 30. The slurry was dumped into the pile to allow the sediment to settle out of the slurry. The new tailings pile walls were built up from dried tailings and at present stand 10 to 50 feet above the ground surface. The wooden slurry line was replaced in the 1990s with a durable, flexible pipe. (Boise Cascade Corporation 1997)

The Van Stone Mine/Mill operations were located in the Onion Creek watershed approximately 21 miles northeast of Colville, Washington. Onion Creek has been categorized by Ecology as a Class AA (extraordinary) surface water body. A comprehensive analyses of the entire Onion Creek watershed titled *Onion Creek Watershed Analysis* was carried out in March 1997 for Boise Cascade Corporation by a number of organizations, including DNR, Ecology, Stevens County Conservation District, Vaagen Brothers Lumber, Arden Tree Farm, Inland Empire Paper, Maurice Williamson, and the Washington Farm Forestry. The purpose of the assessment was twofold: to provide an understanding of the current and possible future states of channel conditions, and to locate accessible fish habitat in the watershed to identify existing conditions and habitats of special concern. The assessment identified localized evidence of land use impacts to fish-bearing channels including a disturbance described as "major" in the tributary adjacent to the Van Stone Mine due to an apparent tailings pipe-burst or associated slope failure which occurred prior to 1968. (Raines, et. al. 1997)

6.12.4 START-2 Mine/Mill Visit

On June 22 and 23, 2001 the START-2 visited Van Stone Mine/Mill and conducted a visual inspection of the property and surrounding area (Figures 6-9 through 6-11; Appendix A, Photos 1-1 through 9-25; Appendix B, Team 1 Phase 1, Pages 24 and 25; Team 2 Phase 1, Pages 10 through 12; Team 3 Phase 1, Pages 20 through 22). The mine/mill area consisted of a waste rock storage area, two tailings piles, an open pit, a seepage pond, buildings, and stained soil areas.

The waste rock storage area was constructed by end dumping to the south contour from the open pit haul road. The eastern toe of the waste rock storage area consists mostly of larges and is located less than 100 feet of the Northeast Fork of Onion Creek. Slopes on the north side of the haul road consist, in part, of colluvial overburden. Depth and quantity of overburden has yet to be determined. (Beacon 1999)

The tailings embankments consist of steep sided erodable tailings sands. In some locations the slopes are heavily rilled, particulary along the south and west faces. (Beacon 1999)

A rock-lined spillway and discharge channel has been installed in the extreme northeast corner of the main tailings impoundment to direct any excess accumulated rainwater to the adjacent drainage. Tailings area water quality is monitored every 90 days and is reported to be suitable for discharge under the facility's Washington State Water Discharge Permit or can be used for irrigation purposes.

A seepage pond is located adjacent to the tailings facility.

The open pit, located in the most southern portion of the area, is oblong in shape with an average width of 120 feet, an average length of 317 feet, and a maximum depth of 460 feet. The pit is flooded to an elevation of 3,510 feet or 170 feet above the current pit bottom. The rim of the open pit and portions of the top bench currently support vegetation. The water in the open pit is separated from a tributary to the Northeast Fork of Onion Creek by a narrow rock-filled berm. The water level in the open pit is static at 3,510 feet elevation and excess water seeps through the berm to the adjacent creek (PPE 3). (Beacon 1999)

The buildings on site include the process plant, crushing plant, mill building, mill shop, warehouse, change house, assay office, garage, scale house, core storage, switch building, pit shop, conveyor system, reagent and fuel storage areas, bunk house, and four residences. Other miscellaneous items include a 20 million gallon water tank, return water tank, power feeders, pump power line, T-6 tractor, car spotter, tailings pipe line, tailings flume, tailings dam, 60 million gallon water tank, 200 million gallon water tank, fire mains and hydrants, domestic water main, two pipe lines, three dams

and pipe lines, pit power lines and switchgear, pit water line, pit air line, mine shop equipment, and road equipment. (Beacon 1999)

Six areas of stained soil were noted on the property. The first area was near a liquid propane tank south of the mill building. The second area was near elevated transformers adjacent to the mill building. At this location the soil was stained orange and green. The third area was near an aboveground storage tank (AST) with secondary containment near the entrance to the mine/mill. The containment area was filled with water and smelled of diesel. No sheen was noted. The secondary containment had been breached. The fourth area was on a concrete pad with staged transformers and stained soil south of the liquid propane tank. The fifth area was near staged 55-gallon drums surrounded by stained soil west of the mine/mill buildings and south of the Roundup Powder Company abandoned building. The sixth area was near another AST area surrounded by stained soil located east of the shed and staged 55-gallon drums.

Several unnamed creeks were located adjacent to the property. One unnamed creek was located south of the mine pit water and could not be accessed due to safety concerns. A second unnamed creek was located at the southwest portion of the old tailings pile. Surface water runoff from this pile drains to this creek (PPE 4). A third unnamed creek was located on Boise Cascade Corp. property; no sample was collected due to lack of access. A fourth unnamed creek was located adjacent to the tailings pile near the entrance to the mine/mill. Surface water runoff from the tailings pile also drains to this creek at two locations (PPE 1 and PPE 2). Excess water from the on-site open pit seeps through the pit berm to an adjacent creek (PPE 3).

A number of public, private, and commercial interests access the mine/mill access road. Boise Cascade Forest District maintains an easement over the road to access their timber holdings. Washington Water Power maintains an easement over the road to access a substation located on the mine/mill property. There are residences near the road junction and the DNR uses the road for fire control. (Beacon 1999)

Access to the mine/mill is restricted by two locked gates. No logging or grazing was noted in the vicinity of the property.

6.12.5 Sampling Locations

Sample locations are depicted in Figures 6-12 through 6-14. Twelve waste rock samples (VSWP01SS through VSWP12SS) were collected from the waste rock pile. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were

collected to determine potential contamination associated with this source. The samples appeared to consist of tan/gray, fine sand with gravel and rocks. No odor or staining was noted during sample collection.

Twenty-one tailings samples (VSTP01SS through VSTP21SS) were collected from two tailings piles. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of dark gray/brown, fine, dry sand and tailings. No odor or staining was noted during sample collection. Samples VSTP01SS through VSTP09SS and VSTP21SS were collected from the tailings pile located near the entrance to the mine/mill. Samples VSTP10SS through VSTP20SS were collected from the old tailings pile located on the eastern portion of the mine/mill.

Seven surface soil samples (VSSS01SS through VSSS07SS) were collected from stained soil areas around the mine/mill property. The samples were collected from stained areas identified by the START-2. The samples were collected to determine potential contamination associated with these sources. Odor and staining was noted during sample collection.

One co-located surface water and sediment sample (VSMW01SW and VSMW01SD) was collected from the mine pit water. The sample was collected within the overland surface water drainage route identified by the START-2. The sample was collected to determine potential contamination associated with this source. The surface water sample was clear and blue-green in color. No odor or staining was noted during the surface water sample collection. The sediment sample appeared to consist of silty sand to fine gravel, gray to light brown in color, with a slight odor. No staining was noted during sediment sample collection.

One sediment sample (VSPP01SD) was collected at PPE 1 from the confluence of the tailings pile and the pond located near the entrance of the mine/mill.

One sediment sample (VSPP02SD) was collected at PPE 2 from the potential overland flow from the tailings pile to the unnamed creek located near the entrance of the mine/mill.

One sediment sample (VSPP03SD) was collected at PPE 3 from the northwest corner of the mine pit water area.

One sediment sample (VSPP04SD) was collected from PPE 4 near the southwest portion of the old tailings pile at the confluence with an unnamed creek.

6.12.6 Analytical Results

6.12.6.1 Surface Soil Sample Results

The START-2 collected a total of 38 surface soil samples for TAL metals analyses: twelve waste rock samples (VSWP01SS through VSWP12SS); twenty-one tailings samples (VSTP01SS through VSTP21SS); and seven surface soil samples (VSSS01SS through VSSS07SS) from areas of stained soil. Seven surface soil samples also were analyzed for pesticide/PCBs and SVOCs.

In waste rock samples, significant concentrations of cadmium ranged from 27.9 mg/kg to 234 mg/kg. Significant concentrations of lead ranged from 1,520 mg/kg to 76,500 mg/kg. Significant concentrations of mercury ranged from 0.26 mg/kg to 1.5 mg/kg. Significant concentrations of zinc ranged from 3,450 mg/kg to 20,600 mg/kg.

In tailings samples, a significant concentration of lead was detected at 4,710 mg/kg. A significant concentration of mercury was detected at 0.17 mg/kg. Significant concentrations of zinc ranged from 2,610 mg/kg to 5,870 mg/kg.

In samples collected from stained soil areas, significant concentrations of cadmium ranged from 24.7 mg/kg to 940mg/kg. Significant concentrations of copper ranged from 218 mg/kg to 461 mg/kg. Significant concentrations of lead ranged from 771 mg/kg to 181,000 mg/kg. Significant concentrations of mercury ranged from 0.15 mg/kg to 6.0 mg/kg. Significant concentrations of zinc ranged from 3,560 mg/kg to 431,000 mg/kg. Refer to Table 6-6 for complete data results.

6.12.6.2 Surface Water Sample Results

Analytes of concern that were in the surface water sample collected from the mine pit water (VSMW01SW) consist of zinc at an estimated concentration of 112 μg/L.

6.12.6.3 Sediment Sample Results

The START-2 collected five sediment samples for TAL metals analyses. Three sediment samples were also analyzed for pesticide/PCBs. No analytes were detected at significant concentrations in the sample from the mine pit. Lead was detected at an elevated concentration of 466 mg/kg and zinc was detected at an elevated concentration of 1,960 mg/kg in VSPP01SD (PPE 1). Cadmium was detected at an elevated concentration of 11.9 mg/kg and zinc was detected at an elevated concentration of 3,670 mg/kg in VSPP03SD (PPE 3). No analytes were detected at elevated concentrations in sediment samples VSPP02SD (PPE 3) or VSPP04SD (PPE 4). Refer to Table 6-7 for complete data results.

6.13 HOPE AND TWIN CABINS MINE

6.13.1 Mine Location

Latitude:	48° 53' 09.96"N
Longitude:	118° 01' 37.92"W
Legal Description:	Sections 7 and 18, Township 39N, Range 38E
CERCLIS ID:	WAN001002379
County:	Stevens
Contact:	United States Department of the Interior Bureau of Land Management Spokane District Office 1103 N. Fancher Spokane, Washington 99212-1275 (509) 536-1200

6.13.2 Historical Information and Mine Description/Features

The Hope and Twin Cabins Mine is a former copper, gold, and silver mine located in the Fifteen Mile Creek district, Washington. An estimated 100 tons of ore were produced. The ore deposit consists of pyrrhotite containing some chalcopyrite in a mineralized zone about seven feet wide and lying in the acidic dioritic dike rock. The claim is developed by two tunnels, each about 30 feet in length. In addition, there are several open cuts and shallow shafts (Weaver 1920). Historic ownership information from the time of patent to the present is unknown.

6.13.3 START-2 Mine Visit

On June 24, 2001, the START-2 visited the Hope and Twin Cabins Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 2 Phase 1, Page 13). The area consisted of a shaft and a waste rock pile. The shaft measured approximately 15 feet by 15 feet by 30 feet to water. The waste rock pile measured an estimated 20 feet by 35 feet by 4 feet deep (Appendix A, Photos 29-21 and 29-22). The START-2 did not observe any overland drainage routes from the waste rock pile to surface water. Access to the mine was unrestricted. No residents or potential receptors were observed on the property. No samples were collected at the Hope and Twin Cabins Mine.

6.14 ST. CRISPIN MINE

6.14.1 Mine Location

Latitude:	48° 56' 30.99"N
Longitude:	117° 47' 07.47"W
Legal Description:	Section 25, Township 40N, Range 39E
CERCLIS ID:	WAN001002398
County:	Stevens

6.14.2 Historical Information and Mine Description/Features

The St. Crispin Mine is a former copper, gold, lead, and silver mine situated on Sheep Creek, approximately one mile west of Northport, Washington. The formation exposed in the bed of Sheep Creek is a dark, carbonaceous argillite. A shaft was sunk in the creek to a depth of 16 feet on a mineralized zone in the argillite. Eight other similar mineralized zones are reported to occur to the southwest. Back from the creek a second shallow shaft was sunk and from it several drifts were driven (Weaver 1920). Historical ownership information from the time of patent to the present is unknown.

6.14.3 START-2 Mine Visit

On September 13, 2001, the START-2 attempted to locate the St. Crispin Mine. The START-2 followed an access road along Sheep Creek to a campground area at the end of the road. The START-2 continued on foot for approximately a quarter mile along Sheep Creek. No shafts were identified; however, they could have been submersed under water. The START-2 returned to the campground area to collect latitudinal and longitudinal coordinates. No samples were collected at the St. Crispin Mine because the mine was not located.

6.15 NORTHPORT MILL

6.15.1 Mill Location

Latitude:	48° 56' 31.08"N
Longitude:	117° 45' 15.66"W
Legal Description:	NE¼ NW¼ Section 29, Township 40N, Range 40E
CERCLIS ID:	WAN001002393
County:	Stevens

Contact: Dan Dumaine, General Manager
Mountain Minerals Northwest Company, Ltd.
(a division of Highwood Resources Ltd.)
3403 - 6th Avenue South
Lethbridge, Alberta
Canada T1J 1GC

6.15.2 Historical Information and Mill Description/Features

The Northport Mill is a former rock ore mill situated adjacent to Washington State Highway 25, in Northport, Washington. The property was listed under Kendrick Mercantile Company (1925), Mines Management, Inc. (1951), Idaho Continental Mines, Inc. (1964), Silver Crown Mining Company, Inc. (1970), Tri H Mining Company, Inc. (1979), Crown-S, Inc. (1981), Northport Mill (1985), Matovich Mining Industries, Ltd. (1990), and Mountain Minerals Northwest Company, Ltd. (1992). Mountain Minerals Northwest Company, Ltd., is a division of Highwood Resources Ltd., the current property owner. The property occupies approximately 16 acres. (Pepper 2001)

Highwood Resources, Ltd., operated a rock ore mill at the site from the late 1980s to early 1990s. The plant feed was impure barite rock mined in the vicinity. The ore was processed for barium sulfate. The rock ore was crushed then ground, with barite separated using floatation processes. Various chemicals and reagents were added to cause the barite to float and the calcium carbonate and silica to settle during floatation. The material that did not float was pumped to a tailings pond by overhead piping. The tailings pond is lined with a high-density polyethelene (HDPE) 80 millimeters (Pepper 2001). The lined tailings pond has a waste water re-circulation system of approximately 10,000 cubic feet of volume (Ecology 1990). The dried product was pneumatically conveyed (blown by dry air) through an underground pipeline to the product storage silo (Pepper 2001).

In August 2002, Highwood Resources, Ltd., the current property owner, conducted the disposal of laboratory chemicals and drummed waste/tailings present on the property. Disposal activities were conducted by Spencer Environmental, Portland, Oregon. An inventory of chemicals and wastes/tailings that were removed from the site was provided to the EPA. As of September 2002, twenty drums of mill reagents remain on site. All twenty drums have been overpacked. The property owner is exploring opportunities for use of the reagents elsewhere and continues to address the environmental issues with this site under the direction of Ecology. (Dumaine 2002).

6.15.3 EPA Visit

On November 28, 2001, EPA personnel visited the Northport Mill site and conducted a visual inspection of the property and surrounding area (Figure 6-15; Appendix B, EPA Logbook, Pages 1 through 5). The property is fenced and access is restricted by a locked gate. Representatives of Highwood Resources Ltd. (Dan Dumaine and Terri Pepper) and representatives of the Colville Confederated Tribes (Patti Stone and Don Hurst) were present during the visit. The area consisted of two ASTs, a product storage silo, a conveyor plant, a tailings pond, an ore rock pile, a process building with chemical feeders and floatation cells, a mill building with an adjoining thickener room, a dryer, an assay laboratory, an office and a "portable-type" building used for sample preparation (Appendix A, Photos 47-1 through 47-21). The capacity of each of the ASTs was estimated at 8,000 to 10,000 gallons (Appendix A, Photo 47-4). The property representatives were not knowledgeable of what the tanks were used for and believed they were empty. Three barrels observed on the property contained soil-like material (Appendix A, Photo 47-6). According to Dan Dumaine, he sampled the barrels in the summer of 2001. At the time of the visit, he had not received the sample results. A tailings pond was also observed on the property. Access to the tailings pond is restricted by a fence (Appendix A, Photo 47-11). According to Terri Pepper, the pond is lined with an HDPE liner. The volume of solid material observed at the bottom of the tailings pond was estimated to be 150 feet by 80 feet by 2 feet deep. Mr. Dumaine mentioned that he also collected samples from the tailings pond in the summer of 2001. At the time of the visit, he had not received the sample results. Inside the building that housed the thickener room, numerous drums and containers were observed. Some labels indicated contents including fatty acids, promoters, frothers, caustic soda, potassium chloride, ammonia acetate, and floatation agents (Appendix A, Photo 47-16). Inside the assay laboratory, numerous sample jars and containers were observed with labels indicating oxidizers, hydrochloric acid, amberine, reagents, and others (Appendix A, Photos 47-19 and 47-20). Sheep Creek is located approximately 150 feet from the mill. No overland drainage routes from the tailings pond to Sheep Creek were observed. No residents or potential receptors were observed on the property. No samples were collected at the Northport Mill.

During the visit, Mr. Pepper and Mr. Dumaine briefly discussed plans by the property owner to reclaim the site. Some of the planned activities include the proper abandonment of the tailings pond, dismantling and removing some of the equipment found throughout the property, and the proper removal/disposition of chemical substances on the property.

6.16 LEROI/NORTHPORT SMELTER

6.16.1 Smelter Location

Latitude:	48° 55' 23.16"N
Longitude:	117° 46' 02.28"W
Legal Description:	Section 33, Township 40N, Range 40E
CERCLIS ID:	WAD988507323
County:	Stevens
Smelter Owner/Contact:	Murray McConnachie K.E.S. Contracting Ltd. 1252 Bay Avenue Trail, British Columbia Canada V1R 4A6 (250) 368-5222

6.16.2 Historical Information

The LeRoi/Northport Smelter is a former smelter located northeast of the town center of Northport, Washington, along Highway 25. The city of Northport is located along the east bank of the Columbia River approximately 7 miles south of the U.S.-Canada border in Stevens County. (URS 1993)

The Northport-Waneta Road borders the LeRoi/Northport Smelter site along the south and east. Highway 25 defines the western boundary of the site. The Burlington Northern Sante Fe Railway (formerly the Spokane Falls and Northern Railroad) runs parallel to the Columbia River and designates the northern site boundary. The Columbia River is located approximately 200 feet north of the LeRoi/Northport Smelter property. Properties west of the site are residential homes. Smelter Hill is located directly east of the site and Silver Crown Mountain is south of the site. A city park with an area of approximately 10 acres is located northwest of the site along the Columbia River, approximately 50 feet from the site. (URS 1993)

The property encompasses approximately 32 acres and is accessed from the Northport-Waneta Road via Highway 25 (SAIC 1997). The ground surface generally slopes toward the Columbia River in elevation from about 1,360 feet above msl at the site to 1,290 feet above msl, the normal pool elevation for the Columbia River (SAIC 1997). The former smelter buildings, which are no longer standing, included the furnace building, the roaster building, and the crusher and ore building (Heritage 1981).

Beginning in 1897, the smelter refined copper, lead, and silver ores from mines in northeast Washington, as well as copper ore from British Columbia, Canada (DHHS 1999). In 1901, the LeRoi Company smelting operations reorganized as the Northport Smelting and Refining Company

(URS 1993). By 1908, it was one of the largest smelters on the West Coast, processing 500 tons of ore per day (URS 1993). In 1909, the smelter closed because of competition from another smelter located in Trail, British Columbia (URS 1993). During World War I, the government demand for lead encouraged the Northport Mining and Smelting Company to reopen and process the lead ores that had been discovered at Leadpoint, Washington, approximately 9 miles east of Northport (URS 1993). In September 1914, Jerome Day purchased the smelter and renovated it to accommodate lead ores (URS 1993). The government curtailed its lead purchases in 1921, and subsequently, the smelter closed and was dismantled in 1922, after 24 years of sporadic operation (DHHS 1999). After the smelter closed, the American Smelting and Refining Company purchased the site. The company removed the smelting equipment and transported it to a smelter elsewhere (URS 1993). Between 1922 and 1953, the inactive site was purchased by J.D. Harms. Between 1953 and 1969, a lumber mill went into operation on the property (URS 1993). In 1975, Cecil Frazier purchased the property and operated the lumber mill (URS 1993). In 1985, Steve Frazier purchased the property and business and operated the mill under the name SSF Building Materials until the property was sold to the current owner in 2001.

6.16.3 Smelter Description/Features

Refer to Appendix F for historical site maps. The smelter, Breen Copper Smelter, operated from 1896 until 1901. The initial smelter operations were rudimentary and involved releases of large quantities of pollutants. The tellurium ore was more difficult to process; however, it contained high enough amounts of copper and gold to make the process worthwhile. Tellurium is naturally occurring and belongs to the same family of elements as selenium and sulfur. Because of the tellurium, the ore had to be burned or heated to release the minerals. The burning released high amounts of sulfur dioxide into the air. (URS 1993)

The ore was processed by heap roasting, which involves open burning of the raw ore prior to placing it in a mineral filtration furnace. The heap roasting process produced a disagreeable sulfur odor; the local citizens termed the burning piles "stink piles." Local farmers believed that the heap roasting process was poisoning the nearby soils. (URS 1993)

A slag brick platform was used for the initial burning, or heap roasting, of the ore. The ore was piled on the brick platform to an approximate depth of 4 feet. Cord wood was then stacked on top of the ore pile and ignited. The tellurium in the ore would be vaporized during this process, thus freeing the gold and copper for smelting. The location of this brick platform is where the Northport city wells are

currently located. Refer to Appendix G for Northport city wells analytical results collected by Stevens County. (URS 1993)

The burned ore was then placed into the furnace where the separation of the minerals took place. Limerock was used during the flux process. Tap holes were located at different levels in the furnace to filter the minerals and rocks (including copper, iron and slag rock). The tap hole for the iron and slag rock was located higher than the copper tap hole. The iron and slag rock collected from this filtration was considered waste. The copper mineral was collected and loaded into box cars for shipment to a copper refinery. (URS 1993)

Because gold is heavy, it settled to the bottom of the furnace and formed a gold matte. After the gold accumulated to a thickness of 14 inches, the furnace was shut down. Once the furnace and materials cooled, the sides of the furnace were removed to gain access to the gold matte, which was then pried from the furnace and cut into pieces before being loaded into box cars and shipped to a gold refinery. (URS 1993)

The lead smelter used a process more sophisticated than that used in the copper and gold process of the previous decade, although a large quantity of sulfur (approximately 30 tons per day) was still being discharged into the air. Filters for the smokestacks were added later. (URS 1993)

In the days of the copper and gold smelter, two large steam engines, fueled by coal, provided power. Both flywheel steam engines were hooked onto one long line shaft. On the other end of the line shaft, a dynamo produced 10,000 volts of electricity prior to being boosted by a generator that provided up to 100,000 volts. Once the smelter reopened to process lead ores, a high-voltage line from Canada supplied the power, and the steam plant was shut down. (URS 1993)

The abandoned and dismantled smelter remained inactive after closure in 1922. The town of Northport demolished the buildings for the usable brick. One building retained enough walls to provide an ice-skating rink during the winter. The railroad was abandoned and the tracks salvaged. (URS 1993)

The smelting operations produced a tailings waste referred to as slag. The slag was usually placed in piles near the smelter for temporary or permanent disposal. Historical photographs indicate possible tailings piles located on the northeast portion of the property. The COCs in the slag are arsenic, copper, lead, mercury, and zinc.

SSF Building Materials, when operational, was one of the largest businesses in Northport, employing from 18 to 25 people. The entire site was used for the mill. The southern half of the property maintained the main lumber operations. The northern half, which contained the smelter remnants, was used to store lumber products and old metal parts such as cars, piping, and roofing. The lumber mill

processed mostly cedar wood from rough-dimension lumber into exterior siding and exterior paneling. The mill process included cutting the wood, drying the cut wood, and shipping it. Mill operations were run on propane. All water used for the mill operations was obtained from the city water supply. The mill did not discharge to or collect water from the Columbia River. (URS 1993)

The scrap wood materials, including sawdust, were sent to Kettle Falls for the Kettle Falls Water Power Company, which burned the material for energy. Originally, the lumber mill burned the scrap wood on site inside a wigwam burner. No wood treatment or chemical use is reported in the past mill operations. (URS 1993)

Environmental concerns in the Northport area have been investigated since 1925. In 1925, the area became involved in the first international case concerning air pollution. The Washington State Department of Health and Ecology conducted an investigation of the furan and dioxin reported in the Columbia River. A PA and SI was conducted by the EPA in 1993. The site inspection stated antimony, arsenic, copper, and lead were potentially deposited on site as a result of the former smelter operations, as they were detected on site at significant concentrations. (URS 1993)

Ecology sampled soil and slag piles at the LeRoi/Northport Smelter in 1997. Sample results showed levels of metals two or three orders of magnitude above background. Concentrations of up to 1,010 mg/kg arsenic; 337 mg/kg cadmium; 33,400 mg/kg copper; 20,200 mg/kg lead; and 1,750 mg/kg zinc were detected (Gregory 2000a). Ecology planned to conduct a groundwater investigation at the site; however, due to availability of resources, this has not been pursued (Gregory 2000b).

6.16.4 START-2 Smelter Visit

On June 29 and September 13, 2001, the START-2 visited the LeRoi/Northport Smelter and conducted a visual inspection of the property and surrounding area (Figure 6-16; Appendix A, Photos 33-1 through 34-4, 42-1 through 42-8, 46-4 through 46-10; Appendix B, Boat Team, Pages 13 through 17; Team 1 Phase 2, Page 15; Team 2 Phase 2, Pages 20 through 22). The START-2 and EPA personnel observed areas of black glassy sand-like material along the bank of the Columbia River. A public boat launch is located directly over this material. The START-2 characterized the material as slag. Sediment samples were collected at the Columbia River from locations near the boat launch and sand bar/beach area.

On September 13, 2001, the START-2, the EPA TM, Don Hurst of Fulcrum Environmental, and the property owner conducted a walk-through of the property. An area where slag bricks had been deposited was observed south of the former smelter operations. A potential former tailings pile was

observed west of the slag brick area. City water wells were observed on the former LeRoi/Northport Smelter property. The START-2 collected sediment and soil samples from locations on the property. Water samples were not collected from the City supply wells because local officials did not grant EPA permission to access the wells to collect samples.

6.16.5 Sampling Locations

Sample locations are depicted in Figures 6-17 and 6-18. Three surface soil samples (NSSL01SS through NSSL03SS) were collected west of the former tailings area underneath the slag bricks. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of very fine to medium grained sand with sandy reddish slag and yellowish stain. No odor was noted during sample collection.

Nine sediment samples (NSSL01SD through NSSL09SD) were collected from slag areas along the Columbia River adjacent to the smelter (PPE 3). The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source in the Columbia River. The samples appeared to consist of dark brown to black medium sand. No odor or staining was noted during sample collection.

Sediment sample NSPP01SD was collected at the confluence of the former tailings pile and the ditch (PPE 1). The sample appeared to consist of saturated, light brown silt. No odor or staining was noted during sample collection

One sediment sample (NSDT01SD) was collected in the western portion of a recently constructed ditch where the former tailings pile potentially was located (PPE 2). The sample was collected within the overland surface water drainage routes identified by the START-2. The sample was collected to determine whether potential contamination associated with the tailings pile is migrating to surface water. The sample appeared to consist of light brown sand fine to medium coarse grained. No odor or staining was noted during sample collection.

6.16.6 Analytical Results

6.16.6.1 Surface Soil Sample Results

The START-2 collected three surface soil samples from tailings for TAL metals analyses. Significant concentrations of arsenic ranged from 209 mg/kg to 297 mg/kg. Significant concentrations of cadmium ranged from 26.9 mg/kg to 105 mg/kg. Significant concentrations of copper ranged from

2,430 mg/kg to 14,700 mg/kg. Significant concentrations of lead ranged from 2,600 mg/kg to 10,500 mg/kg. Significant concentrations of mercury ranged from 0.28 mg/kg to 0.40 mg/kg. Significant concentrations of zinc ranged from 978 mg/kg to 5,420 mg/kg. Refer to Table 6-8 for complete data results.

6.16.6.2 Sediment Sample Results

The START-2 collected 9 sediment samples from slag areas along the Columbia River (PPE 3) for TAL metals analyses. One sediment sample was also analyzed for pesticide/PCBs and TOC. Significant/elevated concentrations of arsenic ranged from 7.5 mg/kg to 41.4 mg/kg. Significant/elevated concentrations of cadmium ranged from 1.5 mg/kg to 4.9 mg/kg. Significant/elevated concentrations of copper ranged from an estimated concentration of 238 mg/kg to an estimated concentration of 2,960 mg/kg. Significant/elevated concentrations of lead ranged from 230 mg/kg to 845 mg/kg. Mercury was detected at a significant/elevated concentration of 0.29 mg/kg. Significant/elevated concentrations of zinc ranged from 1,520 mg/kg to 16,900 mg/kg. Refer to Table 6-9 for complete data results.

The START-2 collected two sediment samples from on-site ditches potentially adjacent to former tailings piles (PPE 1 and PPE 2) for TAL metals analyses. Arsenic was detected at elevated concentrations ranging from 17.6 mg/kg to 39.9 mg/kg. Cadmium was detected at elevated concentrations ranging from 2.6 mg/kg to 5.9 mg/kg. Copper was detected at elevated concentrations ranging from 124 mg/kg to 1,090 mg/kg. Lead was detected at elevated concentrations ranging from 87.1 mg/kg to 887 mg/kg. Zinc was detected at elevated concentrations ranging from 92.2 mg/kg to 223 mg/kg. Refer to Table 6-10 for complete data results.

6.17 BLACK ROCK MINE/MILL

6.17.1 Mine/Mill Location

Latitude:	48° 52' 13.45"N
Longitude:	117° 42' 22.12"W
Legal Description:	Section 24, Township 39N, Range 40E
CERCLIS ID:	WAN001002369
County:	Stevens

Contact: Mick Vaagen and Trent Lang
Vaagen Brothers Lumber
565 W 5th
Colville, Washington 99114
(509) 684-5071

6.17.2 Historical Information

The Black Rock Mine/Mill is a former lead and zinc mine/mill located in the Northport mining district, Washington (Derkey et al. 1990). The mine produced six carloads of ore prior to 1920 and 5,280 tons of ore between 1922 and 1924 (Derkey et al. 1990). Total production was 140,856 pounds of lead; 7,903,447 pounds of zinc, and 377 ounces of silver (Derkey et al. 1990). A new mill was built in 1923 (Battien 1998). The mine was still producing in 1943, but no production results are available (Battien 1998). By 1964 the mine/mill was under option to American Zinc (Battien 1998). Historical ownership from 1964 to the present is unknown.

6.17.3 Mine/Mill Description/Features

The Black Rock Mine/Mill is situated on the east side of Deep Creek, 6 miles northeast of Northport, Washington. The property consists of seven claims and seven acres of deeded land. Ore occurs disseminated along bedding planes in white, nonsilicified dolomitic marble. Two ore bodies, indicated by drilling, appear to have moderate ore reserves with an average grade of 8% zinc. The property is developed by a 250-foot incline, 260-foot adit, and considerable drifting and stoping. (Huntting 1956)

6.17.4 START-2 Mine/Mill Visit

On June 19, 2001, the START-2 visited the Black Rock Mine/Mill and conducted a visual inspection of the property and the surrounding area (Figure 6-19; Appendix A, Photos 15-21 through 16-13; Appendix B, Team 1 Phase 1, Pages 10 through 12). The mine/mill area consisted of a waste rock pile measuring 180 feet by 120 feet by 30 feet deep located east and adjacent to Northport/Alladin Road. A shaft was identified adjacent to the waste rock pile on the southern portion measuring 10 feet by 5 feet by unknown depth. No water was flowing from the shaft. The remnants of a mill building and two sorting bins were located. The collapsed mill building measured 15 feet by 20 feet and was located adjacent to the waste rock pile on the southern portion and west of the shaft. One sorting bin was located within the waste rock pile and measured 10 feet by 10 feet. The second sorting bin or potential collapsed

building was located east of the waste rock pile and measured 10 feet by 10 feet. A residence was located 20 feet west of Northport/Alladin Road. Farm buildings were located 40 feet west of Northport/Alladin Road. No PPEs were identified by the START-2. Access to the mine/mill is unrestricted and the START-2 noted evidence of people removing waste rock from the property. No logging or grazing was noted in the mine/mill area.

6.17.5 Sample Locations

Sample locations are depicted in Figure 6-20. Three waste rock samples (BRWP01SS through BRWP03SS) were collected from the waste rock pile. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of light brown medium sand with gravel. No odor or staining was noted during the sample collection.

Two surface soil samples (BRMS01SS and BRMS02SS) were collected near the collapsed mill building. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of light brown loamy sand. No odor or staining was noted during sample collection.

6.17.6 Analytical Results

6.17.6.1 Surface Soil Sample Results

The START-2 collected five surface soil samples for TAL metals analyses: three waste rock samples (BRWP01SS through BRWP03SS) and two surface soil samples (BRMS01SS and BRMS02SS) near the collapsed mill building.

In waste rock samples, significant concentrations of cadmium ranged from 688 mg/kg to 1,090 mg/kg. Significant concentrations of copper ranged from 228 mg/kg to 398 mg/kg. Significant concentrations of lead ranged from 555 mg/kg to 1,040 mg/kg. Significant concentrations of mercury ranged from 10 mg/kg to 26.4 mg/kg. Significant concentrations of zinc ranged from 141,000 mg/kg to 207,000 mg/kg.

In soil samples collected near the collapsed mill building, significant concentrations of cadmium ranged from 27.3 mg/kg to 1,630 mg/kg. A significant concentration of copper was detected at 192 mg/kg. A significant concentration of lead was detected at 1,800 mg/kg. A significant concentration of

mercury was detected at 0.19 mg/kg. Significant concentrations of zinc ranged from 7,500 mg/kg to 402,000 mg/kg. Refer to Table 6-11 for complete data results.

6.18 GREAT WESTERN MINE

6.18.1 Mine Location

Latitude:	48° 52' 06.24"N
Longitude:	117° 41' 48.48"W
Legal Description:	SE¼ Section 24, Township 39N, Range 40E
CERCLIS ID:	WAN001002377
County:	Stevens
Contact:	Mick Vaagen and Trent Lang Vaagen Brothers Lumber 565 W 5th Colville, Washington 99114 (509) 684-5071

6.18.2 Historical Information

The Great Western Mine is a former lead and zinc mine located six miles from Northport, Washington, one and one half miles off Deep Creek Road, near Black Rock and Last Chance mines/mills (Derkey et al. 1990; Battien 1998). The mine produced $40,000 prior to 1917 (Derkey et al. 1990). Total production was 434,072 pounds of lead, 125 ounces of silver, 936,524 pounds of zinc (Derkey et al. 1990). In 1943, the mine was owned by L.J. Magney (Battien 1998). Historical ownership information from the time reported to the present is unknown.

6.18.3 Mine Description/Features

The Great Western Mine is in the middle dolomite unit of the Metaline Formation (Derkey et al. 1990). The mine consists of two claims known as Great Western and Empire. The ores are chiefly carbonate of zinc with some carbonate of lead, together with a subordinate amount of galena and sphalerite (Weaver 1920). The known length of the mineralized zone is 1,000 feet. The mine is developed by 1,000 feet of adits and about 200 feet in 3 shafts. (Huntting 1956)

6.18.4 START-2 Mine Visit

On June 21, 2001, the START-2 visited the Great Western Mine and conducted a visual inspection of the property and the surrounding area (Figure 6-21; Appendix A, Photos 17-23 through 18-13; Appendix B, Team 1 Phase 1, Pages 15 through 17). The mine area consisted of three waste rock piles, three shafts or shaft systems, and two adits. Waste rock pile 1 was located adjacent to shaft 1 system and measured 18 feet by 30 feet by 3 feet deep. Shaft 1 system comprised 3 shafts within 30 feet of each other. No discharge was noted by the START-2. West of shaft 1 system and waste rock pile 1 was shaft 2 which measured 15 feet across. No waste rock pile was associated with this shaft and no discharge was noted by the START-2. Continuing west, waste rock pile 2 and shaft 3 were located. Waste rock pile 2 measured 18 feet by 30 feet by 3 feet deep. Approximately 120 feet west of shaft 3 and waste rock pile 2 was adit 1 measuring 10 feet by 5 feet by unknown depth. Adit 1 was located on the east side of Knudson Road; no drainage was noted by the START-2. Waste rock pile 3 was located on the west side of the Knudson Road and measured 90 feet by 90 feet by 6 feet deep. A collapsed adit house and adit 2 were located adjacent to waste rock pile 3 on the northern side. No drainage from this adit was noted by the START-2. No PPEs were identified by the START-2. Access to the mine is unrestricted. The START-2 noted evidence of grazing and logging within 0.25 mile of the mine.

6.18.5 Sampling Locations

Sample locations are depicted in Figure 6-22. Two waste rock samples (GWWP01SS and GWWP02SS) were collected from the waste rock pile south of Knudson Road. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of brown coarse sand and gravel. No odor or staining was noted during the sample collection.

6.18.6 Analytical Results

6.18.6.1 Surface Soil Sample Results

The START-2 collected two surface soil samples from waste rock for TAL metals analyses. Significant concentrations of cadmium ranged from 166 mg/kg to 490 mg/kg. Significant concentrations of lead ranged from 6,200 mg/kg to 24,000 mg/kg. Significant concentrations of mercury ranged from 2.5 mg/kg to 4.3 mg/kg. Significant concentrations of zinc ranged from 52,700 mg/kg to 118,000 mg/kg. Refer to Table 6-12 for complete data results.

6.19 LAST CHANCE MINE/MILL

6.19.1 Mine/Mill Location

Latitude:	48° 51' 59.40"N
Longitude:	117° 41' 56.40"W
Legal Description:	SW¼ SE¼ Section 24, Township 39N, Range 40E
CERCLIS ID:	WASFN1002162
County:	Stevens
Contact:	Mick Vaagen and Trent Lang Vaagen Brothers Lumber 565 W 5th Colville, Washington 99114 (509) 684-5071

6.19.2 Historical Information

The Last Chance Mine/Mill is a former lead, silver, and zinc mine/mill located 5 miles southeast of Northport, Washington (Derkey et al. 1990; E & E 2000). From Northport, the mine/mill is accessed via Colville-Aladdin Northport Road, which runs on the west side of the property (E & E 2000). The mine/mill is reported to have produced $600,000 prior to 1937 (Derkey et al. 1990). One carload of ore was shipped in 1938 and small amounts of concentrate were shipped between 1947 and 1949 (Derkey et al. 1990). Between 1904 and 1954, the mine/mill produced 5,937,708 pounds of lead; 18,567 pounds of silver; and 110,110 pounds of zinc (Derkey et al. 1990). The construction of the floatation mill is reported to have begun in 1940 (E & E 2000). Juniper Lead Company owned the mine/mill from 1907 to 1926 (E & E 2000). Reports indicate that in 1938 the property was owned by Mrs. A. Baker, the widow of the previous owner Al Baker (E & E 2000). Last Chance Consolidated Mines, Inc., was listed as the owner since 1948 (Battien 1998). Historical ownership information from 1948 to the present is unknown.

6.19.3 Mine/Mill Description/Features

The Last Chance Mine/Mill consists of three patented claims and a mill site (Huntting 1956). The mine is in the middle dolomite of the Metaline Formation (Mills 1977). Ore shoots occur in a mineralized shear zone in dolomite, especially at fracture intersections. The zone is as much as 5 feet wide (Huntting 1956). Two distinct veins are remarkably uniform in strike and dip over a combined strike length of 650 feet and a dip length of at least 500 feet. The veins are emplaced along faults and

appear parallel or sub-parallel to bedding (Mills 1977). The property is developed by four adits, more than 1,000 feet in open cuts and trenches, and a 60-ton gravity-floatation mill (Huntting 1956).

6.19.4 START-2 Mine/Mill Visit

On June 20, 2001, the START-2 visited the Last Chance Mine/Mill and conducted a visual inspection of the property and surrounding area (Figure 6-23; Appendix A, Photos 16-14 through 17-22; Appendix B, Team 1 Phase 1, Pages 13 and 14). The mine/mill area consisted of two waste rock piles. The larger pile was located north of the north shaft and measured 1,320 feet by 75 feet by 2 feet deep. The smaller waste rock pile was located west of the north shaft and measured 75 feet by 45 feet by unknown depth. A tailings pile surrounding a former house or office and mill building was located west of the waste rock piles and measured 600 feet by 105 feet by 3 feet deep. East of the waste rock piles and the abandoned road the START-2 located a north and south shaft and an adit upgradient from the north shaft. A seep was located near the mouth of the south shaft which flows into the unnamed creek. Further east of the shafts, an unnamed creek was documented. The shaft discharge flowed into the unnamed creek (PPE 1) and continued west past the waste rock piles, through the tailings pile (PPE 2) and infiltrated the ground prior to reaching the Colville-Alladin Northport Road. South of the point of infiltration, a drainage ditch and culvert were observed. The potential flow from the culvert travels by sheet flow into Deep Creek. Access to the mine/mill is unrestricted. No logging or grazing was noted in the mine/mill area.

6.19.5 Sampling Locations

Sample locations are depicted in Figure 6-24. Three waste rock samples (LCWP01SS through LCWP03SS) were collected from the larger waste rock pile located north of the north shaft. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of dry, brown, fine sand/silt. No odor or staining was noted during sample collection.

Three tailings samples (LCTP01SS through LCTP03SS) were collected from the tailings pile located near the former mill building. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of brown-orange fine sand/silt. No odor was noted during sample collection.

Three surface soil samples (LCMS01SS through LCMS03SS) were collected from the former mill building area. The samples appeared to consist of medium brown, fine sand with gravel. No odor was noted during sample collection.

One surface water sample was collected from the discharge of water originating at the shaft (LCAD01SW). The sample was collected within the overland surface water drainage route identified by the START-2. The sample was collected to determine potential contamination associated with this source. The sample was clear and no odor or staining was noted during sample collection.

Sediment sample LCPP01SD was collected at the confluence of the adit discharge and the unnamed creek (PPE 1). The sample appeared to consist of gray-brown-black medium sand with gravel. The sample was wet with an organic odor. No staining was noted during sample collection.

Sediment sample LCPP02SD was collected at the confluence of the tailings and the unnamed creek (PPE 2). The sample appeared to consist of black-brown medium sand/silt. The sample was wet with no odor. No staining was noted during sample collection.

6.19.6 Analytical Results

6.19.6.1 Surface Soil Sample Results

The START-2 collected nine surface soil samples for TAL metals analyses: three waste rock samples (LCWP01SS through LCWP03SS); three tailings samples (LCTP01SS through LCTP03SS); and three surface soil samples from the former mill building area (LCMS01SS through LCMS03SS).

In waste rock samples, significant concentrations of cadmium ranged from 285 mg/kg to 349 mg/kg. Significant concentrations of lead ranged from 113,000 mg/kg to 170,000 mg/kg. Significant concentrations of mercury ranged from 1.5 mg/kg to 2.7 mg/kg. Significant concentrations of zinc ranged from 67,700 mg/kg to 89,800 mg/kg.

In tailings samples, significant concentrations of cadmium ranged from 269 mg/kg to 518 mg/kg. Significant concentrations of lead ranged from 72,900 mg/kg to 110,000 mg/kg. Significant concentrations of mercury ranged from 1.3 mg/kg to 2.3 mg/kg. Significant concentrations of zinc ranged from 63,900 mg/kg to 112,000 mg/kg.

In soils samples collected from the former mill building area, significant concentrations of cadmium ranged from 136 mg/kg to 471 mg/kg. Copper was detected at a significant concentration of 2,790 mg/kg. Significant concentrations of lead ranged from 18,000 mg/kg to 86,200 mg/kg. Significant concentrations of mercury ranged from 1.3 mg/kg to 2.6 mg/kg. Significant concentrations of zinc ranged from 36,900 mg/kg to 107,000 mg/kg. Refer to Table 6-13 for complete data results.

6.19.6.2 Surface Water Sample Results

The surface water sample (LCAD01SW) collected at the shaft contained zinc at an estimated concentration of 459 μg/L.

6.19.6.3 Sediment Sample Results

The START-2 collected two sediment samples at PPEs to the on-site unnamed creek for TAL metals analyses. Cadmium was detected at a elevated concentration of 56.9 mg/kg. Elevated concentrations of lead ranged from 385 mg/kg to 14,600 mg/kg. Elevated concentrations of mercury ranged from 0.46 mg/kg to 1.2 mg/kg. Elevated concentrations of zinc ranged from 1,100 mg/kg to 13,400 mg/kg. Refer to Table 6-14 for complete data results.

6.20 DEEP CREEK MINE

6.20.1 Mine Location

Latitude:	48° 51' 48.96"N
Longitude:	117° 42' 54.36"W
Legal Description:	N½ NE¼ Section 26, Township 39N, Range 40E
CERCLIS ID:	WASFN1002161
County:	Stevens
Contact:	Terry Richmond Richmond Family Trust 448 North Walnut Colville, Washington 99114 (509) 684-3033

6.20.2 Historical Information

The Deep Creek Mine is a former lead, silver, and zinc mine located west of Deep Creek and approximately 7 miles south of Northport, Washington (Derkey et al. 1990, E & E 2000). From Northport the property is accessed via the Colville-Alladin Northport Road, which runs on the east side of the property (E & E 2000). The mine is reported to have produced from 1944 to 1955 (Derkey et al. 1990). Previous owners include the Northport Mining Company (1919-1921); Anaconda Copper Mining Company (1926-1941); Western Knapp Engineering Company (1941-1944); Jamison-Higginbotham Partnership (1944-1947); Goldfields Consolidated Mines (1947-1964); American Zinc Company (1964-1971); Columbia Resources, Inc. (1971-1979); and Great Basins Petroleum, Inc., from 1979 to the

current owner, the Richmond Family Trust (E & E 2000). There are no records available after 1979 with regards to ownership changes, and no information is available regarding other periods of ownership.

6.20.3 Mine Description/Features

The Deep Creek Mine is located approximately 100 yards from the west bank of Deep Creek. Mineralization occurs in the Metaline Formation (Derkey et al. 1990). The mine was operated from approximately 1944 to 1956, when the mine was shut down (E & E 2000). The maximum depth of development was 850 feet bgs. According to tabulations in 1958, the following quantities of metals were obtained from a total ore production of 763,307 tons: 24,000 pounds of copper; 69 ounces of gold; 15,000,000 pounds of lead; 36,000 ounces of silver; and 66,000,000 pounds of zinc (E & E 2000). The mine was closed in 1956 due to a combination of factors including a shaft fire, rising mining costs, and declining metal prices (E & E 2000). Following the closure, the headframe, hoisting, pumping, and other machinery were removed, and the mine was allowed to flood to within several feet of the shaft collar. (E & E 2000)

6.20.4 START-2 Mine Visit

On June 20, 2001, the START-2 visited the Deep Creek Mine and conducted a visual inspection of the property and surrounding area (Figure 6-25; Appendix A, Photos 21-21 through 24-8; Appendix B, Team 2 Phase 1, Pages 6 and 7). The mine area consisted of four waste rock piles. Waste rock pile 1 located adjacent to Deep Creek measured 20 feet by 20 feet by 5 feet deep. There could be potential overland flow from waste rock pile 1 to Deep Creek (PPE 1). The flow of Deep Creek was estimated by the START-2 at 100 cfs. Waste rock pile 2 located adjacent to the main road measured 60 feet by 20 feet by 10 feet deep. Waste rock pile 3 located west of the pad with power tower and fence measured 100 feet by 30 feet by 10 feet deep. Waste rock pile 4 located near an adit on the south end of the property measured 40 feet by 20 feet by 5 feet deep. The roads on the mine property were comprised of waste rock. The entrance road measured 700 feet by 20 feet by 2 feet deep. The road heading south to the adit measured 400 feet by 15 feet by 2 feet deep and also consisted of tailings. Tailings were found scattered throughout the mine area. Concentrated areas were located in two on-site wet areas (one on the south end of the property near the adit measuring 15 feet by 15 feet and one south of the main entrance road measuring 30 feet by 30 feet) and north and west of waste rock pile 2 adjacent to the entrance road. A swampy area was located south of the gated entrance and measured 150 feet by 100 feet. There could be potential flow from this swampy area to Deep Creek (PPE 2). The pad with power tower and fence

located between the two wet areas measured 25 feet by 40 feet. A garbage and debris pile was located adjacent to the main road and measured 50 feet by 20 feet by 5 feet deep. West of the garbage and debris pile was an assay building measuring 20 feet by 20 feet. Further west and north four buildings were identified. Building 1 measured 50 feet by 40 feet and contained a winch and four small transformers. Building 2 measured 100 feet by 45 feet and contained two small transformers, motor and pumps, and a foundation. Building 3 measured 40 feet by 40 feet. Building 4 measured 30 feet by 30 feet. Other features on the south end of the property include a concrete pad, a shaft, and a pond. The concrete pad measured 15 feet by 20 feet. The adit in this area measured 4 feet by 3 feet by unknown depth. The adit was not flowing; however, standing water was present. The shaft measured 5 feet by 5 feet by approximately 800 feet deep. The pond measured 20 feet by 20 feet by 5 feet deep. A locked gate was present at the mine; however, one could cross the creek to gain access to the property. A residence was located to the east of the mine and outside of the gated area. No logging or livestock grazing was noted in the vicinity.

6.20.5 Sampling Locations

Sample locations are depicted in Figure 6-26. One waste rock sample (DCWP01SS) was collected from waste rock pile 1 located adjacent to Deep Creek. The sample was collected within the overland surface water drainage route identified by the START-2. The sample was collected to determine potential contamination associated with this source. The sample appeared to consist of white, quartz-like rock. No odor or staining was noted during sample collection.

Three waste rock samples (DCWP02SS through DCWP04SS) were collected from the waste rock comprising the main road. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of white, quartz-like rock. No odor or staining was noted during sample collection.

One waste rock sample (DCWP05SS) was collected from waste rock pile 3 located west of the pad with power tower and fence. The sample was collected within the overland surface water drainage route identified by the START-2. The sample was collected to determine potential contamination associated with this source. The sample appeared to consist of white, quartz-like rock. No odor or staining was noted during sample collection.

Nine tailings samples (DCTP01SS through DCTP09SS) were collected from the northern portion of the mine area. The samples were collected within the overland surface water drainage routes

identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of fine, light brown, dry soil. No odor or staining was noted during sample collection.

Three tailings samples (DCTP10SS through DCTP12SS) were collected from the wet area located north of the pad with power tower and fence. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of fine, light brown, dry soil. No odor or staining was noted during sample collection.

Three tailings samples (DCTP13SS through DCTP15SS) were collected on the road leading to the adit. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of fine, light brown, dry soil with some white quartz-like rocks. No odor or staining was noted during sample collection.

Three tailings samples (DCTP16SS through DCTP18SS) were collected from the wet area north of the adit. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of fine, brown, moist soil. No odor or staining was noted during sample collection.

One surface water sample (DCAD01SW) was collected from the adit. The sample was collected within the overland surface water drainage route identified by the START-2. The sample was collected to determine potential contamination associated with this source. The sample was clear. No odor or staining was noted during sample collection.

6.20.6 Analytical Results

6.20.6.1 Surface Soil Sample Results

The START-2 collected 23 surface soil samples for TAL metals analyses: five waste rock samples (DCWP01SS through DCWP05SS) and eighteen tailings samples (DCTP01SS through DCTP18SS).

In waste rock samples, significant concentrations of cadmium ranged from 24.9 mg/kg to 25.2 mg/kg. Significant concentrations of lead ranged from 558 mg/kg to 799 mg/kg. Significant concentrations of mercury ranged from 0.14 mg/kg to 0.25 mg/kg. Significant concentrations of zinc ranged from 4,220 mg/kg to 7,780 mg/kg for zinc.

In tailings samples, significant concentrations of cadmium ranged from 23.8 mg/kg to 425 mg/kg. Significant concentrations of lead ranged from 632 mg/kg to 13,300 mg/kg. Significant concentrations of mercury ranged from 0.17 mg/kg to 3.2 mg/kg. Significant concentrations of zinc ranged from 4,240 mg/kg to 123,000 mg/kg for zinc. Refer to Table 6-15 for complete data results.

6.20.6.2 Surface Water Sample Results

Analytes detected in the surface water collected from the adit (DCAD01SW) include lead at 12.9 μg/L and zinc at an estimated concentration of 558 μg/L.

6.21 COPPER KING MINE

6.21.1 Mine Location

Latitude:	48° 46' 51.60"N
Longitude:	117° 39' 12.24"W
Legal Description:	Section 20, Township 38N, Range 41E
CERCLIS ID:	WAN001002370
County:	Stevens
Contact:	Mick Vaagen and Trent Lang Vaagen Brothers Lumber 565 W 5th Colville, Washington 99114 (509) 684-5071

6.21.2 Historical Information

The Copper King Mine is a former copper and silver mine located in the Northport mining district, Washington (Derkey et al. 1990). The mine is reported to have produced between 1904 and 1941 (Derkey et al. 1990). Copper King Mining Company owned the mine from 1905 to 1907 (Battien 1998). United Copper Company operated the mine from 1916 to 1918 and by 1930 ownership changed to Northwest Mines Corporation. In 1950, the mine was owned by Banner Mining Company and in 1976 the mine had been acquired by an eastern syndicate (Battien 1998). Historical ownership information from 1976 to the present is unknown.

6.21.3 Mine Description/Features

The Copper King Mine is in a shear zone between the upper and lower units of the Wallace Formation (Derkey et al. 1990). The mine consists of two claims known as the Copper King No. 1 and

No. 2. The property is developed by a lower tunnel driven for a distance of 221 feet, an upper tunnel driven for a distance of 285 feet, and a 20-foot shaft (Weaver 1920). The veins range up to 30 feet wide and a low-grade ore body was reported to be 40 feet wide and 500 feet long (Derkey et al. 1990). The ore deposit occurs along the contact between limestone and an intrusive dike (Huntting 1956).

6.21.4 START-2 Mine Visit

On June 19, 2001, the START-2 visited the Copper King Mine and conducted a visual inspection of the property and surrounding area (Figure 6-27; Appendix A, Photos 15-6 through 15-20; Appendix B, Team 1 Phase 1, Pages 8 through 10). The mine area consisted of two waste rock piles. One waste rock pile was located east of Alladin Road and southwest of adit 1 and measured 60 feet by 30 feet by 3 feet deep. Adit 1 measured 5 feet by 10 feet. No flow or drainage was noted by the START-2. Adit 2 was located east of adit 1 and measured 5 feet by 10 feet. Adit drainage flowed approximately 75 feet southwest before infiltrating the ground. There is a potential that during heavy flow adit 2 discharge could reach Deep Creek (PPE 1). A retention area was documented where the adit discharge infiltrates the ground measuring 5 feet by 1 feet by 1 feet deep. The retention area was composed of small logs and plastic sheeting which was estimated to retain approximately 15 gallons. A hose was noted south of the retention area extending southwest for approximately 20 feet. To the east of adit 2 the START-2 identified a second waste rock pile and shaft. The waste rock pile measured 75 feet by 120 feet by 6 feet deep. The shaft was surrounded by the waste rock and measured 15 feet by 20 feet by unknown depth. Standing water was noted. No buildings or evidence of buildings were noted on the property. Access to the mine is unrestricted and the START-2 noted recent logging. The START-2 also noted grazing in the area near adit 2.

6.21.5 Sample Locations

Sample locations are depicted in Figure 6-28. Two waste rock samples (CKWP01SS and CKWP02SS) were collected from the waste rock pile surrounding the shaft on the northeast portion of the property. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of fine orange and brown sand with trace gravel and pyrite. No odor or staining was noted during the sample collection.

One surface water sample was collected from the discharge of water originating at adit 2 (CKAD01SW). The sample was collected within the overland surface water drainage route identified by

the START-2. The sample was collected to determine potential contamination associated with this source. The sample was clear. No odor or staining was noted during sample collection.

One sediment sample (CKPP01SD) was collected at the confluence of the adit 2 discharge and the retention area which can flood and flow into Deep Creek (PPE 1). The sample was collected within the overland surface water drainage route identified by the START-2. The sample was collected to determine potential contamination associated with this source. The sample appeared to consist of light brown medium sand with gravel. No odor or staining was noted during sample collection.

6.21.6 Analytical Results

6.21.6.1 Surface Soil Sample Results

The START-2 collected two surface soil samples from waste rock for TAL metals analyses. Significant concentrations of copper ranged from 559 mg/kg to 1,700 mg/kg. Mercury was detected at a significant concentration of 0.12 mg/kg. Refer to Table 6-16 for complete data results.

6.21.6.2 Surface Water Sample Results

Analytes detected in the surface water sample collected at adit 2 (CKAD01SW) include lead at 17.9 μg/L and zinc at an estimated concentration of 180 μg/L.

6.21.6.3 Sediment Sample Results

The START-2 collected one sediment sample from the retention pond for TAL metals and pesticide/PCBs analyses. No significant concentrations of TAL metals were detected in the sample. Refer to Table 6-17 for complete data results.

6.22 SIERRA ZINC MINE/MILL

6.22.1 Mine/Mill Location

Latitude:	48° 46' 28.20"N
Longitude:	117° 40' 06.24"W
Legal Description:	Section 20, Township 38N, Range 41E
CERCLIS ID:	WAN001002396
County:	Stevens

Contact: United States Department of the Interior
Bureau of Land Management
Spokane District Office
1103 N. Fancher
Spokane, Washington 99212-1275
(509) 536-1200

6.22.2 Historical Information

The Sierra Zinc Mine/Mill is a former gold, lead, silver, and zinc mine/mill off Colville-Alladin Northport Road, south of Northport, Washington (Derkey et al. 1990). Sierra Zinc, sometimes called Aladdin or Blue Ridge included eight claims and 180 acres of deeded ground (Battien 1998). The mine/mill was located on the west side of Deep Creek and approximately 4 miles north of Aladdin or 17 miles south of Northport (Battien 1998). The mine is reported to have produced in 1909, 1924, 1925, 1941 through 1944, and between 1950 and 1952 (Derkey et al. 1990). A mill was built in 1942 (Battien 1998). In 1924 and earlier, some development work was performed by T.R. Roberts (Battien 1998). Amos E. Huseland filed claims for part of the mine in 1935 (Battien 1998). Other owners include T.C. Higginbotham, Goldfield Consolidated, Tri-Nite, and Coronado. Higginbotham sold the mill to Goldfield Consolidated in 1948 and then bought it back in 1960 (Battien 1998). Tri-Nite purchased the mill in 1962 (Battien 1998). Coronado leased the property with an option to purchase from Tri-Nite in 1972 (Battien 1998). Additional historical ownership from 1972 to the present is unknown.

6.22.3 Mine/Mill Description/Features

The Sierra Zinc Mine/Mill consists of seven claims. Alternative names include Alladin Mine and Blue Ridge Mine. The ore deposit consists of galena and sphalerite disseminated in limestone. Quartz veins carry minor amounts of chalcopyrite, galena, molybdenite, pyrite, and sphalerite. The main ore body mined prior to 1944 measured 300 feet along the strike, 200 feet along the dip, and 4 to 12 feet thick. Three smaller ore bodies were mined. The property is developed 8,450 feet in three adits, a 470-foot shaft, and a 300-ton floatation mill. (Huntting 1956)

6.22.4 START-2 Mine/Mill Visit

On June 21, 2001, the START-2 visited the Sierra Zinc Mine/Mill and conducted a visual inspection of the property and surrounding area (Figure 6-29; Appendix A, Photos 24-10 through 28-2; Appendix B, Team 2 Phase 1, Page 8 and supplemental pages supplied by Guy Gregory of Ecology). The property was accessed by Colville-Aladdin Northport Road. The mine/mill area consisted of one

waste rock pile measuring 100 feet by 50 feet by 5 feet deep. North of the waste rock pile was a tailings pile measuring 1,000 feet by 2,100 feet by an estimated 20 feet deep. There could be potential overland flow from the tailings pile to a drainage ditch (PPE 1) located east of the tailings pile. The flow of the drainage ditch was estimated by the START-2 to be approximately 0.5 cfs. A mill building was located south of the waste rock pile and tailings pile measuring 250 feet by 225 feet. Northwest of the mill building an adit was located measuring 2 feet by 2 feet by unknown depth. The discharge was estimated by the START-2 at approximately 0.5 gallons per minute (gpm). The adit water flowed north into the forested area. Three residences were located south of the property. A fence was noted along a portion of the tailings pile; however, gaps were present in the northern fence line. A road with a no trespassing sign was noted which continued to the southern end of the tailings pile and mine/mill area where several houses were located. No fence was observed. No logging or grazing was noted in the vicinity of the property.

6.22.5 Sampling Locations

Sample locations are depicted in Figure 6-30. Twelve waste rock samples (SZWP01SS through SZWP12SS) were collected from the waste rock pile. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of gray, fine, dry sand. No odor or staining was noted during sample collection.

Twenty-one tailings samples (SZTP01SS through SZTP21SS) were collected from the tailings pile area. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of dark gray, fine, moist to dry soil with some clay. No odor or staining was noted during sample collection.

One surface soil sample (SZMS01SS) was collected from the mill area. The sample was collected within the overland surface water drainage route identified by the START-2. The sample was collected to determine potential contamination associated with this source. The sample appeared to consist of black, fine, slightly moist sand with lumps. No odor was noted during sample collection.

One surface water sample (SZAD01SW) was collected from the adit. The sample was collected within the overland surface water drainage route identified by the START-2. The sample was collected to determine potential contamination associated with this source. The sample was clear. No odor or staining was noted during sample collection.

6.22.6 Analytical Results

6.22.6.1 Surface Soil Sample Results

The START-2 collected 34 surface soil samples for TAL metals analyses: twelve waste rock samples (SZWP01SS through SZWP12SS); twenty-one tailings samples (SZTP01SS through SZTP21SS); and one surface soil sample (SZMS01SS) from the mill area.

In waste rock samples, significant concentrations of cadmium ranged from 27.2 mg/kg to 121 mg/kg. A significant concentration of copper was detected at 181 mg/kg. Significant concentrations of lead ranged from 871 mg/kg to 15,800 mg/kg. Significant concentrations of mercury ranged from 0.17 mg/kg to 1.6 mg/kg. Significant concentrations of zinc ranged from 3,820 mg/kg to 32,200 mg/kg.

In tailings samples, significant concentrations of cadmium ranged from 23.4 mg/kg to 130 mg/kg. Significant concentrations of copper ranged from 180 mg/kg to 443 mg/kg. Significant concentrations of lead ranged from 917 mg/kg to 5,110 mg/kg. Significant concentrations of mercury ranged from 0.21 mg/kg to 2.7 mg/kg. Significant concentrations of zinc ranged from 3,560 mg/kg to 33,400 mg/kg.

In the surface soil sample collected from the mill area, cadmium was detected at a significant concentration of 78.2 mg/kg, copper was detected at a significant concentration of 443 mg/kg, lead was detected at a significant concentration of 4,850 mg/kg, mercury was detected at a significant concentration of 0.97 mg/kg, and zinc was detected at a significant concentration of 17,500 mg/kg. Refer to Table 6-18 for complete data results.

6.22.6.2 Surface Water Sample Results

Analytes detected in the surface water sample collected from the adit (SZAD01SW) include zinc at an estimated concentration of 292 μg/L.

6.23 MAGMA MINE

6.23.1 Mine Location

Latitude:	48° 46' 00.48"N
Longitude:	117° 38' 25.08"W
Legal Description:	E½ SW¼ Section 28, Township 38N, Range 41E
CERCLIS ID:	WAN001002387
County:	Stevens
Contact:	Colville National Forest 765 South Main Colville, Washington 99114

6.23.2 Historical Information and Mine Description/Features

The Magma Mine is a former copper, gold, lead, silver, and zinc mine located in the Northport district, Washington. Alternate names are Easy Money Mine and Eldorado Mine. The mine reportedly produced 5 tons of ore in 1927. The property was listed under the Magma Molybdenum Mines Company (1921-1943) and the Magma Mines & Metals Company (1930). Additional historical ownership information is unknown. The ore minerals are galena, molybdenite, pyrite, scheelite, and sphalerite. The property is developed by a 610-foot adit, a 110-foot shaft, and 1,800 feet of other workings. (Huntting 1956)

6.23.3 START-2 Mine Visit

On June 28, 2001, the START-2 visited the Magma Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 2 Phase 1, Page 28). The area consisted of a waste rock pile, a collapsed shaft, and the remnants of two sheds (Appendix A, Photos 32-8 through 32-11). The waste rock pile measured an estimated 50 feet by 30 feet with an average depth of 15 feet and the shaft opening measured approximately 5 feet by 5 feet. The START-2 did not observe any overland drainage routes from the waste rock pile or shaft to surface water. Access to the mine is restricted with a locked gate. No residents or potential receptors were observed on the property. No samples were collected at the Magma Mine.

6.24 FARMER MINE

6.24.1 Mine Location

Latitude:	48°50' 59.28"N
Longitude:	117° 37' 17.40"W
Legal Description:	Section 34, Township 39N, Range 41E
CERCLIS ID:	WAN001002373
County:	Stevens
Contact:	Mick Vaagen and Trent Lang Vaagen Brothers Lumber 565 W 5th Colville, Washington 99114

6.24.2 Historical Information and Mine Description/Features

The Farmer Mine is a former lead, silver, and zinc mine located at the south end of Deep Lake in Stevens County, Washington. Historical ownership information from the time of patent to the present is unknown. The mine consists of two claims known as King Tut No. 1 and No. 2. The mineralized zone is 2 to 20 feet wide in limestone and has been traced for 600 feet. The property is developed by a 135-foot adit, a smaller adit, 150 feet of shaft work, and an open pit. (Huntting 1956)

6.24.3 START-2 Mine Visit

On June 19, 2001, the START-2 visited the Farmer Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 1 Phase 1, Page 6). The area consisted of a shaft and an adit. The adit was not flowing at the time of the visit (Appendix A, Photos 14-21, 14-22). The START-2 did not observe any overland drainage routes from the shaft or adit to surface water. Access to the mine was unrestricted. No residents or potential receptors were observed on the property. No samples were collected at the Farmer Mine.

6.25 MAKI MINE

6.25.1 Mine Location

Latitude:	48° 50' 45.60"N
Longitude:	117° 36' 00.00"W
Legal Description:	Section 35, Township 39N, Range 41E
CERCLIS ID:	WAN001002388
County:	Stevens
Contact:	Mick Vaagen and Trent Lang Vaagen Brothers Lumber 565 W 5th Colville, Washington 99114

6.25.2 Historical Information and Mine Description/Features

The Maki Mine is a former cobalt, lead, and zinc mine located at the south end of Deep Lake in Stevens County, Washington. Historical ownership information from the time of patent to the present is unknown. The property encompasses 160 acres of deeded land. The ore body is 50 to 100 feet thick and 600 feet long in gray limestone. The property is developed by 125 feet of workings in four shafts and a number of open cuts. (Huntting 1956)

6.25.3 START-2 Mine Visit

On June 19, 2001, the START-2 visited the Maki Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 1 Phase 1, Page 7). The area consisted of two waste rock piles and two shaft systems (Appendix A, Photo 14-24, 15-1 through 15-5). The volume of one waste rock pile was estimated to be 500 cubic yards, the other at 200 cubic yards. The adit was not flowing at the time of the visit. The START-2 did not observe any overland drainage routes from the waste rock piles or shafts to surface water. No residents or potential receptors were observed on the property. No samples were collected at the Maki Mine.

6.26 ELECTRIC POINT MINE/MILL

6.26.1 Mine/Mill Location

Latitude:	48° 52' 56.28"N
Longitude:	117° 32' 29.04"W
Legal Description:	Sections 17and 18; Township 39N; Range 42E
CERCLIS ID:	WAN001002372
County:	Stevens
Contact:	Mick Vaagen and Trent Lang Vaagen Brothers Lumber 565 W 5th Colville, Washington 99114 (509) 684-5071

6.26.2 Historical Information

The Electric Point Mine/Mill is a former copper, lead, silver, and zinc mine/mill located 4 miles east of Leadpoint, Washington (Derkey et al. 1990; Battien 1998). The mine is reported to have produced from 1901 to 1955 (Derkey et al. 1990). Total production was 30,711,917 pounds of lead, 7,154 ounces of silver, and 10,691 pounds of zinc (Derkey et al. 1990). The State Mining Company owned the mine/mill as of 1975 (Battien 1998). Historical ownership information from 1975 to the present is unknown.

6.26.3 Mine/Mill Description/Features

The Electric Point Mine/Mill is developed by 10,000 feet of drifts and crosscuts and several thousand feet of shafts (Huntting 1956). There are two shafts and eight 100-foot levels from which the ore columns or "chimneys" were reached. A tunnel on the 300-foot level extended to the surface on the

south side of the hill on which the mine is situated. Production of carbonate ore (30,438,010 tons) averaged about 25% lead, while the production of sulfide ore (21,569,146 tons) averaged 69% lead. The ore occurred in large chimneys of anglesite, cerussite, galena, and iron oxide and brecciated dolomite or magnesian limestone. (Jenkins 1924)

6.26.4 START-2 Mine/Mill Visit

On June 22, 2001, the START-2 visited the Electric Point Mine/Mill and conducted a visual inspection of the property and surrounding area (Figure 6-31; Appendix A, Photos 19-14 through 20-17; Appendix B, Team 1 Phase 1, Pages 21 and 22). The mine/mill area consisted of two waste rock piles. Waste rock pile 1 measured 180 feet by 300 feet by 6 feet deep. Two collapsed shafts were located west and adjacent to waste rock pile 1. The shaft area measured 60 feet by 60 feet. East of waste rock pile 1 was a collapsed mill measuring 75 feet by 30 feet. Further east, waste rock pile 2 and an ore loading building were located. Waste rock pile 2 measured 75 feet by 120 feet by 6 feet deep. The ore loading building measured 20 feet by 10 feet by 10 feet. East of the entrance road a dry tailings pond was located measuring 90 feet by 75 feet by 3 feet deep. No PPEs were identified by the START-2. Access to the mine/mill is unrestricted. No logging or grazing was noted in the mine/mill area.

6.26.5 Sampling Locations

Sample locations are depicted in Figure 6-32. Five waste rock samples (EPWP01SS through EPWP05SS) were collected at the mine/mill. EPWP01SS through EPWP03SS were collected from waste rock pile 1. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of fine/medium tan sand with gravel. No odor or staining was noted during sample collection. EPWP04SS and EPWP05SS were collected from waste rock pile 2. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of fine/medium tan sand with gravel. No odor or staining was noted during sample collection.

Three tailings samples (EPTP01SS through EPTP03SS) were collected from the tailings pond. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source.

The samples appeared to consist of brown/tan/orange fine sand with silt and some gravel. No odor was noted during sample collection.

Three surface soil samples (EPMS01SS through EPMS03SS) were collected from the mill area. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of fine to medium brown-red sandy silt. No odor was noted during sample collection.

6.26.6 Analytical Results

6.26.6.1 Surface Soil Sample Results

The START-2 collected 11 surface soil samples for TAL metals analyses: five waste rock samples (EPWP01SS through EPWP05SS); three tailings samples (EPTP01SS through EPTP03SS); and three surface soil samples (EPMS01SS through EPM03SS) from the mill area.

In waste rock samples, significant concentrations of lead ranged from 4,490 mg/kg to 50,100 mg/kg. Significant concentrations of mercury ranged from 0.20 mg/kg to 0.45 mg/kg. Significant concentrations of zinc ranged from 13,300 mg/kg to 33,800 mg/kg.

In tailings samples, a significant concentration of cadmium was detected at 25.0 mg/kg. Significant concentrations of lead ranged from 15,800 mg/kg to 26,000 mg/kg. Significant concentrations of mercury ranged from 0.14 mg/kg to 0.69 mg/kg. Significant concentrations of zinc ranged from 6,030 mg/kg to 22,000 mg/kg.

In surface soil samples collected from the mill area, significant concentrations of lead ranged from 11,200 mg/kg to 97,800 mg/kg. Significant concentrations of mercury ranged from 0.16 mg/kg to 0.27 mg/kg. Significant concentrations of zinc ranged from 5,080 mg/kg to 10,600 mg/kg. Refer to Table 6-19 for complete data results.

6.27 GLADSTONE MINE/MILL

6.27.1 Mine/Mill Location

Latitude:	48° 53' 12.48"N
Longitude:	117° 32' 35.16"W
Legal Description:	Section 18, Township 39N, Range 42E
CERCLIS ID:	WAN001002376
County:	Stevens

Contact: Mick Vaagen and Trent Lang
Vaagen Brothers Lumber
565 W 5th
Colville, Washington 99114
(509) 684-5071

6.27.2 Historical Information

The Gladstone Mine/Mill is a former copper, lead, silver, and zinc mine/mill adjoining Electric Point Mine/Mill in Washington (Derkey et al. 1990; Battien 1998). The mine/mill is reported to have produced from 1901 to 1955 except for 1945 (Derkey et al. 1990). Total production was 15,583,187 pounds of lead; 9,602 ounces of silver; and 44,681 pounds of zinc (Derkey et al. 1990). The mine/mill was owned by Gladstone Mining Company who leased the property to other companies and/or private owners throughout the history of the mine/mill (Battien 1998). Historical ownership information from the time reported to the present is unknown.

6.27.3 Mine/Mill Description/Features

The Gladstone Mine/Mill is located in the middle dolomite unit of the Metaline Formation. The ore deposit consists of chimney-type replacements at brecciated intersections of two or more sets of fissures. Most chimneys are 10 to 15 feet in diameter and 100 feet deep. Most of the circular to ellipsoidal chimneys do not extend more than 300 feet from the surface (Derkey et al. 1990). The mine/mill is developed by 4,000 feet of old workings and an 80-foot shaft (Huntting 1956).

6.27.4 START-2 Mine/Mill Visit

On June 21, 2001, the START-2 visited the Gladstone Mine/Mill and conducted a visual inspection of the property and surrounding area (Figure 6-33; Appendix A, Photos 18-16 through 19-11; Appendix B, Team 1 Phase 1, Pages 16 through 19). The mine/mill area, which is accessed via a gravel entrance road, contained one waste rock pile measuring 18 feet by 30 feet by 3 feet deep. Shaft 1 located west of the waste rock pile measured 10 feet by 10 feet by unknown depth. Shaft 2 was located approximately 75 feet north of shaft 1and measured 10 feet by 10 feet by unknown depth. Collapsed shaft 3 was located approximately 20 feet east and 30 feet north of shaft 2 and measured 10 feet by 10 feet by unknown depth. Continuing north of shaft 3 for 20 feet shaft 4 was identified and measured 10 feet by 10 feet by unknown depth. West of the gravel entrance road and the shafts, the START-2 identified a tailings pile, a collapsed building potentially a mill, and an ore loading cart. The tailings pile

measured 60 feet by 60 feet by 6 feet deep and was located 30 feet west of the gravel road. The collapsed building measured 15 feet by 15 feet and was located near the southern portion of the tailings pile. The ore loading cart measured 10 feet by 10 feet by 20 feet and was located near the northern portion of the tailings pile. No PPEs were identified by the START-2. Access to the mine/mill is unrestricted. The START-2 noted evidence of past logging on the property. No grazing was noted in the mine/mill area.

6.27.5 Sampling Locations

Sample locations are depicted in Figure 6-34. Three tailings samples (GLTP01SS through GLTP03SS) were collected from the tailings pile located in between two buildings. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of fine orange-brown sand/silt. No odor was noted during the sample collection.

Three surface soil samples (GLMS01SS through GLMS03SS) were collected from the potential mill area. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of medium brown-orange sand with trace gravel. No odor was noted during the sample collection.

6.27.6 Analytical Results

6.27.6.1 Surface Soil Sample Results

The START-2 collected six surface soil samples for TAL metals analyses: three tailings samples (GLTP01SS through GLTP03SS) and three surface soil samples (GLMS01SS through GLMS03SS) from the potential mill area.

In the tailings samples, significant concentrations of lead ranged from 27,100 mg/kg to 94,000 mg/kg. Significant concentrations of mercury ranged from 0.19 mg/kg to 0.30 mg/kg. Significant concentrations of zinc ranged from 6,560 mg/kg to 10,500 mg/kg.

In surface soil samples collected from the potential mill area, significant concentrations of lead ranged from 20,300 mg/kg to 35,200 mg/kg. Significant concentrations of mercury ranged from 0.20 mg/kg to 0.25 mg/kg. Significant concentrations of zinc ranged from 6,020 mg/kg to 6,790 mg/kg. Refer to Table 6-20 for complete data results.

6.28 LUCKY FOUR MINE

6.28.1 Mine Location

Latitude:	48° 52' 51.60"N
Longitude:	117° 32' 33.00"W
Legal Description:	Section 18, Township 39N, Range 42E
CERCLIS ID:	WAN001002386
County:	Stevens
Contact:	Colville National Forest 765 South Main Colville, Washington 99114

6.28.2 Historical Information and Mine Description/Features

The Lucky Four Mine is a former copper, gold, lead, and silver mine situated at the north end of the Fifteen Mile Creek district, Washington. A vein, four and one-half feet in width, trends through the formations. The ore consists of chalcopyrite, pyrrhotite and pyrite, which yields copper, gold, and silver. It is estimated that 100 tons of ore have been mined and shipped from the Lucky Four Mine. For a distance of over 100 feet along the vein there has been trenching and open cut work. The property has been developed by two shafts, one to a depth of 27 feet, the other to a depth of 12 feet. (Weaver 1920)

6.28.3 START-2 Mine Visit

On June 22, 2001, the START-2 visited the Lucky Four Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 1 Phase 1, Page 20). The area consisted of a shaft with a crank or pulling system above it (Appendix A, Photo 19-12 and 19-13). No contaminant source was identified on the property. Access to the mine was unrestricted. No samples were collected at the Lucky Four Mine.

6.29 RED TOP MINE

6.29.1 Mine Location

Latitude:	48° 56' 35.88"N
Longitude:	117° 33' 52.20"W
Legal Description:	NE¼ SE¼ Section 25, Township 40N, Range 41E
CERCLIS ID:	WAN001002394
County:	Stevens

Contact: Mick Vaagen and Trent Lang
Vaagen Brothers Lumber
565 W 5th
Colville, Washington 99114
(509) 684-5071

6.29.2 Historical Information

The Red Top Mine is a former lead, silver, and zinc mine located in the Northport mining district, Washington (Derkey et al. 1990). The mine is reported to have produced approximately 200 tons of ore prior to 1939 (Derkey et al. 1990). The mine also is reported to have produced in 1944 and 1953 (Derkey et al. 1990). From 1952 to 1954 the Pacific Northwest Mining Company was listed as the owner (Battien 1998). By 1962, the Red Top Company leased the mine to Rare Metals Corporation (Battien 1998). Historical ownership information from 1962 to the present is unknown.

6.29.3 Mine Description/Features

The Red Top Mine consists of five patented and three unpatented claims (Huntting 1956). Mineralized shear zones are in marble and argillite and are crisscrossed by quartz veins. Some ore shoots are as much as 4 feet wide and 18 feet long. Four separate mineralized zones, as much as 1 foot wide, cut across bedding. The ore minerals in these transverse zones include galena, pyrite, scheelite, and tetrahedrite (Derkey et al. 1990). The mine is developed by a 2,700-foot adit and approximately 1,500 feet of drifts and raises (Huntting 1956).

6.29.4 START-2 Mine Visit

On June 26, 2001, the START-2 visited the Red Top Mine and conducted a visual inspection of the property and surrounding area (Figure 6-35; Appendix A, Photos 14-11 through 14-20; Appendix B, Team 1 Phase 1, Pages 3 through 5). The mine area, which is accessed via an unimproved road, contained a waste rock pile measuring 200 feet by 150 feet by 10 feet deep. An adit, measuring 5 feet by 5 feet by unknown depth, is located north of the waste rock pile and unimproved road. Wooden debris, measuring 10 feet by 15 feet, was noted west of the waste rock pile and south of the unimproved road. A portal/shaft, measuring 10 feet by 5 feet, is located west of the adit. No discharge was observed from the adit or the portal/shaft. The START-2 did not observe an overland drainage route from the waste rock pile to a body of water. No PPEs were identified. Access to the mine was unrestricted. No logging or grazing was noted in the vicinity of the mine.

6.29.5 Sample Locations

Sample locations are depicted in Figure 6-36. Three waste rock samples (RDWP01SS through RDWP03SS) were collected from the waste rock pile located south of the portal/shaft. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of light brown fine sand with trace gravel. No odor or staining was noted during the sample collection.

6.29.6 Analytical Results

6.29.6.1 Surface Soil Sample Results

The START-2 collected three surface soil samples from waste rock for TAL metals analyses. Significant concentrations of cadmium ranged from 111 mg/kg to 177 mg/kg. Significant concentrations of copper ranged from 225 mg/kg to 1,080 mg/kg. Significant concentrations of lead ranged from 14,600 mg/kg to 28,900 mg/kg. Significant concentrations of mercury ranged from 0.40 mg/kg to 1.1 mg/kg. Significant concentrations of zinc ranged from 10,700 mg/kg to 15,700 mg/kg. Refer to Table 6-21 for complete data results.

6.30 ANDERSON CALHOUN MINE/MILL

6.30.1 Mine/Mill Location

Latitude:	48° 55' 09.84"N
Longitude:	117°35' 28.68"W
Legal Description:	NW¼ Section 2, Township 39N, Range 41E
CERCLIS ID:	WAN001002309
County:	Stevens
Contact:	Lloyd Nickels Stevens County Public Utilities P.O. Box 390 Colville, Washington 99114 (509) 684-7500

6.30.2 Historical Information

The Anderson Calhoun Mine/Mill is a former lead and zinc mine/mill located one mile north of Leadpoint, Washington (Derkey et al. 1990). The mine is reported to have produced between 1948 and 1952 (Derkey et al. 1990). The first claims were documented in 1937 (Battien 1998). Total production at the end of 1951 was approximately 100,000 tons (Derkey et al. 1990).

Andy Anderson discovered mineralization in 1910 and explored it with shallow pits and trenches (Mills 1977). During World War II, the United States Bureau of Mines drilled several holes as part of the Defense Minerals Program (Mills 1977). Goldfield Consolidated acquired the mine/mill, the date unknown, and mined by open-pit the area prospected by Anderson, drilled out a portion of the ore body adjacent to the pit, and initiated mechanized development (Mills 1977). American Zinc Lead and Smelting Company purchased the mine/mill from Goldfield Consolidated in 1964 and entered into production in 1966 (Battien 1998; Mills 1977). By 1965-1966, a 1,200 ton floatation mill for lead, silver, and zinc had been built (Battien 1998). In addition to the floatation mill, another mill, shops, and warehouses were constructed (Battien 1998). The mine/mill operated until 1968 (Derkey et al. 1990). The mine/mill closed because of depressed metal prices and diminishing ore reserves after extraction of nearly a million tons of ore (Mills 1977). Historical ownership information from 1968 to the present is unknown.

6.30.3 Mine/Mill Description/Features

The Anderson Calhoun Mine/Mill is situated on the west side of Deep Creek approximately 1 mile north of Leadpoint. The mine/mill lies in the middle dolomite unit of the Metaline Formation. Ore minerals occur disseminated in limestone. The ore bodies range up to 80 feet wide, 80 feet high, and 650 feet long (Derkey et al. 1990). Production is from open pit mining. (Huntting 1956)

6.30.4 START-2 Mine/Mill Visit

On September 11 and 13, 2001, the START-2 visited the Anderson Calhoun Mine/Mill and conducted a visual inspection of the property and surrounding area (Figure 6-37; Appendix A, Photos 35-1 through 38-10, 44-15 through 46-3, 46-11 through 46-12; Appendix B, Team 2 Phase 2, Pages 14 through 19, 22 and Team 1 Phase 2, Page 10). The mine/mill area consisted of a tailings pile measuring 555 feet by 500 feet by unknown depth. The tailings pile was located adjacent to the gated entrance road and on the western portion of the property. The START-2 noted 4 x 4 vehicle and bicycle tracks on the tailings. A pond is located on the tailings pile and sporadic vegetation also was noted on the tailings. To the north of the tailings pile, an evaporation pond was noted measuring 105 feet by 50 feet. A pipe was protruding from the southern portion of the evaporation pond into the pond. No liner was present and the vegetation surrounding the evaporation pond was stressed.

To the east of the tailings pile a waste rock pile was located underneath the waste rock conveyor belt measuring 120 feet by 80 feet by 20 feet deep. The waste rock conveyor belt was connected to the

mine building, the floatation building, and the waste rock storage bin. The mine building measured 25 feet in width by 15 feet in length by 20 feet in height. The conveyor belt attached to the floatation building measured 35 feet in length. The floatation building measured 25 feet in width by 15 feet in length by 10 feet in height. The waste rock storage bin measured 15 feet in width by 15 feet in length by 40 feet in height.

The mill building was located north of the mine building and measured 50 feet in width by 75 feet in length by 40 feet in height. The mill building contained staged reagent and unknown drums, floatation tanks, and a crusher. Approximately 100 55-gallon steel drums were staged in the east corner of the mill building. Many of these unmarked drums were punctured with bullets with the contents spilling onto the concrete foundation. The unknown spilled contents were solidified. The concrete floor did not appear to be breached. Tailings were scattered throughout the mill building. A portal measuring 10 feet by 10 feet was located on the western portion of the mill building with a conveyor belt leading into the building.

A first aid room of wood construction was located southwest of the mill building and adjacent to the conveyor belt extending from the portal/shaft. The first aid room measured 8 feet in width by 10 feet in length by 12 feet in height. The conveyor belt extending from the portal/shaft appeared to connect with the mine building at one point, measuring approximately 110 feet in length.

Remnants of a storage shed and two concrete pads were located between the mine and mill buildings. The storage shed foundation measured 20 feet by 20 feet. Remnants of "Cebar Barite", a white cellulose-type material, was scattered throughout the storage shed foundation and surrounding area including the concrete pads. Five 55-gallon drums were scattered on the storage shed foundation. One concrete pad measuring 40 feet by 10 feet was located directly east of the dilapidated storage shed. Ten 55-gallon drums were staged on palettes. There was no legible documentation on the drums. The second concrete pad was located north of the first concrete pad and measured 10 feet by 20 feet. Scrap wood, steel, and garbage were scattered on both concrete pads.

On the north side of the mill building, three areas of scattered drums intermixed with debris and equipment were documented. Stained soil with an oil odor were noted around the drums. Cattle prints were identified in the stained soil. There was a distinct sheen throughout the stained soil area surrounding the drums.

Transformers were identified in 6 areas. A substation, heavily vandalized, also was documented. The first area was located east of the dilapidated storage shed and two concrete pads and included a power line with three transformers. The second area was located adjacent to the south side of the mill

building and consisted of three transformers staged on concrete pads. The concrete was not compromised. The third area was located west of the second area and consisted of a fallen power line with a transformer. The top of the transformer was detached and no staining was noted in the vicinity. The fourth area was located north of the fallen power line and consisted of a gated area containing a power line with transformer and 6 transformers staged on concrete. No staining was noted on the concrete or the surrounding soil. The fifth area was located west of the fourth area and consisted of three transformers staged on a concrete pad. No staining was noted on the concrete or the surrounding soil. The sixth area was located to the east of the fourth area and consisted of a power line with a transformer. The substation was located south of the sixth area and east of the third area and consisted of a partially gated area with remnant electrical equipment.

On the southern portion of the property and east of the mine/mill entrance, a silo, concrete pad, and mine pit were located. The mine pit measured approximately 100 feet by 50 feet by unknown depth and was filled with water.

A stream flowing south extended the entire length of the mine/mill and onto private farmland. A marshy wetland area was noted on the western portion of the stream and adjacent to the eastern side of the tailings pile and evaporation pond (PPE 1).

Access to the mine/mill is restricted with a locked gate. Pastures are located adjacent to the mine/mill on the northern and southern portions. Numerous animal tracks were noted throughout the property, concentrated in the tailings pile and the stained soil areas. No logging was noted in the vicinity of the property.

6.30.5 Sampling Locations

Sample locations are depicted in Figure 6-38. Six tailings samples were collected from the two tailings pile areas: three surface soil samples from the northern portion of the tailings pile (ANTP01SS through ANTP03SS) and three sediment samples from within the pond located on top of the tailings pile on the southern portion of the pile (ANTP04SD through ANTP06SD). The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. ANTP01SS through ANTP03SS appeared to consist of gray silt. ANTP04SD through ANTP06SD appeared to consist of dark brown to black silt. No odor or staining was noted during sample collection.

Four surface soil samples (ANSS01SS through ANSS04SS) were collected from areas of stained soil at the mine/mill. The samples appeared to consist of stained black soil with sand and gravel. An

oily odor and staining were noted during sample collection. ANSS01SS and ANSS02SS were collected from the dilapidated storage shed area. ANSS03SS and ANSS04SS were collected from the stained soil area located on the northern portion of the mill building.

One surface water sample (ANAD01SW) was collected from the mine pit water located on the southern portion of the property. The sample was collected within the overland surface water drainage route identified by the START-2. The sample was collected to determine potential contamination associated with this source. The sample was clear and blue-green in color. No odor or staining was noted during sample collection.

A sediment sample (ANPP01SD) was collected at the confluence of the breach of the tailings pile to the wetlands on the unnamed stream (PPE 1). The sample appeared to consist of silt and sand. The sample was black and had an organic odor.

6.30.6 Analytical Results

6.30.6.1 Surface Soil Sample Results

The START-2 collected 7 surface soil samples at the Anderson Calhoun Mine/Mill for TAL metals analyses: three from the tailings pile (ANTP01SS through ANTP03SS) and four from areas of stained soil (ANSS01SS through ANSS04SS).

In the tailings samples, significant concentrations of copper ranged from 39.2 mg/kg to 55.0 mg/kg. Significant concentrations of mercury ranged from 0.12 mg/kg to 0.19 mg/kg.

In surface soil samples collected from areas of stained soil, significant concentrations of cadmium ranged from 124 mg/kg to 129 mg/kg. Significant concentrations of copper ranged from 73.8 mg/kg to 115 mg/kg. Significant concentrations of lead ranged from 2,130 mg/kg to 2,190 mg/kg. Significant concentrations of mercury ranged from 0.18 mg/kg to 0.35 mg/kg. Significant concentrations of zinc ranged from 44,900 mg/kg to 49,000 mg/kg. Refer to Table 6-22 for complete data results.

Four surface soil samples collected at the Anderson Calhoun Mine/Mill also were analyzed for pesticides//PCBs. No significant concentrations were detected.

6.30.6.2 Surface Water Sample Results

The surface water sample collected from the mine pit water (ANAD01SW) contained lead at 192 μg/L and zinc at 1,480 μg/L.

6.30.6.3 Sediment Sample Results

The START-2 collected 4 sediment samples at the Anderson Calhoun Mine/Mill for TAL metals analyses. The three sediment samples collected from the pond on top of the tailings pile (ANTP04SD, ANTP05SD, and ANTP06SD) contained significant concentrations of arsenic ranging from 4.3 mg/kg to 10.0 mg/kg, cadmium from 4.7 mg/kg to 7.5 mg/kg, copper from 30.7 mg/kg to 67.4 mg/kg, lead from 317 mg/kg to 320 mg/kg, mercury at a significant concentration of 0.17 mg/kg, and zinc at significant concentrations ranging from 723 mg/kg to 3,250 mg/kg for zinc. The sediment sample collected at PPE 1 (ANPP01SD) contained elevated concentrations of copper at 23.2 mg/kg and zinc at 343 mg/kg. Refer to Table 6-23 for complete data results.

6.31 LUCILE MINE

6.31.1 Mine Location

Latitude:	48° 57' 01.08"N
Longitude:	117° 33' 12.24"W
Legal Description:	Section 30, Township 40N, Range 42E
CERCLIS ID:	WAN001002385
County:	Stevens
Contact:	Colville National Forest 765 South Main Colville, Washington 99114

6.31.2 Historical Information and Mine Description/Features

The Lucile Mine is a former cadmium, lead, silver, and zinc mine located on the eastern slope of the Red Top Mountain in the Northport mining district, Washington. Alternate names include Owen Mine and Boundary Silver Lead Mine. The mine was reported to have produced 50 tons of ore in 1926, 160 tons in 1948, and 44 tons in 1949 (Huntting 1956). The mine reportedly operated from 1910 to the late 1940s. The ore deposit consists of irregular mineralized zones in marble associated with quartz veins and lamprophyre dikes (Huntting 1956). Values are in cadmium, lead, silver, and zinc with zinc of high quality (Battien 1998).

6.31.3 START-2 Mine Visit

On June 22, 2001, the START-2 visited the Lucile Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 3 Phase 1, Pages 15 and 16). The mine was accessed

from Forest Service Road 915. The area consisted of a waste rock pile, a collapsed adit, and wood debris (Appendix A, Photos 12-1, 12-2 and 12-3). The adit was not flowing at the time of the visit. The waste rock pile measured approximately 500 feet tall by 75 feet by 5 feet deep and was located about 40 feet from the collapsed adit. The START-2 did not observe any overland drainage routes from the waste rock pile or adit to surface water. No residents or potential receptors were observed on the property. No samples were collected at the Lucile Mine.

6.32 IROQUOIS MINE

6.32.1 Mine Location

Latitude:	48° 57' 06.12"N
Longitude:	117° 32' 22.92"W
Legal Description:	SW¼ Section 30, Township 40N, Range 42E
CERCLIS ID:	WAN001002381
County:	Stevens
Contact:	William Green Mines Management, Inc. 905 W. Riverside #311 Spokane, Washington 99201 (509) 838-6050

6.32.2 Historical Information

The Iroquois Mine is a former cadmium, lead, silver, and zinc mine (Derkey et al. 1990). The mine is 8 miles southeast of Boundary and approximately 4 miles by road to Leadpoint, Washington (Battien 1998). The mine is reported to have produced in 1917, 1928, and 1950 (Derkey et al. 1990). Mines Management, Inc., of Spokane was owner of the mine and its 17 unpatented claims and 40 acres of deeded ground in the 1950s (Battien 1998). In 1964 the Bunker Hill Company took a lease on the mine (Battien 1998). Historical ownership from 1964 to the present is unknown.

6.32.3 Mine Description/Features

The Iroquois Mine is situated about 8 miles southeast of Boundary, Washington. The property consists of three claims and 120 acres of incorporated land. It was formerly known as the Flannigan Mine (Weaver 1920). The property is developed by a main lower tunnel driven for a distance of 430 feet. About 290 feet in elevation above the lower tunnel there is an older, upper tunnel driven for

111 feet. Approximately 175 feet south of the upper tunnel there is an old glory hole where considerable galena and lead carbonate ore have been mined. The formation in which the ores occur is a blue to grayish massive limestone, crushed and faulted and cut by numerous dikes, varying from 2 to 10 inches in width. In the lower tunnel sphalerite was observed in the limestone near the argillite contact. (Weaver 1920)

6.32.4 START-2 Mine Visit

On June 22, 2001, the START-2 visited the Iroquois Mine and conducted a visual inspection of the property and surrounding area (Figure 6-39; Appendix A, Photos 12-5 through 12-17; Appendix B, Team 3 Phase 1, Pages 16 through 18). The mine area consisted of one waste rock pile measuring 170 feet by 40 feet by 4 feet deep located on the northern portion of the property and northwest of the unnamed road. South of the unnamed road, the START-2 identified an adit, three buildings, a pile of wood, and a piece of rail line. The adit measured 3 feet by 5 feet by unknown depth. Adit discharge flowed northwest in two directions. One path was south through a pipe under the road, around and past the waste rock pile where it pooled and infiltrated the ground. The second path was over the road into the waste rock pile. Building 1 measured 10 feet by 15 feet and was located west of the adit. Building 2 measured 20 feet by 50 feet and was located northeast of the adit. Building 3 measured 5 feet by 8 feet and was located 42 feet northeast of building 2. A pile of untreated timber was located between building 1 and the adit. A loose piece of rail line was located northwest of building 2. No PPEs were identified by the START-2. Access to the mine is unrestricted. Logging occurs in the vicinity of the mine. No grazing was observed by the START-2.

6.32.5 Sampling Locations

Sample locations are depicted in Figure 6-40. Two waste rock samples (IRWP01SS and IRWP02SS) were collected from the waste rock pile. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine potential contamination associated with this source. The samples appeared to consist of dark gray sandy gravel. No odor or staining was noted during sample collection.

Two surface water samples (IRAD01SW and IRAD02SW) were collected from the adit located on the property. IRAD01SW was collected near the mouth of the adit. IRAD02SW was collected at the confluence of the adit discharge and the waste rock pile. The samples were collected within the overland surface water drainage routes identified by the START-2. The samples were collected to determine

potential contamination associated with this source. The samples appeared to be clear. No odor or staining was noted during sample collection.

6.32.6 Analytical Results

6.32.6.1 Surface Soil Sample Results

The START-2 collected two surface soil samples from waste rock for TAL metals analyses. Significant concentrations of cadmium ranged from 33.2 mg/kg to 39.1 mg/kg. Significant concentrations of mercury ranged from 0.25 mg/kg to 0.49 mg/kg. Significant concentrations of zinc ranged from 10,000 mg/kg to 12,300 mg/kg. Refer to Table 6-24 for complete data results.

6.32.6.2 Surface Water Sample Results

Analytes detected in surface water samples collected from adit water include zinc at an estimated concentration of 583 μg/L.

6.33 SILVER QUEEN MINE

6.33.1 Mine Location

Latitude:	48° 32' 56.90"N
Longitude:	118° 06' 57.60"W
Legal Description:	NE¼ SW¼ Section 11, Township 35N, Range 37E
CERCLIS ID:	WAN001002397
County:	Stevens
Contact:	United States Department of the Interior Bureau of Land Management Spokane District Office 1103 N. Fancher Spokane, Washington 99212-1275 (509) 536-1200

6.33.2 Historical Information

The Silver Queen Mine is a former lead, silver, and zinc mine located in the Deer Trail district, Washington. The mine is reported to have produced in 1917, 1928, 1937, 1938, and 1940 (Huntting 1956). Prior owners of the claim are reported to be Silver Basin Mining Company (1902-1924), Seal & Queen Consolidated Mining Company (1907), Commodore Mines Corporation (1928-1931), Silver Glance Mines Development Company (1929), Silver Seal Mining Company (1931), Queen & Seel

Mining Company (1935-1939), and J. G. Glasgow (1941) (Huntting 1956). Further ownership history from 1941 to the present is unknown.

6.33.3 Mine Description/Features

The Silver Queen Mine is located on the opposite side of a sharp ridge on the Springdale road, at an elevation of 3,800 feet. The ore consists of white quartz, often iron stained, carrying as its chief value silver in the forms of argentite and chloride, together with subordinate amounts of galena, pyrite, and sphalerite. The ore occurs in shoots having a predominating pitch to the northeast. The country rock is a light colored crystalline dolomite limestone, in places brecciated and silicified. Within one-fourth mile both east and west of the property are exposures of intrusive granite. (Jenkins 1924)

6.33.4 START-2 Mine Visit

On September 11, 2001, the START-2 visited the Silver Queen Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 2 Phase 2, Pages 8 through 12). The property is situated on the side of a mountain with an upper slope, middle slope, and lower slope. The upper slope consisted of four shed-like buildings, an adit, and a power pole (Appendix A, Photos 44-1, 44-2, 44-3, and 44-12). Approximately 4 inches of ponded water was observed in the adit. The adit was not flowing at the time of the visit and sand bags were observed at the opening of the adit (Appendix A, Photos 44-4 and 44-11). The area in front of the adit was wet with shallow ponded water for approximately 10 feet. The middle slope consisted of a mill, a collapsed building, tailings, and a waste rock pile (Appendix A, Photos 44-5 through 44-8, 44-10 and 44-14). The mill building measured 15 feet by 15 feet by 25 feet. The tailings at the middle slope were observed to be very fine and silty. The lower slope consisted of finer tailings. The tailings measured 60 feet by 45 feet by unknown depth. At the bottom of the lower slope, the road slopes downward to a point where most run-off from the mine property would flow. At this location is a pump shed with four round concrete structures (Appendix A, Photo 44-13). The START-2 did not observe any overland drainage routes from the adit, tailings, or waste rock pile to surface water. Access to the mine was unrestricted. No residents or potential receptors were observed on the property. No samples were collected at the Silver Queen Mine.

6.34 MELROSE MINE

6.34.1 Mine Location

Latitude:	48° 56' 44.52"N
Longitude:	117°38' 45.96"W
Legal Description:	SW¼ NW¼ Section 28, Township 40N, Range 41E
CERCLIS ID:	WAN001002389
County:	Stevens
Contact:	Mick Vaagen and Trent Lang Vaagen Brothers Lumber 565 W 5th Colville, Washington 99114 (509) 684-5071

6.34.2 Historical Information

The Melrose Mine is a former copper, lead, silver, and zinc mine located 4 miles south of Boundary, Washington (Derkey et al. 1990). The mine is reported to have produced between 1913 and 1938 (Derkey et al. 1990). The total yield from 97 tons of ore was 1,255 pounds of copper, 11,176 pounds of lead, and 2,973 ounces of silver (Derkey et al. 1990). Charleston Resources Ltd. took over the property in 1977 (Battien 1998). Historical ownership information from 1977 to the present is unknown.

6.34.3 Mine Description/Features

The Melrose Mine ore deposit consists of a 6-foot vein in argillite containing irregular scattered bunches of ore. Ore minerals include galena, sphalerite, and tetrahedrite. The mine is developed by 1,600 feet of underground workings. (Huntting 1956)

6.34.4 START-2 Mine Visit

On June 18, 2001, the START-2 visited the Melrose Mine and conducted a visual inspection of the property and surrounding area (Figure 6-41; Appendix A, Photos 14-1 through 14-7; Appendix B, Team 1 Phase 1, Pages 2 and 3). The mine area consisted of an adit 5 feet by 10 feet by unknown depth. Moss and algae growth were noted near the mouth of the adit. The adit discharge flowed approximately 40 feet east to an unnamed tributary (PPE 1) that feeds into Tom Bush Creek. The START-2 estimated the flow of the unnamed tributary at 1 gpm. There were no waste rock piles; however, the entry road appeared to be constructed out of waste rock. A building approximately 10 feet by 10 feet by 10 feet was

located to the north of the adit and contained test core samples. Access to the mine was unrestricted and the START-2 noted garbage left by visitors. No logging or grazing was noted in the vicinity of the mine.

6.34.5 Sample Locations

Sample locations are depicted in Figure 6-42. One surface water sample was collected from the discharge of water originating at the adit (MLAD01SW). The sample was collected within the overland surface water drainage route identified by the START-2. The sample was collected to determine potential contamination associated with this source. The sample was clear. No odor or staining was noted during sample collection.

One sediment sample was collected at the confluence of the adit water drainage to the unnamed tributary (PPE 1; MLPP01SD). The sample appeared to consist of brown sand with trave gravel and organics. No odor or staining was noted during sample collection.

6.34.6 Analytical Results

6.34.6.1 Surface Water Sample Results

Analytes detected in water collected at the adit include zinc at an estimated concentration of 433 μg/L.

6.34.6.2 Sediment Sample Results

The START-2 collected one sediment sample from the PPE for TAL metals analyses. Cadmium was detected at an elevated concentration of 22.8 mg/kg and zinc was detected at an elevated concentration of 1,650 mg/kg. Refer to Table 6-25 for complete data results.

6.35 LAKEVIEW MINE

6.35.1 Mine Location

Latitude:	48° 57' 51.84"W
Longitude:	117° 32' 57.12"N
Legal Description:	Near center Section 19, Township 40N, Range 42E
CERCLIS ID:	WAN001002383
County:	Stevens
Contact:	Colville National Forest 765 South Main Colville, Washington 99114

6.35.2 Historical Information and Mine Description/Features

The Lakeview Mine is a former lead and silver mine located in the Northport mining district on the north side of Red Top Mountain, Washington. An alternate name is Hazel Mine. The property reportedly consists of six claims. The ore deposit consists of quartz containing a little galena and some silver sulphides. Tiny crystals of pyromorphite were also found in the oxidized portion of the ores. The ore value consists largely of silver (Jenkins 1924).

6.35.3 START-2 Mine Visit

On June 19, 2001, the START-2 visited the Lakeview Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 3 Phase 1, Pages 9 and 10). The area was heavily forested with no signs or visible remnants of mining activity (Appendix A, Photo 10-15). Approximately a quarter mile north of the mine location an area was observed to be heavily logged and clear cut. The START-2 did not observe any contaminant source at the property. Access to the mine was unrestricted. No samples were collected at the Lakeview Mine.

6.36 JACKSON MINE

6.36.1 Mine Location

Latitude:	48° 57' 35.64"N
Longitude:	117° 34' 08.04"W
Legal Description:	SW¼ NW¼ Section 24, Township 40N, Range 41E
CERCLIS ID:	WAN001002382
County:	Stevens
Contact:	Ron Matney 145 Highway 20 East Colville, Washington 99114

6.36.2 Historical Information and Mine Description/Features

The Jackson Mine is a former copper, lead, silver, and zinc mine located in the Northport mining district, Washington. The mine reportedly yielded 7 tons of ore (Derkey et al. 1990). The ore deposit is described as a mineralized quartz vein in argillite 4 to 6 feet in width (Huntting 1956).

6.36.3 START-2 Mine Visit

On June 25, 2001, the START-2 visited the Jackson Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 3 Phase 1, Pages 24 and 25). The START-2 was accompanied by Ron Matney, the property owner. The area consisted of an adit and a cabin (Appendix A, Photos 13-1, 13-2, and 13-3). The adit was not flowing at the time of the visit. The area surrounding the mine was partially logged. The START-2 did not observe any overland drainage route from the adit to surface water. Access to the mine was unrestricted. No residents or potential receptors were observed on the property. No samples were collected at the Jackson Mine.

6.37 FRISCO-STANDARD MINE

6.37.1 Mine Location

Latitude:	48° 59' 34.80"W
Longitude:	117° 26' 39.48"N
Legal Description:	S½ NW¼ Section 12, Township 40N, Range 42E
CERCLIS ID:	WAN001002375
County:	Stevens
Contact:	Charles Shaw 8 B Eagles Nest Drive LaConnor, Washington 98257

6.37.2 Historical Information

The Frisco-Standard Mine is a former copper, lead, and silver mine located in the Northport mining district, Washington (Huntting 1956). The property consists of seven patented claims (Jenkins 1924). Several buildings, including a cookhouse, cabin, and a mill, were to be listed as holdings of Frisco-Standard (Battien 1998). In 1943, the mine was operated by the Northport Mining and Development Company, Inc. A 1965 report states that intermittent exploration had been carried out by several different lessees, with most values in lead, silver, and copper (Battien 1998). The property is currently owned by Charles Shaw (Appendix B, Team 3 Phase 1, Page 8).

6.37.3 Mine Description/Features

The Frisco-Standard Mine is located on Jubilee Creek, just south of the U.S.-Canada border (Derkey et al. 1990). The formation exposed is termed the Fish Creek argillite, and is of probable Palaeozoic age. A grayish calcareous argillite and a black carbonaceous argillite are the predominating

varieties of rock exposed (Weaver 1920). The ore deposit consists of quartz veins or lenses up to 7 feet wide in sheared graphitic schist (Huntting 1956).

6.37.4 START-2 Mine Visit

On June 19, 2001, the START-2 visited the Frisco-Standard Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 3 Phase 1, Pages 8 and 10). The START-2 observed a waste rock pile, two adits, and one possible exploratory adit (Appendix A, Photos 10-3 through 10-7). None of the adits were flowing at the time of the visit. The waste rock pile measured approximately 3 feet deep by 25 feet wide by 63 feet in height. The START-2 did not observe any overland drainage routes from the waste rock pile to surface water. Access to the mine was unrestricted. No residents or potential receptors were observed on the property. No samples were collected at the Frisco-Standard Mine.

6.38 MYEERAH MINE

6.38.1 Mine Location

Latitude:	48° 59' 26.16"N
Longitude:	117° 27' 14.76"W
Legal Description:	E center Section 11, Township 40N, Range 42E
CERCLIS ID:	WAN001002390
County:	Stevens
Contact:	Colville National Forest 765 South Main Colville, Washington 99114

6.38.2 Historical Information and Mine Description/Features

The Myeerah Mine is a former gold, lead, silver, and zinc mine located in the Northport mining district, Washington. The mine is reported to have produced in 1926 and 1942. Yield from 21 tons of ore was 8,175 pounds lead and 288 ounces silver (Derkey et al. 1990). The ore deposit is a 2-foot wide vein consisting of quartz, sheared slate, and numerous lamprophyre dikes. The vein is reported to be traceable for about 1,000 feet. The mine is developed by adits and numerous open cuts. (Huntting 1956)

6.38.3 START-2 Mine Visit

On June 19, 2001, the START-2 visited the Myeerah Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 3 Phase 1, Pages 8 through 10). The mine area consisted of a dilapidated metal shed with a collapsed adit inside, and two waste rock piles (Appendix A, Photos 10-8 through 10-12). The collapsed adit was not flowing at the time of the visit. One waste rock pile located north and across the road from the dilapidated shed measured 2 feet deep by 20 feet wide by 20 feet in height. The second waste rock pile measuring 10 feet by 10 feet by 2 feet deep was located west of the dilapidated shed (Appendix A, Photo 10-12). Signs posted on the shed included "Danger Forest Service abandoned mine hazard: sign P61-23"; "Keep out Pure Luck Mining Claim"; and "Work-current, August 1992, August 1996, August 1997". The START-2 did not observe any overland drainage routes from the adit or waste rock piles to surface water. Access to the shed and adit was restricted by a locked metal door. No residents or potential receptors were observed on the property. No samples were collected at the Myeerah Mine.

6.39 UNITED TREASURE MINE

6.39.1 Mine Location

Latitude:	48° 59' 21.48"N
Longitude:	117° 27' 51.12"W
Legal Description:	Near center Section 11, Township 40N, Range 42E
CERCLIS ID:	WAN001002399
County:	Stevens
Contact:	Colville National Forest 765 South Main Colville, Washington 99114

6.39.2 Historical Information

The United Treasure Mine is a former copper, gold, lead, silver, and zinc mine located in the Northport mining district, Washington (Weaver 1920). The mine was reported to have produced 62 tons of ore in 1917, 2 tons in 1933, and some production in 1953 (Huntting 1956). Considerable high-grade ore, more or less oxidized, was mined and shipped and packed out by horses to the railroad at Boundary, Washington (Weaver 1920). Still making shipments in 1933, and up to 1953, the United Treasure Mine was owned by Singlejack Silver Mining Exploration Company (Battien 1998). Additional historical ownership information is unknown.

6.39.3 Mine Description/Features

The United Treasure Mine is situated on the east side of Fish Creek (Huntting 1956). The formation exposed is a very dark-colored silicified carbonaceous argillite which has been greatly broken by fractures and cross fractures. The vein is composed of a quartz gangue containing copper, lead, and zinc minerals carrying silver. The mineralized zone varies in thickness from a few inches to 30 inches (Weaver 1920).

6.39.4 START-2 Mine Visit

On June 20, 2001, the START-2 visited the United Treasure Mine and conducted a visual inspection of the property and surrounding area (Appendix B, Team 3 Phase 1, Pages 12 and 13). The mine area consisted of three adits and a waste rock pile (Appendix A, Photos 10-23 and 10-24). The adits were not flowing at the time of the visit. The adit openings measured 8 feet by 6 feet, 7 feet by 4 feet, and 5 feet by 2 feet, respectively. The waste rock pile measured approximately 2 feet long by 5 feet wide by 1 foot deep. The START-2 did not observe any overland drainage routes from the adits or waste rock pile to surface water. Access to the mine was unrestricted. No residents or potential receptors were observed on the property. No samples were collected at the United Treasure Mine.

Table 6-1

DAISY MINE
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374163	01374164	01374165	01374166
CLP Inorganic ID	MJ0KH2	MJ0KH3	MJ0KH4	MJ0KH5
CLP Organic ID	NU	NU	NU	NU
E & E Sample ID	NU	NU	NU	NU
Station Location	DTBK01SS	DTTP01SS	DTTP02SS	DTTP03SS
Sample Depth (inches)	0-6	0-6	0-6	0-6
Description	Background	Tailings Pile		
TAL Metals (mg/kg)				
Aluminum	**18100**	**3370**	**8130**	**4700**
Arsenic	**68.2**	**64.3**	**233**	**20.4**
Barium	**168**	**70.4**	34.6 JB	**73.5**
Beryllium	0.89 JB (1.06 SQL)	**1.1**	**1.2**	0.30 JB
Cadmium	**4.8**	**7.8**	**9.7**	0.52 JB
Calcium	**5420**	**245000**	**38400**	**7950**
Chromium	**13.9**	**6.4**	**19.1**	**12.0**
Cobalt	**14.7**	9.4 JB	**12.5**	4 3 JB
Copper	**55.2**	**137**	**121**	**19.6**
Iron	**25200**	**23900**	**30500**	**12500**
Lead	**183**	**70.9**	**69.3**	**12.1**
Magnesium	**4110**	**6040**	**7710**	**2840**
Manganese	**1070**	**360**	**655**	**236**
Mercury	0.06 JB (0 11 SQL)	**0.42**	**2.9**	0.05 U
Nickel	**16.1**	**23.5**	**67.0**	**20.2**
Potassium	**1300 JK**	**1230 JK**	**1820 JK**	**1180 JK**
Selenium	**1.5 JL**	**3.0 JL**	**5.9 JL**	0.68 UJL
Silver	**6.7**	**2.3**	**4.6**	0.94 JB
Vanadium	**41.9**	**16.3**	**87.5**	**35.3**
Zinc	**462**	**649**	**990**	**76.1**

Note· Bold type indicates sample concentration is above the detection limit
Underlined type indicates the sample results is significant as defined in Section 5.

Key·

B = The reported concentration is between the instrument detection limit and the contract required detection limit
BK = Background.
CLP = Contract Laboratory Program.
DT = Daisy Mine.
E & E = Ecology and Environment, Inc
EPA = United States Environmental Protection Agency
ID = Identification
J = The analyte was positively identified The associated numerical value is an estimate
K = Unknown bias.
L = Low bias
mg/kg = Milligrams per kilogram.
NU = Not utilized
SQL = Sample quantitation limit
SS = Surface soil.
TAL = Target Analyte List
TP = Tailings pile.
U = The analyte was not detected The associated numerical value is the contract required detection limit

Table 6-2

DAISY MINE
SEDIMENT SAMPLES
ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01374161
CLP Inorganic ID		MJ0KH0
CLP Organic ID		J0KH0
E & E Sample ID		01090426
Station Location		DTPP01SD
Sample Depth (inches)		0-6
Description	Background	PPE 1
TAL Metals (mg/kg)		
Aluminum	**20200**	**11100**
Arsenic	**13.0**	**17.8**
Barium	**450**	**181**
Cadmium	**3.4**	0 35 JB
Calcium	**109000**	**5490**
Chromium	**32.3**	**14.0**
Cobalt	**11.9**	5.7 JB
Copper	**69.3**	**21.6**
Iron	**27900**	**14700**
Lead	**124**	**17.0**
Magnesium	**33500**	**3220**
Manganese	**673**	**352**
Nickel	**31.9**	**20.9**
Potassium	**3920 JK**	**2550 JK**
Vanadium	**47.4**	**42.5**
Zinc	**239**	**105**
Pesticide/PCBs (µg/kg)		
Endrin Ketone	**4.0**	3.4 U

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

Key:

B = The reported concentration is between the instrument detection limit and the contract required detection limit.
CLP = Contract Laboratory Program.
DT = Daisy Mine.
E & E = Ecology and Environment, Inc
EPA = United States Environmental Protection Agency
ID = Identification
J = The analyte was positively identified The associated numerical value is an estimate
K = Unknown bias
mg/kg = Milligrams per kilogram
µg/kg = Micrograms per kilogram
PCBs = Polychlorinated biphenyls
PPE = Probable point of entry
SD = Sediment
TAL = Target Analyte List
U = The analyte was not detected. The associated numerical value is the contract required detection limit

Table 6-3

L-BAR/NORTHWEST MAGNESITE
SEDIMENT SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374104	01374103	01374102
CLP Inorganic ID	MJ0KC4	MJ0KC3	MJ0KC2
CLP Organic ID	J0KC4	J0KC3	J0CK2
E & E Sample ID	01090404	01090403	01090402
Station Location	LBBK01SD	LBDT03SD	LBDT02SD
Sample Depth (inches)	0-8	0-8	0-8
Description	Background	PPE 1	PPE 2
TAL Metals (mg/kg)			
Aluminum	**20200**	**16600 JK**	**19100 JK**
Arsenic	**12.1**	7.0 JB	11.2 JB
Barium	**450**	164 JB	195 JB
Cadmium	**3.4**	0.71 UJK	1.3 JB
Calcium	**39600**	**6330 JK**	**16000 JK**
Chromium	**32.3**	**21.4 JK**	**28.1 JK**
Cobalt	**11.9**	7.6 JB	9.7 JB
Copper	**69.3**	**45.3 JK**	**62.1 JK**
Iron	**27900**	**19600 JK**	**23600 JK**
Lead	**124**	**43.1 JK**	**49.4 JK**
Magnesium	**33500**	**22900 JK**	**38400 JK**
Manganese	**673**	**310 JK**	**784 JK**
Mercury	0.10 JB (0.10 SQL)	R	R
Nickel	**31.9**	21.9 JB	26.3 JB
Potassium	**3920 JK**	**27900 JK**	**31600 JK**
Selenium	0.7 UJK	**18.0 JK**	**15.9 JK**
Vanadium	**47.4**	29.4 JB	32.3 JB
Zinc	**239**	**140**	**218 JK**

Note: Bold type indicates sample concentration is above the detection limit
Underlined type indicates the sample results is significant as defined in Section 5.

Key.

B = The reported concentration is between the instrument detection limit and the contract required detection li
BK = Background
CLP = Contract Laboratory Program
DT = Ditch.
E & E = Ecology and Environment, Inc.
EPA = United States Environmental Protection Agency.
ID = Identification
J = The analyte was positively identified. The associated numerical value is an estimate
K = Unknown bias.
LB = L-Bar/Northwest Magnesite.
mg/kg = Milligrams per kilogram
R = The data are unusable for all purposes.
SD = Sediment.
SQL = Sample quantitation limit
TAL = Target Analyte List
U = The analyte was not detected The associated numerical value is the contract required detection limit

Table 6-4

NORTHWEST ALLOYS
SEDIMENT SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374108	01374107
CLP Inorganic ID	MJ0KC8	MJ0KC7
CLP Organic ID	J0KC8	J0KC7
E & E Sample ID	01090408	01090407
Station Location	NABK01SD	NADT01SD
Sample Depth (inches)	0-8	0-8
Description	Background	Ditch near PPE 1
TAL Metals (mg/kg)		
Aluminum	**2080**	**8420**
Arsenic	1.1 UJK	**4.9**
Barium	34 0 JB (48.8 SQL)	**170**
Calcium	**2730**	**26100**
Chromium	**5.4**	**10.8**
Copper	2.8 JB (6.1 SQL)	**18.7**
Iron	**5590**	**11300**
Lead	**2.0**	**7.5**
Magnesium	**1430**	**4000**
Manganese	**91.7**	**311**
Nickel	3.6 JB (9.8 SQL)	**10.9**
Potassium	605 JB	**1540 JK**
Vanadium	8.9 JB (12.2 SQL)	**16.3**
Zinc	**10.8**	**47.9**

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

Key:

B = The reported concentration is between the instrument detection limit and the contract required detection limit.
BK = Background.
CLP = Contract Laboratory Program.
DT = Ditch.
E & E = Ecology and Environment, Inc
EPA = United States Environmental Protection Agency.
ID = Identification
J = The analyte was positively identified. The associated numerical value is an estimate
K = Unknown bias.
mg/kg = Milligrams per kilogram
NA = Northwest Alloys
SD = Sediment.
SQL = Sample quantitation limit
TAL = Target Analyte List.
U = The analyte was not detected The associated numerical value is the contract required detection limit

Table 6-5

NAPOLEON MINE/MILL
SEDIMENT SAMPLES
ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374114	01374113
CLP Inorganic ID	MJ0KD5	MJ0KD4
CLP Organic ID	J0KD4	J0KD3
E & E Sample ID	01090413	01090412
Station Location	NPBK01SD	NPPP01SD
Sample Depth (inches)	0-8	0-8
Description	Background	PPE 1
TAL Metals (mg/kg)		
Aluminum	**6980**	**8790**
Arsenic	**13.0**	**26.8**
Barium	**83.2**	**96.1**
Calcium	**56700**	**6340**
Chromium	**22.0**	**17.3**
Copper	**47.6**	**<u>207</u>**
Iron	**20300**	**36000**
Lead	**13.1**	**25.5**
Magnesium	**4660**	**3490**
Manganese	**293**	**190**
Nickel	**18.9**	**25.1**
Potassium	899 JB	**1430 JK**
Silver	1.1 JB (2.1 SQL)	**<u>2.3</u>**
Vanadium	**25.8**	**31.0**
Zinc	**62.2**	**77.6**

Note: Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5.

Key:

B = The reported concentration is between the instrument detection limit and the contract required detection limit
BK = Background
CLP = Contract Laboratory Program.
E & E = Ecology and Environment, Inc.
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The analyte was positively identified. The associated numerical value is an estimate
K = Unknown bias.
mg/kg = Milligrams per kilogram.
NP = Napoleon Mine/Mill.
PPE = Probable point of entry
SD = Sediment.
SQL = Sample quantitation limit
TAL = Target Analyte List

Table 6-6

VAN STONE MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254196	01254197	01254198	01254199	01254200	01254201	01254202	01254203	01254204
CLP Inorganic ID		MJ0GJ5	MJ0GJ6	MJ0GJ7	MJ0GJ8	MJ0GJ9	MJ0GK0	MJ0GK1	MJ0GK2	MJ0GK3
CLP Organic ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
E & E Sample ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
Station Location		VSWP01SS	VSWP02SS	VSWP03SS	VSWP04SS	VSWP05SS	VSWP06SS	VSWP07SS	VSWP08SS	VSWP09SS
Sample Depth (inches)		0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Waste Rock Pile								
TAL Metals (mg/kg)										
Aluminum	18100	5640	3670	1600	2900	1230	1150	406	1150	2970
Antimony	1.5 JB (15.1 SQL)	2.0 JB	0.61 UJK	1.1 JB	2.1 JB	2.2 JB	3.0 JB	14.5	1 3 JB	1 3 JB
Arsenic	68.2	42.3	5.4	17.5	43.8	3.7 U	14.9	5.9	12.7	11.6
Barium	548	47.6	31.4 JB	17.5 JB	50.0	113	21.3 JB	62.0	16.4 JB	24.2 JB
Beryllium	0.48 JB (6.3 SQL)	0.98 JB	0.25 JB	0.40 JB	0.27 JB	0 15 JB	0.08 JB	0.07 JB	0.15 JB	0.51 JB
Cadmium	7.8	41.4	15.4	10.5	38.8	69.7	124	234	33.7	27.9
Calcium	118000	90300	44800	146000	55300	125000	85000	127000	144000	114000
Chromium	29.0	7.1	2.4	1.7 JB	1.7 JB	1.0 JB	0 87 JB	0 46 JB	1.1 JB	2.1 JB
Cobalt	8.6 JB (63 SQL)	2.3 JB	1.5 JB	0 54 JB	1.2 JB	0.52 JB	1.5 JB	0 25 JB	0.28 JB	1 4 JB
Copper	55.2	12.5	4.9 JB	7.3	6.2 JL	1.9 JB	7.8 JL	2.5 JB	5.4 JL	4 3 JB
Iron	25200	22600 JK	8710 JK	10800 JK	17100	7450	15300	12000	13600	7180
Lead	183	1830	286	204	2080	12100	6090	76500	359	47.4
Magnesium	17900	68200	33500	102000	34100	74200	46200	68400	107000	76100
Manganese	1370	822	236	407	278	207	202	227	302	472
Mercury	0.06 JB (0.11 SQL)	1.3 JL	0.08 JB	0.32 JL	1.5	0.38	0.84	0.29	0.26	0 05 U
Nickel	58.4	13.7	4.5 JB	3 8 JB	3.8 JB	2.3 JB	3.8 JB	2.1 JB	5.6 JB	7.1 JB
Potassium	11660	942 JB	806 JB	278 JB	1240	477 JB	270 JB	162 JB	198 JB	537 JB
Selenium	1.5 JL	0.71 U	0.69 U	0.79 JB	0.70 U	0.70 U	0.71 U	0.69 U	0 69 U	0.71 U
Silver	6.7	0 94 JB	0.44 JB	0.53 JB	0.83 JB	0.88 JB	1.9 JB	4.4	0.5 JB	0.17 U
Sodium	3308 JB	377 JB	314 JB	202 JB	153 JB	332 JB	690 JB	1190	124 JB	111 JB
Thallium	1.4 U	0.81 U	0 79 U	0 79 U	0.81 U	0 80 U	0.82 U	0.79 U	0.79 U	1 1 JB
Vanadium	51.2	21.1	12.2	6.9 JB	11.1	5.0 JB	4.0 JB	2.3 JB	7.8 JB	7 0 JB
Zinc	835	20600 JK	15000 JK	5920 JK	10800	19500	45800	68000	5960	3660

Table 6-6

VAN STONE MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254196	01254197	01254198	01254199	01254200	01254201	01254202	01254203	01254204
CLP Inorganic ID		MJ0GJ5	MJ0GJ6	MJ0GJ7	MJ0GJ8	MJ0GJ9	MJ0GK0	MJ0GK1	MJ0GK2	MJ0GK3
CLP Organic ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
E & E Sample ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
Station Location		VSWP01SS	VSWP02SS	VSWP03SS	VSWP04SS	VSWP05SS	VSWP06SS	VSWP07SS	VSWP08SS	VSWP09SS
Sample Depth		0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Waste Rock Pile								
SVOCs (µg/kg)										
9H-Carbazole	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
9H-Fluorene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Acenaphthene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Acenaphthylene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Anthracene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Benzo(a)anthracene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Benzo(a)pyrene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Benzo(g,h,i)perylene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Benzo[b]Fluoranthene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Benzo[k]fluoranthene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Chrysene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Dibenzo[a,h]anthracene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Dibenzofuran	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Di-n-octylphthalate	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Indeno(1,2,3-cd)pyrene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Isophorone	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Naphthalene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Naphthalene, 2-methyl-	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Phenanthrene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Pyrene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU

Table 6-6

VAN STONE MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254205	01254206	01254207	01254312	01254315	01254316	01254317	01254318	01254319
CLP Inorganic ID		MJ0GK4	MJ0GK5	MJ0GK6	MJ0EW6	MJ0EW9	MJ0EX0	MJ0EX1	MJ0EX8	MJ0EX3
CLP Organic ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
E & E Sample ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
Station Location		VSWP10SS	VSWP11SS	VSWP12SS	VSTP21SS	VSTP01SS	VSTP02SS	VSTP03SS	VSTP04SS	VSTP05SS
Sample Depth (inches)		0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-4
Description	Background	Waste Rock Pile			Tailings Pile					
TAL Metals (mg/kg)										
Aluminum	18100	3610	12100	796	148	3580	11100	8370	755	12000
Antimony	1.5 JB (15 1 SQL)	0.91 JB	0.64 U	1.4 JB	1.2 UJK	1.1 UJK	1.1 UJK	0 88 UJK	0.74 JB	1.4 UJK
Arsenic	68.2	5.2	4.3 U	10.8	4.2 U	15.1	6.8	5 7 U	8.4	6 3 U
Barium	548	97.4	130	26.4 JB	73.1	71.0	158	127	27 7 JB	241
Beryllium	0.48 JB (6 3 SQL)	0.33 JB	1.6	0.07 JB	0.04 U	0.12 JB	0.46 JB	0.35 JB	0 04 U	0 39 JB
Cadmium	7.8	10.1	5.5	15.0	8.6	7.3	1.9	2.4	7.6	3.2
Calcium	118000	45800	7580	155000	134000	72800	16000	10100	81400	24200
Chromium	29.0	3.6	1.3 JB	0.86 JB	8.7	3.0	12.9	10.1	1.8 JB	6.8
Cobalt	8.6 JB (63 SQL)	2.0 JB	3.9 JB	0.22 U	0.24 U	1 0 JB	5 0 JB	5 4 JB	0.31 JB	2.9 JB
Copper	55.2	4.8 JB	8.5 JL	5.7	76.2 JL	27.4 JL	26.9 JL	23.1 JL	23.4 JL	22.6 JL
Iron	25200	8720	14300	34000 JK	4950	8940	16300	12700	7340	11200
Lead	183	1610	7.4	1520	4710	283	81.7	74.3	257	119
Magnesium	17900	26700	8730	96700	81600	40100	10500	6800	45000	12900
Manganese	1370	290	410	226	135	210	315	318	113	476
Mercury	0 06 JB (0.11 SQL)	0.52	0.05 U	0.08 JB	0.09 JB	0 07 JB	0.06 U	0.06 U	0 09 JB	0 06 U
Nickel	58.4	3.8 JB	5 9 JB	10.7	2.6 JB	4 8 JB	17.1	13.6	3 4 JB	10.5
Potassium	11660	891 JB	2380	267 JB	123 JB	598 JB	2930	2250	250 JB	1370
Selenium	1.5 JL	0.69 U	0.73 U	0.68 U	0.73 U	0.76 U	0.78 U	0 77 U	0.68 U	0 85 U
Silver	6.7	0.25 JB	0.28 JB	0.27 JB	0.36 JB	0 32 JB	0 51 JB	0.51 JB	0.22 JB	0.40 JB
Sodium	3308 JB	121 JB	54.0 JB	157 U	186 U	286 JB	282 JB	261 JB	230 JB	341 JB
Thallium	1.4 U	0.79 U	0.84 U	0.78 U	0.91 U	0.87 U	0.89 U	0.89 U	0.78 U	0.97 U
Vanadium	51.2	13.9	20.6	5.2 JB	1 9 JB	7.6 JB	45.2	33.1	4 1 JB	20.5
Zinc	835	3450	4950	6340 JK	2430	2770	813	907	2920	1100

Table 6-6

VAN STONE MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254205	01254206	01254207	01254312	01254315	01254316	01254317	01254318	01254319
CLP Inorganic ID		MJ0GK4	MJ0GK5	MJ0GK6	MJ0EW6	MJ0EW9	MJ0EX0	MJ0EX1	MJ0EX8	MJ0EX3
CLP Organic ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
E & E Sample ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
Station Location		VSWP10SS	VSWP11SS	VSWP12SS	VSTP21SS	VSTP01SS	VSTP02SS	VSTP03SS	VSTP04SS	VSTP05SS
Sample Depth		0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-4
Description	Background	Waste Rock Pile			Tailings Pile					
SVOCs (µg/kg)										
9H-Carbazole	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
9H-Fluorene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Acenaphthene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Acenaphthylene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Anthracene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Benzo(a)anthracene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Benzo(a)pyrene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Benzo(g,h,i)perylene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Benzo[b]Fluoranthene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Benzo[k]fluoranthene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Chrysene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Dibenzo[a,h]anthracene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Dibenzofuran	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Di-n-octylphthalate	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Indeno(1,2,3-cd)pyrene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Isophorone	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Naphthalene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Naphthalene, 2-methyl-	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Phenanthrene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Pyrene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU

Table 6-6

VAN STONE MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254320	01254321	01254322	01254323	01254331	01254332	01254333	01254334	01254335
CLP Inorganic ID		MJ0EX4	MJ0EX5	MJ0EX6	MJ0EX7	MJ0EY5	MJ0EY6	MJ0EY7	MJ0EY8	MJ0EY9
CLP Organic ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
E & E Sample ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
Station Location		VSTP06SS	VSTP07SS	VSTP08SS	VSTP09SS	VSTP10SS	VSTP11SS	VSTP12SS	VSTP13SS	VSTP14SS
Sample Depth (inches)		0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Tailings Pile								
TAL Metals (mg/kg)										
Aluminum	18100	12300	11700	12200	13500	4640	8870	3760	1610	2220
Antimony	1.5 JB (15.1 SQL)	1.7 JB	1.6 JB	0.85 JB	0.76 UJK	0.62 UJK	1.1 JB	0 86 JB	0.62 JB	0.59 U
Arsenic	68.2	4.5 U	5.2 U	4.2 U	4.8 U	3.3 U	3.0 U	0.96 JB	2.6	0 96 JB
Barium	548	321	244	241	261	93.9	86.8	54.3	18 6 JB	26.2 JB
Beryllium	0.48 JB (6 3 SQL)	0.40 JB	0.36 JB	0 38 JB	0.41 JB	0 19 JB	0 26 JB	0.15 JB	0 08 JB	0.10 JB
Cadmium	7.8	1.0 JB	3.0	1.5	0.59 JB	4.9	5.2	0.67 JB	5.2	0 24 U
Calcium	118000	4320	21000	7580	3540	28100	21000	4750 JL	33200 JL	1470 JL
Chromium	29.0	7.5	6.3	7.1	6.8	2.4	3.7	2.5	1.9 JB	2 0 JB
Cobalt	8.6 JB (63 SQL)	3.3 JB	2.6 JB	2 8 JB	3 2 JB	1.9 JB	1.8 JB	1.4 JB	0.52 JB	1.8 JB
Copper	55.2	11.1 JL	18.1 JL	14.1 JL	10.4 JL	25.3 JL	23.6 JL	5.4	11.2	3.0 JB
Iron	25200	10400	10900	10500	10400	9150	10600	5200	5090	4060
Lead	183	35.9	109	51.2	18.8	167	143	32.7	87.3	10.7
Magnesium	17900	2320	11000	4150	1960	18000	13300	3200 JL	18000 JL	1230 JL
Manganese	1370	675	427	429	506	420	287	260 JH	97.8 JH	94.3 JH
Mercury	0.06 JB (0.11 SQL)	0.06 U	0.06 U	0.06 U	0.06 U	0.07 JB	0.06 JB	0.05 U	0.08 JB	0 05 U
Nickel	58.4	11.5	9.6	10.0	9.1 JB	2.4 JB	4.3 JB	2.4 JB	1 9 JB	1.6 JB
Potassium	11660	1520	1170 JB	1510	1420	1550	1030 JB	734 JB	454 JB	649 JB
Selenium	1.5 JL	0.79 U	0.80 U	0.78 U	0.87 U	0.70 U	0.77 U	0 70 UJK	0.70 UJK	0 69 UJK
Silver	6.7	0.5 JB	0.47 JB	0.48 JB	0.56 JB	0.26 JB	0 46 JB	0.14 U	0 23 U	0.10 U
Sodium	3308 JB	272 JB	309 JB	286 JB	325 JB	203 JB	261 JB	193 JB	164 U	184 JB
Thallium	1.4 U	0.90 U	0.92 U	0 89 U	0.99 U	0.80 U	0.89 U	1.0 U	1.1 U	1.0 U
Vanadium	51.2	22.3	19.7	23.1	20.3	14.2	15.6	8.8 JB	5 5 JB	8 4 JB
Zinc	835	150	1100	565	121	2100	2610	341	2260	106

Table 6-6

VAN STONE MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254320	01254321	01254322	01254323	01254331	01254332	01254333	01254334	01254335
CLP Inorganic ID		MJ0EX4	MJ0EX5	MJ0EX6	MJ0EX7	MJ0EY5	MJ0EY6	MJ0EY7	MJ0EY8	MJ0EY9
CLP Organic ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
E & E Sample ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
Station Location		VSTP06SS	VSTP07SS	VSTP08SS	VSTP09SS	VSTP10SS	VSTP11SS	VSTP12SS	VSTP13SS	VSTP14SS
Sample Depth		0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Tailings Pile								
SVOCs (µg/kg)										
9H-Carbazole	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
9H-Fluorene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Acenaphthene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Acenaphthylene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Anthracene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Benzo(a)anthracene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Benzo(a)pyrene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Benzo(g,h,i)perylene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Benzo[b]Fluoranthene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Benzo[k]fluoranthene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Chrysene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Dibenzo[a,h]anthracene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Dibenzofuran	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Di-n-octylphthalate	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Indeno(1,2,3-cd)pyrene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Isophorone	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Naphthalene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Naphthalene, 2-methyl-	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Phenanthrene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Pyrene	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU

Table 6-6

VAN STONE MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254336	01254337	01254338	01254339	01254324	01254325	01254326	01254327	01254328	01254329	01254330
CLP Inorganic ID		MJ0EZ0	MJ0EZ1	MJ0EZ2	MJ0EZ3	MJ0F12	MJ0EX9	MJ0EY0	MJ0EY1	MJ0EY2	MJ0EY3	MJ0EY4
CLP Organic ID		NU	NU	NU	NU	J0EX8	J0EX9	J0EY0	J0EY1	J0EY2	J0EY3	J0EY4
E & E Sample ID		NU	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Station Location		VSTP15SS	VSTP16SS	VSTP17SS	VSTP18SS	VSSS01SS	VSSS02SS	VSSS03SS	VSSS04SS	VSSS05SS	VSSS06SS	VSSS07SS
Sample Depth (inches)		0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Tailings Pile				Stained Soil						
TAL Metals (mg/kg)												
Aluminum	18100	3710	146	7560	4950	1480	2740	3970	68.8	431	4230	8810
Antimony	1.5 JB (15.1 SQL)	0.60 U	1.0 JB	0.61 U	0.67 JB	5.5 JB	2.4 JB	0.70 UJK	113 JL	9 8 JB	1 1 JB	2.0 JB
Arsenic	68.2	1.2 JB	9.6	2.7	0.96 U	16.5	9.7	2.2 U	23.6	42.9	11.3	19.0
Barium	548	38.9 JB	5.2 JB	128	82.5	37 JB	54.3	41.2 JB	1.5 JB	7 2 JB	135	121
Beryllium	0.48 JB (6.3 SQL)	0.15 JB	0.02 U	0.37 JB	0.18 JB	0.07 JB	0.13 JB	0.18 JB	0 04 U	0 05 U	0 27 JB	0.46 JB
Cadmium	7.8	0.36 JB	14.3	0.86 JB	0 74 JB	702	36.6	1.9	510	940	24.7	8.2
Calcium	118000	2110 JL	84300 JL	5150 JL	8150 JL	37200 JL	55100	12500	1550	6810	99100	26400
Chromium	29.0	2.9	1.3 JB	3.9	2.7	2.2 JB	3.7	3.7	1 2 JB	5.1	3.0	4.7
Cobalt	8.6 JB (63 SQL)	1.2 JB	0 24 U	3.5 JB	1.5 JB	1 JB	2.1 JB	1.6 JB	0.61 JB	0 89 JB	1 7 JB	3 2 JB
Copper	55.2	3.6 JB	28.7	5.9	5.9	202	461 JL	5.0 JB	73.1 JL	218 JL	7.6 JL	10.8 JL
Iron	25200	5070	6380	12200	7000	32400	15500	7520	31400	75300	11000	16600
Lead	183	16.3	270	25.2	33.8	10900	11000	114	181000	14700	1040	771
Magnesium	17900	1630 JL	44000 JL	5500 JL	5420 JL	22600 JL	32800	8570	2080	5100	68600	20800
Manganese	1370	131 JH	110 JH	388 JH	211 JH	412 JH	267	160	266	659	260	294
Mercury	0.06 JB (0.11 SQL)	0.05 U	0.17	0.05 U	0.05 U	3.2	0.21	0.05 U	0.05 U	6.0	0.15	0.60
Nickel	58.4	2.6 JB	2.5 JB	2.9 JB	2.5 JB	5 1 JB	4.8 JB	2.5 JB	6.0 JB	10.7	4.4 JB	3.5 JB
Potassium	11660	815 JB	122 JB	3090	1180	499 JB	1100 JB	1120 JB	60.0 JB	127 JB	997 JB	2720
Selenium	1.5 JL	0.70 UJK	0.73 UJK	0.71 UJK	0.71 UJK	0.92 UJK	0 88 U	0.79 U	2.0 JH	0 80 U	0.71 U	0 99 U
Silver	6.7	0.13 U	0.29 U	0.28 U	0.23 U	3.3	1.9 JB	0.22 JB	27.1	6.8	0 41 JB	0 44 JB
Sodium	3308 JB	279 JB	286 JB	290 JB	286 JB	6080	296 JB	251 JB	4850	13800	295 JB	256 JB
Thallium	1.4 U	1.0 U	1.1 U	1.1 U	1.1 U	1.4 JB	1.0 U	0.91 U	7.8	3.7	0.82 U	1 1 U
Vanadium	51.2	9.0 JB	1.6 JB	24.6	11.1	4.5 JB	11.5 JB	14.6	0.49 JB	2 1 JB	11.8	25.8
Zinc	835	171	5870	432	312	189000	12000	812	164000	431000	5770	3560

Table 6-6

VAN STONE MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254336	01254337	01254338	01254339	01254324	01254325	01254326	01254327	01254328	01254329	01254330
CLP Inorganic ID		MJ0EZ0	MJ0EZ1	MJ0EZ2	MJ0EZ3	MJ0F12	MJ0EX9	MJ0EY0	MJ0EY1	MJ0EY2	MJ0EY3	MJ0EY4
CLP Organic ID		NU	NU	NU	NU	J0EX8	J0EX9	J0EY0	J0EY1	J0EY2	J0EY3	J0EY4
E & E Sample ID		NU	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Station Location		VSTP15SS	VSTP16SS	VSTP17SS	VSTP18SS	VSSS01SS	VSSS02SS	VSSS03SS	VSSS04SS	VSSS05SS	VSSS06SS	VSSS07SS
Sample Depth		0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Tailings Pile				Stained Soil						
SVOCs (µg/kg)												
9H-Carbazole	NU	NU	NU	NU	NU	175	145 U	72.8 U	NU	NU	342 U	560 U
9H-Fluorene	NU	NU	NU	NU	NU	794	145 U	72.8 U	NU	NU	342 U	560 U
Acenaphthene	NU	NU	NU	NU	NU	618	145 U	72.8 U	NU	NU	342 U	560 U
Acenaphthylene	NU	NU	NU	NU	NU	25.1 J	145 U	72.8 U	NU	NU	342 U	560 U
Anthracene	NU	NU	NU	NU	NU	779	145 U	72.8 U	NU	NU	342 U	560 U
Benzo(a)anthracene	NU	NU	NU	NU	NU	1440	145 U	8.5 J	NU	NU	342 U	560 U
Benzo(a)pyrene	NU	NU	NU	NU	NU	1680	290 U	146 U	NU	NU	685 U	1120 U
Benzo(g,h,i)perylene	NU	NU	NU	NU	NU	901	145 U	72.8 U	NU	NU	342 U	560 U
Benzo[b]Fluoranthene	NU	NU	NU	NU	NU	654	290 U	146 U	NU	NU	685 U	1120 U
Benzo[k]fluoranthene	NU	NU	NU	NU	NU	983	145 U	72.8 U	NU	NU	342 U	560 U
Chrysene	NU	NU	NU	NU	NU	1650	145 U	72.8 U	NU	NU	342 U	560 U
Dibenzo[a,h]anthracene	NU	NU	NU	NU	NU	140	145 U	72.8 U	NU	NU	342 U	560 U
Dibenzofuran	NU	NU	NU	NU	NU	177	145 U	72.8 U	NU	NU	342 U	560 U
Di-n-octylphthalate	NU	NU	NU	NU	NU	78.8 U	R	72.8 U	NU	NU	342 U	560 U
Indeno(1,2,3-cd)pyrene	NU	NU	NU	NU	NU	688	290 U	146 U	NU	NU	685 U	1120 U
Isophorone	NU	NU	NU	NU	NU	78.8 U	99.7 J	72.8 U	NU	NU	342 U	560 U
Naphthalene	NU	NU	NU	NU	NU	1030	145 U	72.8 U	NU	NU	342 U	560 U
Naphthalene, 2-methyl-	NU	NU	NU	NU	NU	610	145 U	72.8 U	NU	NU	342 U	560 U
Phenanthrene	NU	NU	NU	NU	NU	5090	145 U	72.8 U	NU	NU	342 U	560 U
Pyrene	NU	NU	NU	NU	NU	4350	145 U	72.8 U	NU	NU	342 U	560 U

Note Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5.

Key

B	= The reported concentration is between the instrument detection limit and the contract required detection limit
CLP	= Contract Laboratory Program.
E & E	= Ecology and Environment, Inc.
EPA	= United States Environmental Protection Agency.
H	= High bias.
ID	= Identification.
J	= The analyte was positively identified. The associated numerical value is an estimate.
K	= Unknown bias.
L	= Low bias.
mg/kg	= Milligrams per kilogram.
µg/kg	= Micrograms per kilogram.
NU	= Not utilized
SQL	= Sample quantitation limit.
SS	= Surface soil.
SS	= Stained soil
SVOCs	= Semivolatile Organic Compounds.
TAL	= Target Analyte List
TP	= Tailings pile
U	= The analyte was not detected The associated numerical value is the contract required detection limit.
VS	= Van Stone Mine/Mill.
WP	= Waste Rock Pile

Table 6-7

VAN STONE MINE/MILL
SEDIMENT SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254363	01254313 01254340	01254314 01254341	01254361	01254364
CLP Inorganic ID		MJ0FK2	MJ0EW7	MJ0EW8	MJ0FK0	MJ0FK3
CLP Organic ID		J0FJ1	J0EZ4	J0EZ5	J0FK0	J0FJ2
E & E Sample ID		NU	NU	NU	NU	NU
Station Location		VSMW01SD	VSPP01SD	VSPP02SD	VSPP03SD	VSPP04SD
Sample Depth (inches)		6-8	6-8	6-8	6-8	6-8
Description	Background	Mine Pit	PPE 1	PPE 2	PPE 3	PPE 4
TAL Metals (mg/kg)						
Aluminum	**20200**	**2070**	**1140**	**2010**	**1970**	**5440**
Arsenic	**13.0**	3.2 U	**9.2**	2 1 U	**13.8**	1 4 U
Barium	**450**	48 6 JB	41.0 JB	27.8 JB	20.7 JB	**86.0**
Cadmium	**3.4**	1.2 JB	**6.0**	0.07 U	**11.9**	0.17 JB
Calcium	**109000**	**32000**	**99300**	1030 JB	**28200**	**2800**
Chromium	**32.3**	2.4 JB	1.5 JB	1.7 JB	2.0 JB	2.9 JB
Cobalt	**11.9**	0.88 JB	0.3 U	0.71 JB	1.1 JB	1.5 JB
Copper	**69.3**	2.1 JB	**23.0 JL**	1.5 JB	2.3 JB	3.3 JB
Iron	**27900**	**3730**	**4460**	**3710**	**6300**	**7560**
Lead	**124**	**50.4**	**466**	**2.2**	**124**	**8.1**
Magnesium	**33500**	**17000**	**56100**	709 JB	**14400**	1410 JB
Manganese	**673**	**120**	**95.7**	**192**	**162**	**386**
Nickel	**31.9**	2.2 JB	1.7 JB	1.0 JB	2 9 JB	2.6 JB
Potassium	**3920 JK**	508 JB	265 JB	485 JB	515 JB	847 JB
Vanadium	**47.4**	6.2 JB	4.4 JB	6.6 JB	10 0 JB	12 7 JB
Zinc	**239**	**526**	**1960**	**13.0**	**3670**	**112**
Pesticide/PCBs (µg/kg)						
Endrin Ketone	**4.0**	4.0 U	4.4 U	3.7 U	4 1 U	4.6 U

Note: Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5.

Key

B	= The reported concentration is between the instrument detection limit and the contract required detection limit
CLP	= Contract Laboratory Program.
E & E	= Ecology and Environment, Inc.
EPA	= United States Environmental Protection Agency.
ID	= Identification.
J	= The analyte was positively identified. The associated numerical value is an estimate
K	= Unknown bias.
mg/kg	= Milligrams per kilogram.
µg/kg	= Micrograms per kilogram.
MW	= Mine water.
NU	= Not utilized.
PCBs	= Polychlorinated biphenyls.
PPE	= Probable point of entry.
SD	= Sediment.
TAL	= Target Analyte List.
U	= The analyte was not detected. The associated numerical value is the contract required detection limit.
VS	= Van Stone Mine/Mill.

Table 6-8

LeROI/NORTHPORT SMELTER
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374188	01374182	01374183	01374184
CLP Inorganic ID	MJ0KK8	MJ0KK0	MJ0KK1	MJ0KK2
CLP Organic ID	NU	NU	NU	NU
E & E Sample ID	NU	NU	NU	NU
Station Location	NSBK02SS	NSSL01SS	NSSL02SS	NSSL03SS
Sample Depth (inches)	0-6	0-6	0-6	0-6
Description	Background	Slag		
TAL Metals (mg/kg)				
Aluminum	**4810**	**13200**	**13600**	**8070**
Antimony	1.5 JB (15.1 SQL)	11.8 JB	**21.4 JL**	**60.6 JL**
Arsenic	**2.6**	**294 JL**	**297 JL**	**209 JL**
Barium	**194**	**157**	**178**	**87.1**
Cadmium	**1.3**	**2.0**	**26.9**	**105**
Calcium	**90500**	**4790 JK**	**23700 JK**	**15800 JK**
Chromium	**17.6**	**13.0**	**10.8**	**10.4**
Cobalt	2.9 JB (12.6 SQL)	**20.5**	**112**	**42.0**
Copper	**17.3**	**2430**	**14700**	**4480**
Iron	**7690**	**31800**	**35700**	**23200**
Lead	**57.0**	**2600**	**7980**	**10500**
Magnesium	**3520**	**3550**	**8040**	**5970**
Manganese	**152**	**275**	**594**	**351**
Mercury	0.06 U	**0.28**	**0.34**	**0.40**
Nickel	8.0 JB (10.1 SQL)	**12.0**	**25.3**	**16.5**
Potassium	897 JB	**1310**	**4900**	**1910**
Selenium	1.1 JB (1.3 SQL)	**1.2**	0.76 U	**1.4**
Silver	0.57 JB (2.5 SQL)	**13.1**	**21.3**	**26.7**
Vanadium	**13.8**	**33.8**	**44.1**	**27.9**
Zinc	**60.9**	**120**	**978**	**5420**

Note Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5.

Key:

B = The reported concentration is between the instrument detection limit and the contract required detection limit
BK = Background
CLP = Contract Laboratory Program.
E & E = Ecology and Environment, Inc
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The analyte was positively identified. The associated numerical value is an estimate.
K = Unknown bias.
L = Low bias.
mg/kg = Milligrams per kilogram.
NS = LeRoi/Northport Smelter.
NU = Not utilized.
SL = Slag.
SQL = Sample quantitation limit
SS = Surface soil.
TAL = Target Analyte List
U = The analyte was not detected The associated numerical value is the contract required detection limit

Table 6-9

LeROI/NORTHPORT SMELTER
SEDIMENT SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01198040[a]	01264431	01264432	01264433	01264434	01264435	01264436	01264437	01264438	01264439
CLP Inorganic ID	NU	MJ0GP0	MJ0GP1	MJ0GP2	MJ0GP3	MJ0GP4	MJ0GP5	MJ0GP6	MJ0GP7	MJ0GP8
CLP Organic ID	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
E & E Sample ID	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
Station Location	NU	NSSL01SD	NSSL02SD	NSSL03SD	NSSL04SD	NSSL05SD	NSSL06SD	NSSL07SD	NSSL08SD	NSSL09SD
Sample Depth (inches)	NU	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Columbia River Slag (PPE 3)								
TAL Metals (mg/kg)										
Arsenic	2 U	7.5	15	19.3	23.9	41.4	10.9	12.3	11.1	15.9
Cadmium	0 47	1.6	0.81 JB	0.74 JB	1.5	1.7	3.3	4.9	3.0	3.2
Copper	3.6	238 JL	1540 JL	2070 JL	2530 JL	2960 JL	349 JL	257 JL	347 JL	357 JL
Lead	12	230 JK	246 JK	292 JK	388 JK	507 JK	470 JK	548 JK	597 JK	845 JK
Mercury	0.0004 U	0.06 U	0.06 U	0.07 U	0.06 U	0.06 U	0.08 JB	0.11 JB	0.08 JB	0.29
Zinc	26.9	1520	10500	13000	15100	16900	3920	2800	5430	5280

Note [a] The highest concentration between the sample and the duplicate of the sample Sample was collected by Ecology in May of 2001 at Lower Arrow Lake in Canada
Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5.

Key

B = The reported concentration is between the instrument detection limit and the contract required detection limit
BK = Background
CLP = Contract Laboratory Program
E & E = Ecology and Environment, Inc.
EPA = United States Environmental Protection Agency.
ID = Identification
J = The analyte was positively identified. The associated numerical value is an estimate
K = Unknown bias
L = Low bias.
mg/kg = Milligrams per kilogram
NS = Northport Smelter
NU = Not utilized.
PPE = Probable point of entry
R = The data are unusable for all purposes
SD = Sediment.
SL = Slag.
SQL = Sample quantitation limit
TAL = Target Analyte List
U = The analyte was not detected The associated numerical value is the contract required detection limit

Table 6-10

LeROI/NORTHPORT SMELTER
SEDIMENT SAMPLE ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374187	01374186	01374185
CLP Inorganic ID	MJ0KK5	MJ0KK4	MJ0KK3
CLP Organic ID	J0KJ3	J0KJ2	J0KJ1
E & E Sample ID	01090432	01090431	01090430
Station Location	NSBK01SD	NSPP01SD	NSDT01SD
Sample Depth (inches)	0-8	0-8	0-8
Description	Background	PPE 1	PPE 2
TAL Metals (mg/kg)			
Aluminum	**2740**	**7650 JK**	**7170**
Antimony	0.73 UJL	8.3 JB	0.68 U
Arsenic	1.2 UJL	**39.9 JK**	**17.6 JL**
Barium	**145**	**413 JK**	**69.0**
Cadmium	0.26 JB (1.3 SQL)	**5.9 JK**	**2.6**
Calcium	**90700 JK**	**222000 JK**	**3110 JK**
Chromium	**7.6**	**34.8 JK**	**14.5**
Cobalt	1.7 JB (12.6 SQL)	16.3 JB	5.8 JB
Copper	**6.8**	**1090 JK**	**124**
Iron	**6560**	**15400 JK**	**13700**
Lead	**16.6**	**887 JK**	**87.1**
Magnesium	**2600**	**5950 JK**	**3650**
Manganese	**87.3**	**339 JK**	**261**
Mercury	0.06 U	R	0.06 U
Nickel	4.1 JB (10.1 SQL)	14.5 JB	**13.3**
Potassium	485 JB	1650 JB	**1380**
Selenium	0.86 U	**5.8 JK**	0.79 U
Silver	0.15 U	3.3 JB	0.92 JB
Sodium	175 JB	684 JB	189 JB
Vanadium	**14.6**	24.8 JB	**24.7**
Zinc	**26.4**	**223**	**92.2**

Note: Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5

B = The reported concentration is between the instrument detection limit and the contract required detection limit
BK = Background.
CLP = Contract Laboratory Program.
E & E = Ecology and Environment, Inc
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The analyte was positively identified. The associated numerical value is an estimate.
K = Unknown bias
L = Low bias
mg/kg = Milligrams per kilogram.
NS = Northport Smelter.
PP = PPE.
PPE = Probable point of entry
R = The data are unusable for all purposes.
SD = Sediment
SQL = Sample quantitation limit
TAL = Target Analyte List
U = The analyte was not detected The associated numerical value is the contract required detection limit

Table 6-11

BLACK ROCK MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254160	01254161	01254162	01254163	01254164
CLP Inorganic ID		MJ0GE9	MJ0GF0	MJ0GF1	MJ0GF2	MJ0GF3
CLP Organic ID		NU	NU	NU	NU	NU
E & E Sample ID		NU	NU	NU	NU	NU
Station Location		BRWP01SS	BRWP02SS	BRWP03SS	BRMS01SS	BRMS02SS
Sample Depth (inches)		0-6	0-6	0-6	0-6	0-6
Description	Background	Waste Rock Pile			Mill Soil	
TAL Metals (mg/kg)						
Aluminum	18100	6030	3590	4470	7700	2000
Arsenic	68.2	62.1 JL	15.8 JL	15.4 JL	5.3 JL	3.0 JL
Barium	548	3870	2300	2890	593	252
Cadmium	7.8	851 JH	688 JH	1090 JH	27.3 JH	1630 JH
Calcium	118000	99000	148000	113000	67200	42400
Chromium	29.0	2.5	2.6	1.9 JB	14.0	2.5
Cobalt	8.6 JB (63 SQL)	4.0 JB	2.5 JB	2 6 JB	4.8 JB	3 1 JB
Copper	55.2	389	228	398	22.5	192
Iron	25200	15800	6850	6390	12600	5170
Lead	183	6520	555	1040	1800	318
Magnesium	17900	29100	49200	26800	21400	11200
Manganese	1370	99.8	171	129	268	96.0
Mercury	0.06 JB (0.11 SQL)	26.4	10	18.8	0.19	0.05 U
Nickel	58.4	6.4 JB	5.1 JB	3.2 JB	14.6	3 8 JB
Potassium	11660	674 JB	211 JB	142 JB	1160	213 JB
Selenium	1.5 JL	3.7	2.1	2.3	0.74 U	1.6
Silver	6.7	4.2	1.6 JB	3.8	0.72 JB	4.9
Sodium	3308 JB	6810	5060	8780	290 JB	16400
Vanadium	51.2	5.3 JB	5.7 JB	7.0 JB	19.8	2 8 JB
Zinc	835	180000	141000	207000	7550	402000

Note Bold type indicates sample concentration is above the detection limit
Underlined type indicates the sample results is significant as defined in Section 5

Key:

B	= The reported concentration is between the instrument detection limit and the contract required detection limit.
BR	= Black Rock Mine/Mill.
CLP	= Contract Laboratory Program.
E & E	= Ecology and Environment, Inc.
EPA	= United States Environmental Protection Agency.
H	= High bias.
ID	= Identification.
J	= The analyte was positively identified. The associated numerical value is an estimate.
L	= Low bias
mg/kg	= Milligrams per kilogram
MS	= Mill soil.
NU	= Not utilized
SS	= Surface soil.
TAL	= Target Analyte List.
U	= The analyte was not detected. The associated numerical value is the contract required detection limit
WP	= Waste Rock Pile

Table 6-12

GREAT WESTERN MINE
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254177	01254178
CLP Inorganic ID		MJ0GG6	MJ0GG7
CLP Organic ID		NU	NU
E & E Sample ID		NU	NU
Station Location		GWWP01SS	GWWP02SS
Sample Depth (inches)		0-6	0-6
Description	Background	Waste Rock Pile	
TAL Metals (mg/kg)			
Aluminum	18100	7470 JL	1970 JL
Arsenic	68.2	68.4 JH	61.5 JH
Barium	548	68.8	19 6 JB
Cadmium	7.8	166 JL	490 JL
Calcium	118000	78900 JL	97300 JL
Chromium	29.0	21.6 JL	14.2 JL
Cobalt	8.6 JB (63 SQL)	1.3 JB	0.33 JB
Copper	55.2	57.7 JL	46.7 JL
Iron	25200	83600 JL	57300 JL
Lead	183	6200	24000
Magnesium	17900	49900 JL	61400 JL
Manganese	1370	413 JL	572 JL
Mercury	0.06 JB (0.11 SQL)	2.5	4.3
Nickel	58.4	15.4 JL	17.7 JL
Potassium	11660	766 JB	232 JB
Selenium	1.5 JL	R	R
Silver	6.7	5.3	7.5
Sodium	3308 JB	732 JB	2830
Thallium	1.4 U	4.5	2.3
Vanadium	51.2	48.5 JL	33.8 JL
Zinc	835	52700 JK	118000 JK

Note: Bold type indicates sample concentration is above the detection limit
Underlined type indicates the sample results is significant as defined in Section 5.

Key

B = The reported concentration is between the instrument detection limit and the contract required detection limit.
CLP = Contract Laboratory Program.
E & E = Ecology and Environment, Inc.
EPA = United States Environmental Protection Agency
GW = Great Western Mine.
H = High bias
ID = Identification.
J = The analyte was positively identified The associated numerical value is an estimate
K = Unknown bias.
L = Low bias.
mg/kg = Milligrams per kilogram.
NU = Not utilized
R = The data are unusable for all purposes
SS = Surface soil.
TAL = Target Analyte List
U = The analyte was not detected The associated numerical value is the contract required detection limit
WP = Waste Rock Pile.

Table 6-13

LAST CHANCE MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254174	01254175	01254176	01254169	01254170	01254171	01254165	01254166	01254167
CLP Inorganic ID		MJ0GG3	MJ0GG4	MJ0GG5	MJ0GF8	MJ0GF9	MJ0GG0	MJ0GF4	MJ0GF5	MJ0GF6
CLP Organic ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
E & E Sample ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
Station Location		LCWP01SS	LCWP02SS	LCWP03SS	LCTP01SS	LCTP02SS	LCTP03SS	LCMS01SS	LCMS02SS	LCMS03SS
Sample Depth (inches)		0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Waste Rock Pile			Tailings Pile			Mill Soil		
TAL Metals (mg/kg)										
Aluminum	18100	2980	3480	1890	585	418	649	2440	3560	437
Arsenic	68.2	101	105	135	112 JL	120 JL	82.9 JL	71.0 JL	36.0 JL	143 JL
Barium	548	26 0 JB	25.8 JB	18.4 JB	18.1 JB	14.1 JB	18.2 JB	84.2	267	13.4 JB
Cadmium	7.8	285	349	326	301 JH	269 JH	518 JH	165 JH	136 JH	471 JH
Calcium	118000	44400	34700	38800	68200	74800	67000	162000	241000	51200
Chromium	29.0	12.1	11.3	12.8	10.7	10.3	9.2	8.0	7.7	11.5
Cobalt	8.6 JB (63 SQL)	0.24 U	0.24 U	0.26 U	0.24 U	0.24 U	0 23 U	0 26 U	1 5 JB	0.24 U
Copper	55.2	48.1 JL	51.6 JL	56.0 JL	53.2	49.2	39.1	50.2	2790	61.1
Iron	25200	156000	161000	167000	181000	166000	113000	103000	37000	200000
Lead	183	113000	125000	170000	110000	72900	110000	29000	18000	86200
Magnesium	17900	28300	22500	24200	39500	46700	32300	15300	10700	31200
Manganese	1370	200	198	216	129	108	98.2	107	185	107
Mercury	0 06 JB (0.11 SQL)	1.5	2.0	2.7	2.3	1.4	1.3	0 06 U	1.3	2.6
Nickel	58.4	13.1	13.3	12.5	10.5	9.7	8.8	8.8 JB	9 5 JB	11.6
Potassium	11660	366 JB	444 JB	261 JB	83.0 JB	69.2 JB	118 JB	241 JB	346 JB	81 7 JB
Selenium	1.5 JL	0 75 U	0 75 U	0 80 U	0.74 U	0.74 U	0 71 U	0 81 U	0 86 U	0 73 U
Silver	6.7	9.9	10.0	12.1	8.7	6.2	7.5	3.0	9.2	7.3
Sodium	3308 JB	1000 JB	1520	1500	1490	1160	2960	588 JB	385 JB	2640
Thallium	1 4 U	6.5	6.9	8.3	0 85 U	0.85 U	0.82 U	0.93 U	0 99 U	0 84 U
Vanadium	51.2	12.0	12.9	14.8	9.5 JB	11.2	8 5 JB	8 4 JB	5 8 JB	14.6
Zinc	835	67700	89800	89300	72600	63900	112000	36900	18600	107000

Note Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5

Key

B	= The reported concentration is between the instrument detection limit and the contract required detection limit.
CLP	= Contract Laboratory Program.
E & E	= Ecology and Environment, Inc
EPA	= United States Environmental Protection Agency.
H	= High bias.
ID	= Identification.
J	= The analyte was positively identified. The associated numerical value is an estimate.
L	= Low bias.
LC	= Last Chance Mine/Mill
mg/kg	= Milligrams per kilogram
MS	= Mill soil
NU	= Not utilized.
SS	= Surface soil.
TAL	= Target Analyte List
TP	= Tailings pile
U	= The analyte was not detected The associated numerical value is the contract required detection limit
WP	= Waste Rock Pile.

Table 6-14

LAST CHANCE MINE/MILL
SEDIMENT SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254168	01254173
CLP Inorganic ID		MJ0FG7	MJ0GG2
CLP Organic ID		NU	NU
E & E Sample ID		NU	NU
Station Location		LCPP01SD	LCPP02SD
Sample Depth (inches)		0-8	0-8
Description	Background	PPE 1	PPE 2
TAL Metals (mg/kg)			
Aluminum	20200	5800	1280
Arsenic	13.0	30.5 JL	1 9 UJK
Barium	450	112	70.5 JB
Cadmium	3.4	56.9 JH	3.2 JH
Calcium	109000	191000	197000
Chromium	32.3	9.5	1.9 JB
Cobalt	11.9	1.2 JB	0 51 U
Copper	69.3	75.1	3.9 JB
Iron	27900	39000	4940
Lead	124	14600	385
Magnesium	33500	14500	7540
Manganese	673	170	58.5
Mercury	0.10 JB (0.102 SQL)	0.46	1.2
Nickel	31.9	8.6 JB	2.5 JB
Potassium	3920 JK	623 JB	315 JB
Vanadium	47.4	9.6 JB	3.1 JB
Zinc	239	13400	1100

Note: Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5

Key.

B = The reported concentration is between the instrument detection limit and the contract required detection limit.
CLP = Contract Laboratory Program.
E & E = Ecology and Environment, Inc.
EPA = United States Environmental Protection Agency.
H = High bias.
ID = Identification.
J = The analyte was positively identified. The associated numerical value is an estimate.
K = Unknown bias
LC = Last Chance Mine/Mill.
mg/kg = Milligrams per kilogram.
µg/kg = Micrograms per kilogram.
PPE = Probable point of entry.
SD = Sediment
SQL = Sample quantitation limit.
TAL = Target Analyte List.
U = The analyte was not detected The associated numerical value is the contract required detection limit

Table 6-15

DEEP CREEK MINE
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254251	01254252	01254253	01254254	01254267	01254255	01254256	01254257	01254258
CLP Inorganic ID		MJ0EN5	MJ0EN6	MJ0EN7	MJ0EN8	MJ0EQ1	MJ0EN9	MJ0EP0	MJ0EP1	MJ0EP2
CLP Organic ID		NU	J0EN6	J0EN7	J0EN8	NU	J0EN9	J0EP0	J0EP1	J0EP2
E & E Sample ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
Station Location		DCWP01SS	DCWP02SS	DCWP03SS	DCWP04SS	DCWP05SS	DCTP01SS	DCTP02SS	DCTP03SS	DCTP04SS
Sample Depth (inches)		0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Waste Rock Pile					Tailings Pile			
TAL Metals (mg/kg)										
Aluminum	18100	133	1350	2070	1750	75.7	761	656	439	497
Arsenic	68.2	4.5	5.4	4.4	2.8	1.9 JB	12.3	14.0	8.8	11.6
Barium	548	1.4 U	23.5 JB	57.6	30.2 JB	1.4 U	10 6 JB	11 3 JB	6.8 JB	9.6 JB
Cadmium	7.8	8.1	16.3	24.9	25.2	15.1	147	160	124	138
Calcium	118000	187000	173000	132000	153000	180000	137000	141000	162000	155000
Chromium	29.0	0.41 U	2.3	3.4	3.2	0 62 U	2.7	2.5 JB	1.9 JB	1 8 JB
Cobalt	14.7	0.22 U	0.58 JB	1.4 JB	1.4 JB	0.26 U	0.29 U	0.33 JB	0.28 U	0 28 U
Copper	55.2	13.1 JL	10.4 JL	10.2 JL	8.6 JL	10.0 JL	52.0 JL	46.5 JL	29.7 JL	30.5 JL
Iron	25200	2120	7160	7210	6090	2310	11600	13500	10900	12200
Lead	183	476	799	558	416	324	6110	5990	3350	5230
Magnesium	17900	125000	105000	67000	93900	117000	75500	78800	87800	86300
Manganese	1370	172	184	175	206	167	186	197	183	192
Mercury	0 06 JB (0 11 SQL)	0.06 JB	0.25	0.14	0.21	0.06 U	2.7	2.1	1.4	1.6
Nickel	58.4	0.67 U	3.2 JB	4.1 JB	3.6 JB	0.74 JB	4.2 JB	4.9 JB	3.6 JB	3.8 JB
Potassium	11660	45.5 JB	224 JB	449 JB	413 JB	33.2 JB	95.6 JB	98 5 JB	56.1 JB	67 3 JB
Selenium	1.5 JL	0.69 U	0.69 U	0.76 U	0.75 U	0 79 U	0.89 U	0 90 U	0 87 U	0 86 U
Silver	6.7	0.16 U	0.42 JB	0.18 JB	0.18 U	0.19 U	2.4 JB	2.4 JB	1.5 JB	1 9 JB
Sodium	377 JB	186 JB	213 JB	230 JB	230 JB	192 JB	604 JB	731 JB	573 JB	585 JB
Vanadium	51.2	1.6 JB	11.4	7.2 JB	6.4 JB	5.2 JB	14.8	18.2	14.6	14.9
Zinc	835	2030	4220	6770	7780	4680	37500	41300	34400	34500
Pesticide/PCBs (µg/kg)										
4,4'-DDT	3.5 U	NU	3.4 U	3.7 U	3.6 U	NU	4.5 U	5 5 U	4 U	4 1 JQ

Table 6-15

DEEP CREEK MINE
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254259	01254260	01254261	01254262	01254263	01254264	01254265	01254266	01254268
CLP Inorganic ID		MJ0EP3	MJ0EP4	MJ0EP5	MJ0EP6	MJ0EP7	MJ0EP8	MJ0EP9	MJ0EQ0	MJ0EQ2
CLP Organic ID		J0EP3	J0EP4	J0EP5	J0EP6	J0EP7	J0EP8	J0EP9	J0EQ0	J0EQ2
E & E Sample ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
Station Location		DCTP05SS	DCTP06SS	DCTP07SS	DCTP08SS	DCTP09SS	DCTP10SS	DCTP11SS	DCTP12SS	DCTP13SS
Sample Depth (inches)		0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Tailings Pile								
TAL Metals (mg/kg)										
Aluminum	18100	819	617	455	593	750	405	354	344	795
Arsenic	68.2	12	15.6	11.4	14.6	22.6	9.7	9.8	12.7	8.0
Barium	548	13.2 JB	11.3 JB	5.9 JB	9.1 JB	29.0 JB	7.3 JB	7 8 JB	10.5 JB	9.2 JB
Cadmium	7.8	169	232	142	162	192	122	151	170	425
Calcium	118000	147000	154000	147000	144000	147000	149000	157000	155000	132000
Chromium	29.0	2.2 JB	2.2 JB	1.9 JB	2.5 JB	2.8	1.6 JB	1.5 JB	1.6 JB	1.9 JB
Cobalt	14.7	0.37 JB	0.28 U	0.29 U	0.29 U	0.35 JB	0.30 U	0 28 U	0.27 U	0.49 JB
Copper	55.2	32.0 JL	43.7 JL	41.0 JL	53.2 JL	35.5 JL	31.2 JL	33.3 JL	35.5 JL	60.2 JL
Iron	25200	18500	18300	11200	13700	15300	10700	11900	16600	17800
Lead	183	5410	13300	4900	6290	8250	5200	5660	6700	1860
Magnesium	17900	85000	92200	85100	83900	80600	85000	94300	94900	82600
Manganese	1370	194	186	199	202	186	170	208	198	226
Mercury	0.06 JB (0.11 SQL)	1.7	3.2	1.6	2.4	2.3	0.97	2.1	1.9	1.2
Nickel	58.4	6.4 JB	6.8 JB	3.7 JB	4.8 JB	5.9 JB	3.3 JB	4 0 JB	5.2 JB	4 4 JB
Potassium	11660	153 JB	78.4 JB	43.6 JB	74.4 JB	78.3 JB	55.3 JB	27.4 JB	42 5 JB	101 JB
Selenium	1.5 JL	0.84 U	0.85 U	0.89 U	0.91 U	0.92 U	0.94 U	0.86 U	0.84 U	0 72 U
Silver	6.7	2.1 JB	3.0	2.1 JB	2.7 JB	2.4 JB	1.6 JB	1.6 JB	2.1 JB	1.3 JB
Sodium	377 JB	847 JB	1130 JB	531 JB	814 JB	767 JB	559 JB	682 JB	809 JB	3340
Vanadium	51.2	11.7 JB	10.5 JB	14.4	20.5	29.5	11.4 JB	12 3 JB	12.9	8.8 JB
Zinc	835	48300	58000	33300	46000	44300	33100	39800	46300	123000
Pesticide/PCBs (µg/kg)										
4,4'-DDT	3.5 U	4.2 U	4.1 U	4.3 U	4.3 U	3.9 JQ	4.3 U	4 1 U	4.1 U	3.6 U

Table 6-15

DEEP CREEK MINE
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254269	01254270	01254272	01254273	01254274
CLP Inorganic ID		MJ0EQ3	MJ0EQ4	MJ0EQ6	MJ0EQ7	MJ0EQ8
CLP Organic ID		J0EQ3	J0EQ4	J0EQ6	J0EQ7	J0EQ8
E & E Sample ID		NU	NU	NU	NU	NU
Station Location		DCTP14SS	DCTP15SS	DCTP16SS	DCTP17SS	DCTP18SS
Sample Depth (inches)		0-6	0-6	0-6	0-6	0-6
Description	Background	Tailings Pile				
TAL Metals (mg/kg)						
Aluminum	18100	189	913	1500	2820	3730
Arsenic	68.2	4.7	9.1	11.5 U	1.5 U	2.6 U
Barium	548	2.6 JB	17.6 JB	125 JB	34.6 JB	32 1 JB
Cadmium	7.8	23.8	96.2	261	30.7	18.3
Calcium	118000	175000	136000	155000	131000	142000
Chromium	29.0	0.66 U	6.7	3.8 JB	3.5	4.8
Cobalt	14.7	0.23 U	0.53 JB	1.3 U	0.88 JB	1.3 JB
Copper	55.2	4.4 JB	21.1 JL	148 JL	19.9 JL	12.4 JL
Iron	25200	11900	17800	3460	5660	7270
Lead	183	280	4360	4240	632	202
Magnesium	17900	116000	83400	15700	72000	90700
Manganese	1370	193	184	54.8	153	183
Mercury	0.06 JB (0.11 SQL)	0.48	0.51	0.58 JB	0.17	0.35
Nickel	58.4	2.8 JB	10	16.5 JB	5.3 JB	7 7 JB
Potassium	11660	28.3 JB	155 JB	483 JB	427 JB	577 JB
Selenium	1.5 JL	0.70 U	0 71 U	5.3 JB	1.2 JB	0.84 U
Silver	6.7	0.24 JB	1.1 JB	1.2 JB	0.23 U	0 28 JB
Sodium	377 JB	229 JB	561 JB	665 JB	166 JB	193 JB
Vanadium	51.2	10.4	9.7 JB	3.7 JB	6.9 JB	10.3 JB
Zinc	835	10800	31300	51500	4240	6720
Pesticide/PCBs (µg/kg)						
4,4'-DDT	3.5 U	3.4 U	3.6 U	15 U	4.8 U	4 5 U

Note Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5.

Key:

B	= The reported concentration is between the instrument detection limit and the contract required detection limit.
CLP	= Contract Laboratory Program.
DC	= Deep Creek Mine.
E & E	= Ecology and Environment, Inc.
EPA	= United States Environmental Protection Agency.
ID	= Identification
J	= The analyte was positively identified. The associated numerical value is an estimate.
L	= Low bias
mg/kg	= Milligrams per kilogram.
µg/kg	= Micrograms per kilogram.
NU	= Not utilized
PCBs	= Polychlorinated biphenyls.
Q	= The result is estimated because it is below the Contract Required Detection Limit.
SS	= Surface soil
TAL	= Target Analyte List.
TP	= Tailings pile
U	= The analyte was not detected. The associated numerical value is the contract required detection limit.
WP	= Waste Rock Pile

Table 6-16

COPPER KING MINE
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254156	01254157
CLP Inorganic ID		MJ0GE5	MJ0GE7
CLP Organic ID		NU	NU
E & E Sample ID		NU	NU
Station Location		CKWP01SS	CKWP02SS
Sample Depth (inches)		0-6	0-6
Description	Background	Waste Rock Pile	
TAL Metals (mg/kg)			
Aluminum	**18100**	**308**	**476**
Arsenic	**68.2**	**4.3 JL**	2.2 JB
Barium	**548**	12.3 JB	34 JB
Cadmium	**7.8**	0.07 U	0.07 U
Calcium	**118000**	**16000**	958 JB
Chromium	**29.0**	1.1 JB	**2.6**
Cobalt	8.6 JB (63 SQL)	0.26 U	0.26 U
Copper	**55.2**	**559**	**1700**
Iron	**25200**	**367000**	**262000**
Lead	**183**	**24.3**	**27.6**
Magnesium	**17900**	**4360**	334 JB
Manganese	**1370**	**282**	**276**
Mercury	0.06 JB (0 11 SQL)	**0.12**	0.06 U
Nickel	**58.4**	0.36 U	0.58 JB
Potassium	**11660**	377 JB	336 JB
Selenium	**1.5 JL**	**15.1**	**18.9**
Silver	**6.7**	**6.2**	**8.5**
Thallium	1.4 U	**2.4**	**3.7**
Vanadium	**51.2**	3.0 JB	5.5 JB
Zinc	**835**	**668**	**31.0**

Note: Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5

Key:

B = The reported concentration is between the instrument detection limit and the contract required detection limit.
CK = Copper King Mine.
CLP = Contract Laboratory Program.
E & E = Ecology and Environment, Inc.
EPA = United States Environmental Protection Agency
ID = Identification.
J = The analyte was positively identified. The associated numerical value is an estimate.
L = Low bias.
mg/kg = Milligrams per kilogram.
NU = Not utilized.
SS = Surface soil.
TAL = Target Analyte List
U = The analyte was not detected The associated numerical value is the contract required detection limit
WP = Waste rock pile

Table 6-17

COPPER KING MINE
SEDIMENT SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENT AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254159
CLP Inorganic ID		MJ0GE8
CLP Organic ID		NU
E & E Sample ID		NU
Station Location		CKPP01SD
Sample Depth (inches)		0-8
Description	Background	PPE 1
TAL Metals (mg/kg)		
Aluminum	20200	5750
Arsenic	13.0	4.9 JL
Barium	450	1320
Cadmium	3.4	0.88 JB
Calcium	109000	149000
Chromium	32.3	6.5
Cobalt	11.9	1.5 JB
Copper	69.3	6.3
Iron	27900	17700
Lead	124	33.0
Magnesium	33500	86900
Manganese	673	456
Nickel	31.9	5.9 JB
Potassium	3920 JK	858 JB
Vanadium	47.4	7.3 JB
Zinc	239	318

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

Key:

B = The reported concentration is between the instrument detection limit and the contract required detection limit.
CK = Copper King Mine.
CLP = Contract Laboratory Program.
E & E = Ecology and Environment, Inc
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The analyte was positively identified. The associated numerical value is an estimate.
K = Unknown bias.
L = Low bias.
mg/kg = Milligrams per kilogram.
PP = Probable point of entry
PPE = Probable point of entry.
SD = Sediment.
TAL = Target Analyte List

Table 6-18

SIERRA ZINC MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENT AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254299	01254300	01254301	01254302	01254303	01254304	01254305	01254306	01254307
CLP Inorganic ID		MJ0ET3	MJ0ET4	MJ0ET5	MJ0ET6	MJ0ET7	MJ0ET8	MJ0ET9	MJ0EW0	MJ0EW1
CLP Organic ID		J0ET3	NU	J0ET5	NU	NU	NU	NU	NU	NU
E & E Sample ID		J0ET4	NU	NU	NU	NU	NU	NU	NU	NU
Station Location		SZWP01SS	SZWP02SS	SZWP03SS	SZWP04SS	SZWP05SS	SZWP06SS	SZWP07SS	SZWP08SS	SZWP09SS
Sample Depth (inches)		0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Waste Rock Pile								
TAL Metals (mg/kg)										
Aluminum	18100	5260	6570	4040	788	846	495	1940	2990	2560
Arsenic	68.2	6.4 JH	53.7 JH	12.5 JH	9.6 JH	9.2 JH	5.0 JH	12.6 JH	7.3 JH	9.7 JH
Barium	548	32.0 JB	64.7	27.0 JB	13.9 JB	8.0 JB	6 3 JB	24 2 JB	35 7 JB	24 4 JB
Cadmium	7.8	21.7	65.1	121	15.8	15.9	13.9	22.7	15.3	22.7
Calcium	118000	17300	53000	72900	152000	156000	157000	85900	71600	106000
Chromium	29.0	7.2	8.1	5.5	1.9 JB	2.2	3.1	2.5	3.3	2.9
Cobalt	8.6 JB (63 SQL)	3.0 JB	2.9 JB	3.1 JB	0 57 JB	0.24 U	0.28 JB	1 2 JB	1 5 JB	0.95 JB
Copper	55.2	55.7 JH	130 JH	181 JH	53.9 JH	40.1 JH	61.6 JH	104 JH	46.2 JH	54.4 JH
Iron	25200	14200	35400	28300	17500	19600	9820	30100	16500	21700
Lead	183	1460	6570	15800	918	1380	871	2230	1180	1990
Magnesium	17900	5810	26000	38900	95100	98900	100000	52700	43100	63800
Manganese	1370	1150	2730	1850	441	437	462	272	257	245
Mercury	0.06 JB (0.11 SQL)	0 10 JB	1.6 JL	0.68 JL	0.18 JL	0.23 JL	0.10 JB	0.33 JL	0.17 JL	0.25 JL
Nickel	58.4	6.1 JB	10	9.9	6.3 JB	7.0 JB	4.6 JB	11.0	6 8 JB	8.7 JB
Potassium	11660	1110 JL	845 JB	768 JB	349 JB	117 JB	108 JB	402 JB	843 JB	429 JB
Selenium	1.5 JL	0.71 UJK	0.74 UJK	0.73 UJK	0.73 UJK	0.75 UJK	0.74 UJK	0.74 UJK	0.73 UJK	0.76 UJK
Silver	6.7	2.2	5.8	5.8	0.61 JB	0.58 JB	0.28 JB	0.95 JB	0 50 JB	0 75 JB
Vanadium	51.2	12.7	12.4	10.4 JB	6.5 JB	5.8 JB	5.6 JB	8.0 JB	11.2	7.7 JB
Zinc	835	4980	14600	32200	4100	4330	3990	5900	3820	5880

Table 6-18

SIERRA ZINC MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254308	01254309	01254310	01254277	01254278	01254279	01254280	01254281	01254282
CLP Inorganic ID		MJ0EW2	MJ0EW3	MJ0EW4	MJ0ER1	MJ0ER2	MJ0ER3	MJ0ER4	MJ0ER5	MJ0ER6
CLP Organic ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
E & E Sample ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
Station Location		SZWP10SS	SZWP11SS	SZWP12SS	SZTP01SS	SZTP02SS	SZTP03SS	SZTP04SS	SZTP05SS	SZTP06SS
Sample Depth (inches)		0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Waste Rock Pile			Tailings Pile					
TAL Metals (mg/kg)										
Aluminum	18100	814	1240	5210	2650	173	298	1700	2580	3230
Arsenic	68.2	9.7 JH	7.0 JH	8:7 JH	7.0	6.4	5.6	6.6	6.6	6.4
Barium	548	46.5	32.8 JB	53.2	195	5.4 JB	7.8 JB	156	300	317
Cadmium	7.8	30.5	29.6	27.2	68.1	23.4	14.4	130	126	111
Calcium	118000	139000	148000	98600	134000	168000	178000	121000	119000	122000
Chromium	29.0	3.3	3.8	4.8	9.7	0.84 JB	1.3 JB	6.4	9.7	11.2
Cobalt	8.6 JB (63 SQL)	0.63 JB	0.67 JB	1.7 JB	1.6 JB	0.23 U	0.28 U	2.3 JB	2.4 JB	3 0 JB
Copper	55.2	74.5 JH	144 JH	72.6 JH	370	28.8	33.4	123	251	293
Iron	25200	21000	15200	18200	15700 JK	17900 JK	10600 JK	18400 JK	18100 JK	17000 JK
Lead	183	1960	1710	1970	2830	488	2110	1680	2290	3120
Magnesium	17900	86700	91200	60400	77000	105000	105000	70700	70000	72800
Manganese	1370	527	548	483	414	255	265	443	450	487
Mercury	0.06 JB (0.11 SQL)	0.57 JL	0.40 JL	0.38 JL	1.7 JL	0.10 JB	0.24 JL	2.7 JL	2.2 JL	2.1 JL
Nickel	58.4	8.7 JB	7.1 JB	8.7 JB	18.7	4.8 JB	3.5 JB	17.5	21.1	21.1
Potassium	11660	250 JB	232 JB	529 JB	943 JB	64.9 JB	91.3 JB	884 JB	1170 JB	1260 JB
Selenium	1.5 JL	0.78 UJK	0.78 UJK	0.78 UJK	0.84 U	0.71 U	0.88 U	1.3	0 94 U	0.86 U
Silver	6.7	3.2	2.3 JB	2.6	9.3	0.63 JB	0.34 JB	17.0	16.4	13.4
Vanadium	51.2	8.2 JB	8.4 JB	10 JB	24.0	6.2 JB	8 5 JB	24.9	30.7	31.2
Zinc	835	7030	7530	6770	17600 JK	6860 JK	3560 JK	33400 JK	29500 JK	26100 JK

Table 6-18

SIERRA ZINC MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254283	01254284	01254285	01254286	01254287	01254288	01254289	01254290	01254291
CLP Inorganic ID		MJ0ER7	MJ0ER8	MJ0ER9	MJ0ES0	MJ0ES1	MJ0ES2	MJ0ES3	MJ0ES4	MJ0ES5
CLP Organic ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
E & E Sample ID		NU	NU	NU	NU	NU	NU	NU	NU	NU
Station Location		SZTP07SS	SZTP08SS	SZTP09SS	SZTP10SS	SZTP11SS	SZTP12SS	SZTP13SS	SZTP14SS	SZTP15SS
Sample Depth (inches)		0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Tailings Pile								
TAL Metals (mg/kg)										
Aluminum	18100	214	365	1120	14500	5650	8960	1560	1010	913
Arsenic	68.2	6.5	6.2	8.2	5.8	4.5	3.4	9.8	8.7	9.5
Barium	548	6.8 JB	6.0 JB	37.4 JB	206	73.3	137	52.5 JB	38 3 JB	62.4
Cadmium	7.8	23.2	23.6	45.8	18.3	14.6	18.8	65.6	58.6	54.4
Calcium	118000	161000	160000	153000	53100	82100	39500	148000	154000	153000
Chromium	29.0	1.5 JB	1.6 JB	4.5	8.7	5.6	9.2	6.2	5.2	4.6
Cobalt	8.6 JB (63 SQL)	0.27 U	0.28 U	0.38 JB	3.2 JB	2.0 JB	3.6 JB	0.74 JB	0.60 JB	0 60 JB
Copper	55.2	50.7	69.5	146	97.7	63.4	104	236	185	163
Iron	25200	13000 JK	12300 JK	15400 JK	14500 JK	12100 JK	12500 JK	16500 JK	15700 JK	16100 JK
Lead	183	1670	1830	3210	1110	1020	917	3470	3620	3450
Magnesium	17900	83100	81000	87200	28700	47900	21500	81600	84500	85000
Manganese	1370	202	191	320	478	264	328	381	372	349
Mercury	0.06 JB (0.11 SQL)	0.36 JL	0.33 JL	0.57 JL	0.26 JL	0.21 JL	0 14 JB	0.70 JL	0.80 JL	0.84 JL
Nickel	58.4	5.7 JB	5.0 JB	8.0 JB	11.0	7.6 JB	12.2	11.7	10.5 JB	9.8 JB
Potassium	11660	59.3 JB	65.7 JB	174 JB	800 JB	699 JB	1060 JB	483 JB	280 JB	263 JB
Selenium	1.5 JL	0.82 U	0.85 U	0.86 U	0.87 U	0.80 U	1.0 U	0.90 U	0.89 U	0.87 U
Silver	6.7	0.62 JB	0.71 JB	1.6 JB	1.8 JB	0.92 JB	2.1 JB	6.3	4.1	4.2
Vanadium	51.2	5.3 JB	5.9 JB	10.5 JB	22.5	15.7	21.5	15.5	12.4 JB	11.7 JB
Zinc	835	7220 JK	5340 JK	10100 JK	4410 JK	3730 JK	4880 JK	15600 JK	12000 JK	11500 JK

Table 6-18

SIERRA ZINC MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254292	01254293	01254294	01254295	01254296	01254297	01254311
CLP Inorganic ID		MJ0ES6	MJ0ES7	MJ0ES8	MJ0ES9	MJ0ET0	MJ0ET1	MJ0EW5
CLP Organic ID		NU	NU	NU	NU	NU	NU	J0EW5
E & E Sample ID		NU	NU	NU	NU	NU	NU	NU
Station Location		SZTP16SS	SZTP17SS	SZTP18SS	SZTP19SS	SZTP20SS	SZTP21SS	SZMS01SS
Sample Depth (inches)		0-6	0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Tailings Pile						Mill Soil
TAL Metals (mg/kg)								
Aluminum	18100	383	494	408	714	319	743	1940
Arsenic	68.2	6.5	6.7 JH	6.6 JH	7.2 JH	7.0 JH	5.8 JH	8.4 JH
Barium	548	9.2 JB	11 1 JB	14.6 JB	17.0 JB	5.2 JB	11.0 JB	127
Cadmium	7.8	44.7	44.9	46.0	54.7	46.1	70.0	78.2
Calcium	118000	159000	156000	154000	149000	158000	143000	130000
Chromium	29.0	2.9	2.9	2.9	4.4	2.6	4.9	27.3
Cobalt	8.6 JB (63 SQL)	0.28 U	0.28 U	0.3 JB	0.42 JB	0.28 U	0.30 U	6.1 JB
Copper	55.2	162	163 JH	180 JH	222 JH	147 JH	297 JH	443 JH
Iron	25200	10900 JK	10600	11800	14600	10200	13500	33700
Lead	183	3370	3280	3980	4050	2940	5110	4850
Magnesium	17900	90200	87800	89300	77600	89300	69500	63900
Manganese	1370	301	284	258	569	236	629	520
Mercury	0.06 JB (0.11 SQL)	0.60 JL	0.65 JL	0.62 JL	0.68 JL	0.76 JL	0.77 JL	0.97 JL
Nickel	58.4	6.0 JB	5.5 JB	6.0 JB	8.2 JB	5.5 JB	7 8 JB	47.0
Potassium	11660	96.6 JB	108 JB	107 JB	216 JB	79.8 JB	208 JB	367 JB
Selenium	1.5 JL	0.85 U	0.87 UJK	0.85 UJK	0.90 UJK	0.87 UJK	0.92 UJK	0 89 UJK
Silver	6.7	1.5 JB	1.8 JB	1.8 JB	3.1	1.3 JB	2.8	8.7
Vanadium	51.2	7.2 JB	7.6 JB	7.7 JB	10.5 JB	7 6 JB	12.6 JB	15.0
Zinc	835	10800 JK	9700	9930	12300	10300	14700	17500

Note: Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5.

Key

B	= The reported concentration is between the instrument detection limit and the contract required detection limit.
CLP	= Contract Laboratory Program.
E & E	= Ecology and Environment, Inc.
EPA	= United States Environmental Protection Agency.
H	= High bias.
ID	= Identification.
J	= The analyte was positively identified. The associated numerical value is an estimate.
K	= Unknown bias
L	= Low bias.
mg/kg	= Milligrams per kilogram.
MS	= Mill soil.
NU	= Not utilized.
SS	= Surface soil
SZ	= Sierra Zinc Mine/Mill.
TAL	= Target Analyte List
TP	= Tailings pile
U	= The analyte was not detected. The associated numerical value is the contract required detection limit.
WP	= Waste Rock Pile.

Table 6-19

ELECTRIC POINT MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254185	01254186	01254187	01254191	01254192	01254193	01254194	01254195
CLP Inorganic ID		MJ0GH4	MJ0GH5	MJ0GH6	MJ0GJ0	MJ0GJ1	MJ0GJ2	MJ0GJ3	MJ0GJ4
CLP Organic ID		NU	NU	NU	NU	NU	NU	NU	NU
E & E Sample ID		NU	NU	NU	NU	NU	NU	NU	NU
Station Location		EPWP01SS	EPWP02SS	EPWP03SS	EPWP04SS	EPWP05SS	EPTP01SS	EPTP02SS	EPTP03SS
Sample Depth (inches)		0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Waste Rock Pile					Tailings Pile		
TAL Metals (mg/kg)									
Aluminum	18100	1740 JL	1680 JL	978 JL	4180 JL	2520 JL	3150 JL	7240 JL	5140 JL
Arsenic	68.2	9.4 JH	9.4 JH	9.0 JH	27.7 JH	12.6 JH	19.6 JH	36.6 JH	14.6 JH
Barium	548	12.9 JB	14.2 JB	11.7 JB	12.3 JB	12.1 JB	11.1 JB	38 7 JB	28.2 JB
Beryllium	0.89 JB (1.06 SQL)	0.29 JB	0.30 JB	0.36 JB	1.1	0.51 JB	0 81 JB	1.5	0 79 JB
Cadmium	7.8	7.6 JL	8.0 JL	6.5 JL	17.2 JL	10.5 JL	13.0 JL	25.0 JL	8.7 JL
Calcium	118000	144000 JL	146000 JL	143000 JL	42400 JL	77100 JL	67600 JL	22400 JL	72900 JL
Chromium	29.0	5.0 JL	4.9 JL	8.2 JL	12.9 JL	7.8 JL	10.4 JL	15.7 JL	15.4 JL
Cobalt	8.6 JB (63 SQL)	1.3 JB	1.4 JB	1.5 JB	2.3 JB	2.5 JB	2.1 JB	7.8 JB	4 5 JB
Copper	55.2	7.3 JL	8.3 JL	7.5 JL	18.0 JL	9.8 JL	14.4 JL	26.3 JL	13.6 JL
Iron	25200	26500 JL	28000 JL	30700 JL	140000 JL	57600 JL	111000 JL	161000 JL	63900 JL
Lead	183	8110	14000	4490	50100	29300	26000	23700	15800
Magnesium	17900	94900 JL	95800 JL	94300 JL	26700 JL	49000 JL	42300 JL	13300 JL	44900 JL
Manganese	1370	753 JL	794 JL	871 JL	1540 JL	857 JL	853 JL	4810 JL	1530 JL
Mercury	0.06 JB (0 11 SQL)	0.28	0.42	0.45	0.31	0.20	0.28	0.69	0.14
Nickel	58.4	8.6 JL	8.9 JL	14.0 JL	34.0 JL	19.0 JL	25.0 JL	48.6 JL	28.6 JL
Potassium	11660	101 JB	91.7 JB	53.9 JB	88.9 JB	83.0 JB	85 1 JB	238 JB	307 JB
Selenium	1.5 JL	R	R	R	R	R	R	R	R
Silver	6.7	0.32 JB	0.24 JB	0.31 JB	2.3	1.3 JB	1 7 JB	3.7	1.3 JB
Thallium	1.4 U	1.7 JB	1.1 JB	1.9 JB	10.1	3.7	7.4	17.6	5.6
Vanadium	51.2	19.4 JL	17.6 JL	23.1 JL	30.6 JL	17.5 JL	25.7 JL	57.3 JL	33.2 JL
Zinc	835	2000 JK	2360 JK	1180 JK	33800 JK	13300 JK	12000 JK	22000 JK	6030 JK

Table 6-19

ELECTRIC POINT MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254188	01254189	01254190
CLP Inorganic ID		MJ0GH7	MJ0GH8	MJ0GH9
CLP Organic ID		NU	NU	NU
E & E Sample ID		NU	NU	NU
Station Location		EPMS01SS	EPMS03SS	EPMS04SS
Sample Depth (inches)		0-6	0-6	0-6
Description	Background	Mill Soil		
TAL Metals (mg/kg)				
Aluminum	18100	2940 JL	2590 JL	2920 JL
Arsenic	68.2	26.1 JH	21.7 JH	13.7 JH
Barium	548	19.6 JB	18.5 JB	17 4 JB
Beryllium	0.89 JB (1.06 SQL)	1.1	1.1 JB	0.56 JB
Cadmium	7.8	6.8 JL	5.4 JL	6.4 JL
Calcium	118000	45900 JL	62000 JL	86800 JL
Chromium	29.0	11.3 JL	5.4 JL	11.2 JL
Cobalt	8.6 JB (63 SQL)	1.5 JB	0.75 JB	2.7 JB
Copper	55.2	17.1 JL	13.7 JL	10.5 JL
Iron	25200	113000 JL	88400 JL	61700 JL
Lead	183	94500	11200	97800
Magnesium	17900	28400 JL	38500 JL	51500 JL
Manganese	1370	1510 JL	1430 JL	1170 JL
Mercury	0.06 JB (0.11 SQL)	0.27	0.16	0.16
Nickel	58.4	18.9 JL	15.5 JL	14.7 JL
Potassium	11660	113 JB	92.0 JB	154 JB
Selenium	1.5 JL	R	R	R
Silver	6.7	2.2 JB	1.5 JB	1.5 JB
Thallium	1.4 U	7.5	6.3	3.3
Vanadium	51.2	50.2 JL	39.3 JL	26.6 JL
Zinc	835	5850 JK	10600 JK	5080 JK

Note: Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5.

Key:

B	= The reported concentration is between the instrument detection limit and the contract required detection limit.
CLP	= Contract Laboratory Program.
E & E	= Ecology and Environment, Inc.
EP	= Electric Point Mine/Mill.
EPA	= United States Environmental Protection Agency.
H	= High bias.
ID	= Identification.
J	= The analyte was positively identified. The associated numerical value is an estimate.
K	= Unknown bias.
L	= Low bias.
mg/kg	= Milligrams per kilogram.
MS	= Mill soil.
NU	= Not utilized.
R	= The data are unusable for all purposes.
SQL	= Sample quantitation limit.
SS	= Surface soil.
TAL	= Target Analyte List
TP	= Tailings pile
U	= The analyte was not detected. The associated numerical value is the contract required detection limit.
WP	= Waste Rock Pile

Table 6-20

GLADSTONE MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254179	01254180	01254181	01254182	01254183	01254184
CLP Inorganic ID		MJ0GG8	MJ0GG9	MJ0GH0	MJ0GH1	MJ0GH2	MJ0GH3
CLP Organic ID		NU	NU	NU	NU	NU	NU
E & E Sample ID		NU	NU	NU	NU	NU	NU
Location ID		GLTP01SS	GLTP02SS	GLTP03SS	GLMS01SS	GLMS02SS	GLMS03SS
Sample Depth (inches)		0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Tailings Pile			Mill Soil		
TAL Metals (mg/kg)							
Aluminum	**18100**	**2370 JL**	**2660 JL**	**4270 JL**	**4410 JL**	**3600 JL**	**5950 JL**
Antimony	1.5 JB (15.1 SQL)	**17.7 JL**	8.7 JB	3.9 JB	1.3 JB	2.1 JB	1.2 JB
Arsenic	**68.2**	**65.4 JH**	**55.9 JH**	**41.3 JH**	**21.6 JH**	**19.8 JH**	**22.4 JH**
Barium	**548**	9.7 JB	14.0 JB	33.9 JB	29.3 JB	20.3 JB	45.9
Beryllium	0.48 JB (6.3 SQL)	**2.1**	**2.7**	**1.7**	**1.2**	1.2 JB	**1.4**
Cadmium	**7.8**	**14.9 JL**	**9.2 JL**	**7.7 JL**	**6.4 JL**	**7.9 JL**	**5.4 JL**
Calcium	**118000**	**2250 JL**	**2920 JL**	**60300 JL**	**55800 JL**	**48200 JL**	**52900 JL**
Chromium	**29.0**	**11.8 JL**	**11.3 JL**	**8.5 JL**	**7.5 JL**	**8.1 JL**	**7.6 JL**
Cobalt	8.6 JB (63 SQL)	0.29 U	0.28 U	1.0 JB	1.9 JB	1 5 JB	2.4 JB
Copper	**55.2**	**47.2 JL**	**38.6 JL**	**23.9 JL**	**15.6 JL**	**16.1 JL**	**17.0 JL**
Iron	**25200**	**367000 JL**	**247000 JL**	**153000 JL**	**86300 JL**	**84800 JL**	**82600 JL**
Lead	**183**	**94000**	**90400**	**27100**	**35200**	**20300**	**22600**
Magnesium	**17900**	1150 JB	**1600 JL**	**36400 JL**	**33700 JL**	**29000 JL**	**32500 JL**
Manganese	**1370**	**2510 JL**	**3180 JL**	**2210 JL**	**2050 JL**	**1910 JL**	**1880 JL**
Mercury	0.06 JB (0.11 SQL)	**0.28**	**0.30**	**0.19**	**0.25**	**0.20**	0.11 JB
Nickel	**58.4**	**28.6 JL**	**28.3 JL**	**22.5 JL**	**18.6 JL**	**18.4 JL**	**19.2 JL**
Potassium	**11660**	75.9 JB	124 JB	221 JB	215 JB	305 JB	491 JB
Selenium	**1.5 JL**	R	R	R	R	R	R
Silver	**6.7**	**6.2**	**5.3**	1.9 JB	1.6 JB	1.6 JB	1 5 JB
Thallium	1.4 U	**23.5**	**21.2**	**11.3**	**6.0**	**7.4**	**4.6**
Vanadium	**51.2**	**78.7 JL**	**73.5 JL**	**57.2 JL**	**48.3 JL**	**46.6 JL**	**48.0 JL**
Zinc	**835**	**10500 JK**	**9880 JK**	**6560 JK**	**6370 JK**	**6790 JK**	**6020 JK**

Note Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5

Key:

B	= The reported concentration is between the instrument detection limit and the contract required detection limit.
CLP	= Contract Laboratory Program.
E & E	= Ecology and Environment, Inc.
EPA	= United States Environmental Protection Agency.
GL	= Gladstone Mine/Mill.
H	= High bias.
ID	= Identification.
J	= The analyte was positively identified. The associated numerical value is an estimate.
K	= Unknown bias.
L	= Low bias.
mg/kg	= Milligrams per kilogram.
MS	= Mill soil.
NU	= Not utilized.
R	= The data are unusable for all purposes.
SQL	= sample quantitation limit.
SS	= Surface soil.
TAL	= Target Analyte List.
TP	= Tailings pile.
U	= The analyte was not detected. The associated numerical value is the contract required detection limit.

Table 6-21

RED TOP MINE
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254153	01254154	01254155
CLP Inorganic ID		MJ0GE2	MJ0GE3	MJ0GE4
CLP Organic ID		NU	NU	NU
E & E Sample ID		NU	NU	NU
Location ID		RDWP01SS	RDWP02SS	RDWP03SS
Sample Depth (inches)		0-6	0-6	0-6
Description	Background	Waste Rock Pile		
TAL Metals (mg/kg)				
Aluminum	**18100**	**947**	**1920**	**6780**
Antimony	1.5 JB (15.1 SQL)	**1930**	**81.7**	**183**
Arsenic	**68.2**	**142 JL**	**155 JL**	**69.6 JL**
Barium	**548**	41.0 JB	41.7 JB	201
Cadmium	**7.8**	**177 JH**	**111 JH**	**124 JH**
Calcium	**118000**	**239000**	**128000**	**176000**
Chromium	**29.0**	**4.4**	**8.3**	**42.2**
Cobalt	8.6 JB (63 SQL)	4.3 JB	2.4 JB	9.0 JB
Copper	**55.2**	**1080**	**145**	**225**
Iron	**25200**	**15000**	**55900**	**21800**
Lead	**183**	**28900**	**14600**	**14700**
Magnesium	**17900**	**10700**	**14600**	**21300**
Manganese	**1370**	**9700**	**14000**	**14800**
Mercury	0.06 JB (0.11 SQL)	**1.1**	**0.81**	**0.40**
Nickel	**58.4**	7.6 JB	**11.1**	**43.4**
Potassium	**11660**	363 JB	478 JB	**2890**
Selenium	**1.5 JL**	0.73 U	1.9	0.71 U
Silver	**6.7**	**58.4**	**30.4**	**20.2**
Vanadium	**51.2**	2.1 JB	7.0 JB	**22.8**
Zinc	**835**	**15600**	**15700**	**10700**

Note: Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5.

Key:

B = The reported concentration is between the instrument detection limit and the contract required detection limit.
CLP = Contract Laboratory Program.
E & E = Ecology and Environment, Inc.
EPA = United States Environmental Protection Agency.
H = High bias.
ID = Identification.
J = The analyte was positively identified. The associated numerical value is an estimate
L = Low bias.
mg/kg = Milligrams per kilogram.
NU = Not utilized
RD = Red Top Mine
SS = Surface soil.
TAL = Target Analyte List.
U = The analyte was not detected. The associated numerical value is the contract required detection limit
WP = Waste Rock Pile.

Table 6-22

ANDERSON CALHOUN MINE/MILL
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374189	01374170	01374171	01374172	01374168	01374169	01374179	01374180
CLP Inorganic ID	MJ0KK7	MJ0KH9	MJ0KJ0	MJ0KJ1	MJ0KH7	MJ0KH8	MJ0KJ8	MJ0KJ9
CLP Inorganic ID	NU	NU	NU	NU	J0KH1	J0KH2	J0KH6	J0KH7
Station Location ID	ANBK02SS	ANTP01SS	ANTP02SS	ANTP03SS	ANSS01SS	ANSS02SS	ANSS03SS	ANSS04SS
Sample Depth (inches)	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
Description	Background	Tailings Pile			Stained Soil			
TAL Metals (mg/kg)								
Aluminum	**16400**	**3890**	**4030**	**4180**	**1780**	**2520**	**749**	**929**
Arsenic	**8.3 JL**	**11.4**	**7.1**	**6.9**	**8.7**	**17.4**	**5.2**	**5.0**
Barium	**470**	**117000**	**115000**	**122000**	**3330**	**5350**	**83600**	**97800**
Cadmium	**3.4**	**6.0**	**4.7**	**4.3**	**124**	**129**	**2.9**	**3.2**
Calcium	**8210 JK**	**70500**	**60400**	**59200**	**109000**	**75000**	**30600**	**36500**
Chromium	**15.6**	**46.8**	**34.1**	**30.9**	**12.5**	**76.5**	**18.3**	**21.2**
Cobalt	6.0 JB (10.9 SQL)	**14.2**	**13.4**	**14.1**	**28.3**	**34.8**	10.2 JB	**12.1**
Copper	**11.8**	**55.0**	**41.6**	**39.2**	**73.8**	**115**	**31.0**	**30.5**
Iron	**19600**	**5780**	**3290**	**2740**	**12600**	**21400**	**2090**	**1990**
Lead	**152**	**33.3 JK**	**15.5 JK**	**11.2 JK**	**2130**	**2190**	**381 JK**	**25.8 JK**
Magnesium	**4160**	**12500**	**5110**	**4130**	**68600**	**42400**	**2200**	**2890**
Manganese	**922**	**80.2**	**46.0**	**43.8**	**203**	**220**	**30.3**	**30.5**
Mercury	0.05 U	**0.19**	**0.13**	**0.12**	**0.18**	**0.35**	0.06 JB	0.06 JB
Nickel	**14.4**	**90.4**	**71.8**	**67.3**	**12.7**	**24.5**	**47.5**	**53.9**
Potassium	**1160**	297 JB	237 JB	233 JB	238 JB	355 JB	170 JB	186 JB
Selenium	0.74 U	**4.9 JL**	**4.0 JL**	**3.8 JL**	**1.4 JL**	**2.9 JL**	**2.8 JL**	**3.5 JL**
Silver	1.3 JB (2.2 SQL)	0.69 U	0.64 U	0.64 U	**12.0**	**14.8**	0.64 U	0.64 U
Vanadium	**27.4**	**270**	**183**	**172**	**10.6**	**21.7**	**94.1**	**112**
Zinc	**835**	**770**	**534**	**457**	**44900**	**49000**	**318**	**339**

Note: Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5.

Key:

AN	= Anderson Calhoun Mine/Mill.
B	= The reported concentration is between the instrument detection limit and the contract required detection limit.
BK	= Background.
CLP	= Contract Laboratory Program.
E & E	= Ecology and Environment, Inc.
EPA	= United States Environmental Protection Agency.
ID	= Identification.
J	= The analyte was positively identified. The associated numerical value is an estimate.
K	= Unknown bias.
L	= Low bias.
mg/kg	= Milligrams per kilogram.
NU	= Not utilized.
SQL	= Sample quantitation limit.
SS	= Surface soil.
SS	= Stained soil.
TAL	= Target Analyte List.
TP	= Tailings pile.
U	= The analyte was not detected. The associated numerical value is the contract required detection limit.

Table 6-23

ANDERSON CALHOUN MINE/MILL
SEDIMENT SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374181	01374173	01374174	01374175	01374178
CLP Inorganic ID	MJ0KJ5	MJ0KJ2	MJ0KJ3	MJ0KJ4	MJ0KJ7
CLP Organic ID	J0KH3	NU	NU	NU	J0KH5
E & E Sample ID	01090427	NU	NU	NU	01090429
Station Location ID	ANBK01SD	ANTP04SD	ANTP05SD	ANTP06SD	ANPP01SD
Sample Depth (inches)	0-6	0-6	0-6	0-6	0-6
Description	Background	Tailings Pile			PPE 1
TAL Metals (mg/kg)					
Aluminum	**4070**	**3620**	**1810**	**1720**	**7580**
Arsenic	2.7 JB (3.3 SQL)	**10.0**	**4.3**	**6.9**	6.8 JB
Barium	**101**	**15400**	**3980**	**9080**	**348 JK**
Cadmium	1.2 JB (1.7 SQL)	**6.4**	**4.7**	**7.5**	4.1 JB
Calcium	**109000**	**74000**	**93500**	**107000**	**91300 JK**
Chromium	**9.9**	**55.5**	**11.1**	**10**	**20.8 JK**
Cobalt	2.6 JB (16.7 SQL)	**18.7**	0.98 U	1.3 JB	6.9 JB
Copper	6.9 B (8.3 SQL)	**67.4**	**30.7**	**49.4**	**23.2 JK**
Iron	**9200**	**3960**	**11300**	**17500**	**16600 JK**
Lead	**15.3 JK**	**12.3 JK**	**317 JK**	**320 JK**	**30.4 JK**
Magnesium	**3780**	**5840**	**59800**	**65300**	**5660 JK**
Manganese	**239**	**67**	**186**	**204**	**370 JK**
Mercury	0.08 U	**0.17**	0.08 U	0.11 U	R
Nickel	10.8 JB (13.4 SQL)	**106**	**15.5**	**18.4**	25.1 JB
Selenium	1.4 JB (1.7 SQL)	**6.7 JL**	0.6 JB	1.1 JB	**10.2 JK**
Vanadium	15.9 JB (16.7 SQL)	**294**	**16.7**	**22**	19.4 JB
Zinc	**76.3**	**723**	**2150**	**3250**	**343 JK**

Note. Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5.

Key.

AN = Anderson Calhoun Mine/Mill.
B = The reported concentration is between the instrument detection limit and the contract required detection limit.
BK = Background.
CLP = Contract Laboratory Program.
E & E = Ecology and Environment, Inc.
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The analyte was positively identified. The associated numerical value is an estimate.
K = Unknown bias.
L = Low bias.
mg/kg = Milligrams per kilogram.
µg/kg = Micrograms per kilogram.
NU = Not utilized.
PPE = Probable point of entry
R = The data are unusable for all purposes.
SD = Sediment.
SQL = Sample quantitation limit.
TAL = Target Analyte List.
TP = Tailings pile
U = The analyte was not detected The associated numerical value is the contract required detection limit

Table 6-24

IROQUOIS MINE
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254358	01254359
CLP Inorganic ID		MJ0FJ7	MJ0FJ8
CLP Organic ID		NU	NU
E & E Sample ID		NU	NU
Location ID		IRWP01SS	IRWP02SS
Sample Depth (inches)		0-6	0-6
Description	Background	Waste Rock Pile	
TAL Metals (mg/kg)			
Aluminum	**18100**	**2300**	**1080**
Antimony	1.5 JB (15.1 SQL)	1.3 JB	1.3 JB
Arsenic	**68.2**	**10.8**	**10.5**
Barium	**548**	37.5 JB	13.1 JB
Cadmium	**7.8**	**39.1**	**33.2**
Calcium	**118000**	**161000**	**155000**
Chromium	**29.0**	**3.6**	**2.1**
Cobalt	8.6 JB (63 SQL)	1.5 JB	0.62 JB
Copper	**55.2**	**7.4 JL**	**5.2 JL**
Iron	**25200**	**7140**	**7930**
Lead	**183**	**277**	**358**
Magnesium	**17900**	**107000**	**104000**
Manganese	**1370**	**277**	**232**
Mercury	0.06 JB (0.11 SQL)	**0.49**	**0.25**
Nickel	**58.4**	5.6 JB	4.7 JB
Potassium	**11660**	360 JB	145 JB
Selenium	**1.5 JL**	0.72 U	**1.4**
Silver	**6.7**	0.40 JB	0.55 JB
Vanadium	**51.2**	**12.9**	**12.6**
Zinc	**835**	**12300**	**10000**

Note: Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5.

Key:

B = The reported concentration is between the instrument detection limit and the contract required detection limit.
CLP = Contract Laboratory Program.
E & E = Ecology and Environment, Inc.
EPA = United States Environmental Protection Agency.
ID = Identification.
IR = Iroquois Mine.
J = The analyte was positively identified The associated numerical value is an estimate.
L = Low bias.
mg/kg = Milligrams per kilogram.
NU = Not utilized
SS = Surface soil
TAL = Target Analyte List.
U = The analyte was not detected. The associated numerical value is the contract required detection limit
WP = Waste Rock Pile.

Table 6-25

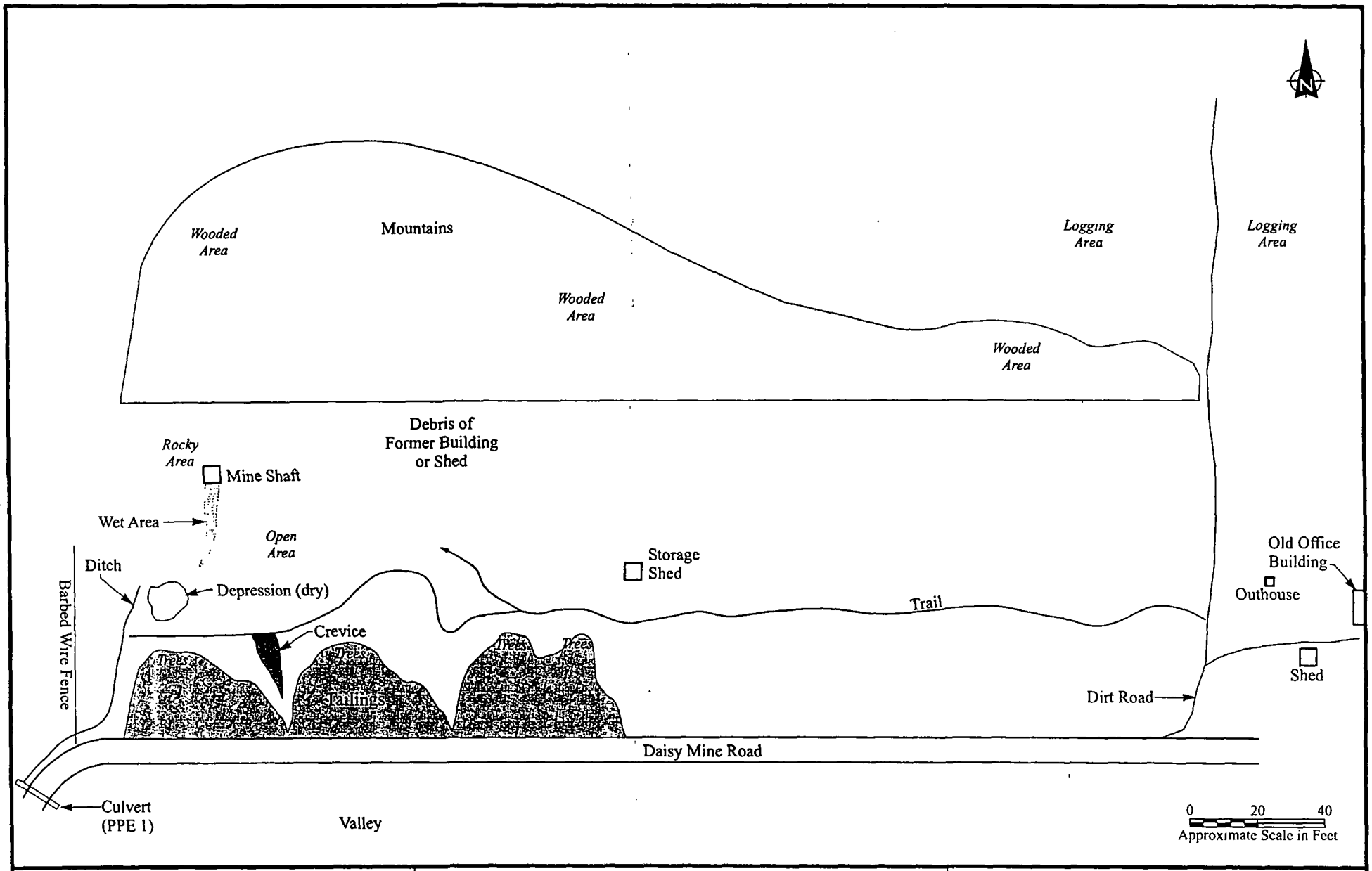
MELROSE MINE
SEDIMENT SAMPLE ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		**012541551**
CLP Inorganic ID		**MJ0GE0**
CLP Organic ID		**NU**
E & E Sample ID		**NU**
Location ID		**MLPP01SD**
Sample Depth (inches)		**0-8**
Sample Description	**Background**	**PPE 1**
TAL Metals (mg/kg)		
Aluminum	**20200**	**4690**
Arsenic	**13.0**	**25.5 JL**
Barium	**450**	**142**
Cadmium	**3.4**	**22.8 JH**
Calcium	**109000**	**81300**
Chromium	**32.3**	**16.1**
Cobalt	**11.9**	4.4 JB
Copper	**69.3**	**38.2**
Iron	**27900**	**11900**
Lead	**124**	**25.8**
Magnesium	**33500**	**4340**
Manganese	**673**	**216**
Nickel	**31.9**	**77.2**
Potassium	**3920 JK**	606 JB
Vanadium	**47.4**	**32.0**
Zinc	**239**	**1650**

Note: Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5

Key:

B = The reported concentration is between the instrument detection limit and the contract required detection limit.
CLP = Contract Laboratory Program.
E & E = Ecology and Environment, Inc.
EPA = United States Environmental Protection Agency.
H = High bias.
ID = Identification.
J = The analyte was positively identified. The associated numerical value is an estimate.
K = Unknown bias.
L = Low bias.
mg/kg = Milligrams per kilogram.
µg/kg = Micrograms per kilogram.
ML = Melrose Mine.
NU = Not utilized.
PCBs = Polychlorinated biphenyls.
PPE = Probable point of entry.
SD = Sediment.
TAL = Target Analyte List.
PP = Probable point of entry



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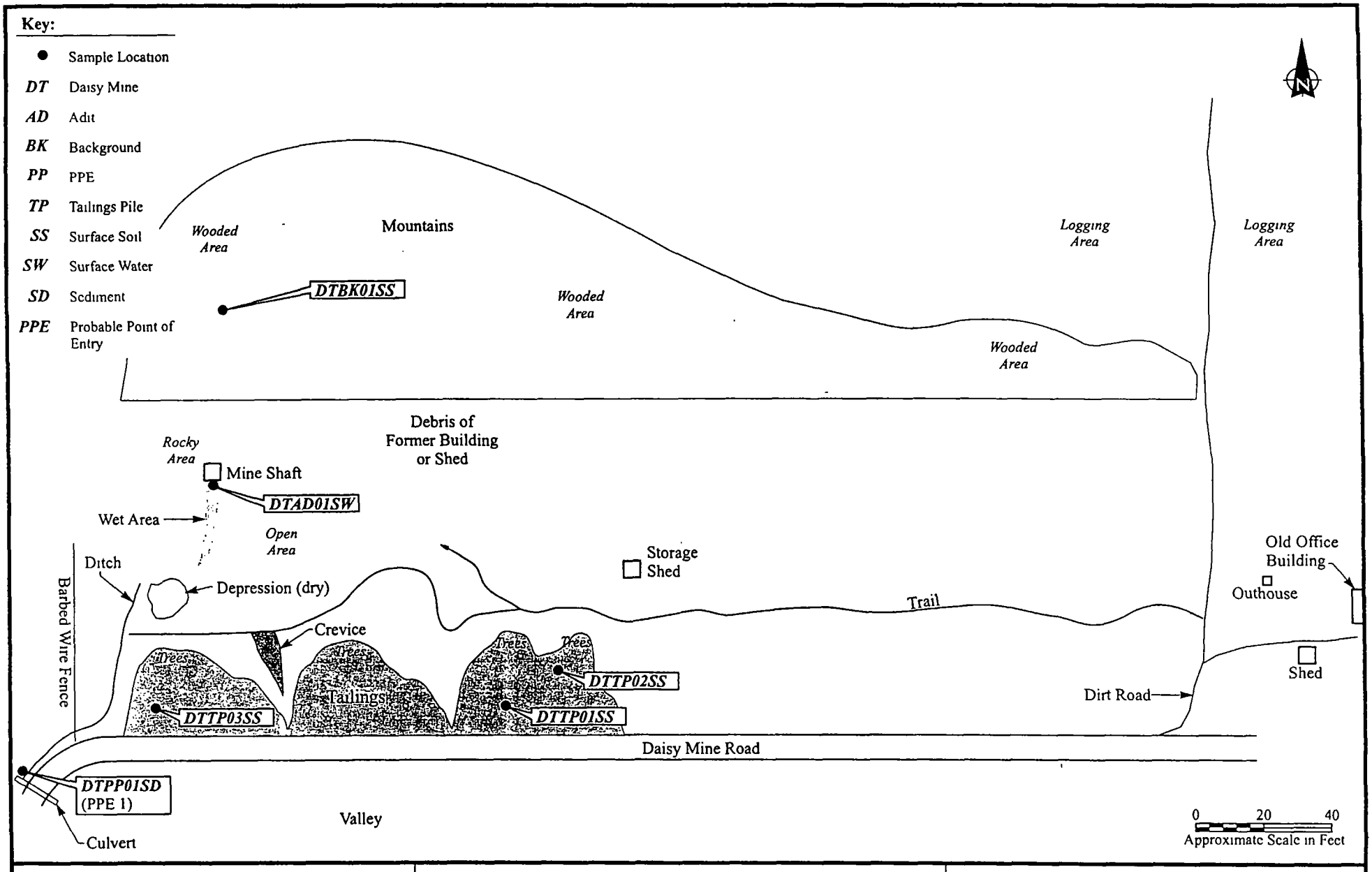
UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-1
DAISY MINE
SITE MAP

Date:	Drawn by:	
7/19/02	AES	10:START-2\01020028\fig 6-1



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UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-2
DAISY MINE
SAMPLE LOCATION MAP

Date:	Drawn by	
7/19/02	AES	10·START-2\01020028\fig 6-2

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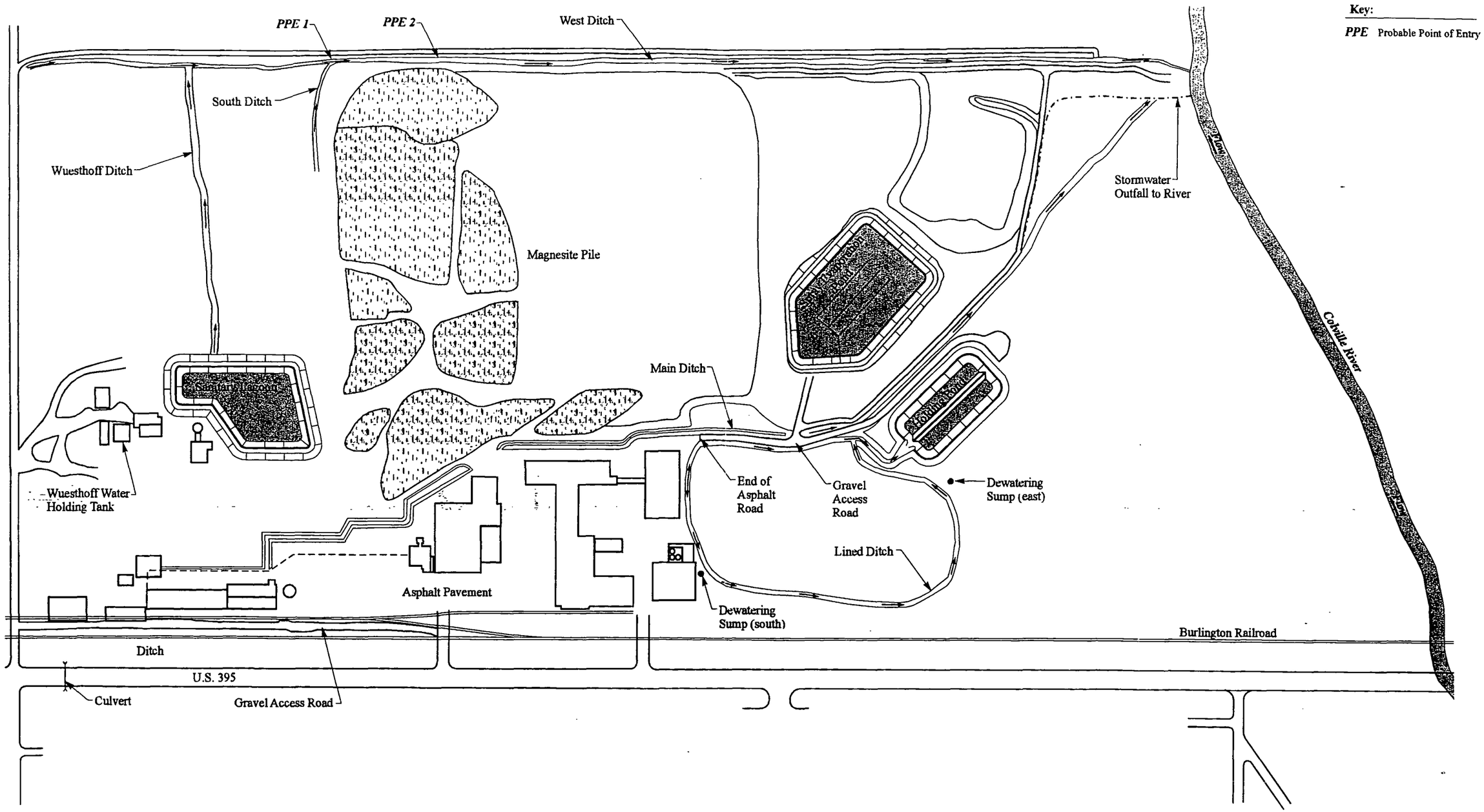
Source: CH2MHill 1997.



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0 100 200
Approximate Scale in Feet

UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-3
L-BAR/NORTHWEST MAGNESITE
SITE MAP

Date:	Drawn by:	
8/6/02	AES	10·START-2\01020028\fig 6-3

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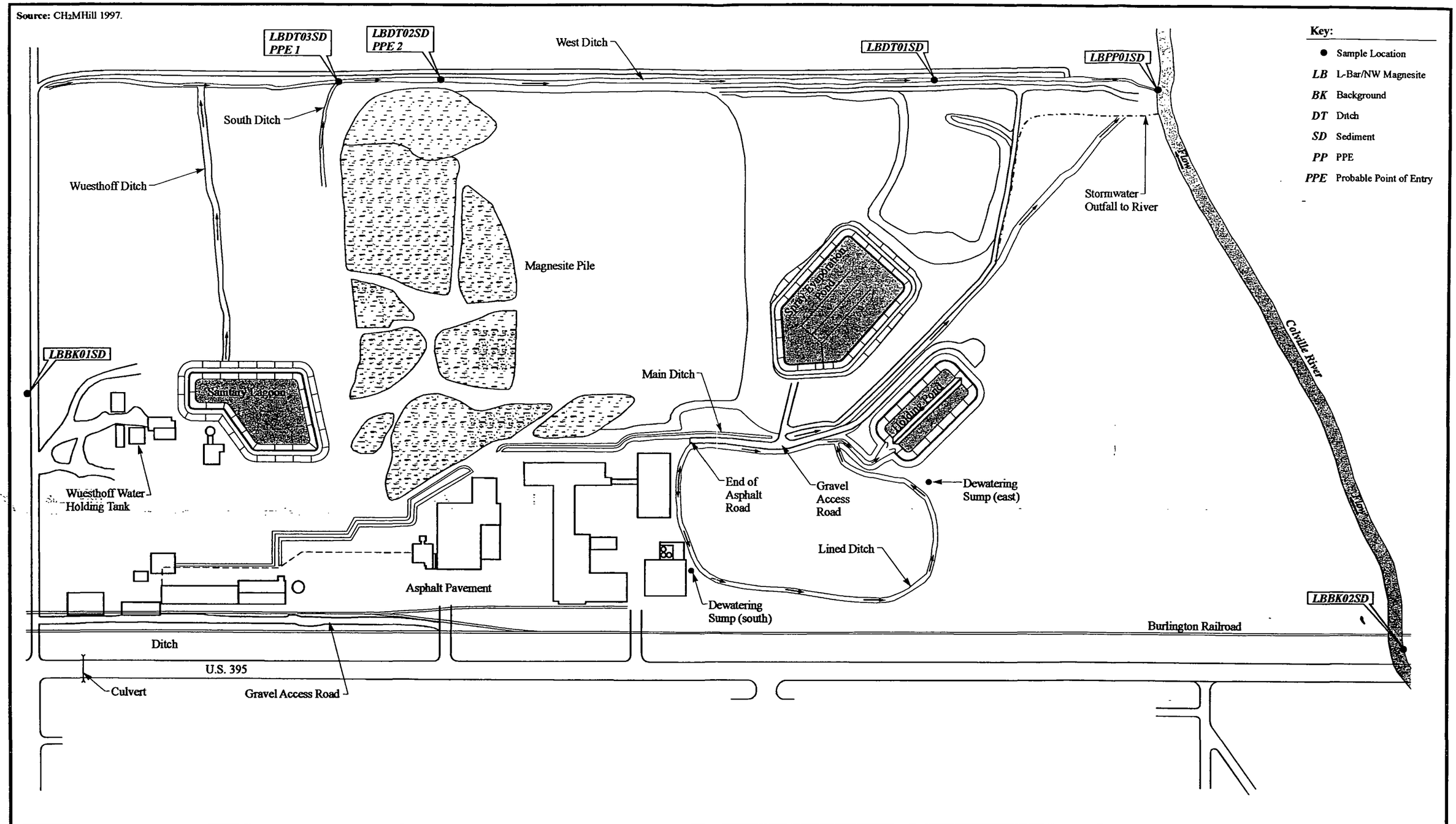
Source: CH2MHill 1997.



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0 100 200
Approximate Scale in Feet

UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-4
L-BAR/NORTHWEST MAGNESITE
SAMPLE LOCATION MAP

Date:	Drawn by:	
8/6/02	AES	10:START-2\01020028\fig 6-4

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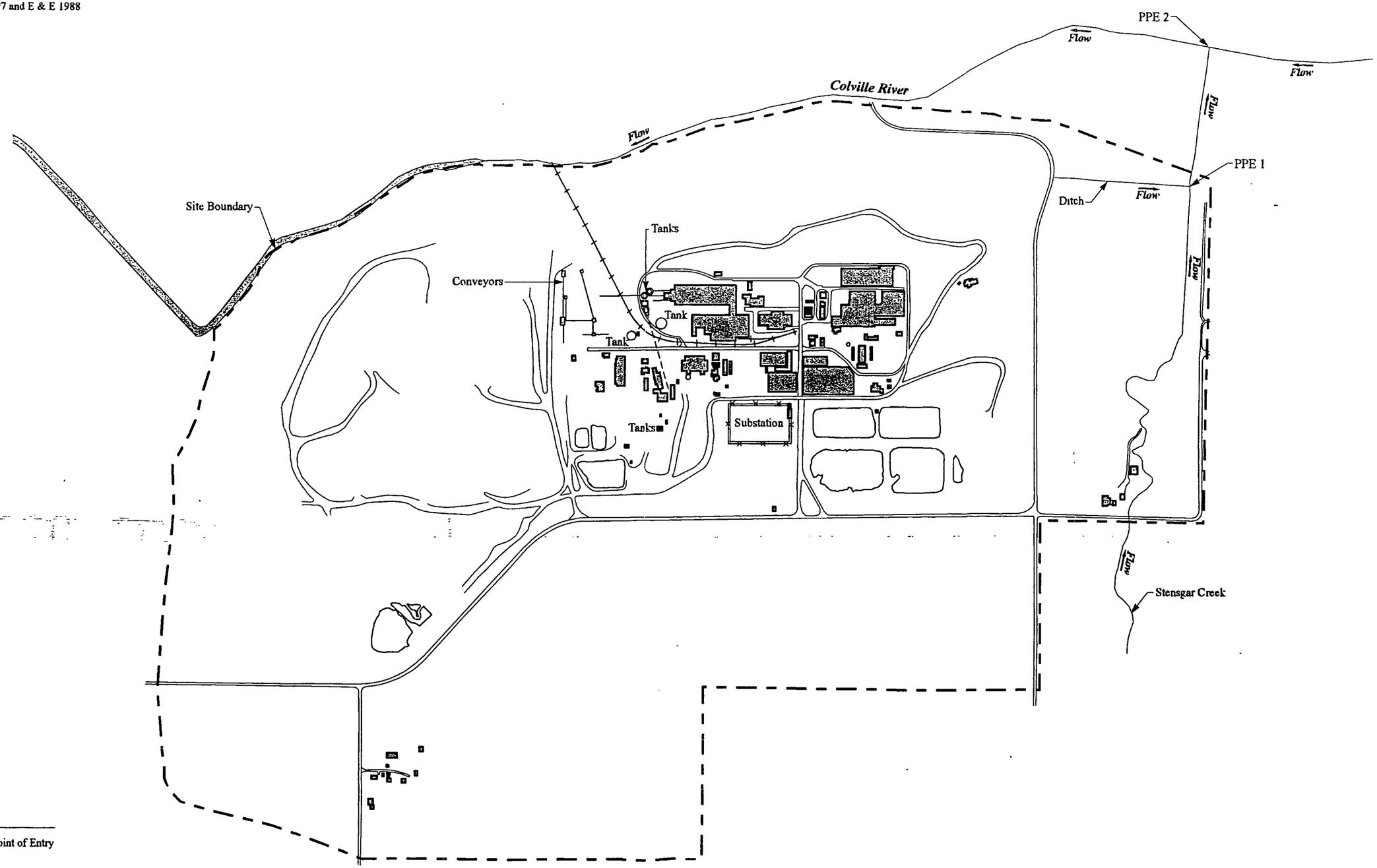
Source: CH2MHill 1997 and E & E 1988



Key:

PPE Probable Point of Entry

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Not to Scale

UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-5
NORTHWEST ALLOYS
SITE MAP

Date:	Drawn by:	
8/6/02	AES	10:START-2\01020028\fig 6-5

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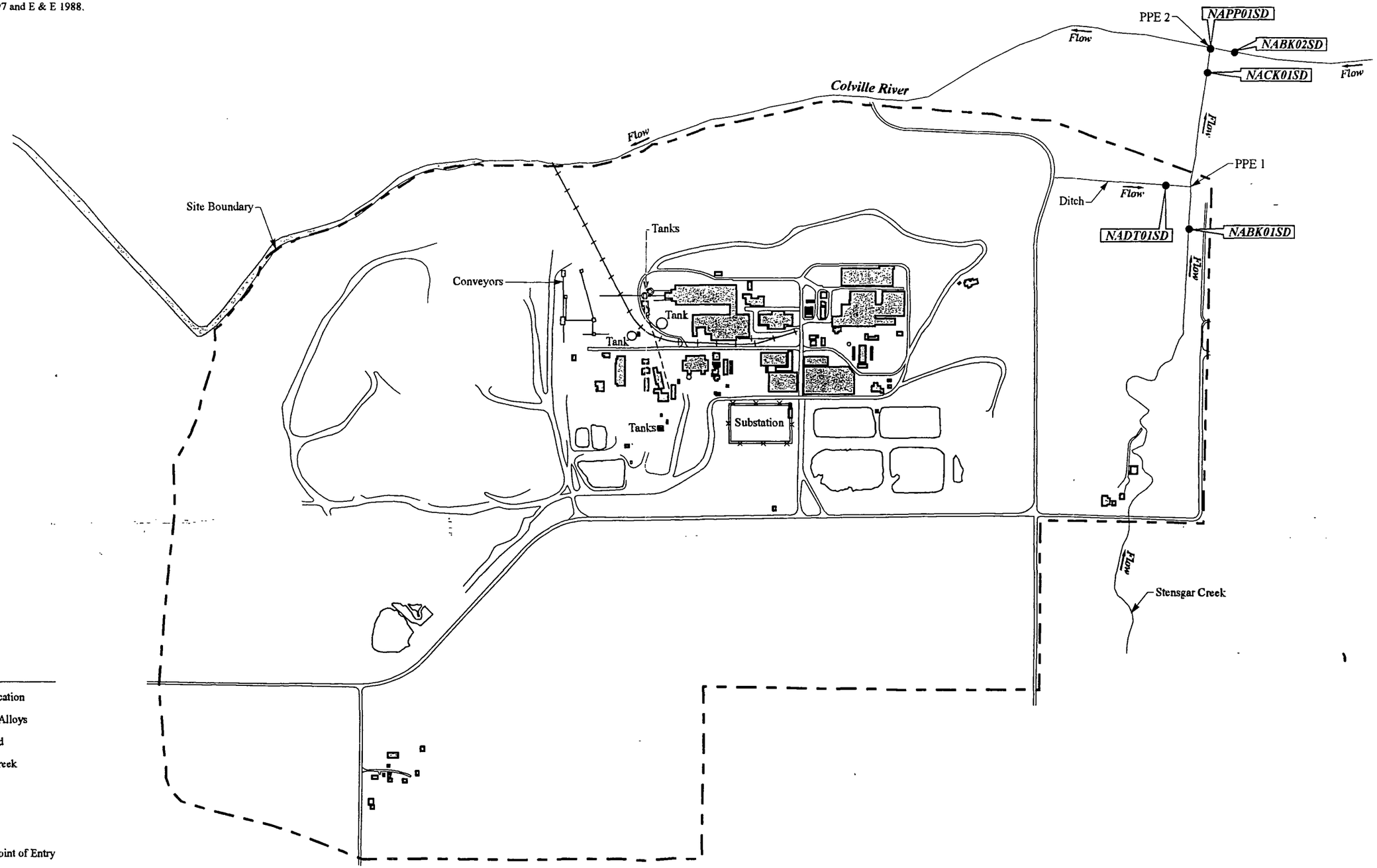
Source: CH2MHill 1997 and E & E 1988.



Key:

- ● Sample Location
- *NA* Northwest Alloys
- *BK* Background
- *CK* Stensgar Creek
- *DT* Ditch
- *SD* Sediment
- *PP* PPE
- *PPE* Probable Point of Entry

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Not to Scale

UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-6
NORTHWEST ALLOYS
SAMPLE LOCATION MAP

Date:	Drawn by:	
8/6/02	AES	10:START-2\01020028\fig 6-6

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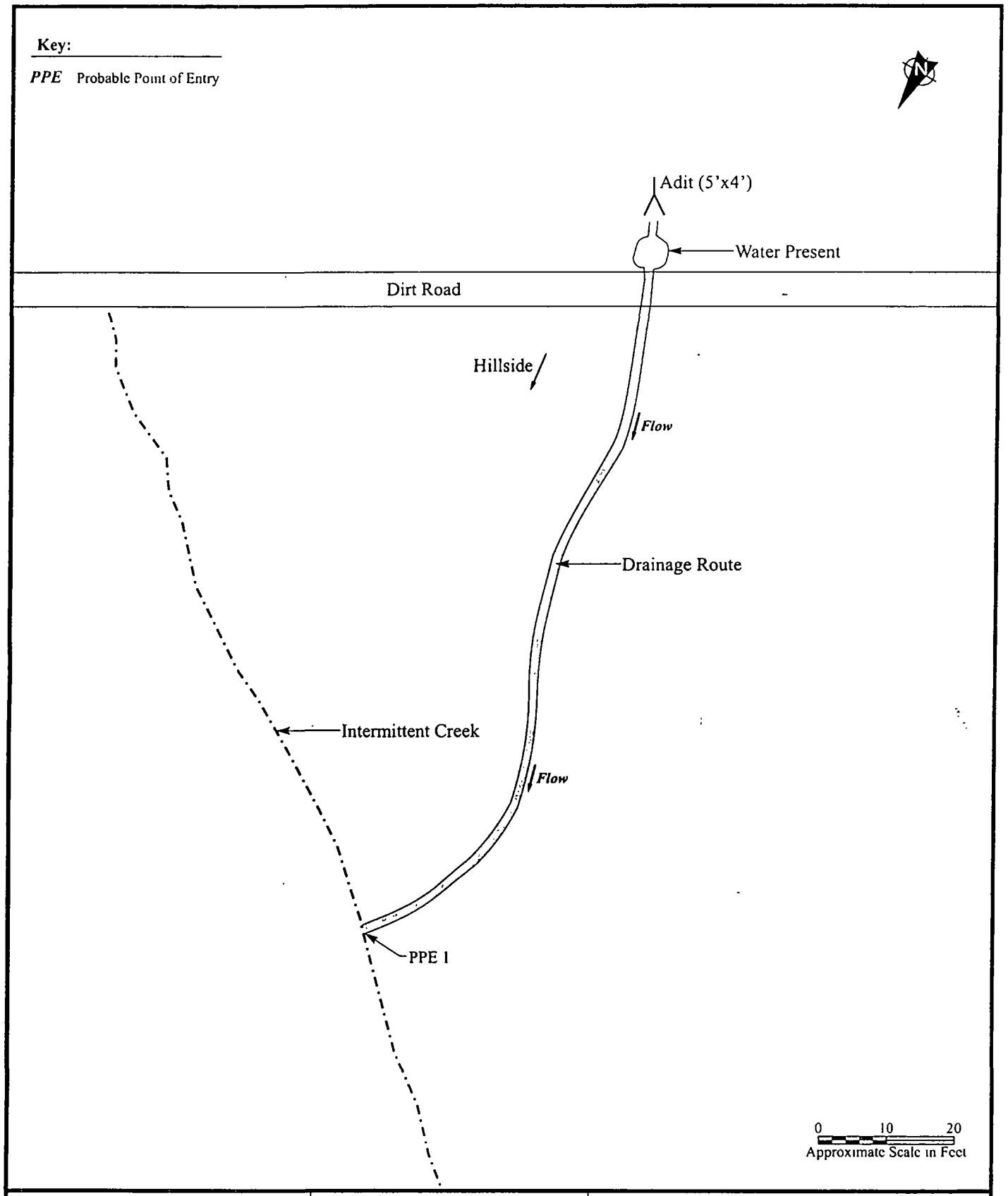

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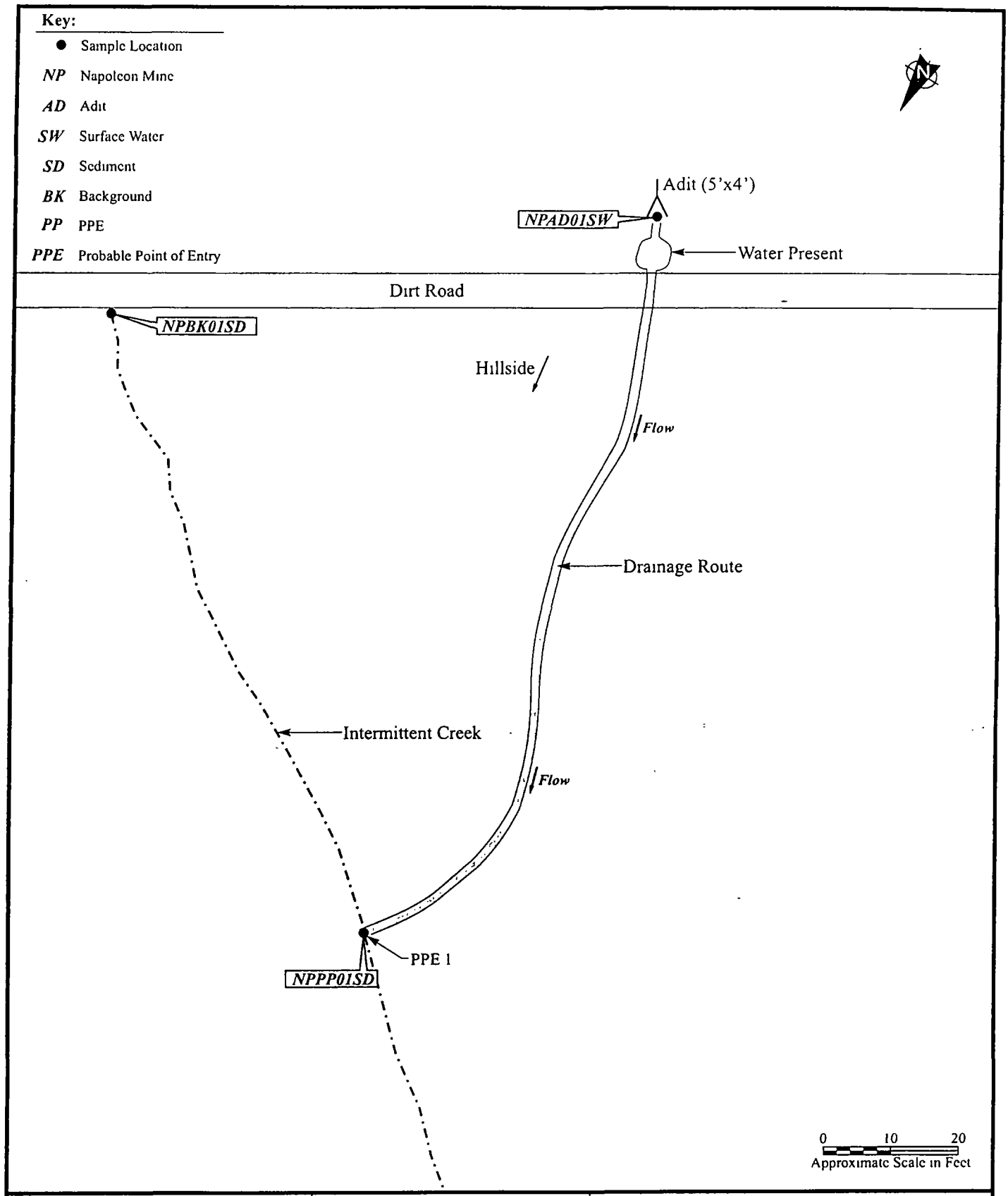
UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-7
NAPOLEON MINE/MILL
SITE MAP

Date	Drawn by	
8-6-02	AES	10 START-2\01020028\fig 6-7



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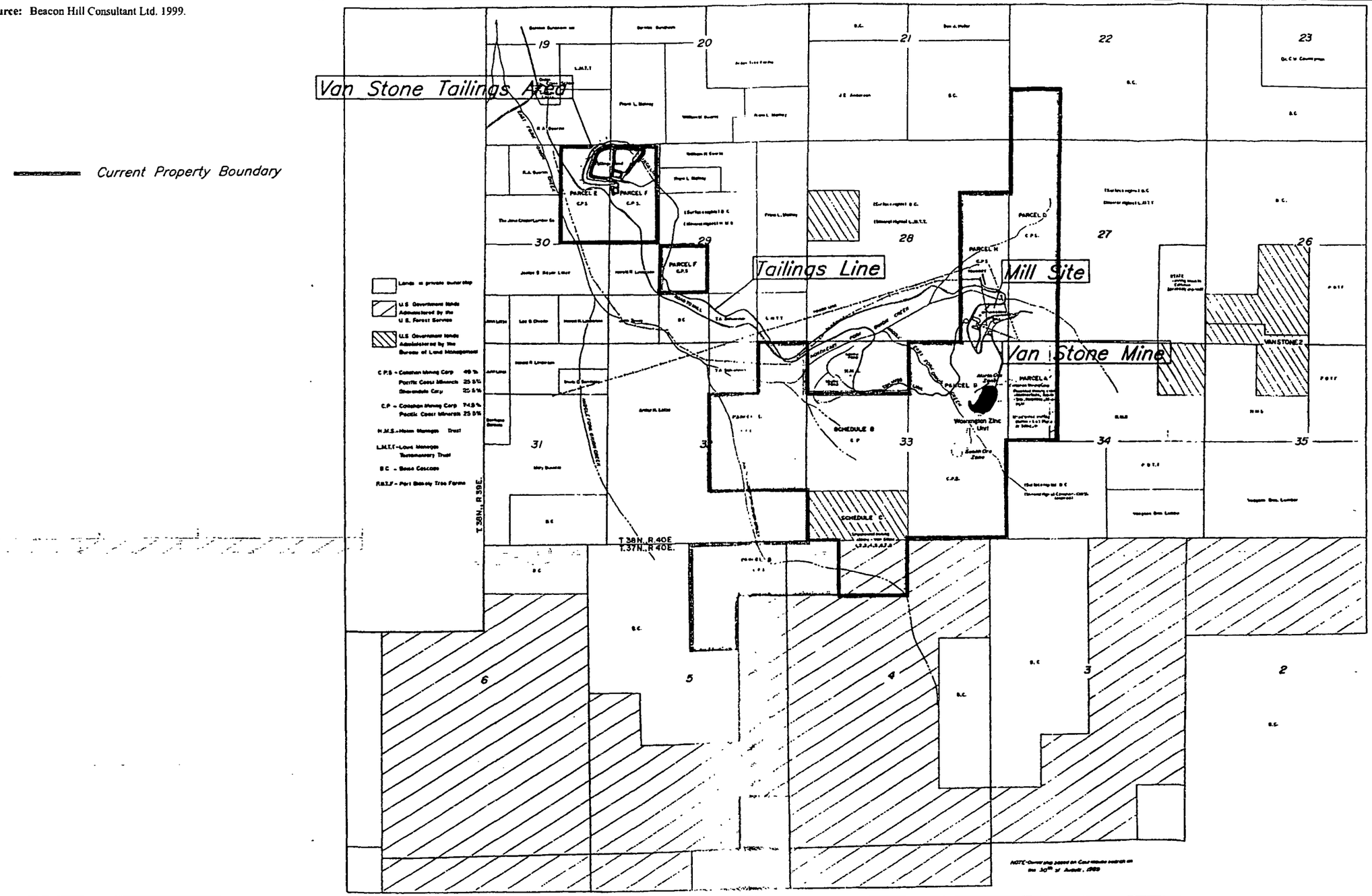
UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-8
NAPOLEON MINE/MILL
SAMPLE LOCATION MAP

Date	Drawn by	
8-6-02	AES	10.START-2\01020028\fig 6-8

Source: Beacon Hill Consultant Ltd. 1999.



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0 1500 3000
Approximate Scale in Feet

UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-9
VAN STONE MINE/MILL
SITE MAP

Date:	Drawn by:	
7/19/02	AES	10:START-2\01020028\fig 6-9

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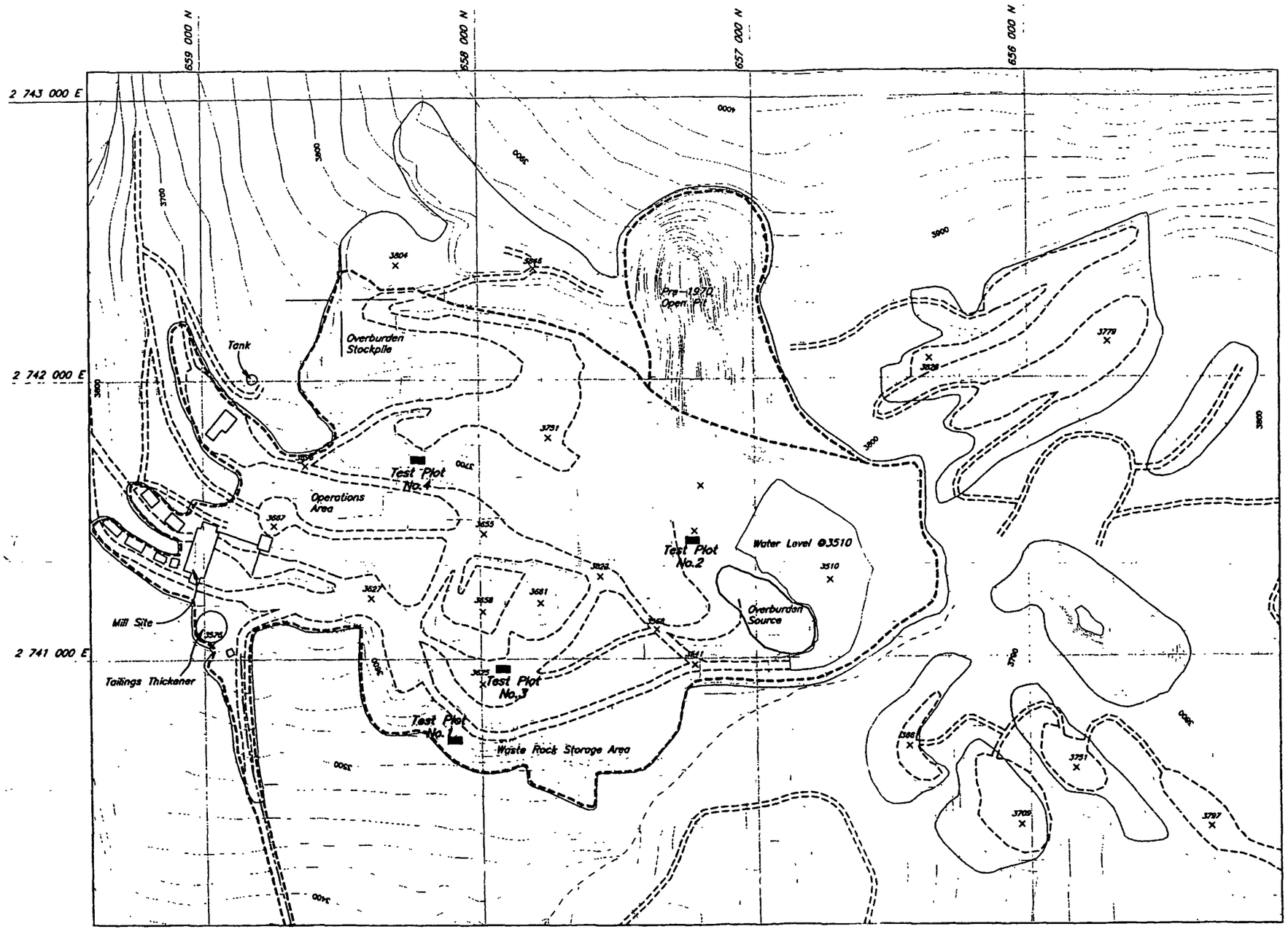
Source: Beacon Hill Consultant Ltd. 1999



LEGEND

PERMIT BOUNDARY AND BOUNDARY OF POST 1970 DISTURBANCE
CONTOUR – INDEX (3800 feet)
CONTOUR – INTERMEDIATE
CONTOUR – DEPRESSION
TREELINE
ROAD AND MAIN DISTURBED AREAS
STREAM – PERENNIAL
STREAM – INTERMITTENT
POND
PIPELINE
BUILDING
TEST PLOTS

REFERENCE

MAP BY: DEPT OF NATURAL RESOURCES
PHOTOGRAPHY DATE: 7/18/95

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0 300 600
Approximate Scale in Feet

UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-10
VAN STONE MINE/MILL
SITE MAP

Date:	Drawn by:	
7/19/02	AES	10:START-2\01020028\fig 6-10

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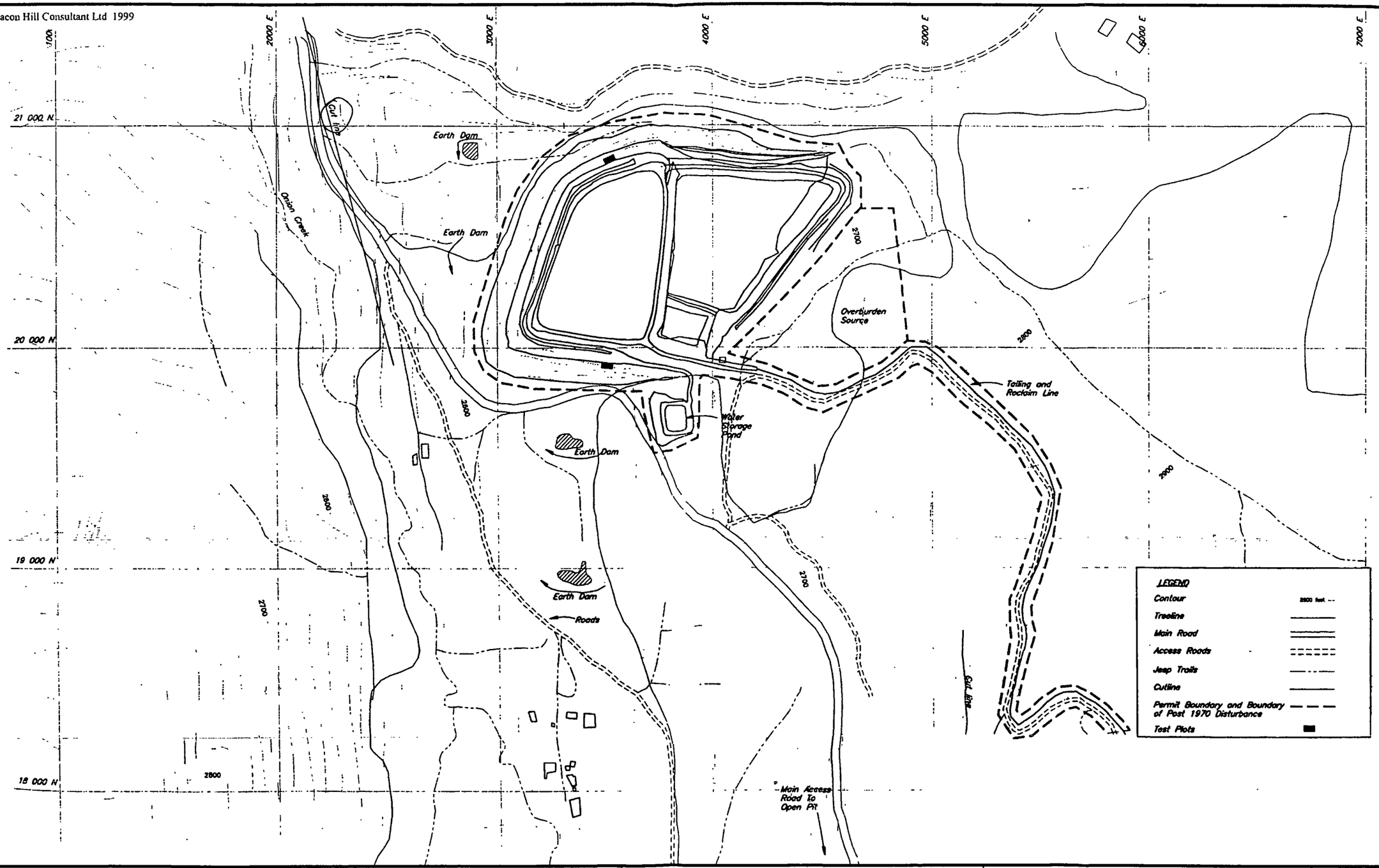
Source: Beacon Hill Consultant Ltd 1999



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0 300 600
Approximate Scale in Feet

UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-11
VAN STONE MINE/MILL
SITE MAP

Date:	Drawn by:	
7/19/02	AES	10:START-2\01020028\fig 6-11

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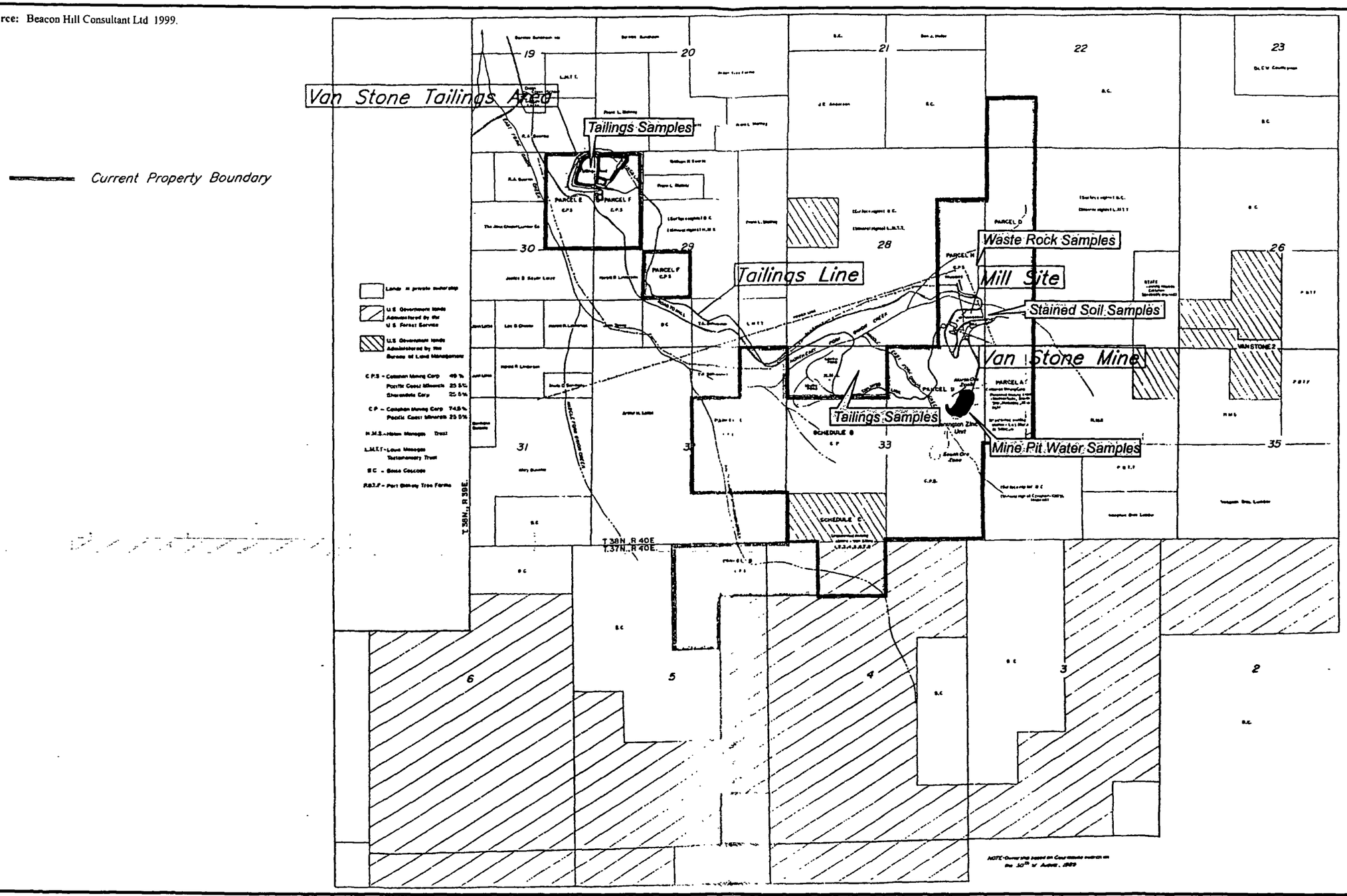
Source: Beacon Hill Consultant Ltd 1999.



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0 1500 3000
Approximate Scale in Feet

UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-12
VAN STONE MINE/MILL
SAMPLE LOCATION MAP

Date:	Drawn by:	
7/19/02	AES	10:START-2\01020028\fig 6-12

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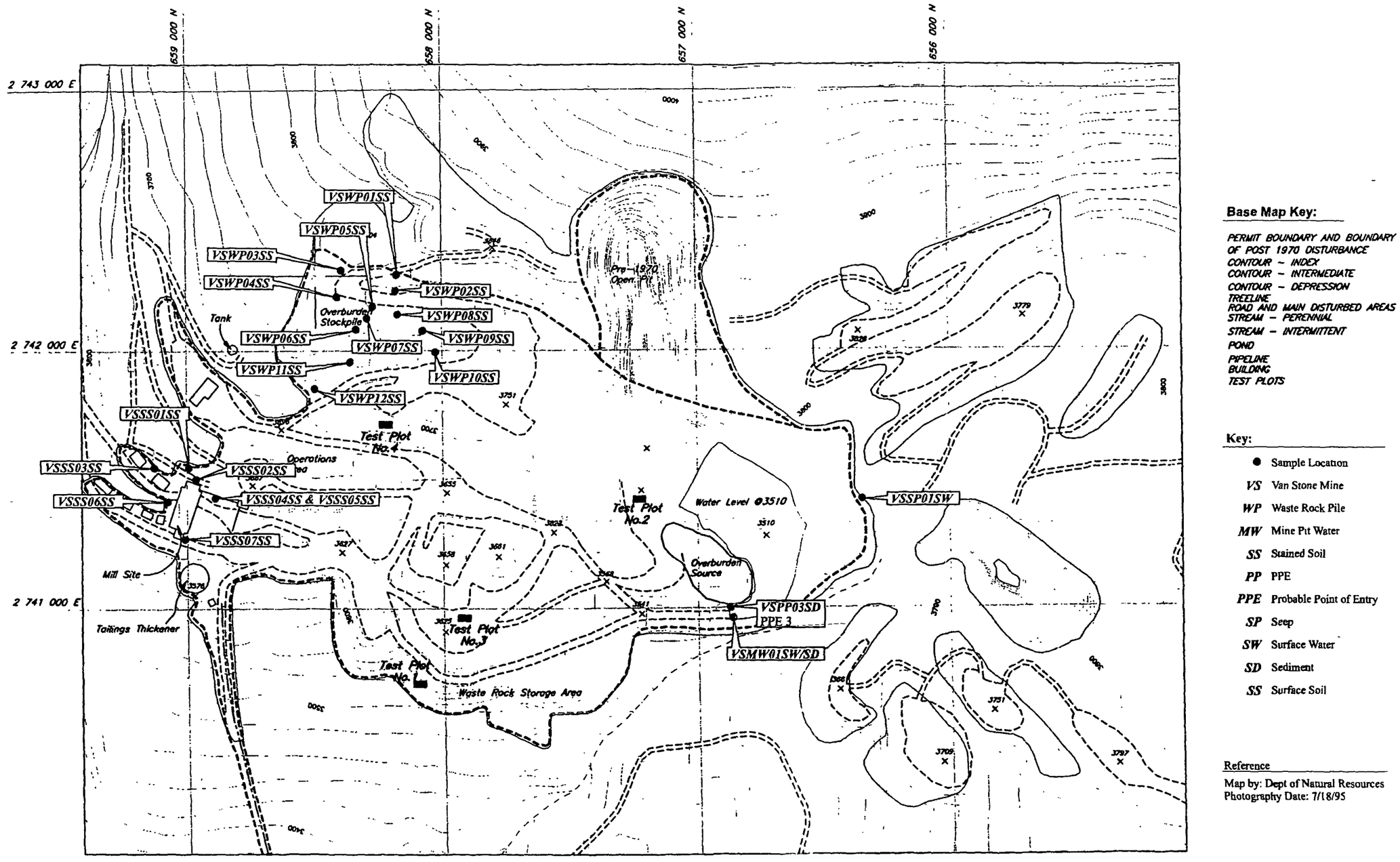
Source: Beacon Hill Consultant Ltd. 1999.



Base Map Key:

PERMIT BOUNDARY AND BOUNDARY OF POST 1970 DISTURBANCE	
CONTOUR – INDEX	3800 feet
CONTOUR – INTERMEDIATE	
CONTOUR – DEPRESSION	
TREELINE	
ROAD AND MAIN DISTURBED AREAS	
STREAM – PERENNIAL	
STREAM – INTERMITTENT	
POND	
PIPELINE	
BUILDING	
TEST PLOTS	

Key:

- ● Sample Location
- *VS* Van Stone Mine
- *WP* Waste Rock Pile
- *MW* Mine Pit Water
- *SS* Stained Soil
- *PP* PPE
- *PPE* Probable Point of Entry
- *SP* Seep
- *SW* Surface Water
- *SD* Sediment
- *SS* Surface Soil

Reference

Map by: Dept of Natural Resources
Photography Date: 7/18/95

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0 300 600
Approximate Scale in Feet

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Stevens County, Washington

Figure 6-13
VAN STONE MINE/MILL
SAMPLE LOCATION MAP

Date:	Drawn by:	
8/15/02	AES	10:START-2\01020028\fig 6-13

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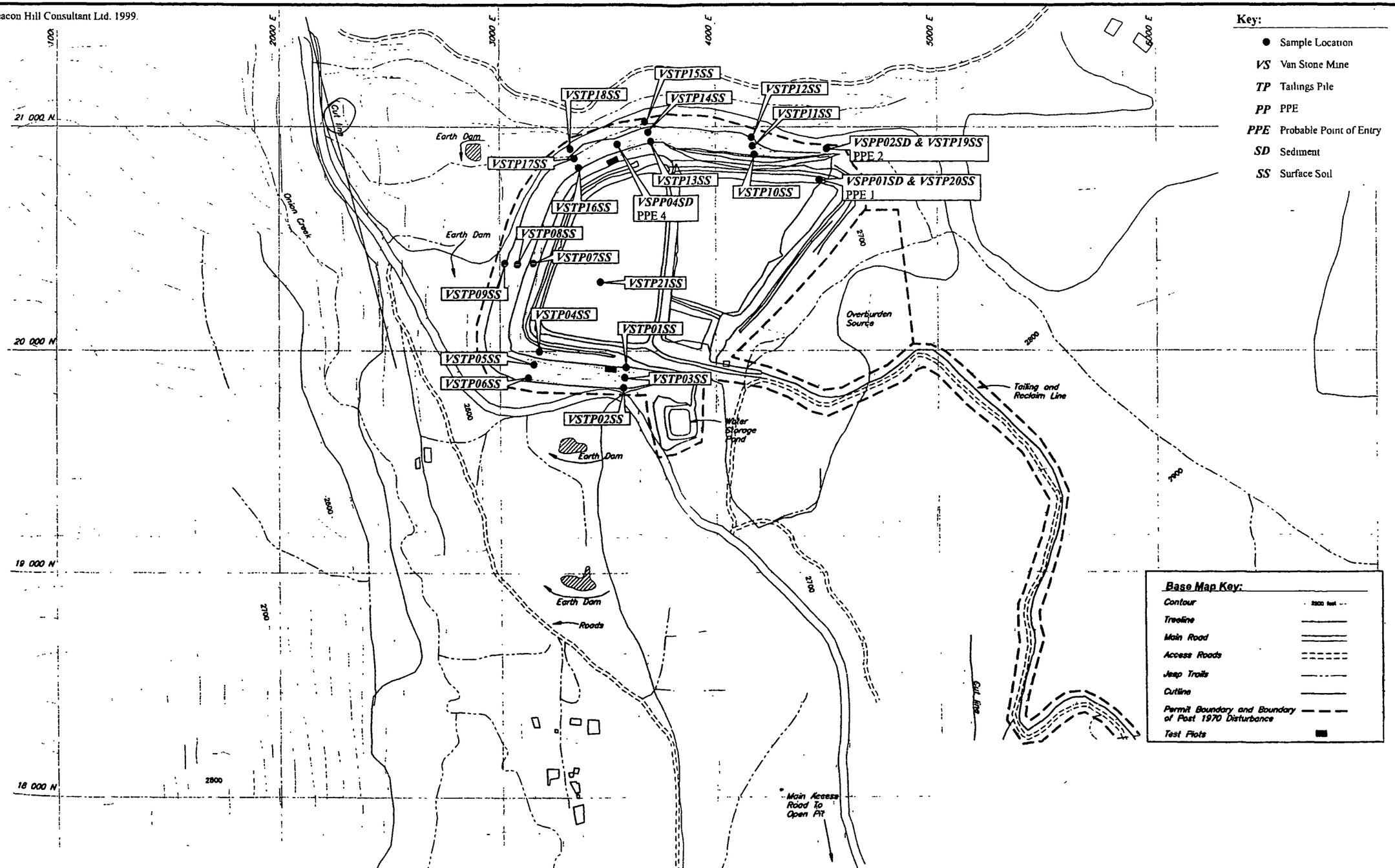
Source: Beacon Hill Consultant Ltd. 1999.



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0 300 600
Approximate Scale in Feet

UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-14
VAN STONE MINE/MILL
SAMPLE LOCATION MAP

Date:	Drawn by:	
7/19/02	AES	10:START-2\01020028\fig 6-14

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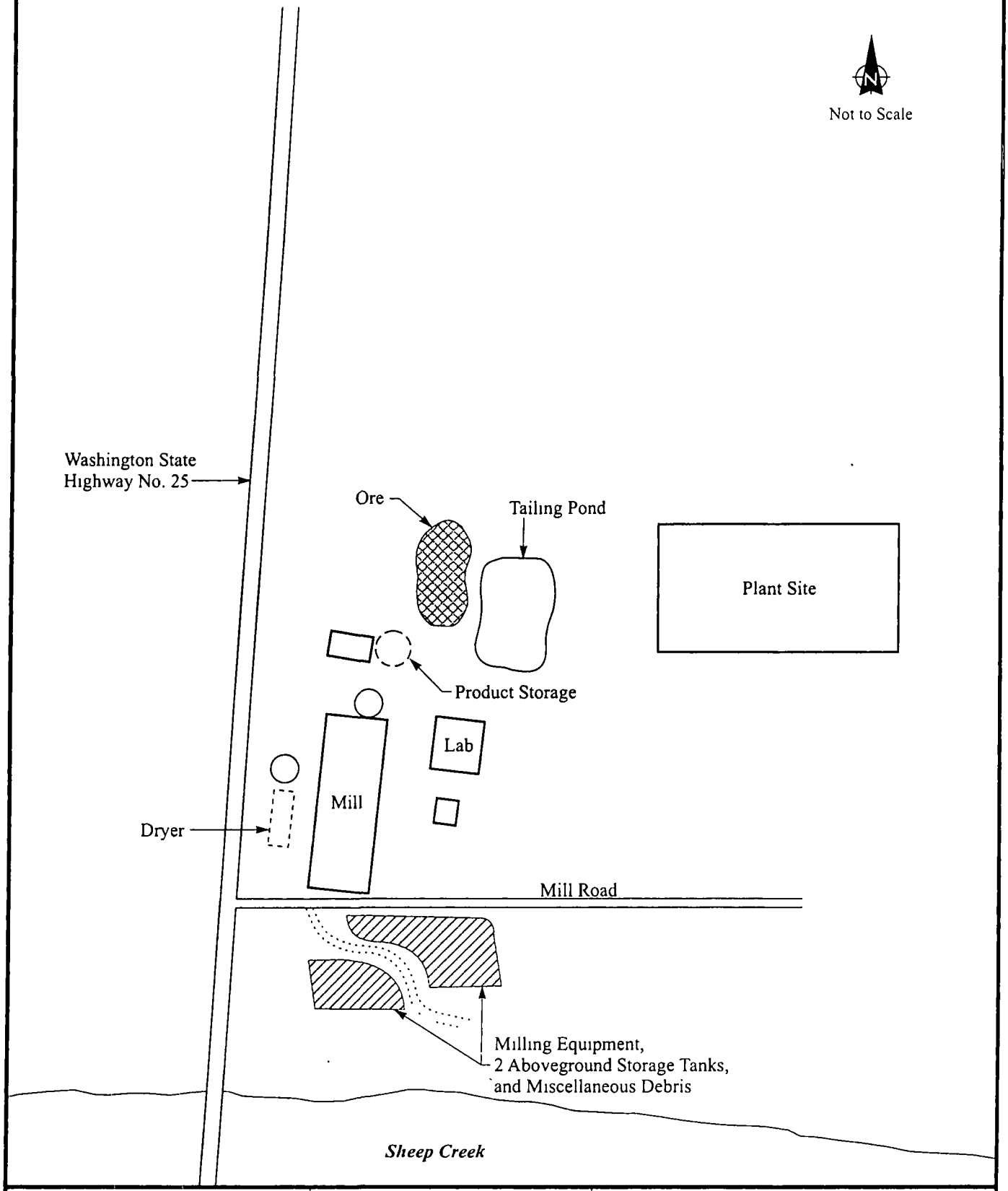
intentionally left blank.

Source: USEPA 2002



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UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
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Stevens County, Washington

Figure 6-15
NORTHPORT MILL
SITE MAP

Date	Drawn by	
7-19-02	AES	10 START-2\01020028\fig 6-15

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File #: 1.4.2
Site Name: Upper Columbia River

Preliminary Assessments and Site Inspections Report
Figure 6-16: LeRoi/Northport Smelter Map

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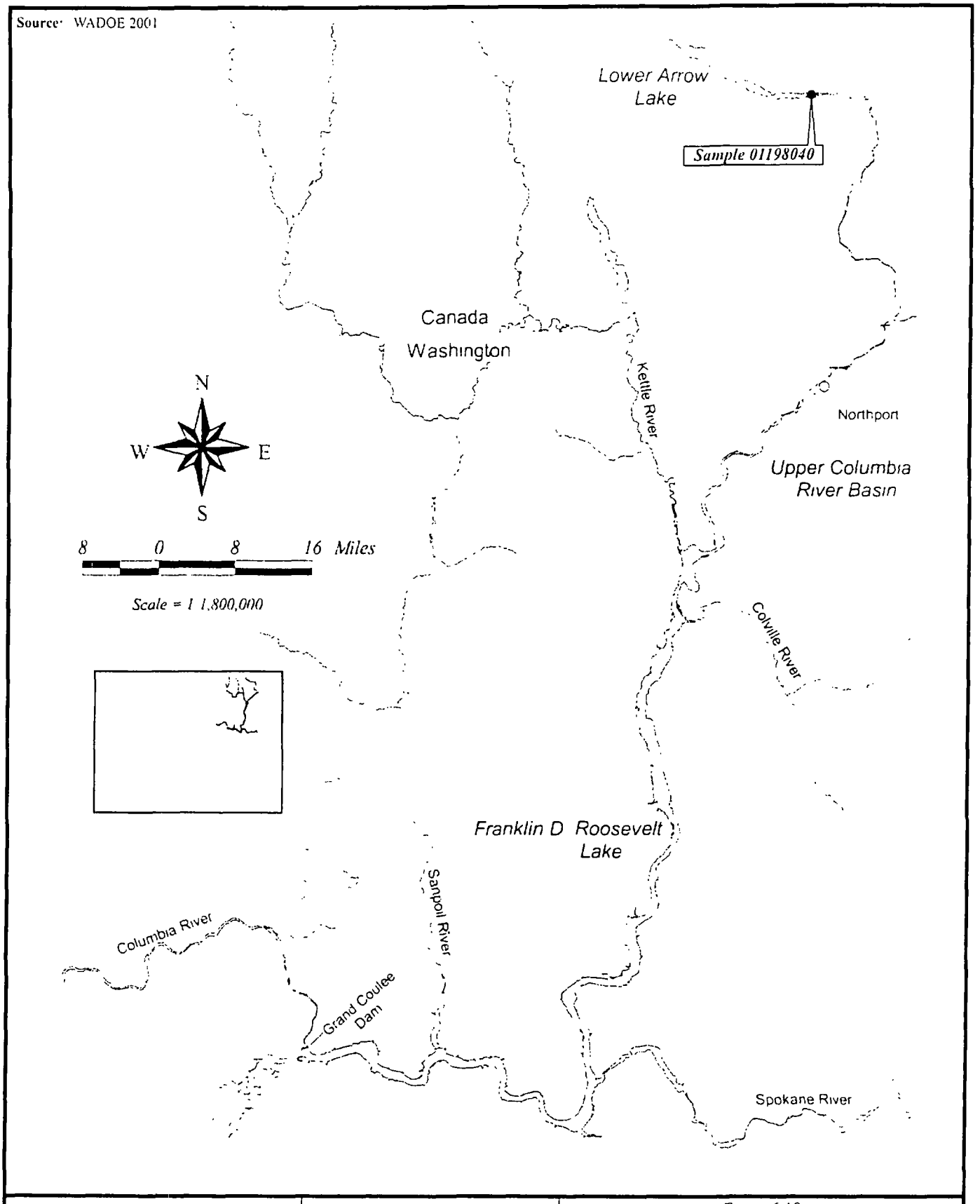
Document Information

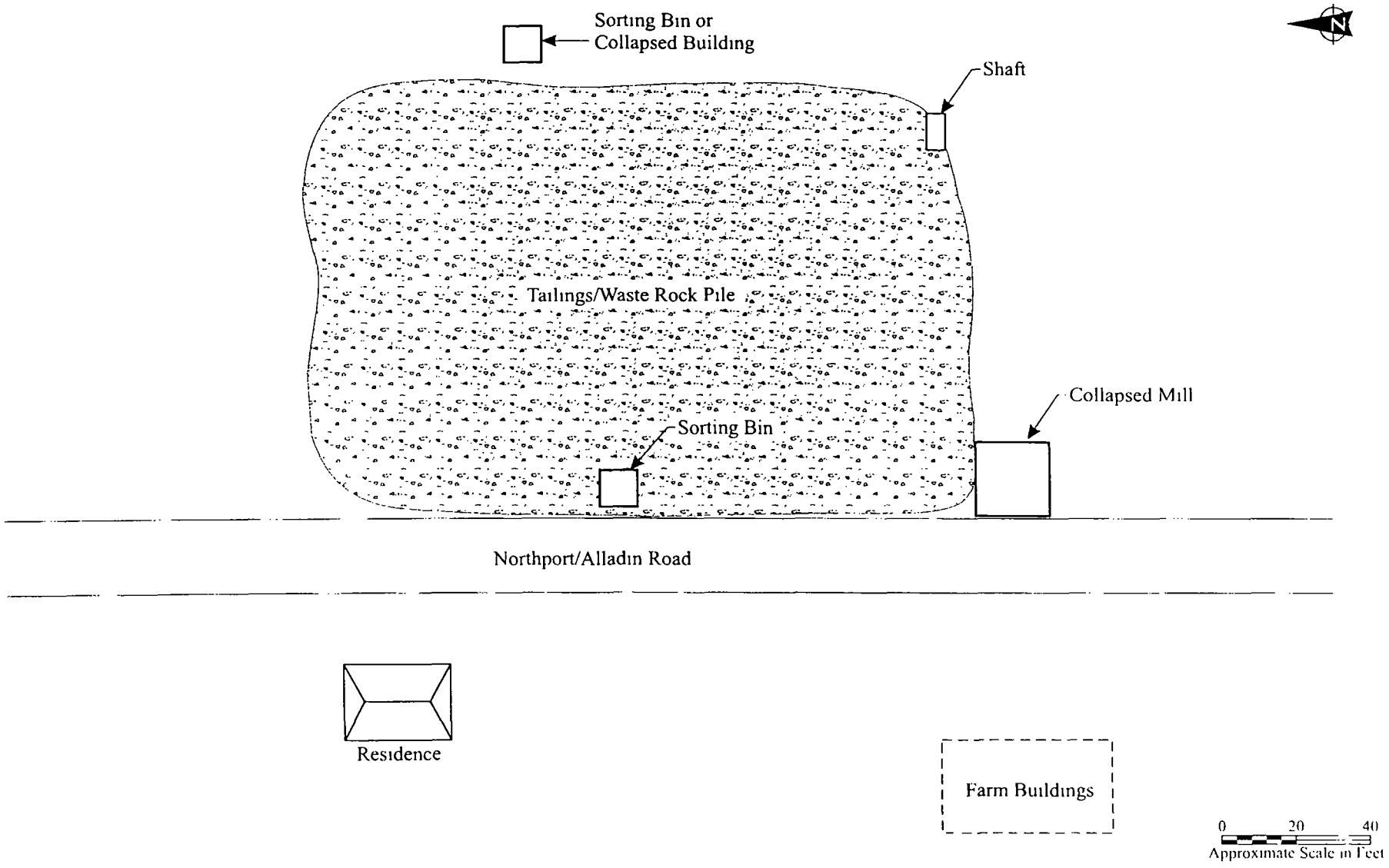
Document ID #: 1159737
File #: 1.4.2
Site Name: Upper Columbia River

Preliminary Assessments and Site Inspections Report
Figure 6-17: LeRoi/Northport Smelter Sample Location Map



ecology and environment, inc. International Specialists in the Environment Seattle Washington	UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS Stevens County, Washington	Figure 6-18 SAMPLING SITE LOCATIONS IN LAKE ROOSEVELT AND THE UPPER COLUMBIA RIVER MAY 2001, ECOLOGY		
		Date 9-11-02	Drawn by AES	10 START-2\01020028\fig 6-18

Note: Some map features are not to scale



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Stevens County, Washington

Figure 6-19
BLACK ROCK MINE/MILL
SITE MAP

Date	Drawn by.	
8-20-02	AES	10-START-2\01020028\fig 6-19

Note: Some map features are not to scale

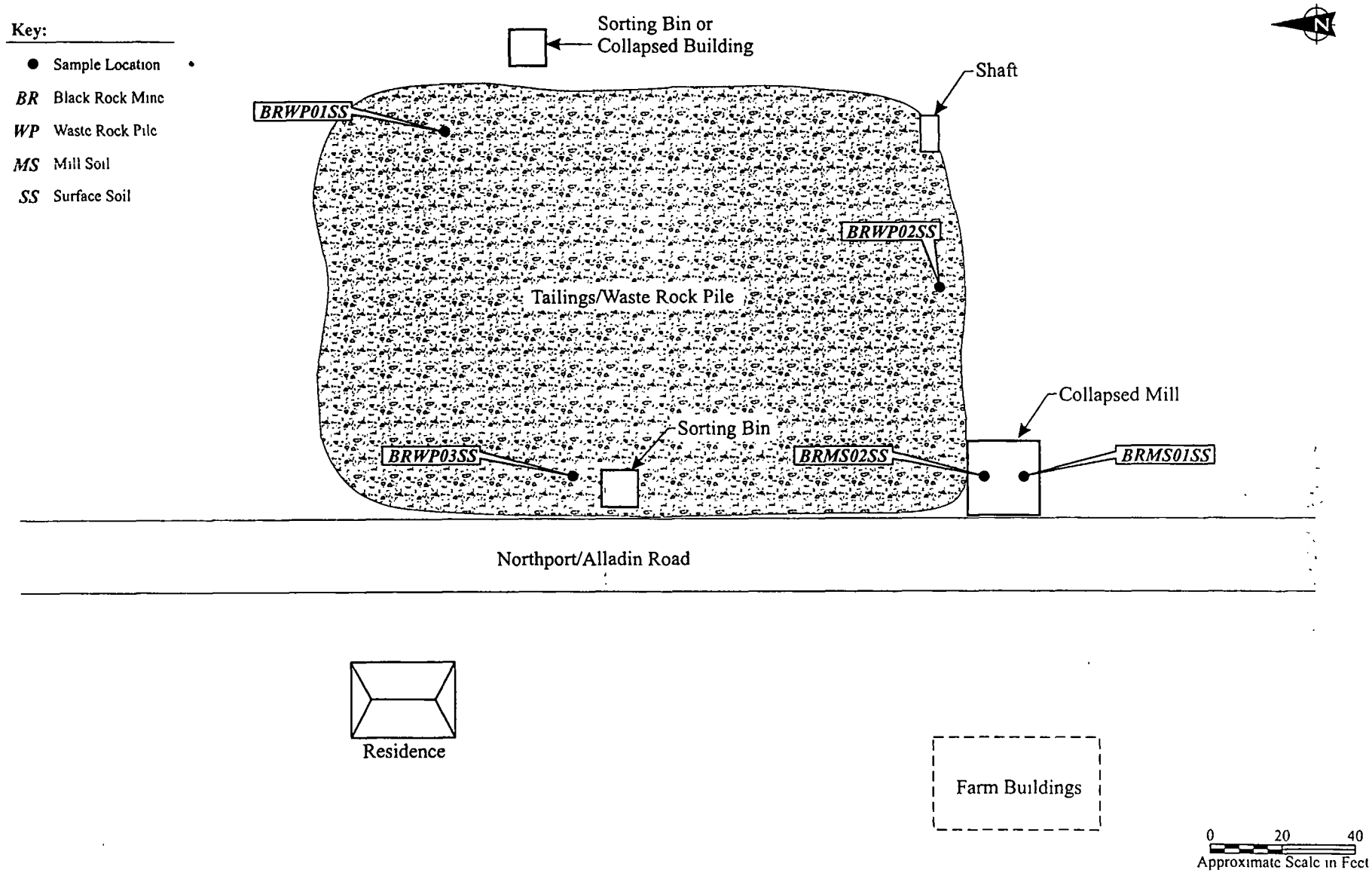

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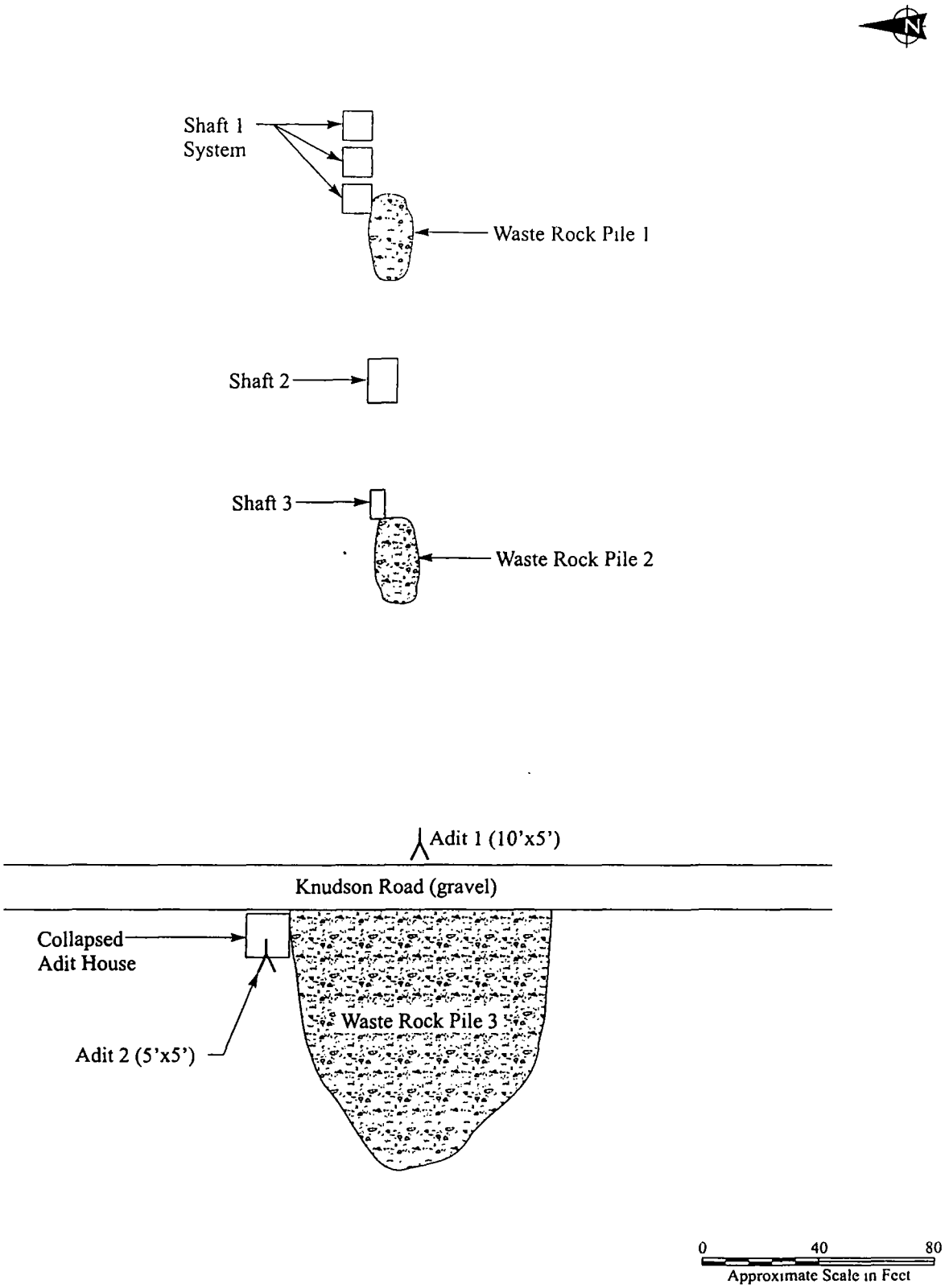
Figure 6-20
BLACK ROCK MINE/MILL
SAMPLE LOCATION MAP

Date:	Drawn by:	
8-20-02	AES	10:START-2\01020028\fig 6-20

Note: Some map features are not to scale



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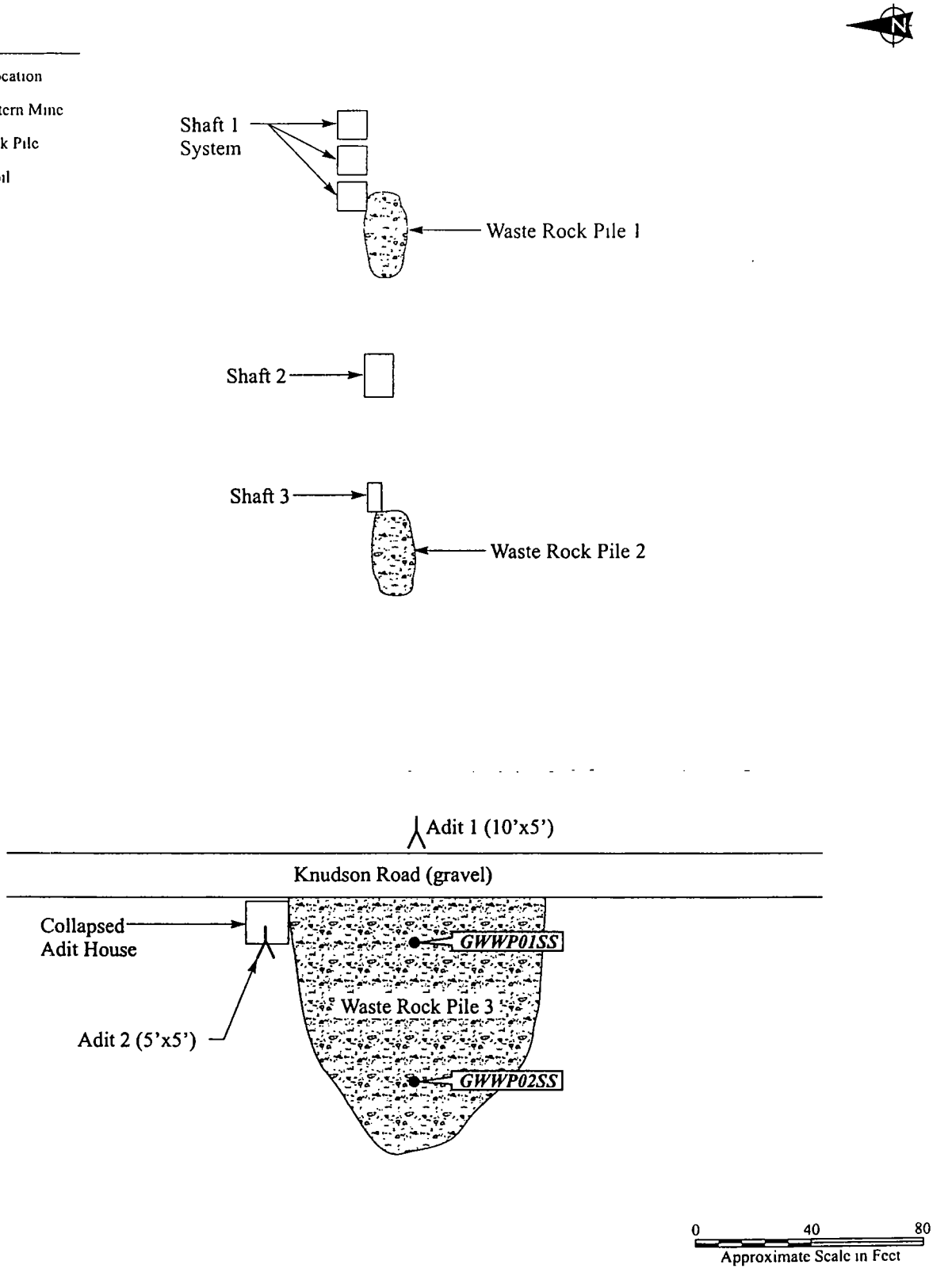
		Date 8-20-02	Drawn by AES	10 START-2\01020028\fig 6-21

Note: Some map features are not to scale

Key:

- ● Sample Location
- *GW* Great Western Mine
- *WP* Waste Rock Pile
- *SS* Surface Soil



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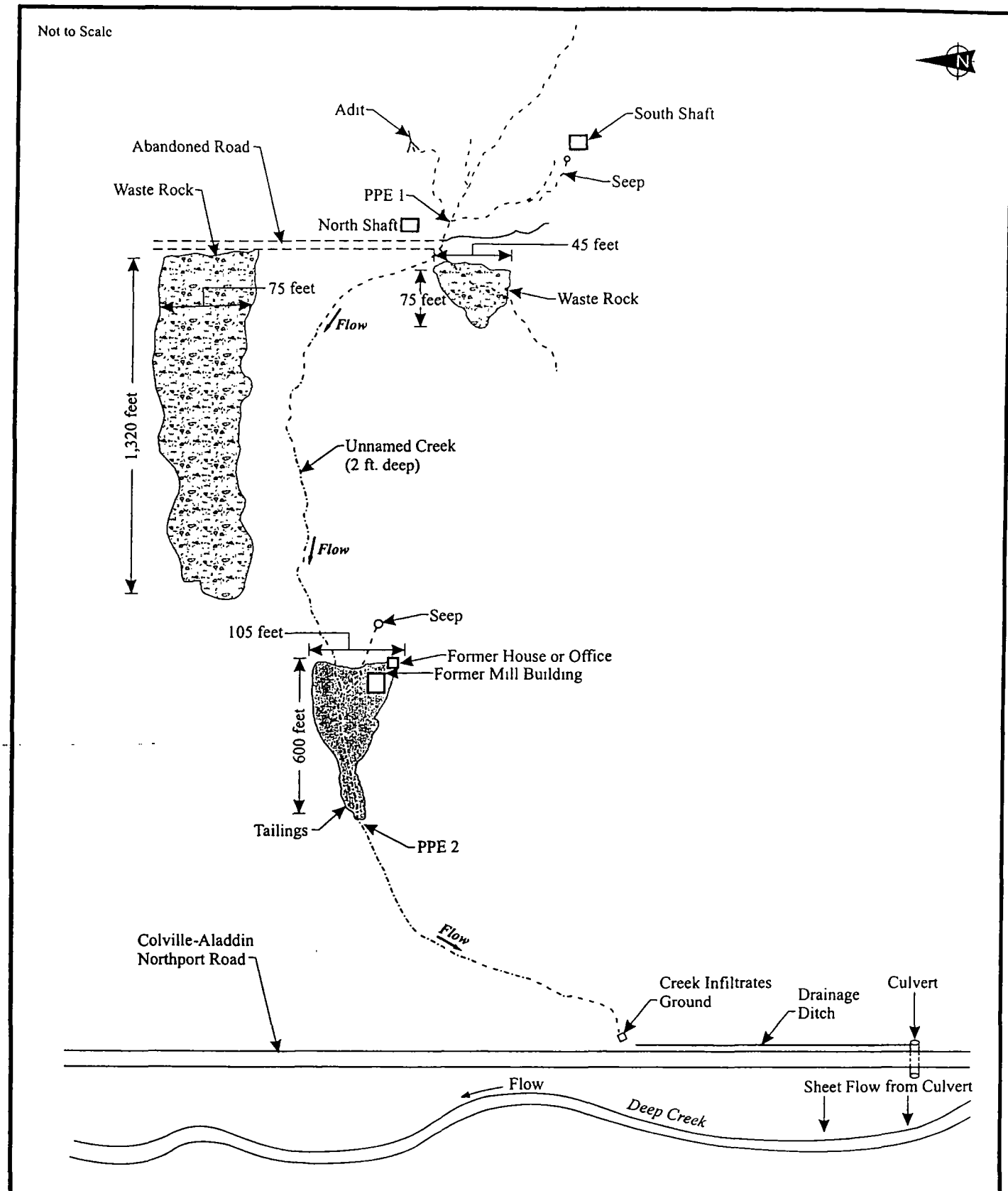

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		Date 8-20-02	Drawn by AES	10 START-2\01020028\fig 6-23

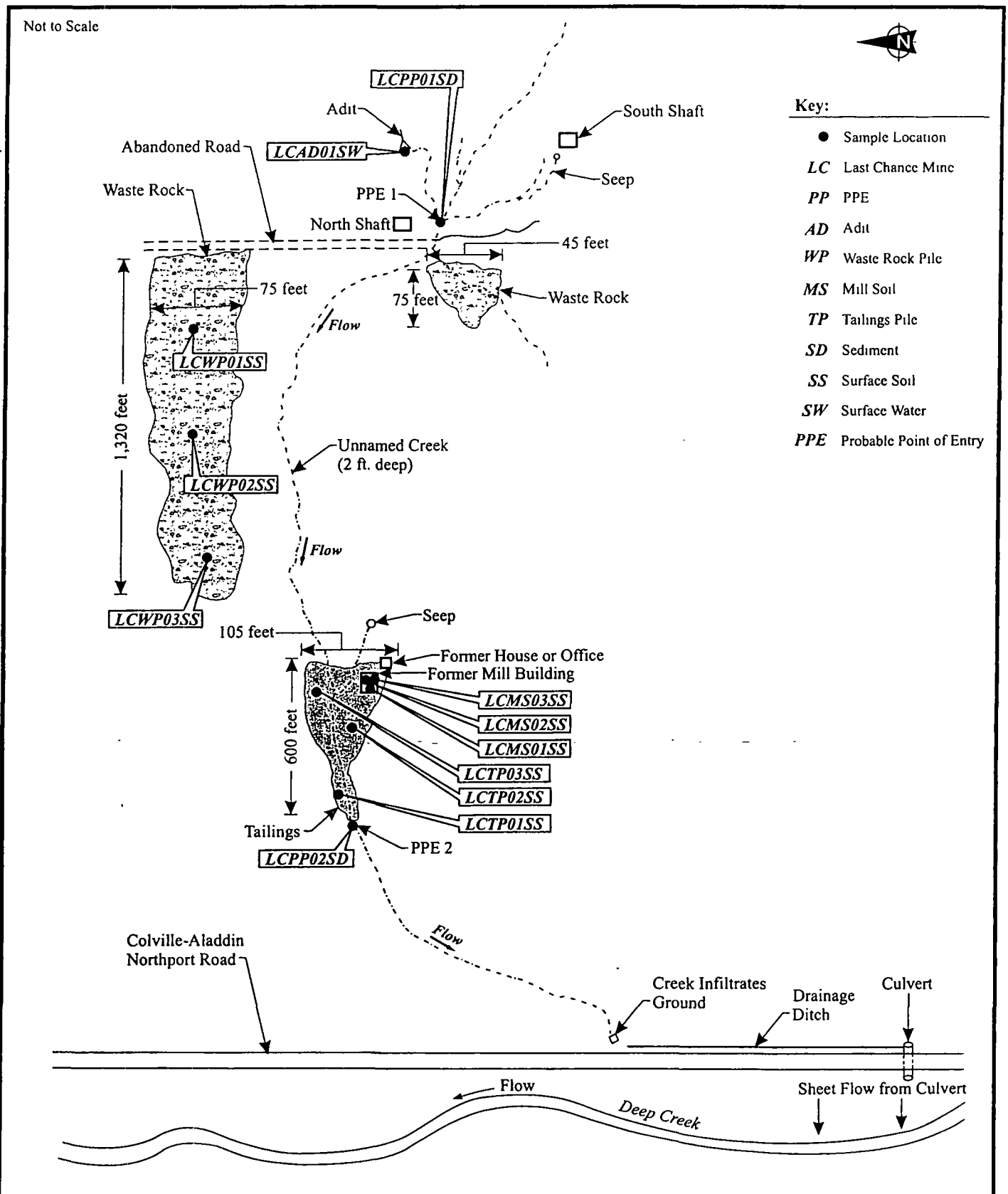

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Figure 6-24
LAST CHANCE MINE/MILL
SAMPLE LOCATION MAP

Date	Drawn by	
8-20-02	AES	10 START-2\01020028\fig 6-24

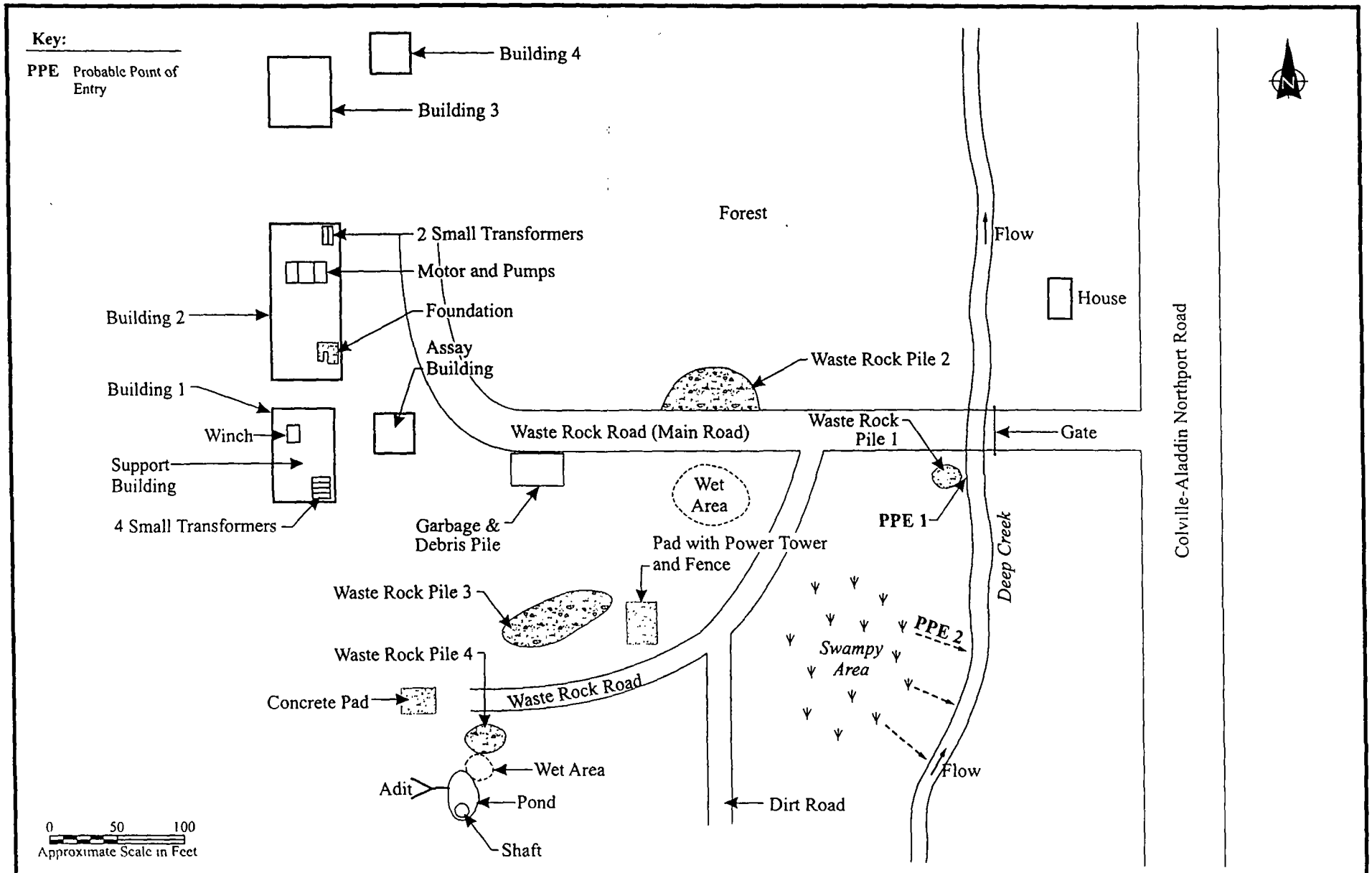

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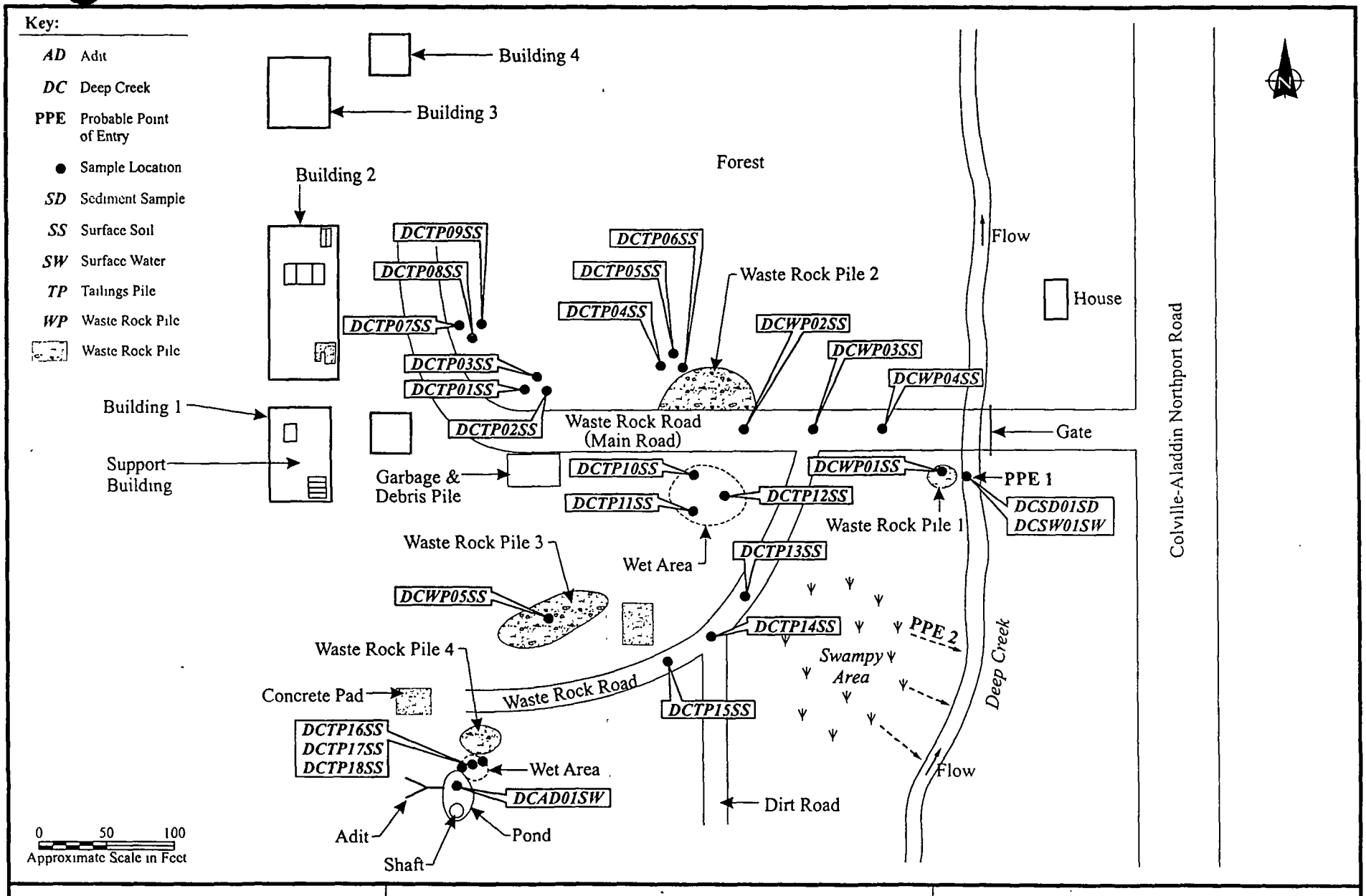
Figure 6-25
DEEP CREEK MINE
SITE MAP

Date:	Drawn by	
8-20-02	AES	10:START-2\0102002 Fig 6-25



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Stevens County, Washington

Figure 6-26
DEEP CREEK MINE
SAMPLE LOCATION MAP

Date:	Drawn by.	
8-20-02	AES	10·START-2\01020028\fig 6-26

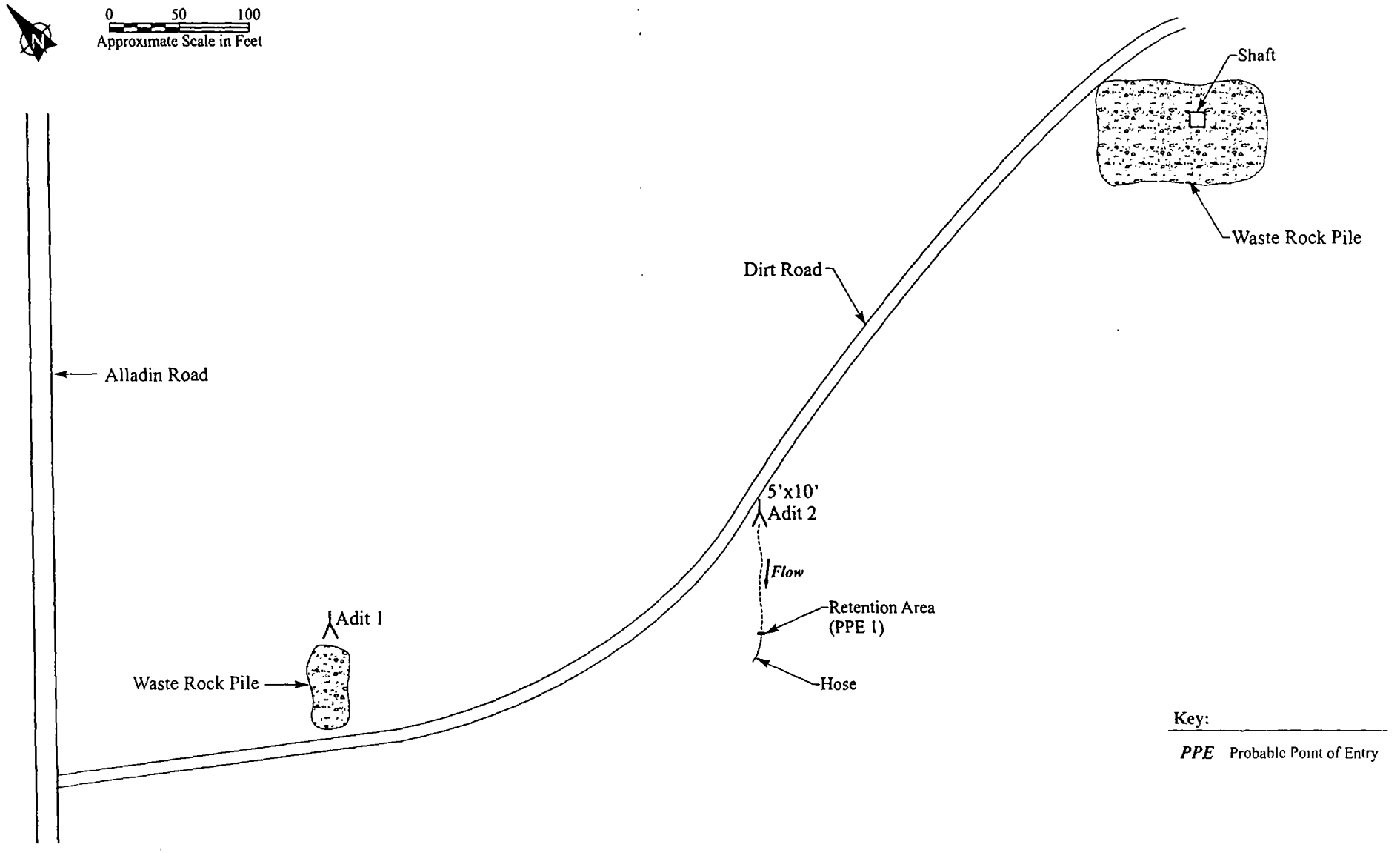

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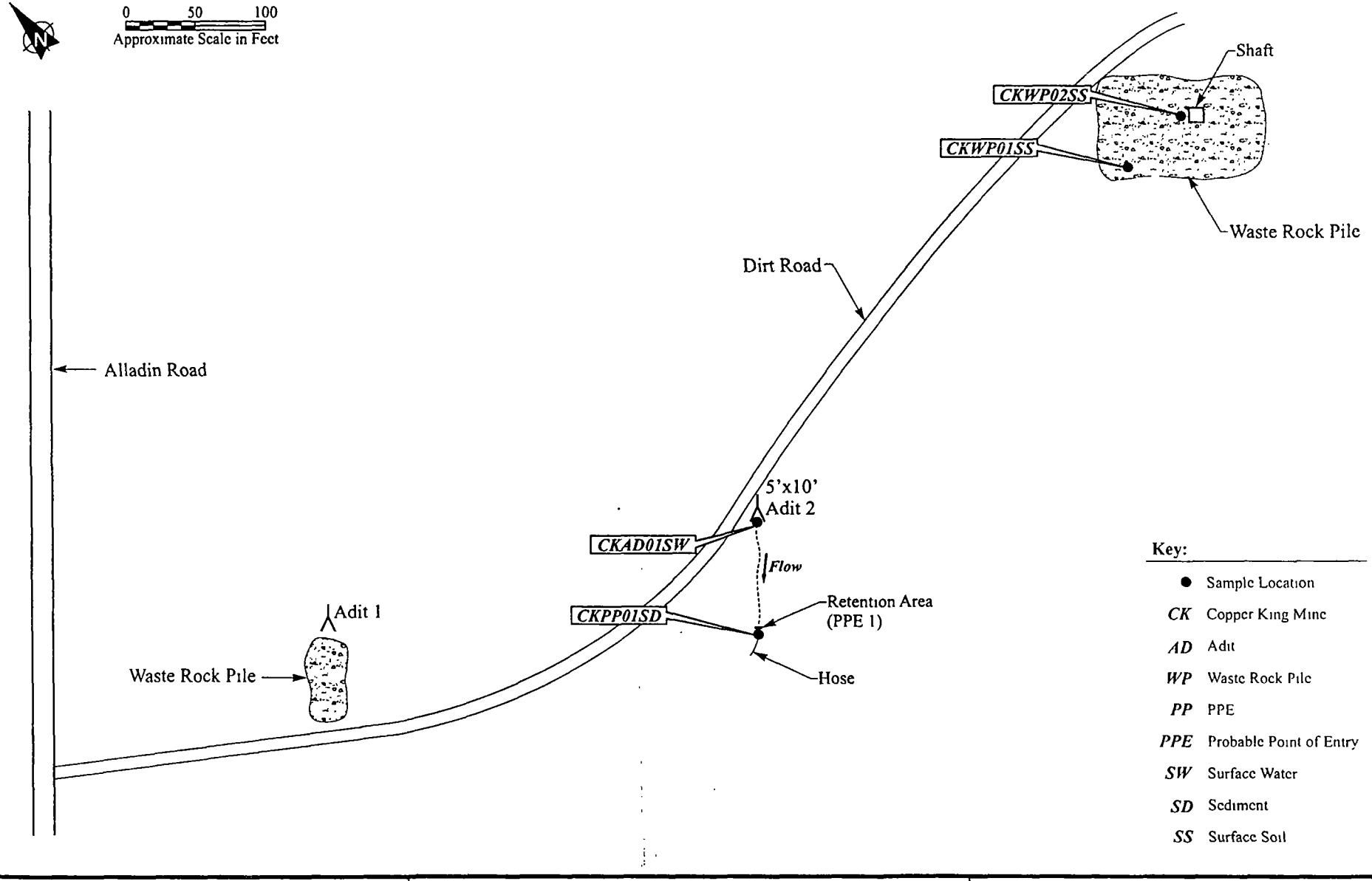
Figure 6-27
COPPER KING MINE
SITE MAP

Date.	Drawn by:	
8-20-02	AES	10 START-2\01020028' 6-27



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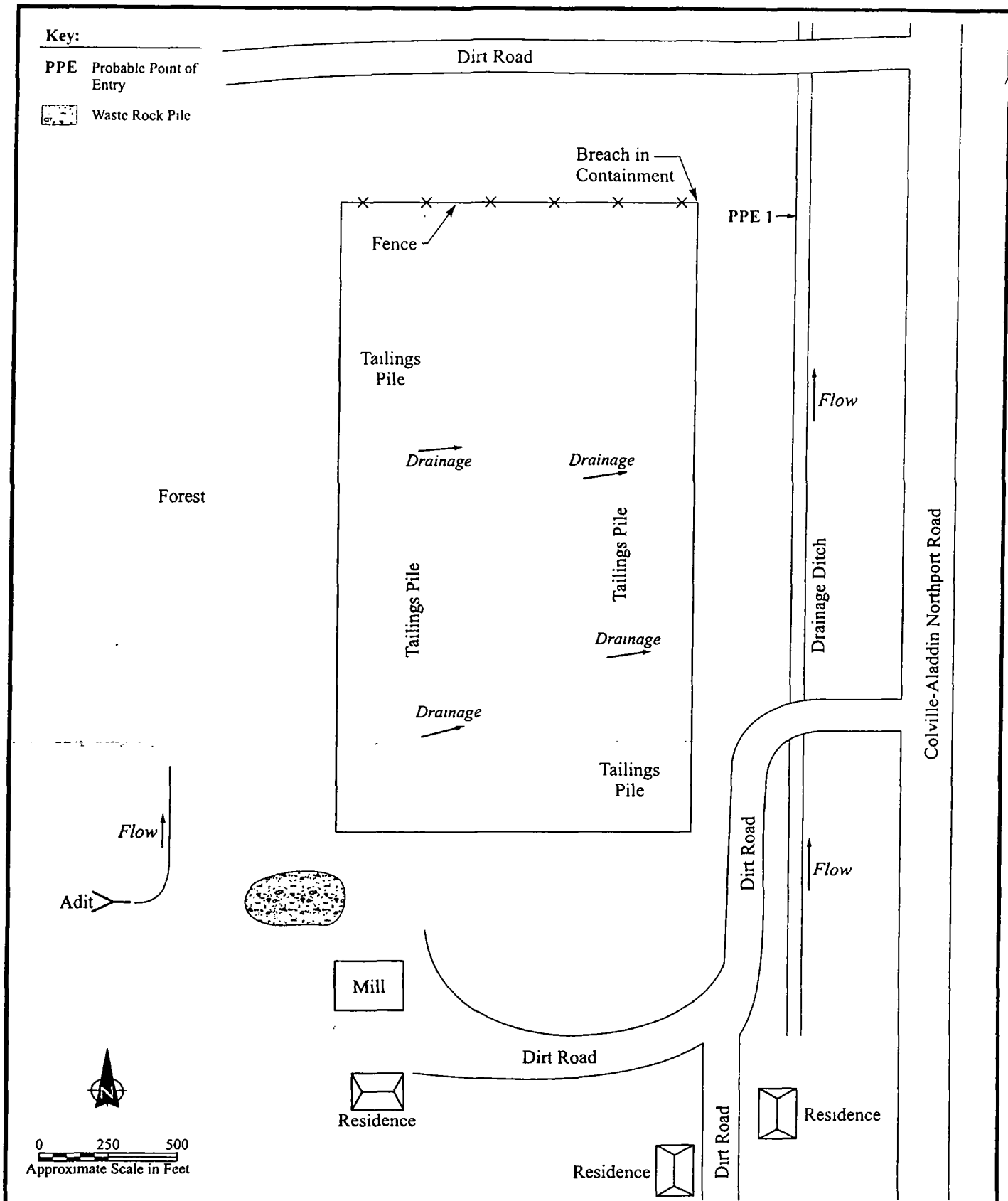
Stevens County, Washington

Figure 6-28
COPPER KING MINE
SAMPLE LOCATION MAP

Date:	Drawn by:	
8-20-02	AES	10:START-2\01020028\fig 6-28



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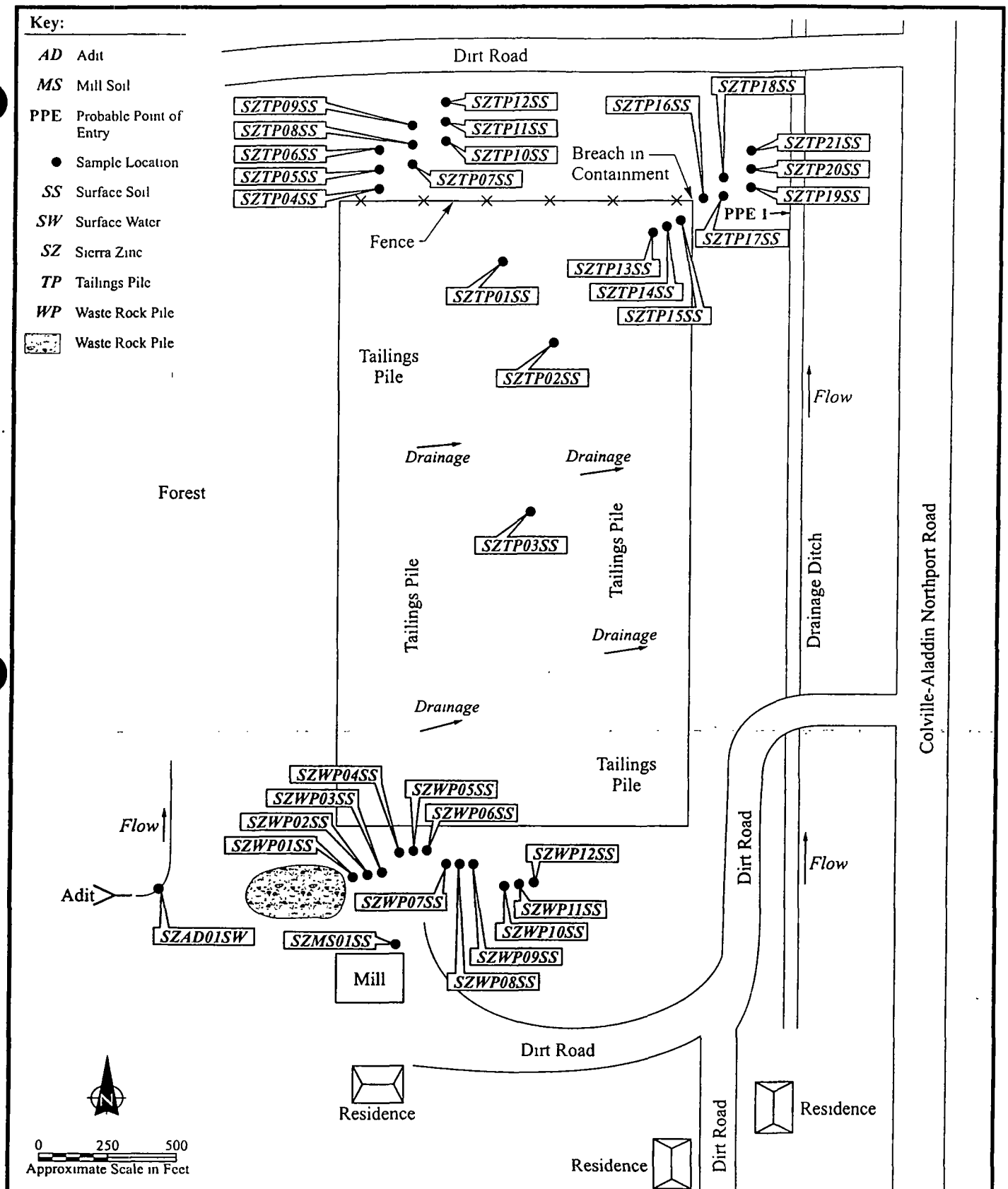
Stevens County, Washington

Figure 6-29
SIERRA ZINC MINE/MILL
SITE MAP

Date	Drawn by	
8-20-02	AES	10 START-2\01020028\fig 6-29



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UPPER COLUMBIA RIVER
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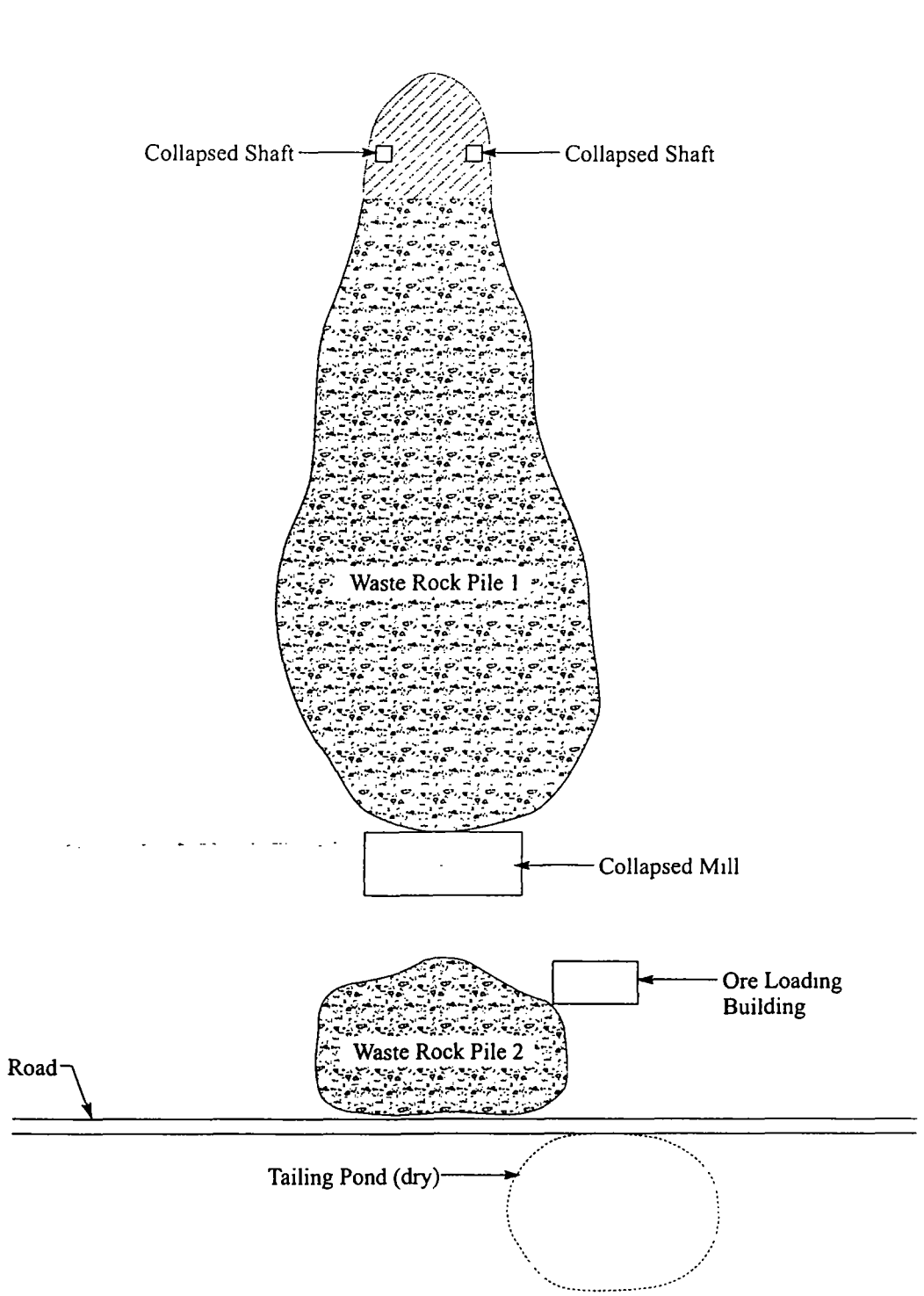
Stevens County, Washington

Figure 6-30
SIERRA ZINC MINE/MILL
SAMPLE LOCATION MAP

Date	Drawn by	
8-20-02	AES	10 START-2\01020028\fig 6-30

Note: Some map features are not to scale



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MINES AND MILLS
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Stevens County, Washington

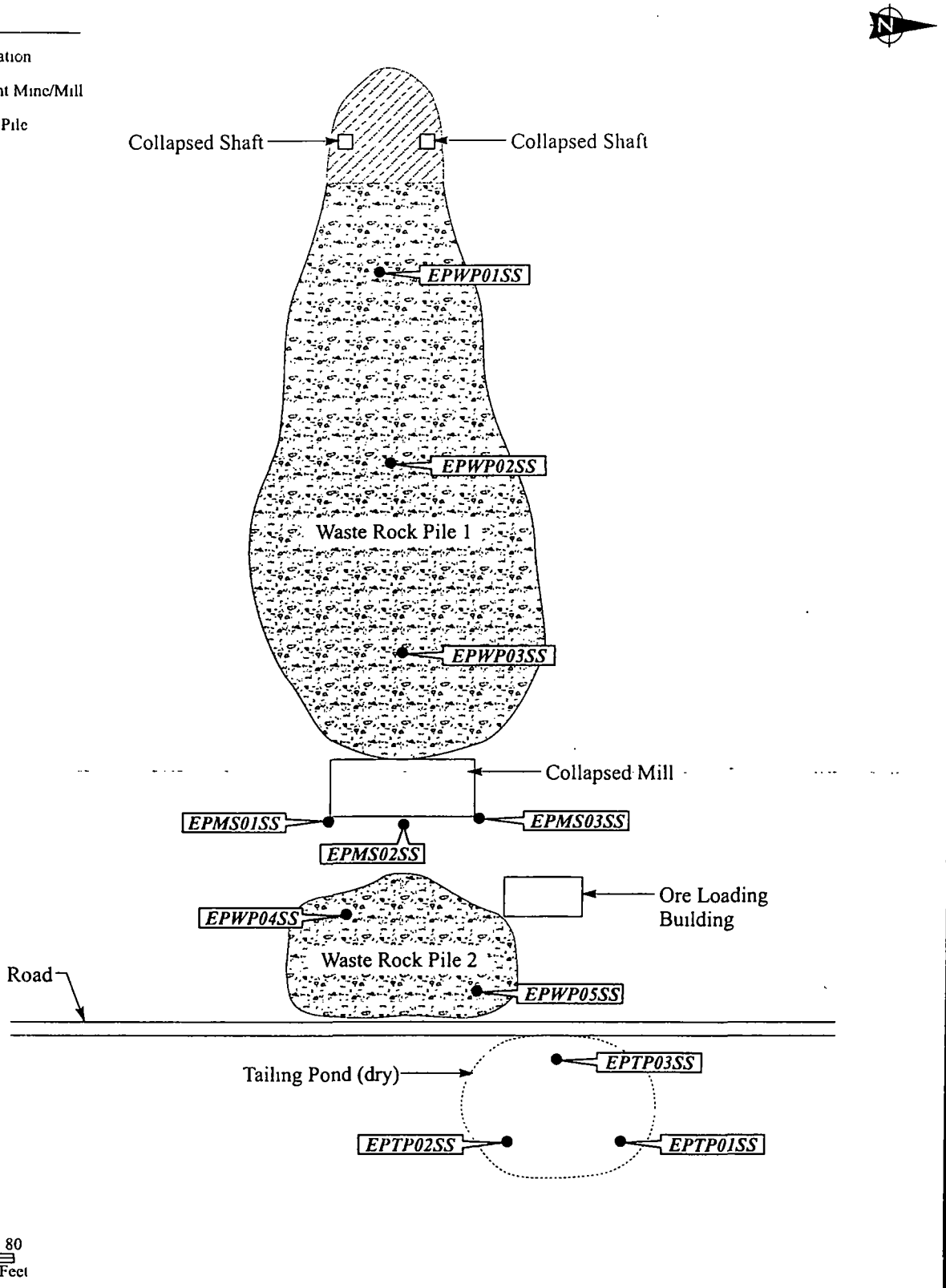
Figure 6-31
ELECTRIC POINT MINE/MILL
SITE MAP

Date	Drawn by	
8-20-02	AES	10 START-2\01020028\fig 6-31

Note: Some map features are not to scale

Key:

- ● Sample Location
- *EP* Electric Point Mine/Mill
- *WP* Waste Rock Pile
- *MS* Mill Soil
- *SS* Surface Soil
- *TP* Tailings Pile



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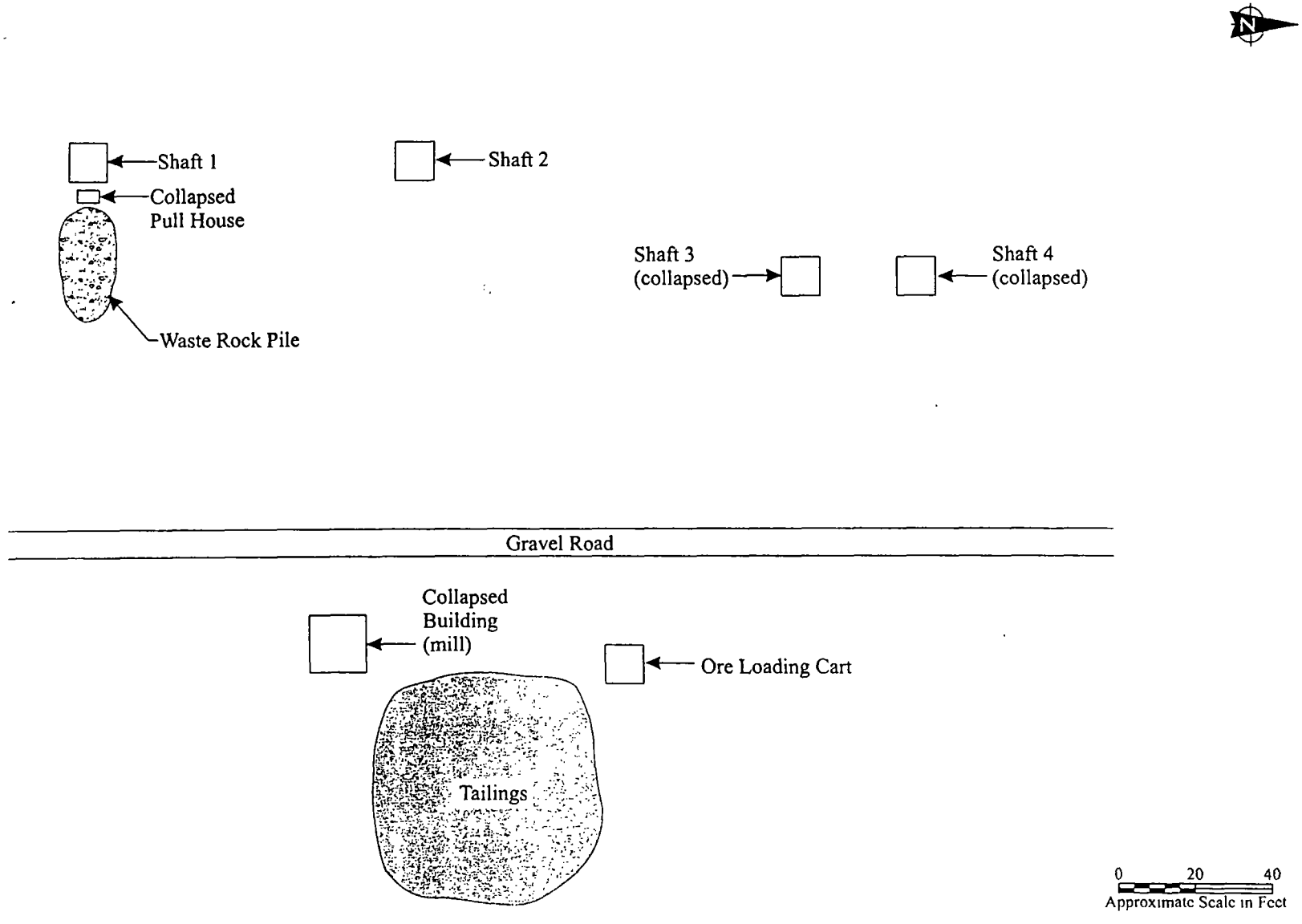
		Date 8-20-02 / Drawn by AES / 10.START-2\01020028\fig 6-32

Note: Some map features are not to scale.



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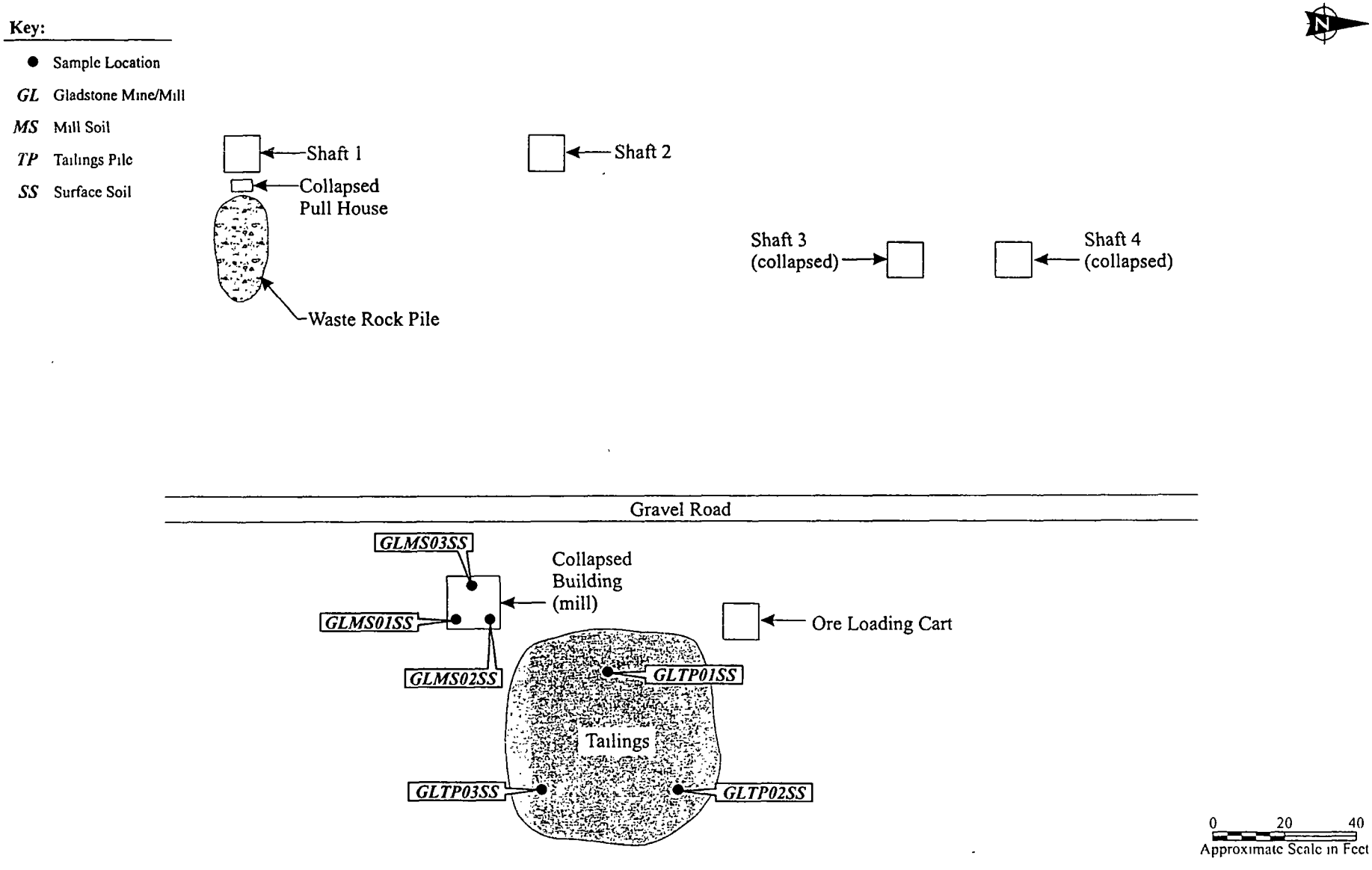
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

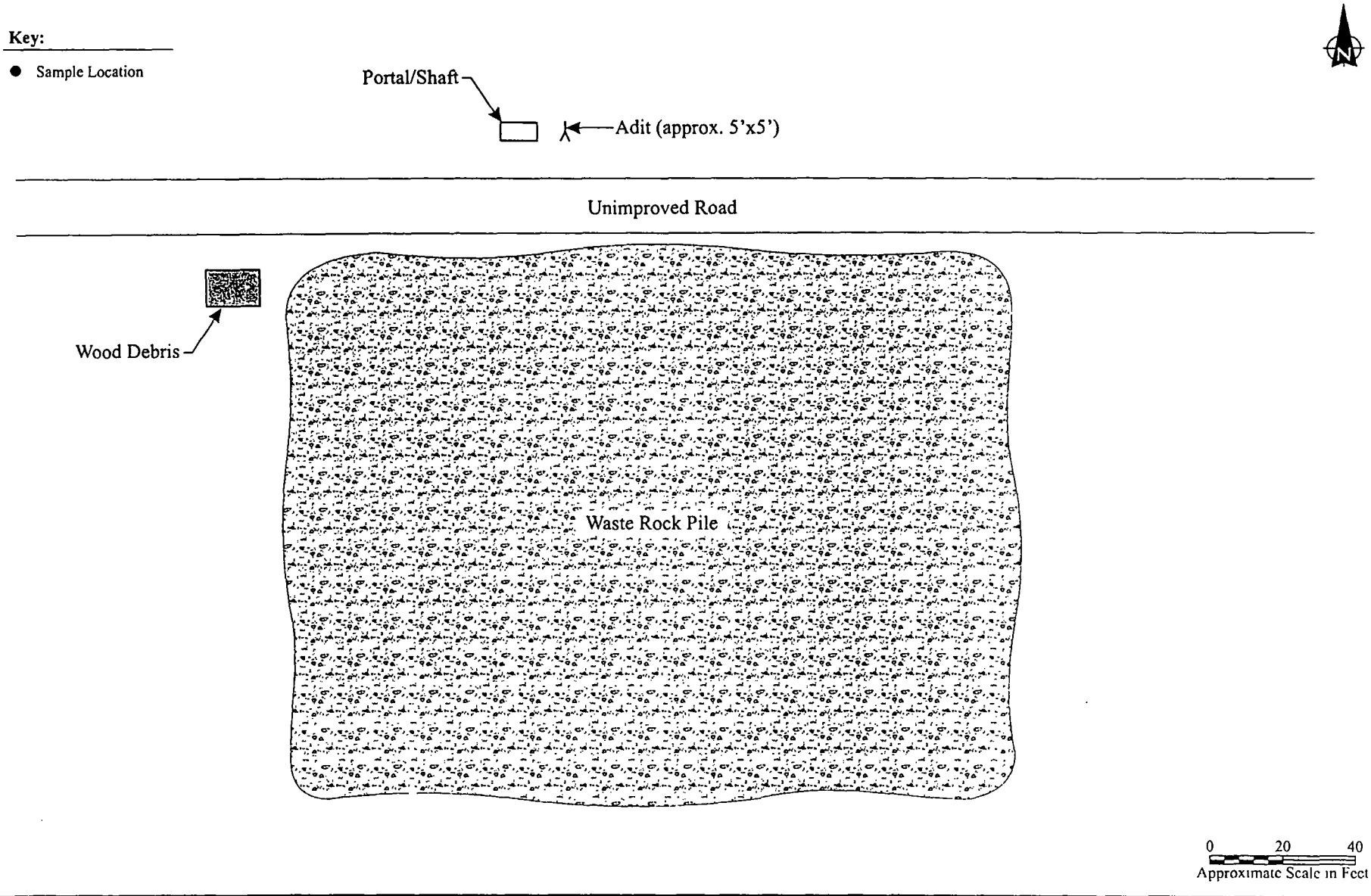
Figure 6-33
GLADSTONE MINE/MILL
SITE MAP

Date:	Drawn by.	
8-20-02	AES	10:START-2\01020028\fig 6-33

Note: Some map features are not to scale.



ecology and environment, inc. International Specialists in the Environment Seattle, Washington	UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS Stevens County, Washington	Figure 6-34 GLADSTONE MINE/MILL SAMPLE LOCATION MAP
		Date. 8-20-02 / Drawn by. AES / 10·START-2\01020028\fig 6-34



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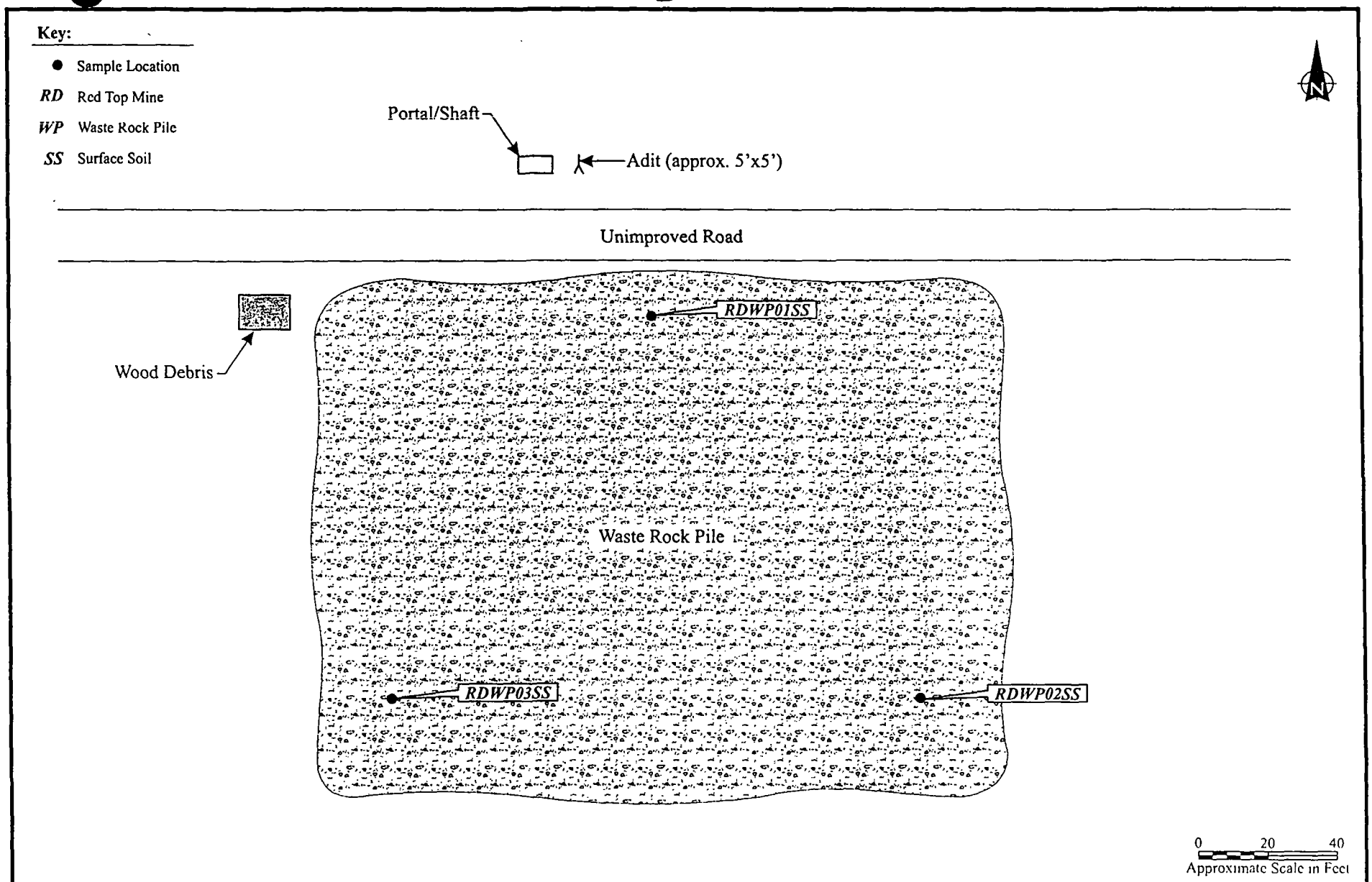
Stevens County, Washington

Figure 6-35
RED TOP MINE
SITE MAP

Date	Drawn by:	
8-20-02	AES	10 START-2\0102002\fig 6-35



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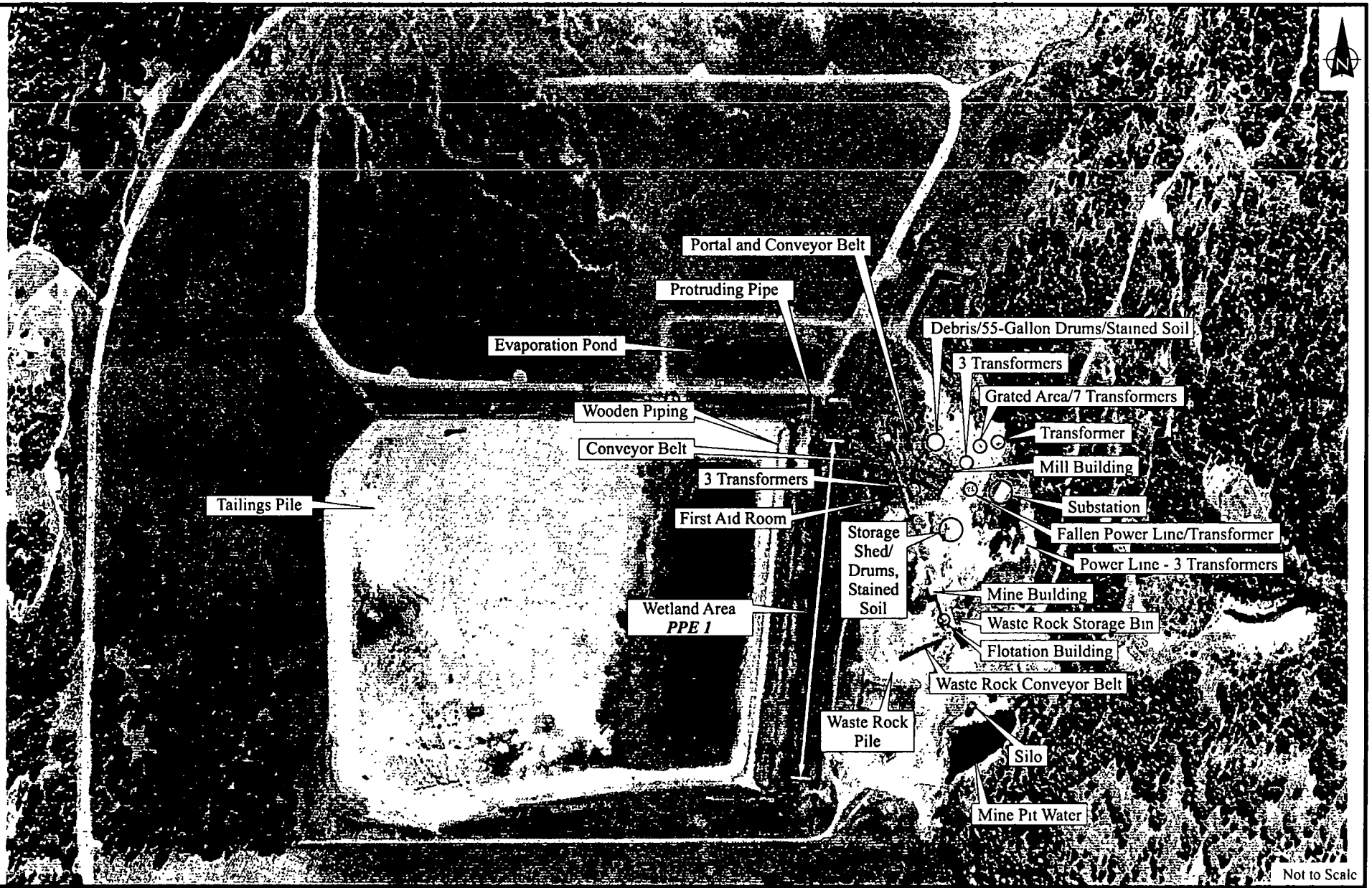
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-36
RED TOP MINE
SAMPLE LOCATION MAP

Date:	Drawn by.	
8-20-02	AES	10·START-2\01020028\fig 6-36



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Stevens County, Washington

Figure 6-37
ANDERSON CALHOUN MINE/MILL
SITE MAP

Date:	Drawn by:	
8-20-02	AES	10:START-2\01020028\fig 6-37

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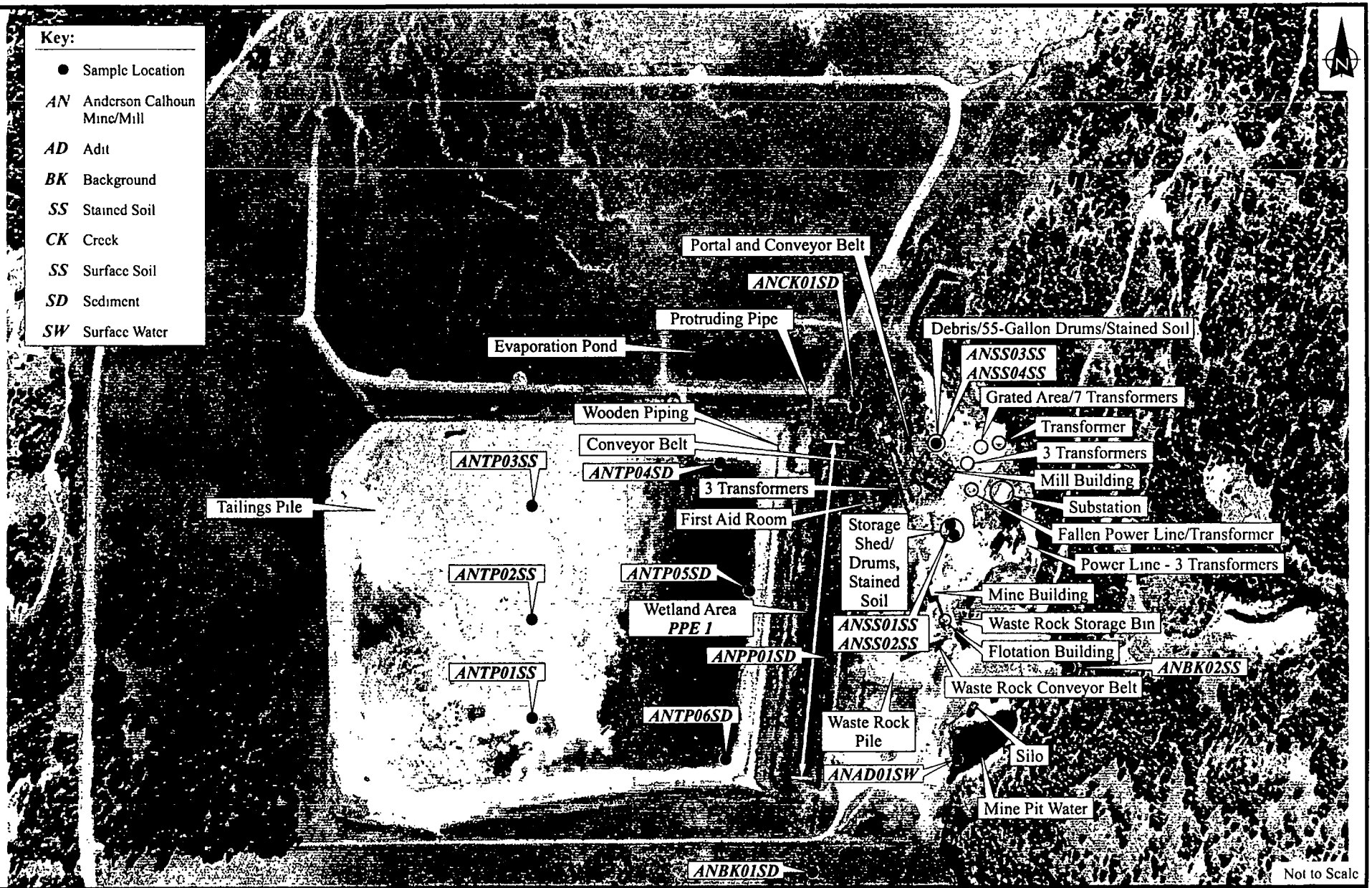

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MINES AND MILLS
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Figure 6-38
ANDERSON CALHOUN MINE/MILL
SAMPLE LOCATION MAP

Date:	Drawn by:	
8-20-02	AES	10:START-2\01020028\fig 6-38

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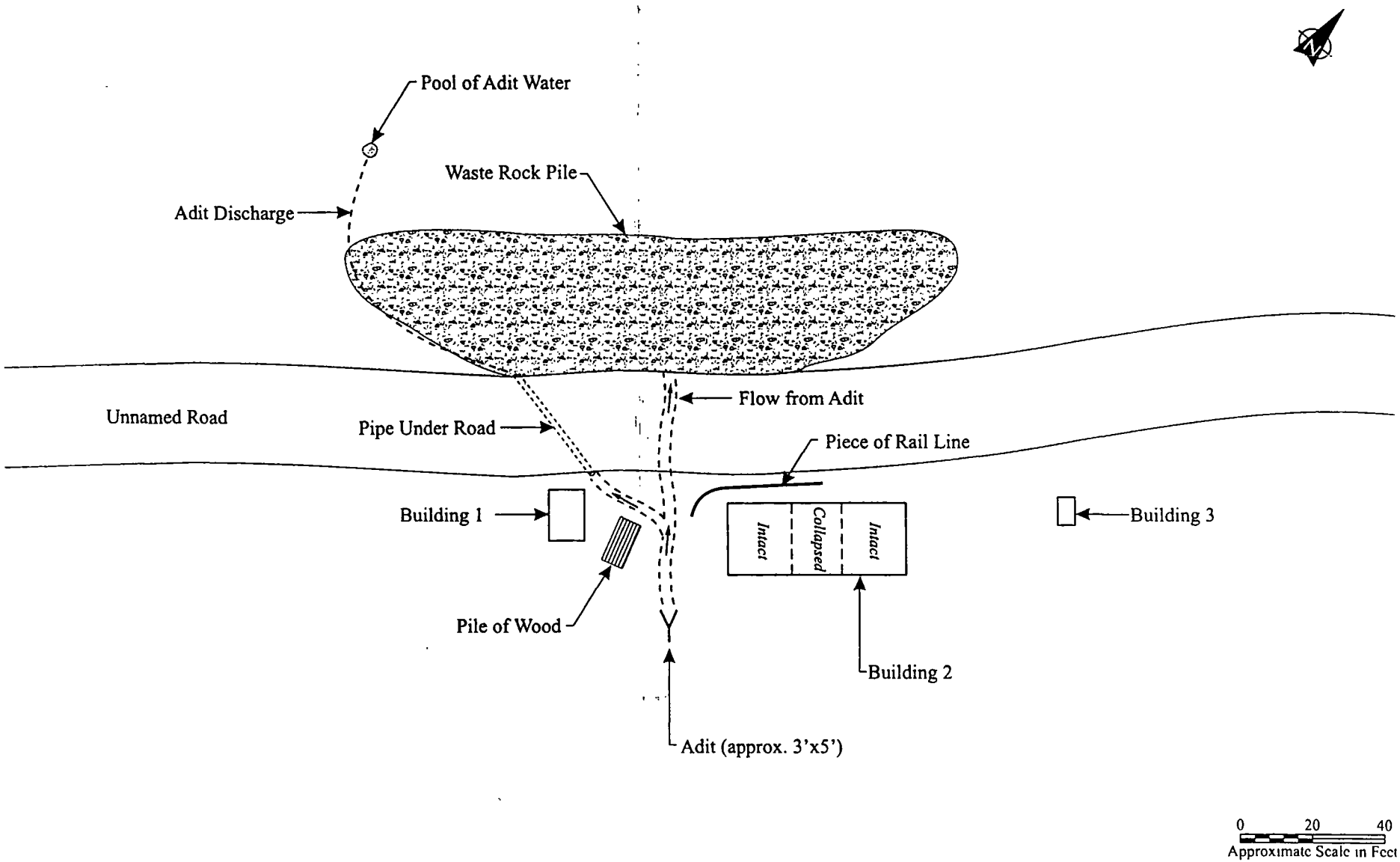

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MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
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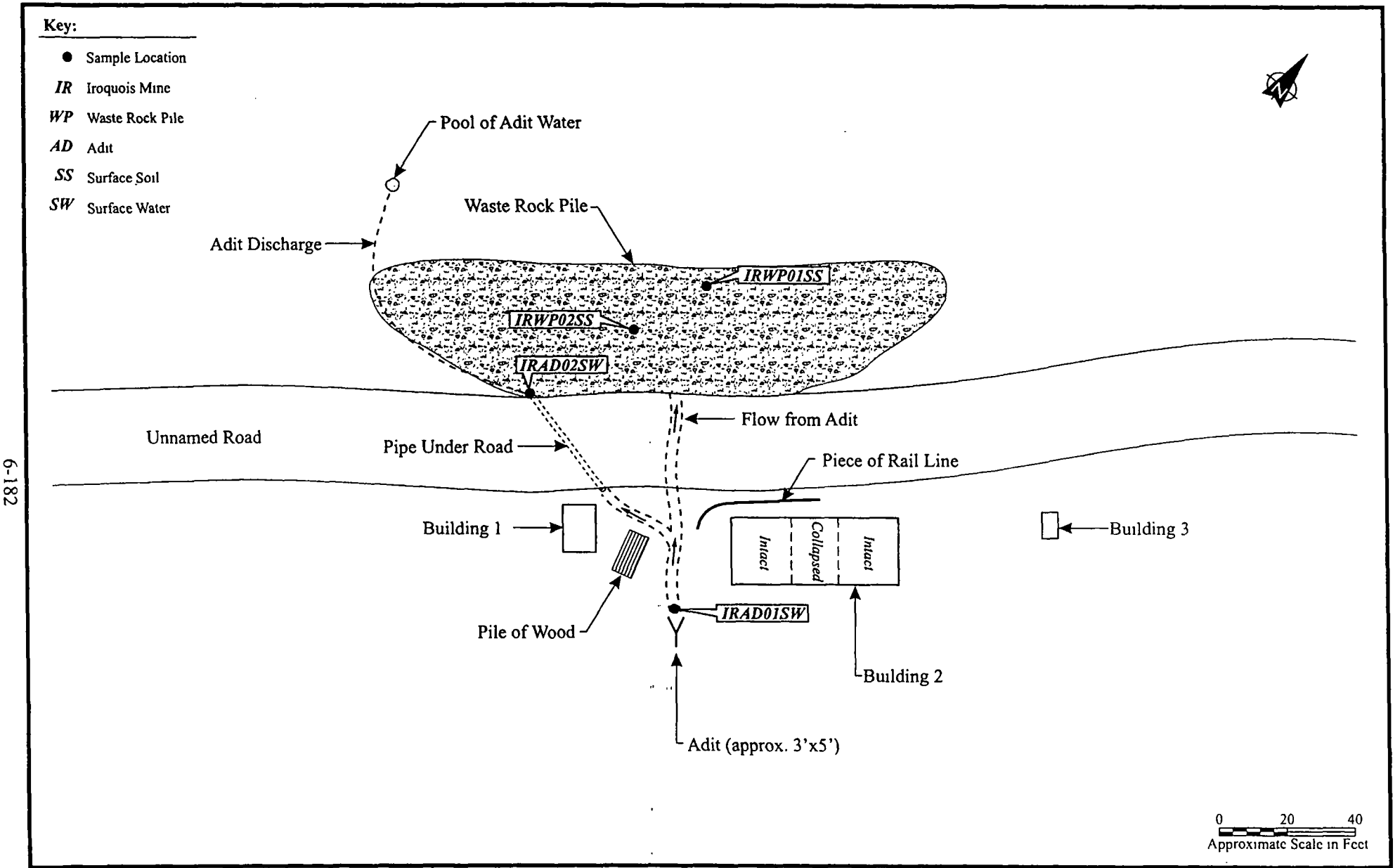
Figure 6-39
IROQUOIS MINE
SITE MAP

Date:	Drawn by:	
8-20-02	AES	10.START-2\01020028\fig 6-39



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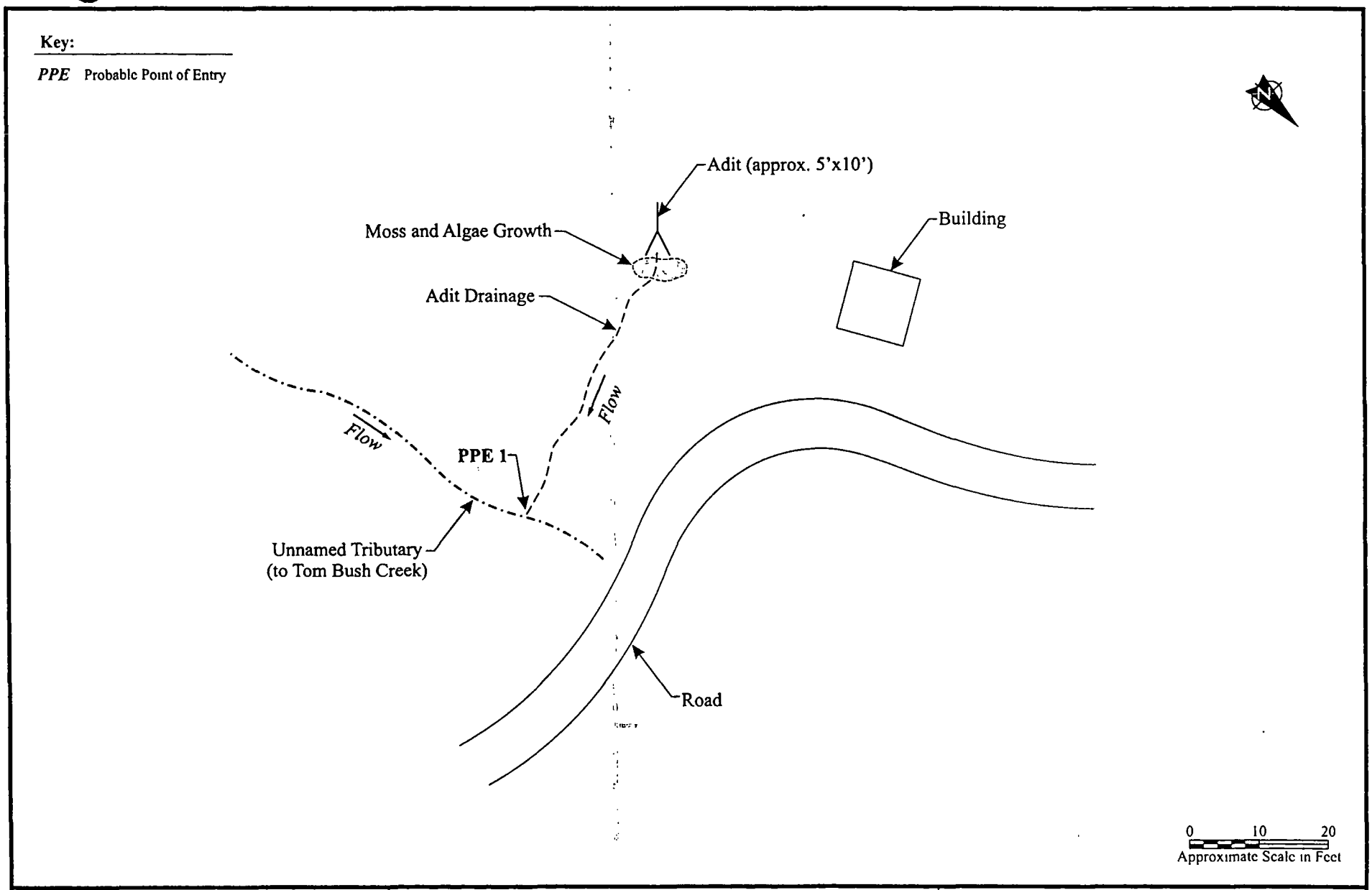
UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-40
IROQUOIS MINE
SAMPLE LOCATION MAP

Date:	Drawn by:	
8-20-02	AES	10 START-2\01020028\fig 6-40



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MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-41
MELROSE MINE
SITE MAP

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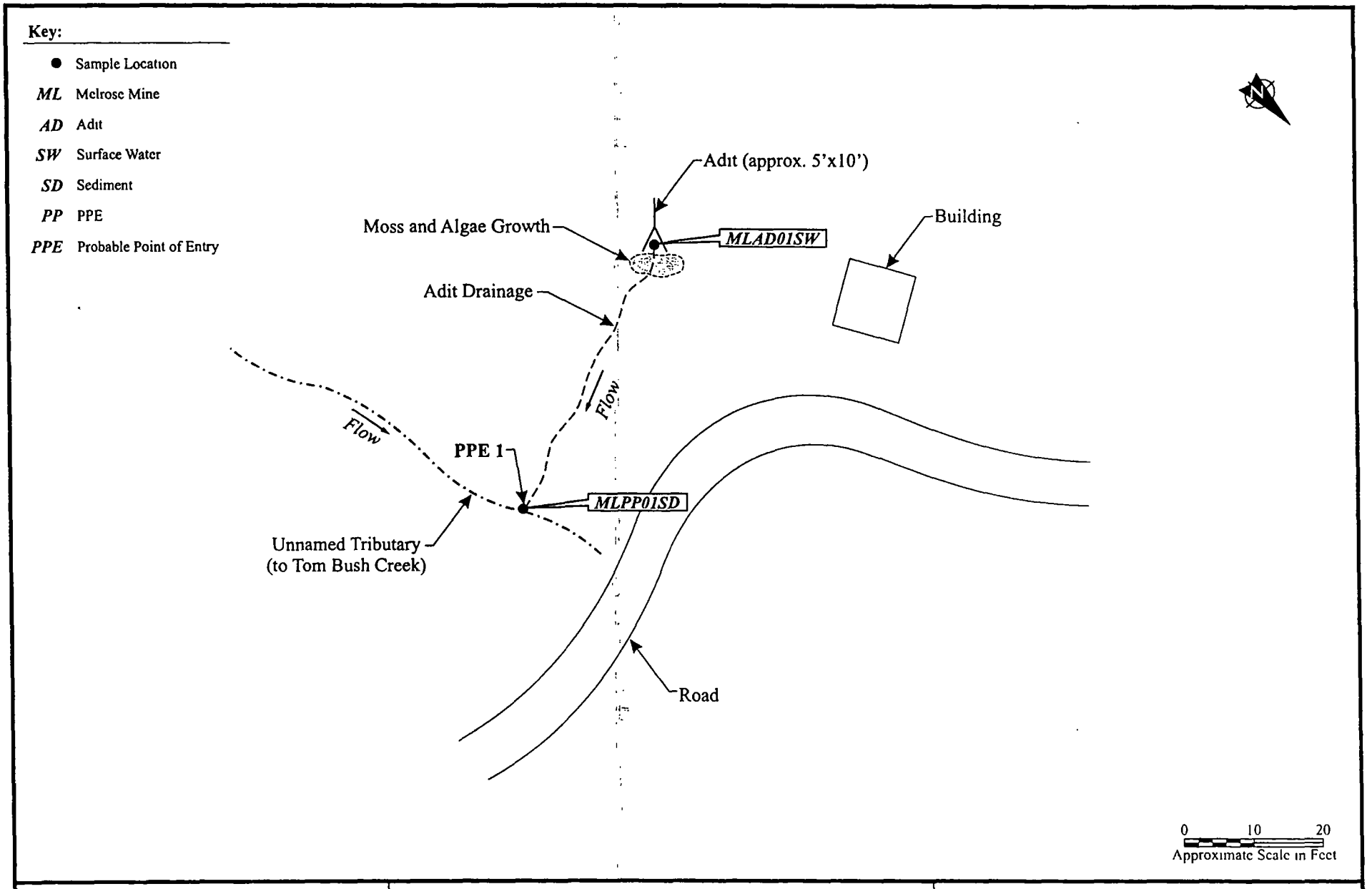

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Seattle, Washington

UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
Stevens County, Washington

Figure 6-42
MELROSE MINE
SAMPLE LOCATION MAP

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7. EPA CLP ANALYTICAL RESULTS, SURFACE WATER MIGRATION/EXPOSURE PATHWAYS, AND TARGETS

The following sub-sections describe the surface water migration pathways for the 18 mines/mills that were sampled, tributaries that were sampled, potential targets within the range of influence of these mines/mills (Figures 7-1 through 7-18), and a discussion of sample results evaluated in accordance with criteria described in Section 5.1.2. Analytical data forms from laboratory analyses are provided in Appendix D.

With the exception of the LeRoi/Northport Smelter and Deep Creek Mine, an evaluation of the groundwater migration, soil exposure, and air migration pathways for all mine/mill sites sampled was not conducted as part of this investigation. Additional to an evaluation of the surface water migration pathway, an evaluation of the soil exposure pathway also was conducted as part of the investigations at the LeRoi/Northport Smelter and Deep Creek Mine.

Refer to Table 7-1 for a list of PPEs for those sampled mines/mills that contained a PPE.

7.1 DAISY MINE

7.1.1 Surface Water Pathway Description

The potential source areas at the Daisy Mine include a tailings pile measuring approximately 150 feet at the base, 30 feet in height with a slope of approximately 35%, and a depth of approximately 45 feet, and a shaft. The shaft measured 10 feet by 10 feet by unknown depth. A wet area originating from the shaft extended south approximately 25 feet. From this source area, it is approximately another 70 feet overland to Magee Creek (PPE 1; Figure 6-1).

From the source area, drainage flows overland approximately 50 feet to the PPE in a ditch. The surface water target distance limit (TDL) continues approximately 0.08 mile in the ditch to an unnamed tributary. The unnamed tributary empties to Magee Creek 2.95 miles downstream. Magee Creek empties into the Columbia River another 2.18 miles downstream. The surface water TDL concludes 9.79 miles downstream in the Columbia River.

The unnamed tributary is assumed to be a minimal stream with flow rates less than 10 cfs Magee Creek is assumed to be a small to moderate stream with flow rates between 10 cfs and 100 cfs Columbia River at the U.S.-Canada border is 116,500 cfs (USGS 2002).

The average annual precipitation is 17.20 inches in Colville, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of Daisy Mine were mapped as Dehart-Rock outcrop complex, 40 to 65 percent slopes on side slopes and foothills. The Dehart soil is very deep and somewhat excessively drained. The permeability of the soil is moderately rapid, and the available water capacity is low. Runoff is very rapid, and the hazard of water erosion is very high. (USDA 1982)

Approximately 279 upgradient acres of land is expected to drain through the source area at the mine (USGS 1985). The drainage area of sources is approximately 1 acre (USGS 1985).

The Daisy Mine does not lie in a flood plain (FEMA 1990).

No containment features such as runoff controls exist at the property.

7.2 L-BAR/NORTHWEST MAGNESITE

7.2.1 Surface Water Pathway Description

The potential source areas at L-Bar/Northwest Magnesite include an above-grade magnesite residue pile, approximately 30 feet deep and 17 acres in area, and inadequate storage of flux bar and flux bar residue. The magnesite pile is adjacent to the Main Ditch which flows into the Colville River approximately 1,000 feet north of the confluence of the magnesite pile and the Main Ditch (Figure 6-3).

For the magnesite and flux bar residue pile, the PPE is located in the West Ditch. The overland distance between the source area and the West Ditch is less than 50 feet. The West Ditch flows approximately 0.32 mile to the confluence with the Colville River. The surface water TDL concludes 14.68 miles downstream in the Colville River. The magnesite and flux bar residue pile also used to drain through the Main Ditch, but a water retention system has been installed in the ditch to eliminate discharge to the Colville River.

The West Ditch is assumed to be a minimal stream with a flow rate less than 10 cfs. The average annual flow rate of the Colville River near Blue Creek is 110 cfs (USGS 2002).

The average annual precipitation is 17.20 inches in Colville, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of L-Bar/Northwest Magnesite were mapped as Colville silt loam, drained in bottom lands. The Colville soil is very deep, artificially drained soil. The permeability of the soil is

moderately slow, and the available water capacity is very high. Runoff is very slow, and there is no hazard of water erosion. (USDA 1982)

Approximately 200,000 upgradient acres of land is expected to drain through the source area at the mine (USGS 1984). The drainage area of sources is approximately 16 acres (USGS 1984).

L-Bar/Northwest Magnesite lies within a 100-year flood plain (FEMA 1990).

Containment features such as runoff controls exist at the property.

7.3 NORTHWEST ALLOYS

7.3.1 Surface Water Pathway Description

The potential source areas at Northwest Alloys include products and byproducts in the production of magnesium, silicon, and ferrosilicon. Waste products generated were either recycled, sold as product or thread, or buried on site. None of the wastes were regarded as hazardous under RCRA but were classified as regulated wastes under Ecology Dangerous Waste Regulations (E & E 1988). There is no overland flow from the site directly into the Colville River due to topography. A potential overland flow exists on the southern portion of the site. The overland flow potentially flows through ditches into Stensgar Creek (PPE 1). Stensgar Creek flows into the Colville River (Figure 6-5).

The average annual precipitation is 17.20 inches in Colville, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of Northwest Alloys were mapped as Colville silt loam, drained; Donavan loam, 8 to 25 percent slopes; Hodgson silt loam, 3 to 15 percent slopes; Koerling fine sandy loam, 5 to 15 percent slopes; Martella silt loam, 0 to 5 percent slopes; Martella silt loam, 5 to 15 percent slopes; Rock outcrop-Donavan complex, 30 to 65 percent slopes; and Springdale gravelly sandy loam, 0 to 15 percent slopes. The Colville silt loam, drained, is very deep, artificially drained soil on bottom lands. The permeability of the soil is moderately slow, and the available water capacity is very high. Runoff is very slow, and there is no hazard of water erosion. The Donavan loam, 8 to 25 percent slopes is very deep, well drained soil on toe slopes and foot slopes of foothills. The permeability of the soil is moderate, and the available water capacity is high. Runoff is medium, and the hazard of water erosion is moderate. Hodgson silt loam, 3 to 15 percent slopes is very deep, moderately well drained soil on undulating terraces. The permeability of the soil is moderately slow, and the available water capacity is very high. Runoff is slow, and the hazard of water erosion is slight to moderate. Koerling fine sandy loam, 5 to 15 percent slopes is very deep, moderately well drained soil on terraces. The permeability of the soil is moderate, and the available water capacity is very high. Runoff is medium, and the hazard of water

erosion is moderate. Martella silt loam, 0 to 15 percent slopes is very deep, moderately well drained soil on terraces. The permeability of the soil is moderately slow, and the available water capacity is very high. Runoff is slow, and the hazard of water erosion is slight to moderate. Martella silt loam, 5 to 15 percent slopes is very deep, moderately well drained soil on undulating terraces. The permeability of the soil is moderately slow, and the available water capacity is very high. Runoff is medium, and the hazard of water erosion is moderate. Rock outcrop-Donavan complex, 30 to 65 percent slopes are on side slopes and foothills. The permeability of the soil is moderate, and the available water capacity is high. Runoff is very rapid, and the hazard of water erosion is very high. Springdale gravelly sandy loam, 0 to 15 percent slopes is very deep, somewhat excessively drained soil on terraces. The permeability of the soil is moderately rapid to the layer of extremely cobbly coarse sand. The available water capacity is low. Runoff is slow, and the hazard of water erosion is slight. (USDA 1982)

From the site, drainage enters a ditch, at PPE 1 for the surface water pathway. The ditch flows an estimated 0.33 mile before entering Stensgar Creek. The surface water TDL continues 0.79 mile in Stensgar Creek to the Colville River. The surface water TDL concludes 13.88 miles downstream in the Colville River.

Stensgar Creek and the ditch are assumed to be minimal streams with flow rates less than 10 cfs. The average annual flow rate of the Colville River at Blue Creek is 110 cfs (USGS 2002).

Approximately 100,000 upgradient acres of land is expected to drain through the source area at the mine. The drainage area of sources is approximately 79 acres. (USGS 1984)

Northwest Alloys lies within a 100-year flood plain (FEMA 1990).

Containment features such as runoff controls exist at the property.

7.4 NAPOLEON MINE/MILL

7.4.1 Surface Water Pathway Description

The potential source areas at the Napoleon Mine/Mill include an adit measuring 5 feet by 4 feet located south of the dirt road entrance. The adit discharge flows across the dirt road, down the hillside approximately 120 feet before entering an intermittent creek (PPE 1; Figure 6-7). The surface water TDL continues 0.73 mile in the intermittent creek to Kettle River. Kettle River empties into the Columbia River another 4.39 miles downstream. The surface water TDL concludes 9.88 miles downstream in the Columbia River.

The intermittent creek is assumed to be a minimal stream with a flow rate less than 10 cfs. Kettle River is assumed to be a small to moderate stream with an average flow rate between 10 cfs and 100 cfs. Columbia River at the U.S.-Canada border has a flow rate of 116,500 cfs (USGS 2002).

The average annual precipitation is 19.43 inches in Northport, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of Napoleon Mine/Mill were mapped as Aits stony loam, 40 to 65 percent slopes. The soil is very deep, well drained soil on side slopes and foothills. The permeability of the soil is moderately slow, and the available water capacity is very high. Runoff is very rapid, and the hazard of water erosion is very high. (USDA 1982)

Approximately 525 upgradient acres of land are expected to drain through a source area at the mine (USGS 1969a). The drainage area of sources is approximately 1 acre (USGS 1969a).

The Napoleon Mine/Mill does not lie in a flood plain (FEMA 1990).

No containment features such as run off control exist at the property.

7.5 VAN STONE MINE/MILL

7.5.1 Surface Water Pathway Description

The potential source areas at the Van Stone Mine/Mill include waste rock storage area, two tailings piles, an open pit, buildings, and stained soil areas (Figures 6-9 through 6-11).

The waste rock storage area was constructed by end dumping to the south contour from the open pit haul road. The eastern toe of the waste rock storage area consists mostly of larges and is located less than 100 feet from the Northeast Fork of Onion Creek. Slopes on the north side of the haul road consist, in part, of colluvial overburden. Depth and quantity of overburden has yet to be determined. (Beacon 1999)

The tailings embankments consist of steep sided erodable tailings sands. In some locations the slopes are heavily rilled, particulary along the south and west faces. (Beacon 1999)

A rock-lined spillway and discharge channel has been installed in the extreme northeast corner of the main tailings impoundment to direct any excess accumulated rainwater to the adjacent drainage. Tailings area water quality is monitored every 90 days and is reported to be suitable for discharge under the Water Discharge Permit or can be used for irrigation purposes.

A seepage pond is located adjacent to the tailings facility.

The open pit, located in the most southern portion of the area is flooded to an elevation of 3,510 feet or 170 feet above the current pit bottom. The rim of the open pit and portions of the top bench

currently support vegetation. The water in the open pit is separated from a tributary to the Northeast Fork of Onion Creek by a narrow rock-fill berm. The water level in the open pit is static at 3,510 feet elevation and excess water seeps through this rock-fill to the adjacent creek (PPE 3). (Beacon 1999)

Six areas of stained soil were noted on the property. The first area was near a liquid propane tank south of the mill building. The second area was near elevated transformers adjacent to the mill building. At this location, the soil was stained orange and green. The third area was near an AST with secondary containment near the entrance to the mine/mill. The containment area was filled with water and smelled of diesel. No sheen was noted. The secondary containment had been breached. The fourth area was on a concrete pad with staged transformers and stained soil south of the liquid propane tank. The fifth area was near staged 55-gallon drums surrounded by stained soil west of the mine/mill buildings and south of the Roundup Powder Company abandoned building. The sixth area was near another AST area surrounded by stained soil located east of the shed and staged 55-gallon drums.

Several unnamed creeks were located adjacent to the property. One unnamed creek was located south of the mine pit water and could not be accessed due to safety concerns. A second unnamed creek was located at the southwest portion of the old tailings pile (PPE 4). A third unnamed creek was located on Boise Cascade property; no sample was collected due to lack of access. A fourth unnamed creek was located adjacent to the tailings pile near the entrance to the mine/mill (PPE 1 and PPE 2). Excess water from the on-site open pit seeps through the pit berm to an adjacent creek (PPE 3).

A number of public, private, and commercial interests access the mine/mill access road. Boise Cascade Forest District maintains an easement over the road to access their timber holdings. Washington Water Power maintains an easement over the road to access a substation located on the mine/mill property. There are residences near the road junction and the DNR uses the road for fire control. (Beacon 1999)

For the waste rock and stained soil source areas, drainage flows overland approximately 800 feet to the PPE in an unnamed tributary. The open pit is located immediately adjacent to this PPE. Excess water in the pit seeps through the rock berm to the unnamed tributary. From the PPE, the surface water pathway TDL continues 2.17 miles in the unnamed tributary to the confluence with Onion Creek. Onion Creek empties into the Columbia River another 8.89 miles downstream. The surface water TDL concludes 3.94 miles downstream in the Columbia River.

For the tailings pile source area, drainage flows overland approximately 950 feet to the PPE in an unnamed tributary. From the PPE, the surface water pathway TDL continues 0.90 mile to the

confluence with Onion Creek. Onion Creek empties into the Columbia River another 8.89 miles downstream. The surface water TDL concludes 5.21 miles downstream in the Columbia River.

For the old tailings pile source area, drainage flows overland approximately 950 feet to the PPE in an unnamed tributary. From the PPE, the surface water pathway TDL continues 1.14 miles to the confluence with Onion Creek. Onion Creek empties into the Columbia River another 8.89 miles downstream. The surface water TDL concludes 4.97 miles downstream in the Columbia River.

The unnamed tributary is assumed to be a minimal stream with a flow rate less than 10 cfs. Onion Creek is assumed to be a small to moderate stream with flow rates between 10 cfs and 100 cfs. The Columbia River (or Lake Roosevelt) has a flow rate of 116,500 cfs as measured at the U.S.-Canada border (USGS 2002).

The average annual precipitation is 17.20 inches in Colville, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of Van Stone Mine/Mill were mapped as Merkel stony sandy loam, 40 to 65 percent slopes; Newbell silt loam, 25 to 40 percent slopes; Newbell stony silt loam, 0 to 40 percent slopes; and Newbell-Rock outcrop complex, 15 to 40 percent slopes. The Merkel stony sandy loam, 40 to 65 percent slopes is very deep, moderately well drained soil on terrace escarpments. The permeability of the soil is moderately slow, and the available water capacity is very high. Runoff is very rapid, and the hazard of water erosion is high. The Newbell silt loam, 25 to 40 percent slopes is very deep, well drained soil on foot slopes of foothills. The permeability of the soil is moderate, and the available water capacity is very high. Runoff is rapid, and the hazard of water erosion is high. The Newbell stony silt loam, 0 to 40 percent slopes is very deep, well drained soil on toe slopes and foot slopes of foothills. The permeability of the soil is moderate, and the available water capacity is very high. Runoff is rapid, and the hazard of water erosion is high. The Newbell-Rock outcrop complex, 25 to 40 percent slopes are on foot slopes of foothills. The permeability of the soil is moderate, and the available water capacity is very high. Runoff is rapid, and the hazard of water erosion is high. (USDA 1982)

Approximately 470 upgradient acres of land are expected to drain through a source area at the mine (USGS 1969b). The drainage area for the waste rock pile at the site is estimated to be 16 acres (USGS 1969b).

The Van Stone Mine/Mill does not lie in a flood plain (FEMA 1990).

Containment features such as runoff control exist at the mine pit water at the mine/mill. At present, the steep outer walls of the tailings piles are subject to surface erosion, as evidenced by the rills

and gullies developed on the walls. A small berm has been made around the tailings piles to contain eroded material and is effective in containing eroded material. The owner is testing erosion control methods on the tailings pile walls. (Boise Cascade Corporation 1997)

7.6 LEROI/NORTHPORT SMELTER

7.6.1 Surface Water Pathway Description

The potential source areas at the LeRoi/Northport Smelter include an area where slag bricks had been deposited south of the former smelter operations, and a potential former tailings area west of the slag brick area. The former tailings pile area was adjacent to a recently constructed ditch (PPE 1; Figure 6-16).

For the tailings pile, drainage enters a constructed ditch, PPE 1 and PPE 2, for the surface water pathway. The overland distance between the tailings pile and the ditch is estimated to be less than 100 feet for PPE 2. The tailings pile extends into the ditch at PPE 1. From the PPEs, the surface water TDL continues approximately 0.05 mile through the constructed ditch, which empties into the Columbia River. The surface water TDL concludes 14.95 miles downstream in the Columbia River.

The slag pile is located on the shore of the Columbia River (or Lake Roosevelt). The source area extends into the Columbia River (PPE 3). From PPE 3 the surface water TDL concludes 15 miles downstream in the Columbia River.

The Columbia River (or Lake Roosevelt) has a flow rate of 116,500 cfs as measured at the U.S.-Canada border (USGS 2002).

The average annual precipitation is 19.43 inches in Northport, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of LeRoi/Northport Smelter were mapped as Hagen sandy loam, 0 to 15 percent slopes. The soil is very deep, somewhat excessively drained soil on terraces. The permeability of the soil is moderately rapid in the upper part and very rapid in the lower part. The available water capacity is moderate. Runoff is slow. The hazard of water erosion is slight to moderate, and the hazard of wind erosion is high. (USDA 1982)

Approximately one upgradient acre of land is expected to drain through the source area at the mine (USGS 1969c). The drainage area of sources is approximately 33 acres (USGS 1969c).

The LeRoi/Northport Smelter lies within a 100-year flood plain (FEMA 1990).

No containment features such as runoff control exist at the property.

7.6.2 Soil Exposure Pathway Description

A boat launch is located near the slag deposited along the bank of the Columbia River. No residents are located at the site. No school or day care facility is located within 200 feet of the site. There are no worker's within 200 feet of any source on site. The LeRoi/Northport Smelter is located within the city limits of Northport. Based on USGS topographic maps, the START-2 assumes 336 people reside within a 1-mile travel distance from the site. No residents are located at the site. The nearest residence is located 0.22 miles southwest from the site. No school or day care facility is located within 200 feet of the site. There are no workers within 200 feet of any source on site. A city park is located approximately 50 feet from the north boundary of the site. The park is accessed by means of a road on the southwest corner of the site. Access to the site is not restricted. Sources at the site are not fenced. No resources such as commercial agriculture, silviculture, or livestock production or grazing exist on a source area at the site. No wetlands are located on a source area at the site.

7.7 BLACK ROCK MINE/MILL

7.7.1 Surface Water Pathway Description

The potential source areas at the Black Rock Mine/Mill include a waste rock pile, shaft, remnants of a mill building, and two sorting bins. No PPEs were identified by the START-2 (Figure 6-19).

Although no PPEs exist at the site, the nearest surface water body is Deep Creek, located approximately 950 feet from the waste rock pile and collapsed mill source areas. From this location, the surface water TDL continues 7.07 miles in Deep Creek to the confluence with the Columbia River. The surface water pathway TDL concludes 7.93 miles downstream in the Columbia River.

The average annual precipitation is 19.43 inches in Northport, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of Black Rock Mine/Mill were mapped as Waits-Rock outcrop complex, 40 to 65 percent slopes. The soils in this complex are very deep and well drained on side slopes of foothills. The permeability of the soil is moderate, and the available water capacity is very high. Runoff is very rapid, and the hazard of water erosion is very high. (USDA 1982)

Approximately 660 upgradient acres of land is expected to drain through the source area at the mine (USGS 1992a). The drainage area of sources is approximately 7 acres (USGS 1992a).

The Black Rock Mine/Mill does not lie in a flood plain (FEMA 1990).

No containment features such as runoff control exist at the property.

7.8 GREAT WESTERN MINE

7.8.1 Surface Water Pathway Description

The potential source areas at the Great Western Mine include three waste rock piles, shaft systems, and adits. No PPEs were identified by the START-2 (Figure 6-21).

Although, no PPEs exist at the site, the nearest surface water body is an unnamed tributary. From this location, the surface water TDL continues 0.13 mile in the unnamed tributary to the confluence with Deep Creek. Deep Creek empties into the Columbia River another 7.36 miles downstream. The surface water pathway TDL concludes 7.51 miles downstream in the Columbia River.

The average annual precipitation is 19.43 inches in Northport, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of Great Western Mine were mapped as Waits-Rock outcrop complex, 40 to 65 percent slopes. The soils in this complex are very deep and well drained on side slopes of foothills. The permeability of the soil is moderate, and the available water capacity is very high. Runoff is very rapid, and the hazard of water erosion is very high. (USDA 1982)

Approximately 400 upgradient acres of land is expected to drain through the source area at the mine (USGS 1992a). The drainage area of sources is approximately 29 acres (USGS 1992a).

The Great Western Mine does not lie in a flood plain (FEMA 1990).

No containment features such as runoff control exist at the property.

7.9 LAST CHANCE MINE/MILL

7.9.1 Surface Water Pathway Description

The potential source areas at the Last Chance Mine/Mill include two waste rock piles, tailings pile, shaft, adit, and a seep (Figure 6-23).

The larger waste rock pile was located north of the north shaft and measured 1,320 feet by 75 feet by 2 feet deep. The smaller waste rock pile located west of the north shaft measured 75 feet by 45 feet by unknown depth. A tailings pile surrounding a former house or office and mill building located west of the waste rock piles measured 600 feet by 105 feet by 3 feet deep. East of the waste rock piles and the abandoned road the START-2 located north and south shafts and an adit upgradient from the north shaft. A seep was located near the mouth of the south shaft which flows into the unnamed creek. Further east of the shafts, an unnamed creek was documented. The adit discharge flowed into the unnamed creek (PPE 1) and continued west past the waste rock piles, through the tailings pile (PPE 2) and infiltrated the ground prior to reaching the Colville-Alladin Northport Road. South of the point of

infiltration, a drainage ditch and culvert were observed. The potential flow from the culvert travels by sheet flow into Deep Creek.

For the three source areas at the site, the PPEs are located in an unnamed tributary that flows through the site. From the this location, the surface water TDL continues 0.56 mile in the unnamed tributary to the confluence with Deep Creek. Deep Creek empties into the Columbia River 7.36 miles downstream. The surface water TDL concludes 7.08 miles downstream in the Columbia River.

The unnamed tributary is assumed to be a minimal stream with a flow rate less than 10 cfs. Deep Creek has an average annual flow rate of 96.0 cfs near Northport. The Columbia River (or Lake Roosevelt) has a flow rate of 116,500 cfs as measured at the U.S.-Canada border. (USGS 2002)

The average annual precipitation is 19.43 inches in Northport, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of Last Chance Mine/Mill were mapped as Waits-Rock outcrop complex, 40 to 65 percent slopes. The soils in this complex are very deep and well drained on side slopes of foothills. The permeability of the soil is moderate, and the available water capacity is very high. Runoff is very rapid, and the hazard of water erosion is very high. (USDA 1982)

Approximately 550 upgradient acres of land is expected to drain through the source area at the mine (USGS 1992a). The drainage area of sources is approximately 12 acres (USGS 1992a).

The Last Chance Mine/Mill does not lie in a flood plain (FEMA 1990).

No containment features such as runoff control exist at the property.

7.10 DEEP CREEK MINE

7.10.1 Surface Water Pathway Description

The potential source areas at the Deep Creek Mine include four waste rock piles, tailings, adit, shaft, garbage and debris pile, and buildings containing transformers (Figure 6-25).

The waste rock pile located adjacent to Deep Creek measured 20 feet by 20 feet by 5 feet deep. There could be potential overland flow from the waste rock pile to Deep Creek (PPE 1). The flow of Deep Creek was estimated by the START-2 at 100 cfs. The waste rock pile located adjacent to the main road measured 60 feet by 20 feet by 10 feet deep. The waste rock pile located west of the pad with power tower and fence measured 100 feet by 30 feet by 10 feet deep. The waste rock pile located near the adit measured 40 feet by 20 feet by 5 feet deep. The roads on the mine property were comprised of waste rock. The entrance road measured 700 feet by 20 feet by 2 feet deep. The road heading south to the adit measured 400 feet by 15 feet by 2 feet deep and also consisted of tailings. Tailings were found

scattered throughout the mine area. Concentrated areas were located in two wet areas (one on the south end of the property near the adit measuring 15 feet by 15 feet and one south of the main entrance road measuring 30 feet by 30 feet) and north and west of the waste rock pile adjacent to the entrance road. A swampy area was located south of the gated entrance and measured 150 feet by 100 feet. There could be potential flow from this area to Deep Creek (PPE 2). The pad with power tower and fence measured 25 feet by 40 feet. A garbage and debris pile was located adjacent to the main road and measured 50 feet by 20 feet by 5 feet deep. West of the garbage and debris pile was an assay building measuring 20 feet by 20 feet. Further west and north four buildings were identified. Building 1 measured 50 feet by 40 feet and contained a winch and four small transformers. Building 2 measured 100 feet by 45 feet and contained two small transformers, motor and pumps, and a foundation. Building 3 measured 40 feet by 40 feet. Building 4 measured 30 feet by 30 feet. Other features on the south end of the property include a concrete pad, a shaft, and a pond. The concrete pad measured 15 feet by 20 feet. The adit measured 4 feet by 3 feet by unknown depth. The adit was not flowing; however, standing water was present. The shaft measured 5 feet by 5 feet by approximately 800 feet deep. The pond measured 20 feet by 20 feet by 5 feet deep.

For the waste rock piles, the nearest PPE is located at Deep Creek, approximately 50 feet overland from a source area. The surface water TDL begins in Deep Creek and continues for 7.7 miles until Deep Creek empties into the Columbia River. The surface water TDL concludes 7.3 miles downstream in the Columbia River.

For the tailings piles and adit, the nearest PPE is located at Deep Creek, approximately 175 feet overland from a source area. The surface water TDL begins in Deep Creek and continues for 7.7 miles until Deep Creek empties into the Columbia River. The surface water TDL concludes 7.3 miles downstream in the Columbia River.

Deep Creek has an average annual flow rate of 96.0 cfs near Northport. The Columbia River (or Lake Roosevelt) has a flow rate of 116,500 cfs as measured at the U.S.-Canada border. (USGS 2002)

The average annual precipitation is 19.43 inches in Northport, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of Deep Creek Mine were mapped as Rock outcrop-Maki complex, 30 to 65 percent slopes. The soils in this complex are on side slopes of foothills. The permeability of the soil is moderate, and the available water capacity is low. Runoff is very rapid, and the hazard of water erosion is very high. (USDA 1982)

Approximately 170 upgradient acres of land is expected to drain through the source area at the mine (USGS 1992a). The drainage area of sources is approximately 5 acres (USGS 1992a).

The Deep Creek Mine lies within a 100-year flood plain (FEMA 1990).

No containment features such as runoff control exist at the property.

7.10.2 Soil Exposure Pathway Description

A residence is located to the east of the mine and outside of the gated area. The average number of persons per household in Stevens County is 2.64 (USBC 2000). No school or day care facility is located within 200 feet of the site. There are no worker's within 200 feet of any source on site. Based on USGS topographic maps, the START-2 assumes no other population within a 1- mile travel distance from the site. No resources such as commercial agriculture, silviculture, or livestock production or grazing exist on a source area at the site. No wetlands are located on a source area at the site. Most sources at the site are not fenced.

7.11 COPPER KING MINE

7.11.1 Surface Water Pathway Description

The potential source areas at the Copper King Mine include two waste rock piles, adits, and a shaft (Figure 6-27).

One waste rock pile was located east of Alladin Road and southwest of adit 1 and measured 60 feet by 30 feet by 3 feet deep. Adit 1 measured 5 feet by 10 feet. No flow or drainage was noted by the START-2. Adit 2 was located east of adit 1 and measured 5 feet by 10 feet. Adit 2 drainage flowed approximately 75 feet southwest before infiltrating the ground. There is a potential that during heavy flow adit 2 discharge could reach Deep Creek (PPE 1). A retention area was documented where the adit discharge infiltrates the ground measuring 5 feet by 1 feet by 1 feet deep. The retention area was composed of small logs and plastic sheeting which was estimated to retain approximately 15 gallons. A hose was noted south of the retention area extending southwest for approximately 20 feet. To the east of adit 2 the START-2 identified a second waste rock pile and shaft. The waste rock pile measured 75 feet by 120 feet by 6 feet deep. The shaft was surrounded by the waste rock and measured 15 feet by 20 feet by unknown depth. Standing water was noted.

For the waste rock piles and adit 2, drainage will flow overland approximately 475 feet to the PPE at the South Fork of Deep Creek. The surface water TDL begins in the South Fork of Deep Creek

and continues for 4.1 miles until the South Fork of Deep Creek empties into Deep Creek. The surface water TDL concludes 10.9 miles downstream in Deep Creek.

The South Fork of Deep Creek is assumed to be a small to moderate stream with an average flow rate between 10 cfs and 100 cfs. Deep Creek has an average annual flow rate of 96.0 cfs near Northport (USGS 2002).

The average annual precipitation is 17.20 inches in Colville, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soil in the area of Copper King Mine was mapped as Aits stony loam, 40 to 65 percent slopes. The soil is very deep, well drained soil on side slopes and foothills. The permeability of the soil is moderately slow, and the available water capacity is very high. Runoff is very rapid, and the hazard of water erosion is very high. (USDA 1982)

Approximately 130 upgradient acres of land is expected to drain through the source area at the mine (USGS 1992a). The drainage area of sources is approximately 3 acres (USGS 1992a).

The Copper King Mine lies within a 100-year flood plain (FEMA 1990).

No containment features such as runoff control exist at the property.

7.12 SIERRA ZINC MINE/MILL

7.12.1 Surface Water Pathway Description

The potential source areas at the Sierra Zinc Mine/Mill include one waste rock pile, tailings pile, mill building, an adit, and areas of contaminated soil (Figure 6-29).

The mine/mill area contained one waste rock pile measuring 100 feet by 50 feet by 5 feet deep. North of the waste rock pile was a tailings pile measuring 1,000 feet by 2,100 feet by an estimated 20 feet deep. There could be potential overland flow from the tailings pile to the drainage ditch (PPE 1). The flow of the drainage ditch was estimated by the START-2 to be approximately 0.5 cfs. A mill building was located south of the waste rock and tailings piles measuring 250 feet by 225 feet. Northwest of the mill building an adit was located measuring 2 feet by 2 feet by unknown depth. The discharge was estimated by the START-2 at approximately 0.5 gpm. The adit water flowed north into the forested area. Three residences were located south of the property.

For the contaminated soil near the waste rock pile, drainage flows overland approximately 750 feet to the PPE in a ditch. The ditch flows approximately 0.30 mile to the South Fork of Deep Creek. The surface water TDL continues 4.67 miles in the South Fork of Deep Creek to the confluence with Deep Creek. The surface water TDL concludes 10.03 miles downstream in Deep Creek.

For the tailings pile, drainage flows overland approximately 350 feet to the PPE in the ditch. The ditch flows approximately 0.30 mile to the South Fork of Deep Creek. The surface water TDL continues 4.67 miles in the South Fork of Deep Creek to the confluence with Deep Creek. The surface water TDL concludes 10.03 miles downstream in Deep Creek.

For the contaminated soil near the mill building, drainage flows overland approximately 1,350 feet to the PPE in the ditch. The ditch flows approximately 0.30 mile to the South Fork of Deep Creek. The surface water TDL continues 4.67 miles in the South Fork of Deep Creek to the confluence with Deep Creek. The surface water TDL concludes 10.03 miles downstream in Deep Creek.

For the adit, drainage flows north into a forested area. A PPE from this source to surface water was not identified.

The ditch is assumed to be an intermittent minimal stream with a flow rate less than 10 cfs. The South Fork of Deep Creek is assumed to be a small to moderate stream with a flow rate between 10 cfs and 100 cfs. The average annual flow rate of Deep Creek near Northport is 96.0 cfs (USGS 2002).

The average annual precipitation is 17.20 inches in Colville, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of Sierra Zinc Mine/Mill were mapped as Aits loam, 25 to 40 percent slopes; Aits stony loam, 40 to 65 percent slopes; Aits-Rock outcrop complex, 0 to 40 percent slopes; Bridgeson silt loam; Eloika very stony silt loam, 25 to 40 percent slopes; Martella silt loam, 0 to 5 percent slopes; Martella silt loam, 5 to 15 percent slopes; and Newbell-Rock outcrop complex, 40 to 65 percent slopes. Aits loam, 25 to 40 percent slopes are very deep, well drained soil on foot slopes of foothills. The permeability of the soil is moderately slow, and the available water capacity is very high. Runoff is rapid, and the hazard of water erosion is high. Aits stony loam, 40 to 65 percent slopes is very deep, well drained soil on side slopes of foothills. The permeability of the soil is moderately slow, and the available water capacity is very high. Runoff is very rapid, and the hazard of water erosion is very high. Aits-Rock outcrop complex, 0 to 40 percent are on toe slopes and foot slopes of foothills. The permeability of the soil is moderately slow, and the available water capacity is very high. Runoff is rapid, and the hazard of water erosion is high. Bridgeson silt loam is very deep, poorly drained soil on bottom lands and low stream terraces. The permeability of the soil is moderately slow, and the available water capacity is very high. Runoff is very slow. This soil is subject to occasional flooding for long periods from February to April. Eloika very stony silt loam, 25 to 40 percent slopes are deep, well drained soil on terrace escarpments. The permeability of the soil is moderate, and the available water capacity is high. Runoff is rapid, and the hazard of water erosion is high. Martella silt loam, 0 to 5

percent slopes is very deep, moderately well drained soil on terraces. The permeability of the soil is moderately slow, and the available water capacity is very high. Runoff is slow, and the hazard of water erosion is slight to moderate. Martella silt loam, 5 to 15 percent slopes is very deep, moderately well drained soil on undulating terraces. The permeability of the soil is moderately slow, and the available water capacity is very high. Runoff is medium, and the hazard of water erosion is moderate. Newbell-Rock outcrop complex, 40 to 65 percent slopes are on side slopes of foothills. The permeability of the soil is moderate, and the available water capacity is very high. Runoff is very rapid, and the hazard of water erosion is very high. (USDA 1982)

Approximately 95 upgradient acres of land is expected to drain through the source area at the mine (USGS 1992a). The drainage area of sources is approximately 36 acres (USGS 1992a).

The Sierra Zinc Mine/Mill does not lie in a flood plain (FEMA 1990).

No containment features such as runoff control exist at the property.

7.13 ELECTRIC POINT MINE/MILL

7.13.1 Surface Water Pathway Description

The potential source areas at the Electric Point Mine/Mill include two waste rock piles, two collapsed shafts, and collapsed mill building (Figure 6-31). No PPEs were identified by the START-2.

Although, no PPEs exist at the site, the nearest surface water body is an unnamed tributary. The unnamed tributary flows 0.59 mile to the confluence with Republican Creek. Republican Creek empties into the North Fork of Deep Creek 2.65 miles downstream. The surface water TDL continues 1.56 miles downstream in the North Fork of Deep Creek to the confluence with Deep Lake. Deep Lake outflows into the North Fork of Deep Creek 1.36 miles from the lake's intake. The North Fork of Deep Creek empties into Deep Creek 2.68 miles downstream. The surface water TDL concludes 6.16 miles downstream in Deep Creek.

The average annual precipitation is 19.43 inches in Northport, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of Electric Point Mine/Mill were mapped as Belzar-Rock outcrop complex, 40 to 65 percent slopes and Waits-Rock outcrop complex, 40 to 65 percent slopes. Belzar-Rock outcrop complex, 40 to 65 percent slopes are moderately deep and well drained on side slopes of foothills. The permeability of the soil is moderate, and the available water capacity is moderate. Runoff is very rapid, and the hazard of water erosion is very high. Waits-Rock outcrop complex, 40 to 65 percent slopes are very deep and well drained on side slopes and foothills. The permeability of the soil is moderate, and the

available water capacity is very high. Runoff is rapid, and the hazard of water erosion is very high. (USDA 1982)

Approximately 22 upgradient acres of land is expected to drain through the source area at the mine (USGS 1992b). The drainage area of sources is approximately 20 acres (USGS 1992b).

The Electric Point Mine/Mill does not lie in a flood plain (FEMA 1990).

No containment features such as runoff control exist at the property.

7.14 GLADSTONE MINE/MILL

7.14.1 Surface Water Pathway Description

The potential source areas at the Gladstone Mine/Mill include one waste rock pile, shafts, tailings pile, and potential collapsed mill building (Figure 6-33). No PPEs were identified by the START-2.

Although, no PPEs exist at the site, the nearest surface water body is an unnamed tributary. The unnamed tributary flows 0.54 mile to the confluence with the West Fork of Silver Creek. The West Fork of Silver Creek empties into Silver Creek 1.28 miles downstream. The surface water TDL continues 1.95 miles downstream in Silver Creek to the confluence with the North Fork of Deep Creek. The North Fork of Deep Creek empties into Deep Lake 3.38 miles downstream. Deep Lake outflows into the North Fork of Deep Creek 1.36 miles from the lake's intake. The North Fork of Deep Creek empties into Deep Creek 2.68 miles downstream. The surface water TDL concludes 3.81 miles downstream in Deep Creek.

The average annual precipitation is 19.43 inches in Northport, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of Gladstone Mine/Mill were mapped as Waits-Rock outcrop complex, 40 to 65 percent slopes. The soils in this complex are very deep and well drained on side slopes of foothills. The permeability of the soil is moderate, and the available water capacity is very high. Runoff is very rapid, and the hazard of water erosion is very high. (USDA 1982)

Approximately 380 upgradient acres of land is expected to drain through the source area at the mine (USGS 1992b). The drainage area of sources is approximately 1 acre (USGS 1992b).

The Gladstone Mine/Mill does not lie in a flood plain (FEMA 1990).

No containment features such as runoff control exist at the property.

7.15 RED TOP MINE

7.15.1 Surface Water Pathway Description

The potential source areas at the Red Top Mine includes a waste rock pile, portal/shaft, and adit (Figure 6-35). No PPEs were identified by the START-2.

Although, no PPEs exist at the site, the nearest surface water body is an unnamed tributary. The unnamed tributary flows 0.42 mile to the confluence with Hartbauer Creek. The surface water TDL continues 1.54 miles in Hartbauer Creek to the confluence with the North Fork of Deep Creek. The North Fork of Deep Creek empties into Deep Lake 4.21 miles downstream. Deep Lake outflows into the North Fork of Deep Creek 1.36 miles from the lake's intake. The North Fork of Deep Creek empties into Deep Creek 2.68 miles downstream. The surface water TDL concludes 4.79 miles downstream in Deep Creek.

The average annual precipitation is 19.43 inches in Northport, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of Red Top Mine were mapped as Ahren loam, 40 to 65 percent slopes. The soils are deep, well drained on side slopes of foothills. The permeability of the soil is moderately slow, and the available water capacity is very high. Runoff is very rapid, and the hazard of water erosion is very high. (USDA 1982)

Approximately 440 upgradient acres of land is expected to drain through the source area at the mine (USGS 1992b). The drainage area of sources is approximately 39 acres (USGS 1992b).

The Red Top Mine does not lie in a flood plain (FEMA 1990).

No containment features such as runoff control exist at the property.

7.16 ANDERSON CALHOUN MINE/MILL

7.16.1 Surface Water Pathway Description

The potential source areas at the Anderson Calhoun Mine/Mill include a tailing pile, evaporation pond, waste rock pile, mine pit, mine building, floatation building, waste rock storage bin, mill building, scattered drums, scattered transformers, and stained soil areas (Figure 6-37).

The mine/mill area consisted of a tailings pile measuring 555 feet by 500 feet by unknown depth. The tailings pile was located adjacent to the gated entrance road and on the western portion of the property. A pond is located on the tailings pile. To the north of the tailings pile, an evaporation pond was noted measuring 105 feet by 50 feet.

To the east of the tailings pile a waste rock pile was located underneath the waste rock conveyor belt measuring 120 feet by 80 feet by 20 feet deep. The waste rock conveyor belt was connected to the mine building, the floatation building, and the waste rock storage bin. The mine building measured 25 feet in width by 15 feet in length by 20 feet in height. The conveyor belt attached to the floatation building measured 35 feet in length. The floatation building measured 25 feet in width by 15 feet in length by 10 feet in height. The waste rock storage bin measured 15 feet in width by 15 feet in length by 40 feet in height.

The mill building was located north of the mine building and measured 50 feet in width by 75 feet in length by 40 feet in height. The mill building contained staged reagent and unknown drums, floatation tanks, and a crusher. Approximately 100 55-gallon steel drums were staged in the east corner of the mill building. Many of these unmarked drums were punctured with bullets with the contents spilling onto the concrete foundation. The unknown spilled contents were solidified. The concrete floor did not appear to be breached. Tailings were scattered throughout the mill building. A portal measuring 10 feet by 10 feet was located on the western portion of the mill building with a conveyor belt leading into the building.

Remnants of a storage shed and two concrete pads were located in between the mine and mill buildings. The storage shed foundation measured 20 feet by 20 feet. Remnants of "Cebar Barite", a white cellulose-type material, was scattered throughout the storage shed foundation and surrounding area including the concrete pads. Five 55-gallon drums were scattered on the storage shed foundation. One concrete pad measuring 40 feet by 10 feet was located directly east of the dilapidated storage shed. Ten 55-gallon drums were staged on palettes. There was no legible documentation on the drums. The second concrete pad was located north of the first concrete pad and measured 10 feet by 20 feet. Scrap wood, steel, and garbage were scattered on both concrete pads.

On the north side of the mill building, three areas of scattered drums intermixed with debris and equipment were documented. Stained soil with an oil odor were noted around the drums. Cattle prints were identified in the stained soil. There was a distinct sheen throughout the stained soil area surrounding the drums.

Transformers were identified in 6 areas. A substation, heavily vandalized, was also documented. The first area was located east of the dilapidated storage shed and two concrete pads and consisted of a power line with three transformers. The second area was located adjacent to the south side of the mill building and comprised three transformers staged on concrete pads. The concrete was not compromised. The third area was located west of the second area and consisted of a fallen power line with a

transformer. The top of the transformer was detached and no staining was noted in the vicinity. The fourth area was located north of the fallen power line and comprised a gated area containing a power line with transformer and 6 transformers staged on concrete. No staining was noted on the concrete or the surrounding soil. The fifth area was located west of the fourth area and consisted of three transformers staged on a concrete pad. No staining was noted on the concrete or the surrounding soil. The sixth area was located to the east of the fourth area and consisted of a power line with a transformer. The substation was located south of the sixth area and east of the third area and consisted of a partially gated area with remnant electrical equipment.

On the southern portion of the property and east of the mine/mill entrance, a silo, concrete pad, and mine pit were located. The mine pit was filled with water.

A stream flowing south extended the entire length of the mine/mill and onto private farmland. A marshy wetland area was noted on the western portion of the stream and adjacent to the eastern side of the tailings pile and evaporation pond (PPE 1).

For the tailings pile source area, drainage flows overland approximately 100 feet to PPE 1. The wetland drains 0.01 mile to an unnamed stream. The unnamed stream empties into the North Fork of Deep Creek 0.11 mile downstream. The surface water TDL continues 4.06 miles downstream in the North Fork of Deep Creek to the confluence with Deep Lake. Deep Lake outflows into the North Fork of Deep Creek 1.36 miles from the lake's intake. The North Fork of Deep Creek empties into Deep Creek 2.68 miles downstream. The surface water TDL concludes 6.78 miles downstream in Deep Creek.

For the contaminated soil source areas at the site, drainage flows overland approximately 250 feet to the PPE, located in the unnamed stream. The unnamed stream empties into the North Fork of Deep Creek 0.11 mile downstream. The surface water TDL continues 4.06 miles downstream in the North Fork of Deep Creek to the confluence with Deep Lake. Deep Lake outflows into the North Fork of Deep Creek 1.36 miles from the lake's intake. The North Fork of Deep Creek empties into Deep Creek 2.68 miles downstream. The surface water TDL concludes 6.79 miles downstream in Deep Creek.

For the mine pit, drainage flows overland approximately 200 feet to the PPE, located in an unnamed stream. The unnamed stream empties into the North Fork of Deep Creek 0.2 mile downstream. The surface water TDL continues 4.06 miles downstream in the North Fork of Deep Creek to the confluence with Deep Lake. Deep Lake outflows into the North Fork of Deep Creek 1.36 miles from the lake's intake. The North Fork of Deep Creek empties into Deep Creek 2.68 miles downstream. The surface water TDL concludes 6.7 miles downstream in Deep Creek.

The unnamed stream is assumed to be a minimal stream with an average flow rate less than 10 cfs. The North Fork of Deep Creek and Deep Lake are assumed to be small to moderate streams with average flow rates between 10 cfs and 100 cfs. The average flow rate of Deep Creek near Northport is 96.0 cfs (USGS 2002).

The average annual precipitation is 19.43 inches in Northport, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of Anderson Calhoun Mine/Mill were mapped as Saltese muck, drained; Waits loam, 0 to 15 percent slopes; Waits loam, 40 to 65 percent slopes; and Waits-Rock outcrop complex, 40 to 65 percent slopes. Saltese muck, drained, are very deep, artificially drained, organic soil in basins and potholes on bottom lands and along the perimeters of lakes. The permeability of the soil is moderate, and the available water capacity is very high. Runoff is ponded. There is no hazard for soil erosion. Waits loam, 0 to 15 percent slopes are very deep, well drained on toe slopes of foothills. The permeability of the soil is moderate, and the available water capacity is very high. Runoff is slow, and the hazard of water erosion is slight to moderate. Waits loam, 40 to 65 percent slopes are very deep, well drained on side slopes of foothills. The permeability of the soil is moderate, and the available water capacity is very high. Runoff is very rapid, and the hazard for water erosion is very high. Waits-Rock outcrop complex, 40 to 65 percent slopes are very deep and well drained on side slopes of foothills. The permeability of the soil is moderate, and the available water capacity is very high. Runoff is very rapid, and the hazard of water erosion is very high. (USDA 1982)

Approximately 660 upgradient acres of land is expected to drain through the source area at the mine (USGS 1992b). The drainage area of sources is approximately 4 acres (USGS 1992b).

The Anderson Calhoun Mine/Mill lies within a 100-year flood plain (FEMA 1990).

No containment features such as runoff control exist at the property.

7.17 IROQUOIS MINE

7.17.1 Surface Water Pathway Description

The potential source areas at the Iroquois Mine include one waste rock pile and an adit (Figure 6-39). No PPEs were identified by the START-2.

Although no PPEs exist at the site, the nearest surface water body is an unnamed tributary. The surface water TDL continues 0.69 mile in the unnamed tributary to Hartbauer Creek. Hartbauer Creek empties to the North Fork of Deep Creek 2.34 miles downstream. The North Fork of Deep Creek empties into Deep Lake 4.21 miles downstream. Deep Lake outflows into the North Fork of Deep Creek

1.36 miles from the lake's intake. The North Fork of Deep Creek empties into Deep Creek 2.68 miles downstream. The surface water TDL concludes 3.72 miles downstream in Deep Creek.

The average annual precipitation is 19.43 inches in Northport, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of Iroquois Mine were mapped as Belzar silt loam, 40 to 65 percent slopes. The soils are moderately deep, well drained on side slopes of foothills. The permeability of the soil is moderate, and the available water capacity is moderate. Runoff is very rapid, and the hazard of water erosion is very high. (USDA 1982)

Approximately 870 upgradient acres of land is expected to drain through the source area at the mine (USGS 1992b). The drainage area of sources is approximately 17 acres (USGS 1992b).

The Iroquois Mine does not lie in a flood plain (FEMA 1990).

No containment features such as runoff control exist at the property.

7.18 MELROSE MINE

7.18.1 Surface Water Pathway Description

The potential source area at the Melrose Mine includes an adit (Figure 6-41).

The mine area consisted of an adit 5 feet by 10 feet by unknown depth. Moss and algae growth were noted near the mouth of the adit. The adit discharge flowed approximately 40 feet east to an unnamed tributary (PPE 1) that feeds into Tom Bush Creek. The START-2 estimated the flow of the unnamed tributary at 1 gpm. The surface water TDL continues for 0.1 mile in the unnamed tributary to the confluence with Tom Bush Creek. Tom Bush Creek empties into the Columbia River 1.74 miles downstream. The surface water TDL concludes 13.16 miles downstream in the Columbia River.

There were no waste rock piles; however, the entry road appeared to be constructed out of waste rock. A building approximately 10 feet by 10 feet by 10 feet was located to the north of the adit and contained test core samples.

The average annual precipitation is 19.43 inches in Northport, Washington (WRCC 2002). The 2-year, 24-hour rainfall event for the area ranges from 1.4 to 2.0 inches (NOAA 1973).

Soils in the area of Melrose Mine were mapped as Huckleberry silt loam, 15 to 25 percent slopes. The soils are moderately deep, well drained on toe slopes and ridgetops of mountains. The permeability of the soil is moderate, and the available water capacity is high. Runoff is medium, and the hazard of water erosion is moderate. (USDA 1982).

Approximately 260 upgradient acres of land is expected to drain through the source area at the mine (USGS 1992c). The drainage area of sources is approximately 3 acres (USGS 1992c).

The Melrose Mine does not lie in a flood plain (FEMA 1990).

No containment features such as runoff control exist at the mine.

7.19 TRIBUTARIES

Tributaries to the upper Columbia River sampled as part of this field effort include unnamed tributary Section 8, Township 32N, Range 37E; unnamed tributary at Clover Leaf Beach Campground; Stranger Creek (west); Hall Creek; Cobbs Creek; unnamed tributary Section 28, Range 37E, Township 33N; unnamed tributary Section 30, Range 37E, Township 33N; unproposed dry tributary; unnamed tributary Section 21, Range 37E, Township 33N; unnamed tributary Section 19, Range 37E, Township 33N; unnamed tributary Section 18, Range 37E, Township 33N; Magee Creek; Jennings Creek; Little Jim Creek; unnamed tributary Section 1, Range 37E, Township 33N; unnamed tributary Section 4, Range 37E, Township 33N; unnamed tributary Section 5, Range 37E, Township 33N; unnamed tributary Section 32, Range 37E, Township 34N; unnamed tributary Section 36, Range 36E, Township 34N; unnamed tributary Section 25, Range 36E, Township 34N; Cheweka Creek; unnamed tributary Section 29, Range 37E, Township 34N (north of Cheweka Creek); unnamed tributary Section 29, Range 37E, Township 34N (NW quarter); unnamed tributary Section 20, Range 37E, Township 34N; Barnaby Creek; Rotter Bay Creek; Quillisascut Creek; unnamed tributary Section 11, Range 36E, Township 34N; unnamed tributary Section 6, Range 37E, Township 34N; Cuba Canyon Creek; unnamed tributary Section 31, Range 37E, Township 35N; La Fleur Creek; unnamed tributary Section 32, Range 37E, Township 36N; unnamed tributary Section 33, Range 37E, Township 36N (SW quarter; drains Nettleton Lake); unnamed tributary Section 33, Range 37E, Township 35N (NW quarter); unproposed dry tributary; unnamed tributary Section 22, Range 37E, Township 35N (south of Bradbury campground); Martin Creek; unnamed tributary Section 15, Range 37E, Township 35N (north of Bradbury campground); Roper Creek; Rickey Creek; Cougar Canyon Creek; Hallam Creek; unnamed ephemeral tributary west of Mingo Creek; Mingo Creek; Colville River; Sherman Creek; unnamed tributary Section 22, Range 37E, Township 36N (SE quarter); unmapped tributary adjacent to TS051; unnamed tributary Section 22, Range 37E, Township 36N (NE quarter); unnamed tributary Section 15, Range 37E, Township 36N (SE quarter, western tributary); unnamed tributary Section 15, Range 37E, Township 36N (SE quarter, eastern tributary); unnamed tributary Section 14, Range 37E, Township 36N (SW quarter); unnamed ephemeral tributary Section 18, Range 38E, Township 36N (SW quarter); Martin Spring Creek;

Pingston Creek; Nancy Creek; unnamed ephemeral tributary Section 33, Range 37E, Township 37N; unnamed tributary Section 16, Range 37E, Township 37N (SW quarter); unnamed ephemeral tributary Section 22, Range 37E, Township 37N; unnamed tributary across from Marcus Island Section 23, Range 37E, Township 37N; unnamed ephemeral tributary Section 28, Range 38E, Township 37N; unnamed ephemeral tributary Section 22, Range 38E, Township 37N (SW quarter); unnamed ephemeral tributary Section 22, Range 38E, Township 37N (NW quarter); unnamed spring drainage east of Evans Campground peninsula; Deadman Creek; unnamed ephemeral tributary Section 16, Range 37E, Township 37N (NW quarter); unnamed tributary to Kettle River Arm (drainage pond near Boyds); unnamed ephemeral tributary Section 9, Range 37E, Township 37N (NW quarter, SE quarter); unnamed ephemeral tributary Section 9, Range 37E, Township 37N (NW quarter, NE quarter); unnamed ephemeral tributary Section 4, Range 38E, Township 37N (NE quarter); Matsen Creek; Doyle Creek; Kettle River; China Creek; unnamed tributary south of Snag Cove; unnamed ephemeral tributary Section 36, Range 37E, Township 38N (SW quarter); unnamed ephemeral tributary entering river Section 35, Range 37E, Township 38N (NE quarter); unnamed tributary directly across from Bossburg, Washington; Dilly Lake ephemeral tributary; unnamed ephemeral tributary upstream of Dilly Lake ephemeral tributary; unnamed ephemeral tributary Section 21, Range 38E, Township 38N; unnamed ephemeral tributary Section 22, Range 38E, Township 38N; unnamed ephemeral tributary at North Gorge Campground; unnamed ephemeral tributary Section 17, Range 38E, Township 38N (NW quarter); unnamed ephemeral tributary downstream of Lodgepole Creek, Section 8, Range 38E, Township 38N (NW quarter); Lodgepole Creek; unnamed ephemeral tributary Section 10, Range 38E, Township 38N; Fifteenmile Creek; unnamed ephemeral tributary at Flat Creek; Flat Creek; unnamed ephemeral tributary downstream of China Bar; unnamed ephemeral tributary Section 25, Range 39E, Township 39N (Sw quarter); Crown Creek; Rattlesnake Creek; unnamed ephemeral tributary downstream from Moses Spring Creek; Moses Spring Creek; Onion Creek; unnamed ephemeral tributary Section 10, Range 39E, Township 39N; Squaw Creek; unnamed tributary from nearshore ponds; Fivemile Creek; Bear Creek; Deep Creek; Big Sheep Creek; Quartz Creek; Goodeve Creek; Scriver Creek; unnamed tributary northeast of gaging station; tributary to Tom Bush Creek and Melrose Mine; unnamed tributary to Onion Creek and Van Stone Mine/Mill; unnamed tributary to Onion Creek and Van Stone Mine/Mill; unnamed tributary to Onion Creek and Van Stone Mine/Mill; tributary to Deep Creek and Last Chance Mine/Mill; Deep Creek South Fork; unnamed tributary to Deep Creek; tributary to Tom Bush Creek and Melrose Mine; unnamed tributary to Onion Creek and Van Stone Mine/Mill; and Deep Creek South Fork.

The annual stream flow data for the available applicable stations in Stevens County include:

- 578 cfs for Colville River at Kettle Falls (USGS 2002);
- 28.0 cfs for Mill Creek at mouth of Colville (USGS 2002);
- 16.3 cfs for Haller Creek near Arden (USGS 2002);
- 62.2 cfs for Little Pend Oreille River near Colville (USGS 2002);
- 110 cfs for Colville River at Blue Creek (USGS 2002);
- 23.2 for Chewelah Creek at Chewelah (USGS 2002);
- 25.5 cfs for Deer Creek near Valley (USGS 2002);
- 13.0 cfs for Sheep Creek at Springdale (USGS 2002);
- 2.84 cfs for Sheep Creek at Loon Lake (USGS 2002);
- 341 cfs for Sheep Creek near Northport (USGS 2002);
- 74.1 cfs for Sheep Creek near Velvet (USGS 2002);
- 96.0 cfs for Deep Creek near Northport (USGS 2002); and
- 116,500 cfs for Columbia River at U.S.-Canada border (USGS 2002).

7.20 TARGETS

This section discusses potential target information for the 18 mines that were sampled. There are no schools or day-care facilities within 200 feet of the 18 mine/mill areas that were sampled.

Lake Roosevelt and the upper Columbia River are used for hydroelectric power, irrigation, and recreation. The man-made Lake Roosevelt area provides opportunities for boating, fishing, swimming, camping, and hiking (http://www2.thingstodo.com/states/WA/nationalparks/lakeroosevelt.htm).

Surface water intakes are reported to lie within the surface water target distance limit (TDL) for each of the mines/mills sampled. The average number of persons per household in Stevens County is 2.64 (USBC 2000); therefore, the START-2 estimates the following:

- There are 5.28 persons using surface water from Magee Creek for drinking water within the 15-mile TDL of Daisy Mine;
- There are 5.28 persons using surface water from the Colville River for drinking water within the 15-mile TDL of L-Bar/Northwest Magnesite;
- There are no people using surface water for drinking water within the 15-mile TDL of Northwest Alloys;

- There are 7.92 persons using surface water from the Kettle River and 16.08 persons using surface water from Lake Roosevelt for drinking water within the 15-mile TDL of Napoleon Mine/Mill;
- There are 10.56 persons using surface water from Onion Creek for drinking water within the 15-mile TDL of Van Stone Mine/Mill;
- There are 2.64 persons using surface water from Lake Roosevelt for drinking water within the 15-mile TDL of LeRoi/Northport Smelter;
- There are 21.12 persons using surface water from Deep Creek for drinking water within the 15-mile TDL of Black Rock Mine/Mill;
- There are 21.12 persons using surface water from Deep Creek for drinking water within the 15-mile TDL of Great Western Mine;
- There are 21.12 persons using surface water from Deep Creek for drinking water within the 15-mile TDL of Last Chance Mine/Mill;
- There are 21.12 persons using surface water from Deep Creek for drinking water within the 15-mile TDL of Deep Creek Mine;
- There are 23.76 persons using surface water from Deep Creek for drinking water within the 15-mile TDL of Copper King Mine;
- There are 23.76 persons using surface water from Deep Creek for drinking water within the 15-mile TDL of Sierra Zinc Mine/Mill;
- There are 2.64 persons using surface water from Republican Creek for drinking water, 5.28 persons using surface water from Deep Creek for drinking water, and 15.84 persons using surface water from Deep Lake for drinking water within the 15-mile TDL of Electric Point Mine/Mill;
- There are 21.12 persons using surface water from Silver Creek for drinking water, 5.28 persons using surface water from Deep Creek for drinking water, and 15.84 persons using surface water from Deep Lake for drinking water within the 15-mile TDL of Gladstone Mine/Mill;
- There are 2.64 persons using surface water from Hartbauer Creek for drinking water, 5.28 persons using surface water from Deep Creek for drinking water, and 15.84 persons using surface water from Deep Lake for drinking water within the 15-mile TDL of Red Top Mine;
- There are 15.84 persons using surface water from Deep Creek for drinking water and 15.84 persons using surface water from Deep Lake for drinking water within the 15-mile TDL of Anderson Calhoun Mine/Mill;
- There are 2.64 persons using surface water from Hartbauer Creek for drinking water, 5.28 persons using surface water from Deep Creek for drinking water, and 15.84 persons using surface water from Deep Lake for drinking water within the 15-mile TDL of Iroquois Mine; and
- There are 2.64 persons using surface water from Tom Bush Creek for drinking water within the 15-mile TDL of Melrose Mine. (Ecology 2001a)

The START-2 expects that surface water will be used within the TDL for irrigation of commercial food or forage crops or for watering of commercial livestock.

Lake Roosevelt and its tributaries in the Lake Roosevelt National Recreation Area support a varied fish community that today is considerably different from the native fish community of the early 1900s. The changes over time were caused by the introduction of nonnative species, habitat alterations such as water pollution, the damming of rivers, and reservoir drawdowns. Today, there are possibly 28 native and 12 nonnative species of fish that inhabit recreation area waters. (DOI 2000)

Between 1990 and 1996 the number of angler trips to Lake Roosevelt ranged from 171,725 to 594,508 per year. Recreational fishing trips to Lake Roosevelt peaked in 1993 and have been declining since. The decline was partly attributed to the dewatering of boat ramps during the 1996 drawdown that prohibited anglers from accessing much of the reservoir. Walleye, rainbow trout, and kokanee salmon were the fish most often caught and harvested by anglers. (DOI 2000) Data provided by the Lake Roosevelt Fisheries Evaluation Project; a cooperative project amongst the Spokane Tribe of Indians, the Colville Confederated Tribes, and the Washington Department of Fish and Wildlife; to the EPA indicates that over a ten week period from July 13, 2002 to September 20, 2002, 576 fish were caught by anglers from Lake Roosevelt. These fish consisted of 338 walleye, 221 rainbow trout, and 17 kokanee salmon. (Lee 2002) The State of Washington only tracks sturgeon, salmon, and steelhead in its freshwater sport fishing data. They list that 4 sturgeon were harvested between Grand Coulee Dam and the Canadian border in 1998. No steelhead and salmon are reported (WSDFW 2001).

The Spokane Tribe and the Colville Confederated Tribes, and the Washington Department of Fish and Wildlife are the primary agencies directly involved in managing the Lake Roosevelt fisheries. The Spokane Tribe is coordinating the development of a Lake Roosevelt fisheries plan, funded by the Bonneville Power Administration in cooperation with the Washington Department of Fish and Wildlife, the Colville Confederated Tribes, and other involved parties. Two kokanee salmon hatcheries are operated by the Spokane Tribe and the Washington Department of Fish and Wildlife to support the resident fishery in Lake Roosevelt. The hatcheries produce thousands of kokanee for release into Lake Roosevelt annually. The Spokane Tribe also has initiated a program of rearing rainbow trout at its hatchery for release into the lake. (DOI 2000)

In addition to the hatchery operations, there are numerous rainbow trout pens on Lake Roosevelt. These fish-rearing pens provide thousands of trout annually to support the recreational fishery. The success of this project in providing catchable-size rainbow trout resulted in its expansion to more than

30 net pens in several locations on Lake Roosevelt by 1995. In addition, some of the net pens are now being used to rear kokanee before release. (DOI 2000)

The Lake Roosevelt National Recreation Area is present along the Columbia River from Grand Coulee Dam to nearly the U.S.-Canada border. Six species may inhabit areas in or near the Lake Roosevelt National Recreation Area that are protected by the Endangered Species Act. Of these, gray wolves (*Canus lupus*), peregrine falcons (*Falco peregrinus*), and woodland caribou (*Rangifer tarandus caribou*) were endangered, and the bald eagle (*Haliaeetus leucocephalus*), bull trout (*Salvelinus confluentus*), and grizzly bear (*Ursus arctos horribilis*) were threatened. The Canada lynx (*Felis lynx canadensis*), a proposed species for listing, may also inhabit lands in or near the Lake Roosevelt National Recreation Area. The Canada lynx is not currently protected under the Endangered Species Act. The state of Washington also listed gray wolves, peregrine falcons, woodland caribou, and grizzly bears as endangered and the bald eagle and Canada lynx as threatened. (DOI 2000)

Peregrine nests have been found in the area surrounding the Lake Roosevelt reservoir. Use of the area by peregrines normally occurs during spring and fall migrations. Peregrine falcon foraging and nesting habitats are usually associated with tall cliffs near water. Their diet consists primarily of waterfowl, shorebirds, and passerine species commonly found on and around lakes and streams. (DOI 2000)

No confirmed gray wolf sightings have been documented in the Lake Roosevelt National Recreation Area; however, numerous unconfirmed sightings have been reported in some surrounding areas in recent years. (DOI 2000)

Between 1987 and 1990, 60 woodland caribou were moved to northern Idaho from British Columbia to help bolster the existing remnant herd. The herd has been augmented as recently as 1998. However, it is unlikely that woodland caribou would be found in the immediate vicinity of the Lake Roosevelt National Recreation Area. Woodland caribou are known to occur in northeastern Washington; however, none have been reported in the national recreation area. Most caribou remain in forested habitats year-round. (DOI 2000)

Bald eagles maintain a large overwintering population in the area surrounding the Lake Roosevelt reservoir from November through March annually. More than 21 bald eagle nests are in the vicinity and bald eagles appear to be becoming more productive each year. A maximum of 15 territories has been occupied in any one year. Bald eagle habitat is usually associated with large bodies of water that provide an abundant source of food. (DOI 2000) Bald eagle habitat has been observed on the Columbia River/Lake Roosevelt within the 15-mile TDLs of Napoleon Mine/Mill, Van Stone Mine/Mill,

LeRoi/Northport Smelter, Black Rock Mine/Mill, Great Western Mine, Last Chance Mine/Mill, Deep Creek Mine, and Melrose Mine (WSDFW various dates).

Although grizzly bears occur in the Selkirk ecosystem in northern Idaho and Washington, population levels are believed to be low. No grizzly bears have been recently reported within the National Recreation Area. (DOI 2000)

Bull trout historically occupied a vast geographic area of the Columbia River. Today the remaining populations are isolated and remnant. Native bull trout have declined significantly in the last 10 years, in part due to predation by and competition with introduced species such as walleye. If bull trout are present, Lake Roosevelt and its tributaries could provide suitable habitat. Bull trout typically migrate from lakes in the fall to spawn in clear streams with flat gradient, uniform flow, and uniform gravel or small cobble. (DOI 2000)

Lynx have been seen near the northern end of Lake Roosevelt; however, no evidence of resident populations have been documented. Lynx prefer the density of coniferous forests and swamp areas where their coloring allows them to be camouflaged from their prey. (DOI 2000)

In addition to the aforementioned, another 24 animal species of concern to the state of Washington or the United States Fish and Wildlife Service may occur in or near the Lake Roosevelt National Recreation Area. These include the threatened ferruginous hawk (*Buteo regalis*); the candidates California floater (*Anodonta californiensis*), Columbia sharp-tail grouse (*Tympanuchus phasianellus columbians*), Columbia spotted frog (*Rana luteiventris*), loggerhead shrike (*Lanius ludovicianus*), northern goshawk (*Accipiter gentilis*), Pacific fisher (*Martes pennanti pacifica*), pale Townsend's big-eared bat (*Corynorhinus townsendii pallexcens*), and Washington ground squirrel (*Spermophilus washingtoni*). (DOI 2000)

No federally-listed, proposed, or candidate plants are known to occur within the Lake Roosevelt National Recreation Area. (DOI 2000)

Lake Roosevelt is the largest single geographic feature in the northeastern corner of Washington state. The surrounding countryside is mostly rural except for the small towns in the Kettle Falls and Grand Coulee Dam areas. There are five counties and two Indian reservations that touch upon Lake Roosevelt National Recreation Area. Grain, forestry, lumber, and mining are the principal economic activities of the region. (DOI 2000)

North and west of the lake, the country is relatively mountainous and largely forested with a small amount of farmland. Logging and mining dominate the economy. East of the lake, the country is more mountainous than rolling and is a mixture of forest and farmland. Forest products manufacturing

dominates the economy. South of the Lake, the topography is generally flatland with low rolling hills. Agriculture is the backbone of the economy, with wheat as the primary crop. Recreational activities, largely fishing, supplement the economy and are potentially significant. (DOI 2000)

Lake Roosevelt is one of the major focal points of recreation in a region that boasts an abundance of recreational opportunities. Within a radius of approximately 100 miles from Grand Coulee Dam, there are four national forests, six other major lakes or reservoirs, several smaller reservoirs on the Columbia and Snake rivers, North Cascades National Park, and Lake Chelan National Recreation Area. The national forests have a substantial complementary recreation potential, which consists of smaller lake and stream fishing, camping, hunting, and winter sports. The Grand Coulee Dam itself is a tourist destination that attracts more than 400,000 visitors a year to tour the dam and watch the laser light show. (DOI 2000)

According to National Wetland Inventory maps (USFWS various dates):

- 0.74 linear miles of wetland frontage exists along Lake Roosevelt within the TDL for Daisy Mine;
- 14.33 linear miles of wetland frontage exists along the Colville River within the TDL for L-Bar/Northwest Magnesite;
- 14.02 linear miles of wetland frontage exists along the Colville River within the TDL for Northwest Alloys;
- 1.06 linear miles of wetland frontage exists along the Kettle River Arm and 1.46 linear miles of wetland frontage exists along Lake Roosevelt within the TDL for Napoleon Mine/Mill;
- 1.79 linear miles of wetland frontage exists along Onion Creek within the TDL for Van Stone Mine/Mill;
- 0.6 linear miles of wetland frontage exists along Lake Roosevelt within the TDL for LeRoi/Northport Smelter;
- 3.91 linear miles of wetland frontage exists along Deep Creek within the TDL for Black Rock Mine/Mill;
- 4.15 linear miles of wetland frontage exists along Deep Creek within the TDL for Great Western Mine;
- 4.15 linear miles of wetland frontage exists along Deep Creek within the TDL for Last Chance Mine/Mill;
- 4.55 linear miles of wetland frontage exists along Deep Creek within the TDL for Deep Creek Mine;
- 10.14 linear miles of wetland frontage exists along Deep Creek within the TDL for Copper King Mine;

- 10.05 linear miles of wetland frontage exists along Deep Creek within the TDL for Sierra Zinc Mine/Mill;
- 1.25 linear miles of wetland frontage exists along Republican Creek, 5.46 linear miles of wetland frontage exists along Deep Creek, and 0.4 linear mile of wetland frontage exists along Deep Lake within the TDL for Electric Point Mine/Mill;
- 6.54 linear miles of wetland frontage exists along Deep Creek and 0.4 linear mile of wetland frontage exists along Deep Lake within the TDL for Gladstone Mine/Mill;
- 0.5 linear mile of wetland frontage exists along Hartbauer Creek, 8.62 linear miles of wetland frontage exists along Deep Creek, and 0.4 linear mile of wetland frontage exists along Deep Lake within the TDL for Red Top Mine;
- 8.93 linear miles of wetland frontage exists along Deep Creek and 0.4 linear mile of wetland exists along Deep Lake within the TDL for Anderson Calhoun Mine/Mill;
- 0.5 linear mile of wetland frontage exists along Hartbauer Creek, 7.64 linear miles of wetland frontage exists along Deep Creek, and 0.4 linear mile of wetland frontage exists along Deep Lake within the TDL for Iroquois Mine; and
- 1.37 linear miles of wetland frontage exists along Lake Roosevelt within the TDL for Melrose Mine.

7.21 SAMPLE LOCATIONS

Two sediment samples were collected near L-Bar/Northwest Magnesite to determine whether contaminants from sources at L-Bar/Northwest Magnesite have impacted the West Ditch and the Colville River (Figure 6-4). LBDT01SD was collected in the West Ditch approximately 400 feet south of the confluence with the Colville River. LBPP01SD was collected in the Colville River at the confluence with the West Ditch.

Two sediment samples were collected near Northwest Alloys to determine whether contaminants from sources at Northwest Alloys have impacted Stensgar Creek and the Colville River (Figure 6-6). NACK01SD was collected in Stensgar Creek approximately 50 feet east of the confluence of the ditch with Stensgar Creek. NAPP01SD was collected at the confluence of Stensgar Creek with the Colville River.

One sediment sample was collected at Deep Creek Mine to determine whether contaminants from the tailings and waste rock piles have impacted Deep Creek (Figure 6-26). DCSD01SD was collected on the west shore of Deep Creek near waste rock pile 1 which drains by sheet flow into Deep Creek.

One sediment sample was collected at Anderson Calhoun Mine/Mill to determine whether contaminants from the tailings and waste rock piles have impacted the unnamed creek (Figure 6-38).

ANCK01SD was collected at the northern end of the property adjacent to private farmland and downgradient from the tailings and waste rock piles.

Samples collected from tributaries by WESTON that are associated with the mines/mills are as follows (Appendix H):

- Magee Creek, associated with Daisy Mine (TS013);
- Onion Creek, associated with Van Stone Mine/Mill (TS099); and
- Deep Creek, associated with Black Rock Mine/Mill, Great Western Mine, Last Chance Mine/Mill, Deep Creek Mine, Copper King Mine, Sierra Zinc Mine/Mill, Electric Point Mine/Mill, and Gladstone Mine (TS105).

7.22 SAMPLE RESULTS

L-Bar/Northwest Magnesite. Sample results are summarized in Tables 7-2 and 7-3. No analytes were detected at elevated concentrations in the sediment sample collected from the West Ditch. Lead was detected at an elevated concentration in the sediment sample collected from the Colville River, however, this analyte was not similarly detected in corresponding PPE sediment samples.

Northwest Alloys. Sample results are summarized in Tables 7-4 and 7-5. No analytes were detected at elevated concentrations in the sediment samples collected from Stensgar Creek or from the Colville River.

Deep Creek Mine. Sample results are summarized in Table 7-6. No analytes were detected at elevated concentrations in the sediment sample collected in Deep Creek.

Anderson Calhoun Mine/Mill. Sample results are summarized in Table 7-7. No analytes were detected at elevated concentrations in the sediment sample collected in the unnamed creek.

Refer to Appendix H for WESTON's tributary sample results.

Table 7-1

PROBABLE POINT OF ENTRY LOCATIONS
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

PROPERTY	PPE	LOCATION
Daisy Mine (Figure 6-2)	PPE 1	A wet area originating from the shaft and extending towards Magee Creek.
L-Bar/Northwest Magnesite (Figure 6-4)	PPE 1	The confluence of the Main Ditch with the Colville River
Northwest Alloys (Figure 6-6)	PPE 1	The confluence of the ditch with Stensgar Creek.
Napoleon Mine/Mill (Figure 6-8)	PPE 1	The confluence of adit discharge and the intermittent creek.
Van Stone Mine/Mill (Figures 6-13 and 6-14)	PPE 1	The confluence of tailings pile to the fourth unnamed creek near the entrance to the mine/mill.
	PPE 2	The confluence of tailings pile to the fourth unnamed creek near the entrance to the mine/mill.
	PPE 3	The confluence of the excess mine pit water that seeps through rock-fill to the adjacent creek.
	PPE 4	The confluence of the old tailings pile to the second unnamed creek located at the southwest portion of the pile.
LeRoi/Northport Smelter (Figure 6-17)	PPE 1	The former tailings pile adjacent to a recently constructed ditch.
	PPE 2	Recently constructed ditch where a former tailing pile potentially was located.
	PPE 3	The slag pile on the shore of the Columbia River.
Last Chance Mine/Mill (Figure 6-22)	PPE 1	The adit discharge which flows into the unnamed creek.
	PPE 2	The adit discharge that continues west past the waste rock piles, through the tailings pile and infiltrates the ground prior to reaching the Colville-Alladin Northport Road.
Deep Creek Mine (Figure 6-24)	PPE 1	Potential overland flow from the waste rock pile to Deep Creek.
	PPE 2	A swampy area located south of the gated entrance could flow to Deep Creek.
Copper King Mine (Figure 6-26)	PPE 1	There is a potential that during heavy flow adit 2 discharge could reach Deep Creek.
Sierra Zinc Mine/Mill (Figure 6-28)	PPE 1	There could be potential overland flow from the tailings to the drainage ditch.
Anderson Calhoun Mine/Mill (Figure 6-36)	PPE 1	A marshy wetland area was noted on the western portion of the stream and adjacent to the eastern portion of the tailings pile and evaporation pond.
Melrose Mine (Figure 6-40)	PPE 1	Adit discharge flows approximately 40 feet east to an unnamed tributary that feeds into Tom Bush Creek.

Key

PPE = Probable point of entry

Table 7-2

L-BAR/NORTHWEST MAGNESITE
DITCH SEDIMENT SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374104	01374101
CLP Inorganic ID	MJ0KC4	MJ0KC1
CLP Organic ID	J0KC4	J0CK1
E & E Sample ID	01090404	01090401
Station Location	LBBK01SD	LBDT01SD
Sample Depth (inches)	0-8	0-8
Description	Background	Ditch
TAL Metals (mg/kg)		
Aluminum	**20200**	**18600**
Arsenic	**12.1**	**9.4**
Barium	**450**	**332**
Cadmium	**3.4**	1.1 JB
Calcium	**39600**	**7670**
Chromium	**32.3**	**22.4**
Cobalt	**11.9**	7.3 JB
Copper	**69.3**	**70.4**
Iron	**27900**	**20700**
Lead	**124**	**34.7**
Magnesium	**33500**	**29000**
Manganese	**673**	**388**
Mercury	0.10 JB (0.10 SQL)	0.14 U
Nickel	**31.9**	17.9 JB
Potassium	**3920 JK**	**13400 JK**
Selenium	0.7 UJK	**12.4 JL**
Vanadium	**47.4**	**39**
Zinc	**239**	**206**

Note: Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5.

Key:

B = The reported concentration is between the instrument detection limit and the contract required detection l
BK = Background.
CLP = Contract Laboratory Program.
DT = Ditch.
E & E = Ecology and Environment, Inc.
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The analyte was positively identified. The associated numerical value is an estimate.
K = Unknown bias.
L = Low bias.
LB = L-Bar/Northwest Magnesite.
mg/kg = Milligrams per kilogram.
SD = Sediment.
SQL = Sample quantitation limit.
TAL = Target Analyte List.
U = The analyte was not detected. The associated numerical value is the contract required detection limit.

Table 7-3

L-BAR/NORTHWEST MAGNESITE
RIVER SEDIMENT SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374111	01374110
CLP Inorganic ID	MJ0KD2	MJ0KD1
CLP Organic ID	J0KD2	J0KD1
E & E Sample ID	01090411	01090410
Station Location	LBBK02SD	LBPP01SD
Sample Depth (inches)	0-8	0-8
Description	Background	Colville River
TAL Metals (mg/kg)		
Aluminum	**3960**	**8500**
Arsenic	**2.8**	**5.0 JK**
Barium	**63.0**	**133**
Cadmium	0.05 U	0.07 U
Calcium	**5740**	**7610**
Chromium	**6.8**	**14.1**
Cobalt	4.7 JB (12.4 SQL)	7.0 JB
Copper	**6.5**	**12.3**
Iron	**10200**	**16800**
Lead	**4.5**	**115**
Magnesium	**3720**	**6450**
Manganese	**144**	**273**
Mercury	0.06 U	0 08 U
Nickel	7.0 JB (9.9 SQL)	**14.1**
Potassium	603 JB	1560 JB
Selenium	0 84 UJL	1.1 JB
Vanadium	10.9 JB (12.4 SQL)	**23.0**
Zinc	**26.5**	**52.2**

Note: Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is significant as defined in Section 5.

Key:

B = The reported concentration is between the instrument detection limit and the contract required detection limit
BK = Background.
CLP = Contract Laboratory Program
E & E = Ecology and Environment, Inc.
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The analyte was positively identified. The associated numerical value is an estimate
K = Unknown bias
L = Low bias.
LB = L-Bar/Northwest Magnesite.
mg/kg = Milligrams per kilogram
PP = PPE.
PPE = Probable point of entry.
SD = Sediment.
SQL = Sample quantitation limit.
TAL = Target Analyte List
U = The analyte was not detected. The associated numerical value is the contract required detection limit

Table 7-4

NORTHWEST ALLOYS
CREEK SEDIMENT SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374108	01374106
CLP Inorganic ID	MJ0KC8	MJ0KC6
CLP Organic ID	J0KC8	J0KC6
E & E Sample ID	01090408	NACK01SD
Station Location	NABK01SD	NACK01SD
Sample Depth (inches)	0-8	0-8
Description	Background	Creek
TAL Metals (mg/kg)		
Aluminum	**2080**	**2490**
Arsenic	1.1 UJK	1.9 JB
Barium	34.0 JB (48.8 SQL)	41.4 JB
Calcium	**2730**	**5590**
Chromium	**5.4**	**4.9**
Copper	2.8 JB (6.1 SQL)	4.3 JB
Iron	**5590**	**6910**
Lead	**2.0**	**2.5**
Magnesium	**1430**	**1800**
Manganese	**91.7**	**105**
Nickel	3.6 JB (9.8 SQL)	4.9 JB
Potassium	605 JB	423 JB
Vanadium	8.9 JB (12.2 SQL)	9.5 JB
Zinc	**10.8**	**14.4**

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

Key:

B = The reported concentration is between the instrument detection limit and the contract required detection
BK = Background.
CK = Creek.
CLP = Contract Laboratory Program
E & E = Ecology and Environment, Inc.
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The analyte was positively identified. The associated numerical value is an estimate
K = Unknown bias.
mg/kg = Milligrams per kilogram.
NA = Northwest Alloys.
SD = Sediment
SQL = Sample quantitation limit.
TAL = Target Analyte List.
U = The analyte was not detected The associated numerical value is the contract required detection limit

Table 7-5

NORTHWEST ALLOYS
RIVER SEDIMENT SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374109	01374105
CLP Inorganic ID	MJ0KC9	MJ0KC5
CLP Organic ID	J0CK9	J0KC5
E & E Sample ID	01090409	01090405
Station Location	NABK02SD	NAPP01SD
Sample Depth (inches)	0-8	0-8
Description	Background	Colville River
TAL Metals (mg/kg)		
Aluminum	13100	10100
Arsenic	4.3 JK	4 JB
Barium	205	182
Calcium	4940	8150
Chromium	24.7	14.6
Copper	21.3 JK	16.1
Iron	27900	17500
Lead	13.8	8.5
Magnesium	6940	5070
Manganese	507	364
Nickel	25.4	14.9 JB
Potassium	2550 JK	1640 JB
Vanadium	36.9	21.6 JB
Zinc	78.2	58.2

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

Key:

B = The reported concentration is between the instrument detection limit and the contract required detection limit.
BK = Background
CLP = Contract Laboratory Program.
E & E = Ecology and Environment, Inc.
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The analyte was positively identified The associated numerical value is an estimate
K = Unknown bias.
mg/kg = Milligrams per kilogram.
NA = Northwest Alloys.
PPE = Probable point of entry.
SD = Sediment.
SQL = Sample quantitation limit.
TAL = Target Analyte List
U = The analyte was not detected. The associated numerical value is the contract required detection limit

Table 7-6

DEEP CREEK MINE
SEDIMENT SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01254275
CLP Inorganic ID		MJ0EQ9
CLP Organic ID		NU
E & E Sample ID		NU
Station Location		DCSD01SD
Sample Depth (inches)		0-6
Description	Background	Deep Creek
TAL Metals (mg/kg)		
Aluminum	20200	4430
Arsenic	13.0	1.3 U
Barium	450	39.6 JB
Cadmium	3.4	0.08 U
Calcium	109000	9860
Chromium	32.3	7.1
Cobalt	11.9	3 JB
Copper	69.3	2.5 JB
Iron	27900	8640
Lead	124	5.5
Magnesium	33500	6100
Manganese	673	117
Nickel	31.9	6.1 JB
Potassium	3920 JK	818 JB
Vanadium	47.4	11 JB
Zinc	239	33.2

Note: Bold type indicates sample concentration is above the detection limit

Key:

B = The reported concentration is between the instrument detection limit and the contract required detection limit
CLP = Contract Laboratory Program.
DC = Deep Creek Mine.
E & E = Ecology and Environment, Inc.
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The analyte was positively identified. The associated numerical value is an estimate.
K = Unknown bias.
mg/kg = Milligrams per kilogram.
SD = Sediment.
TAL = Target Analyte List
U = The analyte was not detected The associated numerical value is the contract required detection limit

Table 7-7

ANDERSON CALHOUN MINE/MILL
SEDIMENT SAMPLES ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA Sample ID		01374177
CLP Inorganic ID		MJ0KJ6
CLP Organic ID		J0KH4
E & E Sample ID		01090428
Station Location		ANCK01SD
Sample Depth (inches)		0-8
Description	Background	Unnamed Creek
TAL Metals (mg/kg)		
Aluminum	**20200**	**9060 JK**
Arsenic	**13.0**	13.3 JB
Barium	**450**	**8720 JK**
Cadmium	**3.4**	6.0 JB
Calcium	**109000**	**69200 JK**
Chromium	**32.3**	**27.8 JK**
Cobalt	**11.9**	10.5 JB
Copper	**69.3**	34.9 JB
Iron	**27900**	**29200 JK**
Lead	**124**	**43.0 JK**
Magnesium	**33500**	5850 JB
Manganese	**673**	**926 JK**
Mercury	0.10 JB (0.102 SQL)	R
Nickel	**31.9**	33.2 JB
Potassium	**3920 JK**	1300 JB
Selenium	1.4 JB (1.7 SQL)	**12.1 JK**
Vanadium	**47.4**	33.9 JB
Zinc	**239**	**155 JK**
Pesticide/PCBs (µg/kg)		
Endrin Ketone	**4.0**	18 U

Note: Bold type indicates sample concentration is above the detection limit.
Underlined type indicates the sample results is elevated as defined in Section 5.

Key:

AN = Anderson Calhoun Mine/Mill.
B = The reported concentration is between the instrument detection limit and the contract required detection limit.
CK = Creek.
CLP = Contract Laboratory Program.
E & E = Ecology and Environment, Inc.
EPA = United States Environmental Protection Agency.
ID = Identification
J = The analyte was positively identified. The associated numerical value is an estimate
K = Unknown bias
mg/kg = Milligrams per kilogram.
µg/kg = Micrograms per kilogram
PCBs = Polychlorinated biphenyls
R = The data are unusable for all purposes
S = Sediment
SQL = Sample quantitation limit
TAL = Target Analyte List
U = The analyte was not detected The associated numerical value is the contract required detection limit

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UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
AND SITE INSPECTIONS
Stevens County, Washington

Figure 7-1
DAISY MINE
15-MILE MAP

Date	Drawn by	
7-19-02	AES	10 START-2\01020028\fig 7-1

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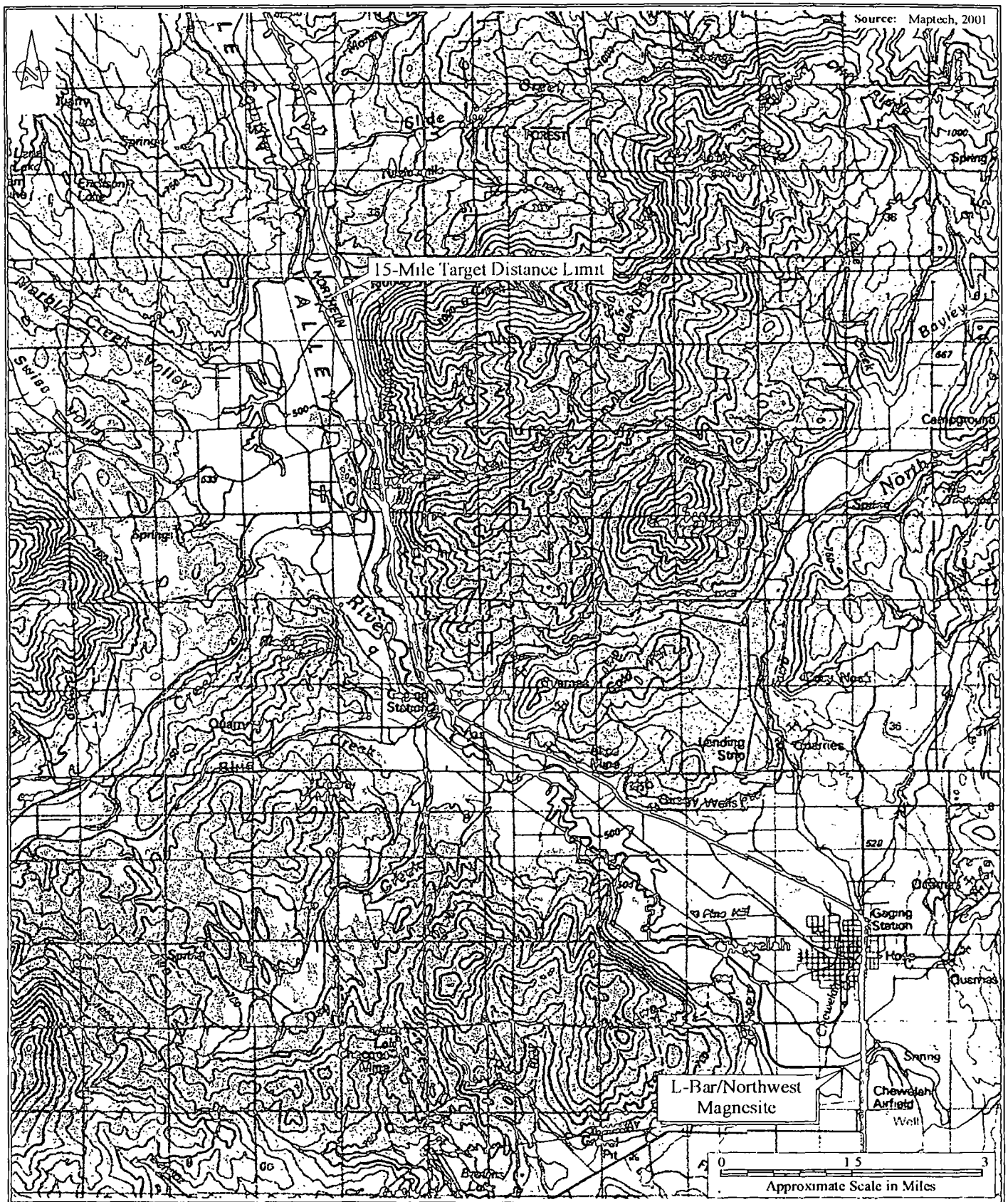

ecology and environment, inc. International Specialists in the Environment Seattle, Washington	UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS Stevens County, Washington	Figure 7-2 L-BAR/NORTHWEST MAGNESITE 15-MILE MAP		
		Date 7-19-02	Drawn by AES	10.START-2\01020028\fig 7-2

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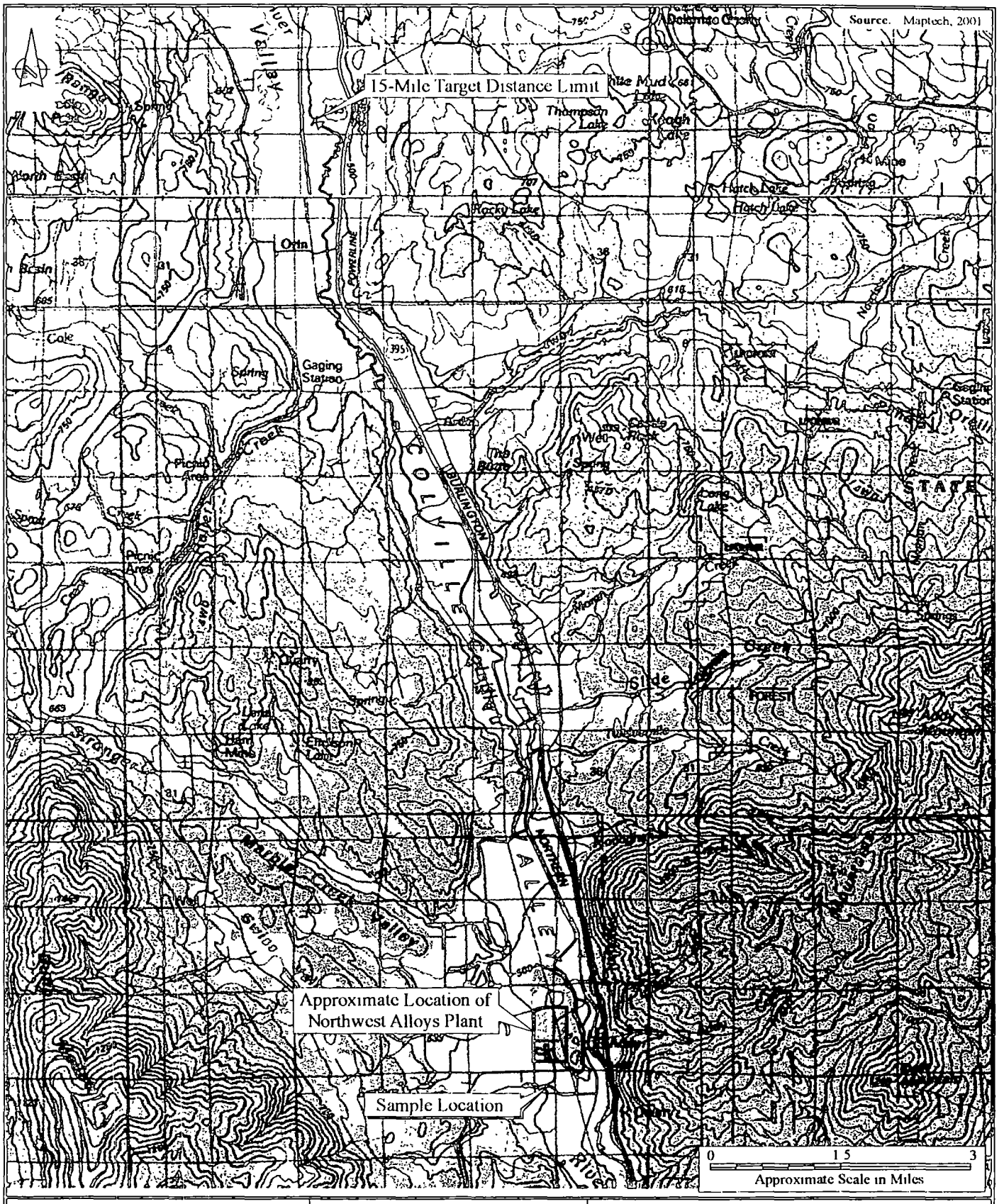

ecology and environment, inc. International Specialists in the Environment Seattle Washington	UPPER COLUMBIA RIVER MINES AND MILLS PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS Stevens County, Washington	Figure 7-3 NORTHWEST ALLOYS 15-MILE MAP		
		Date 7-19-02	Drawn by AES	10 START-2\01020028\fig 7-3

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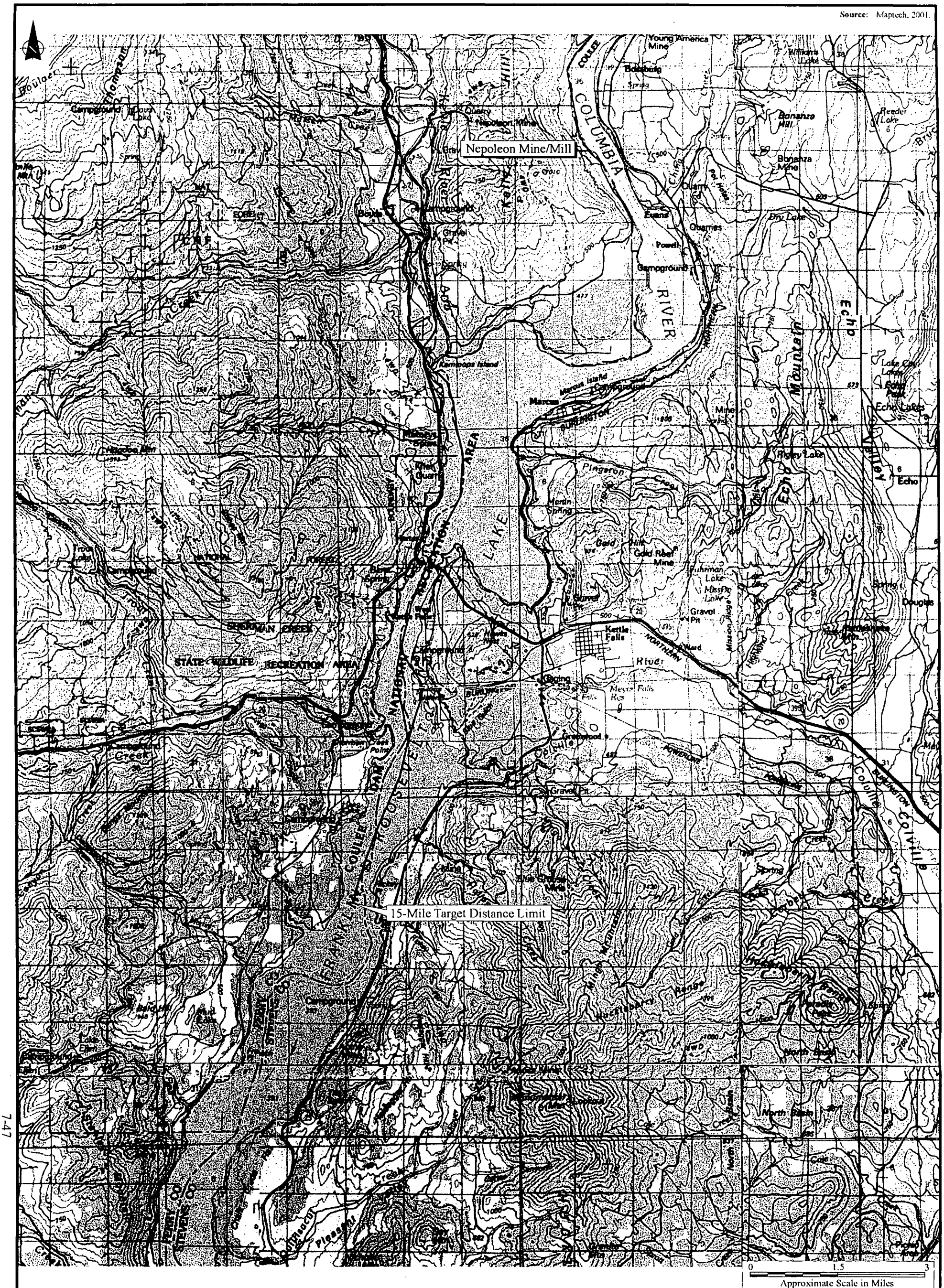
Source: Maptech, 2001.



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UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
AND SITE INSPECTIONS
Stevens County, Washington

Figure 7-4
NAPOLEON MINE/MILL
15-MILE MAP

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7/19/02	AES	10:START-2\01020028\fig 7-4

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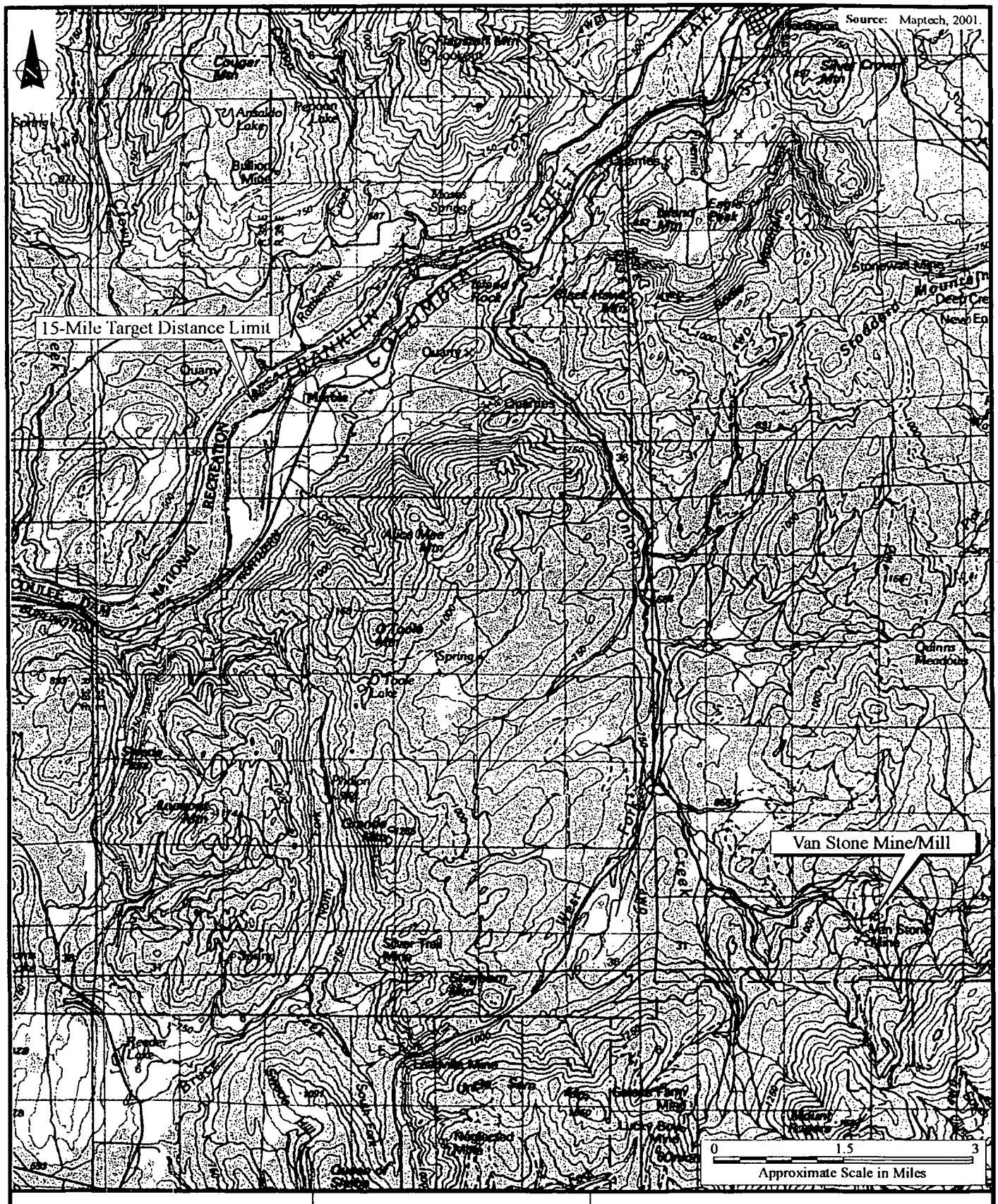

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UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
AND SITE INSPECTIONS
Stevens County, Washington

Figure 7-5
VAN STONE MINE/MILL
15-MILE MAP

Date:	Drawn by:	
7-19-02	AES	10:START-2\01020028\fig 7-5

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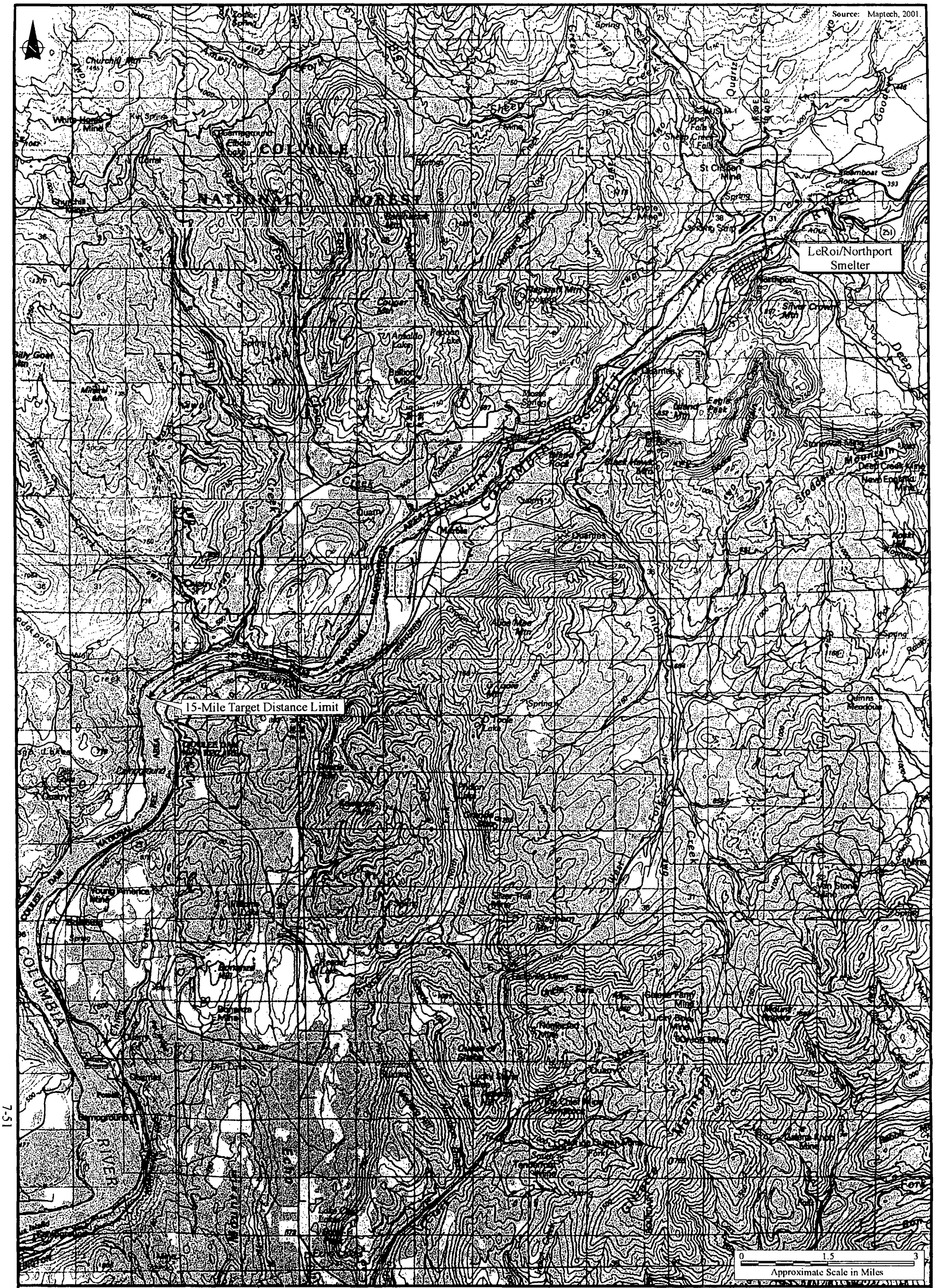

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UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
AND SITE INSPECTIONS
Stevens County, Washington

Figure 7-6
LEROI/NORTHPORT SMELTER
15-MILE MAP

Date:	Drawn by:	
7/19/02	AES	10:START-2\01020028\fig 7-6

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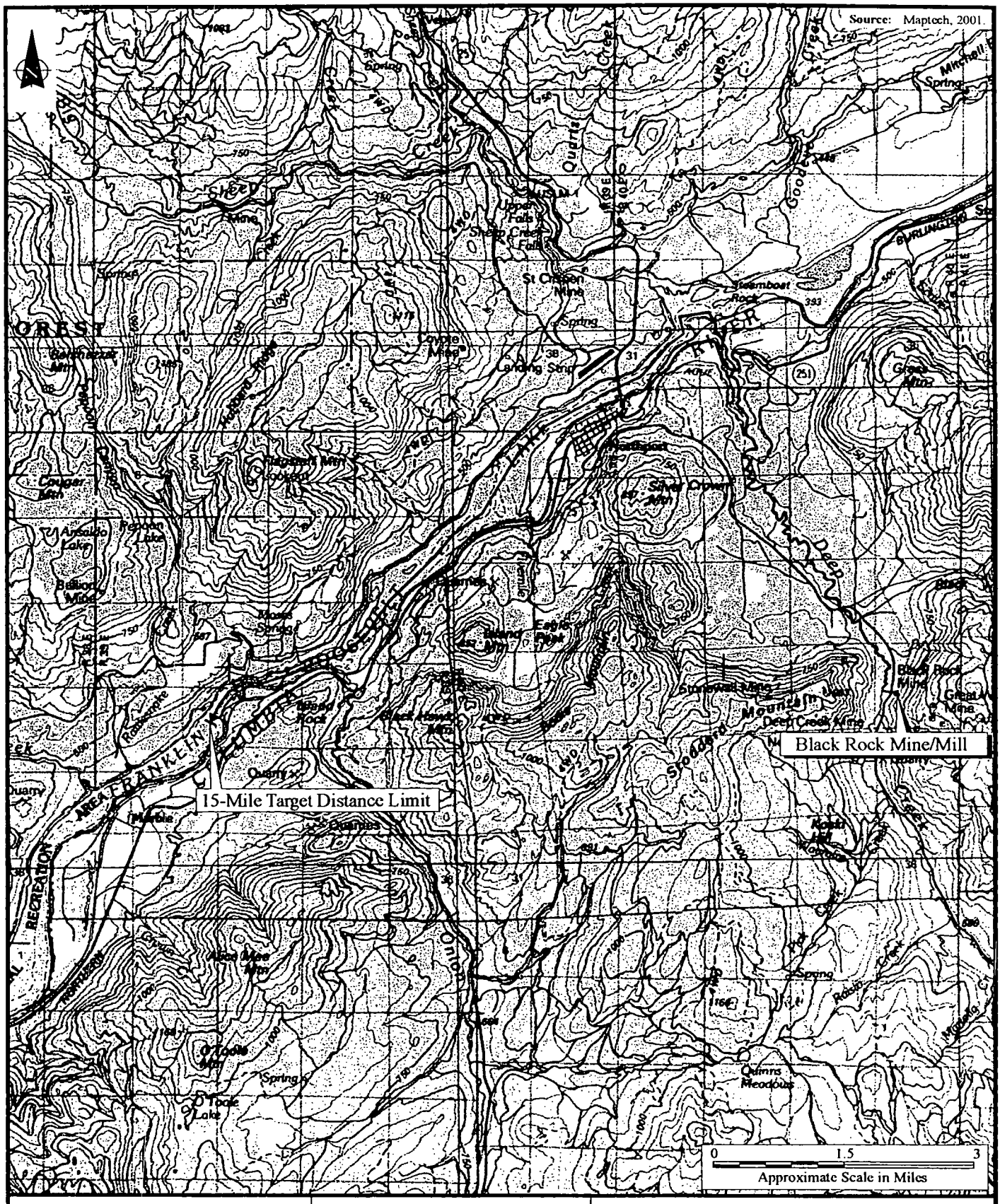

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UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
AND SITE INSPECTIONS
Stevens County, Washington

Figure 7-7
BLACK ROCK MINE/MILL
15-MILE MAP

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7-19-02	AES	10:START-2\01020028\fig 7-7

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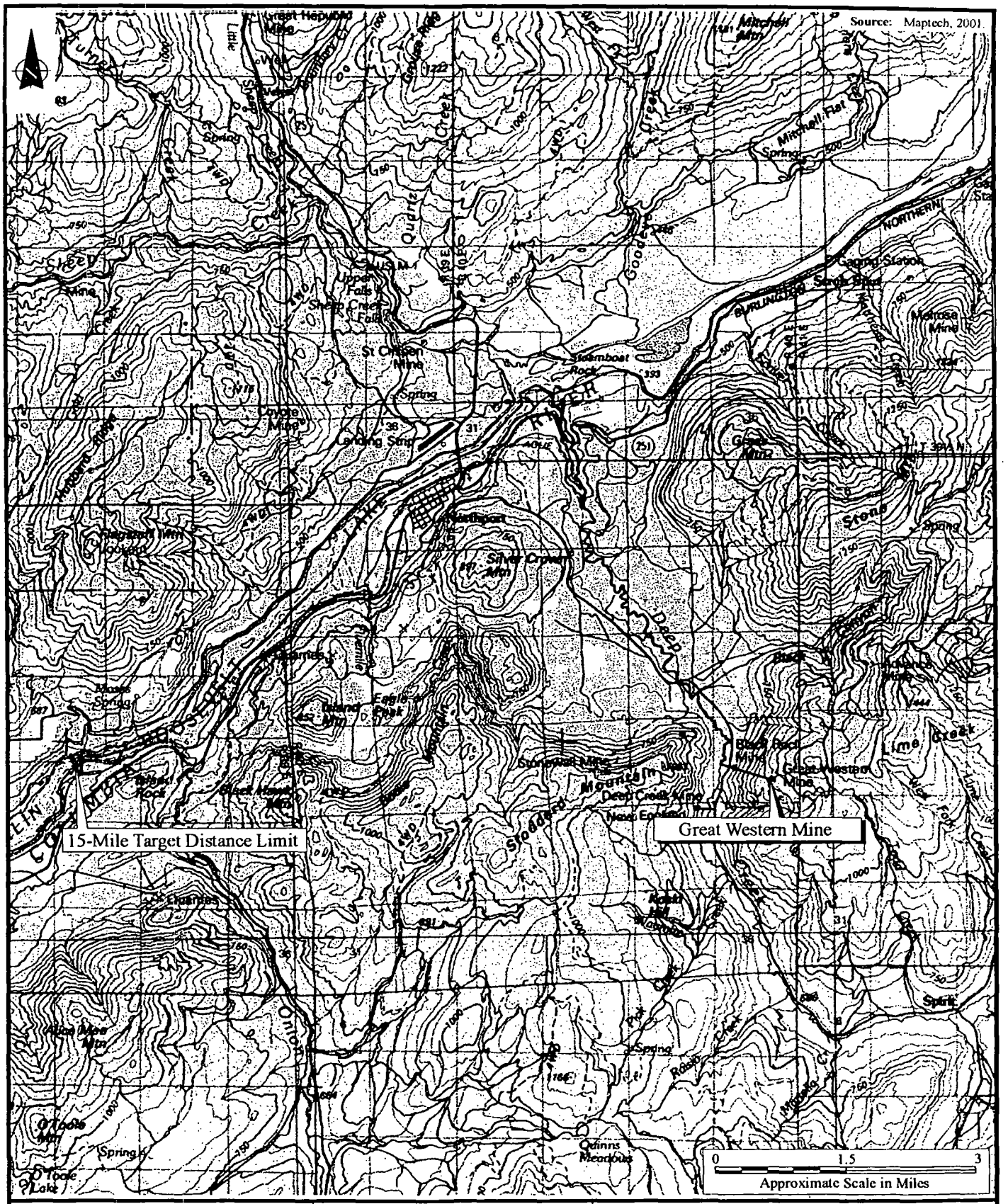

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UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
AND SITE INSPECTIONS
Stevens County, Washington

Figure 7-8
GREAT WESTERN MINE
15-MILE MAP

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7-19-02	AES	10:START-2\01020028\fig 7-8

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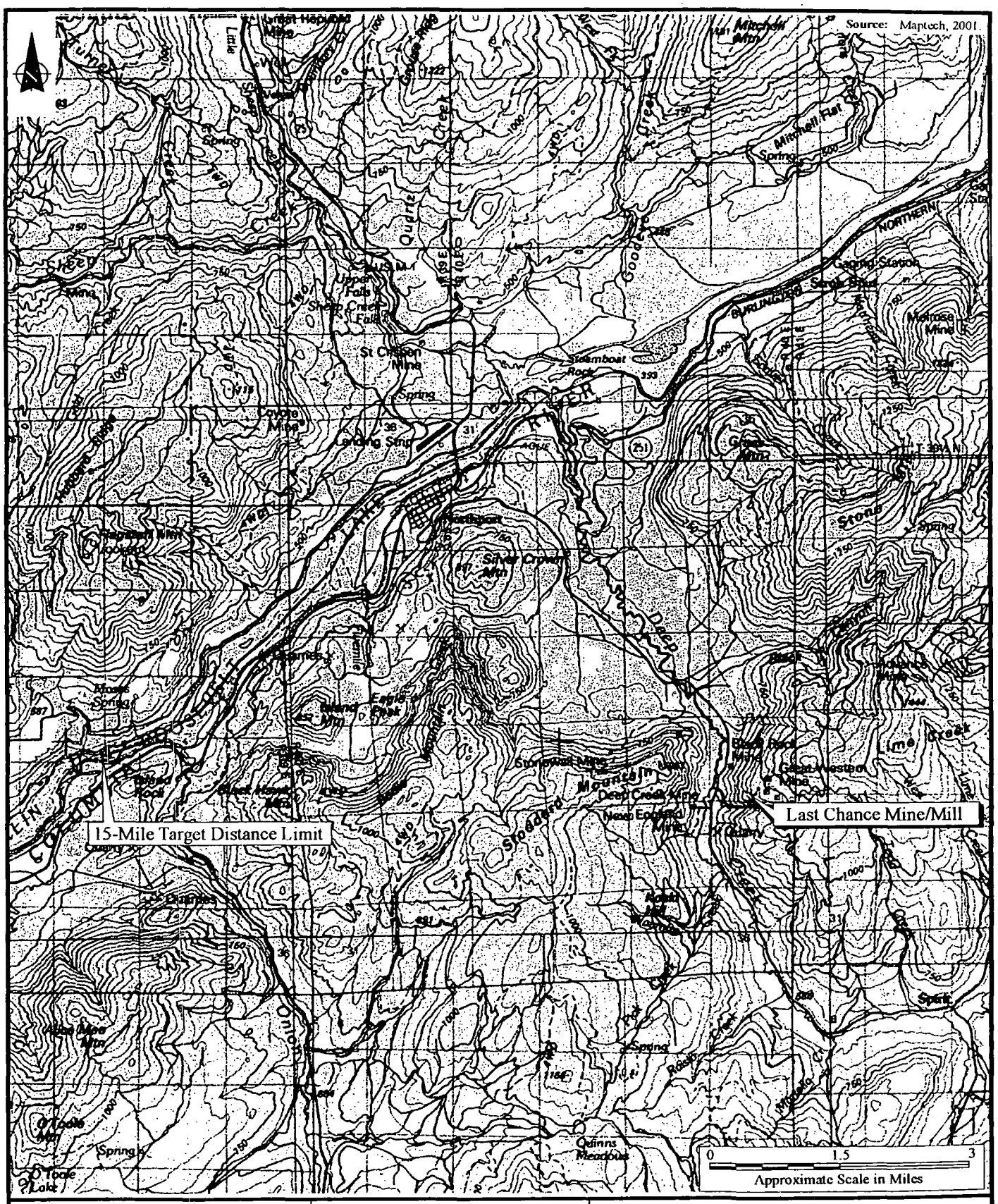

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UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
AND SITE INSPECTIONS
Stevens County, Washington

Figure 7-9
LAST CHANCE MINE/MILL
15-MILE MAP

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7-19-02	AES	10:START-2\01020028\fig 7-9

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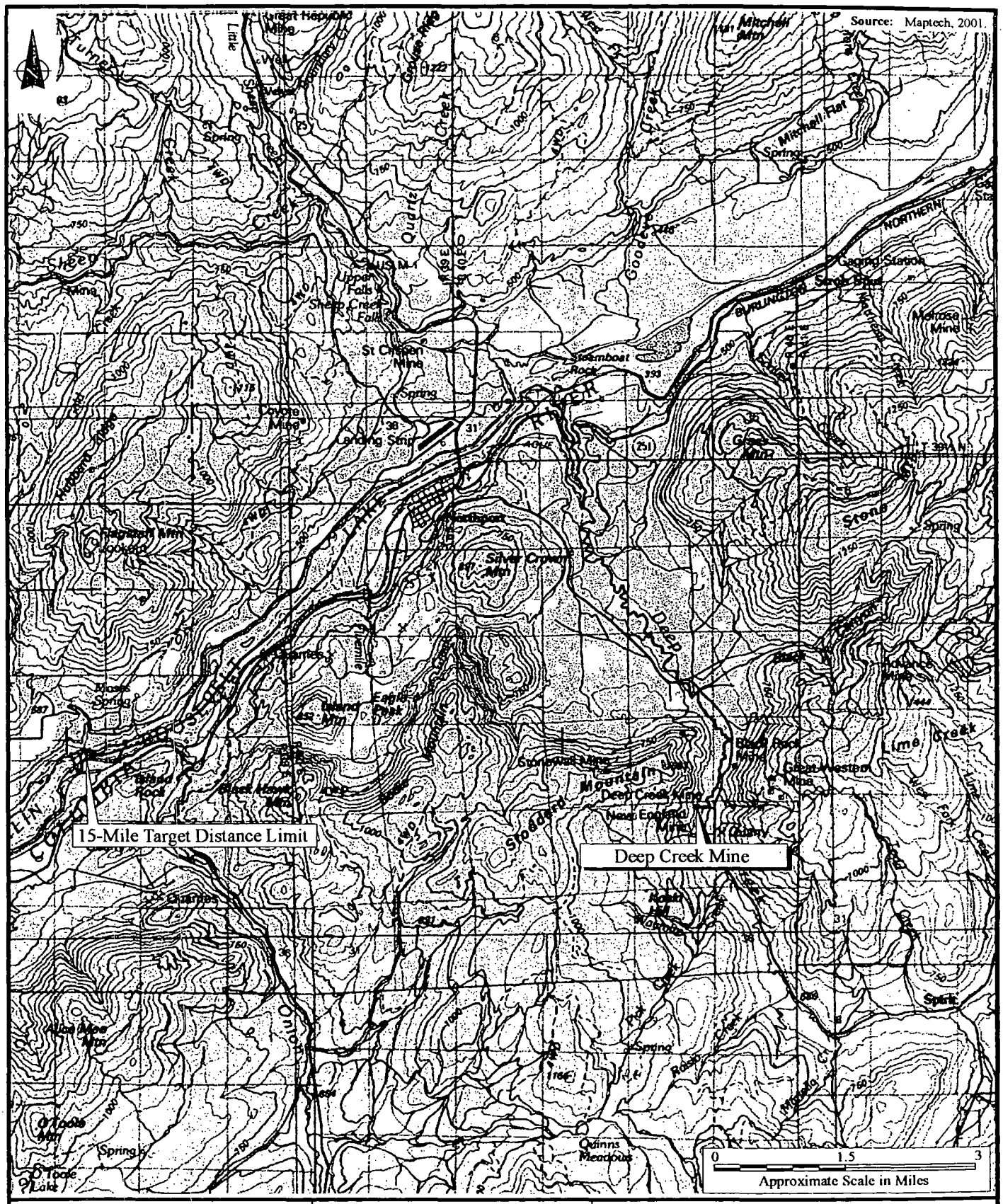

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UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
AND SITE INSPECTIONS
Stevens County, Washington

Figure 7-10
DEEP CREEK MINE
15-MILE MAP

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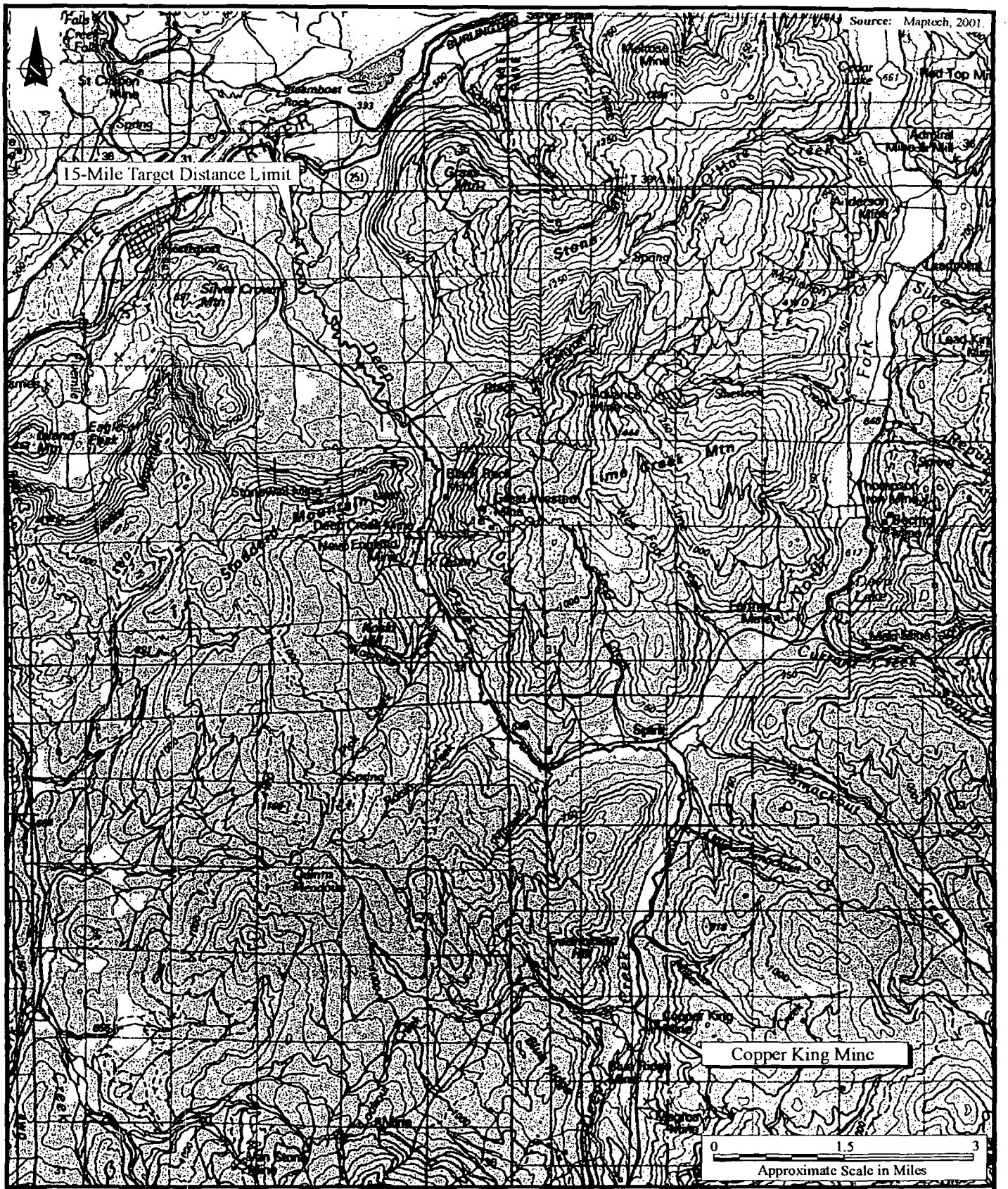

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UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
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Stevens County, Washington

Figure 7-11
COPPER KING MINE
15-MILE MAP

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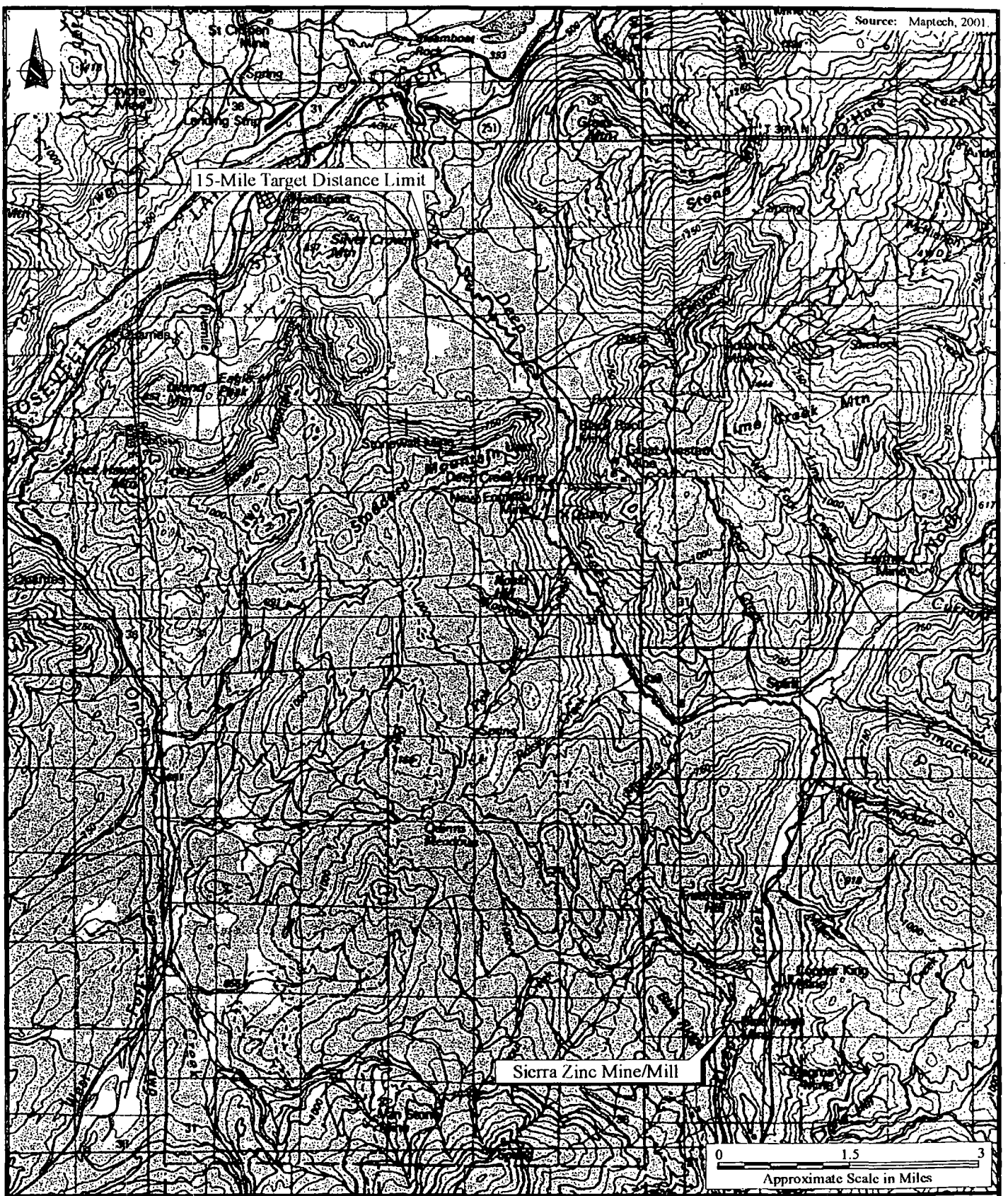

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UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
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Stevens County, Washington

Figure 7-12
SIERRA ZINC MINE/MILL
15-MILE MAP

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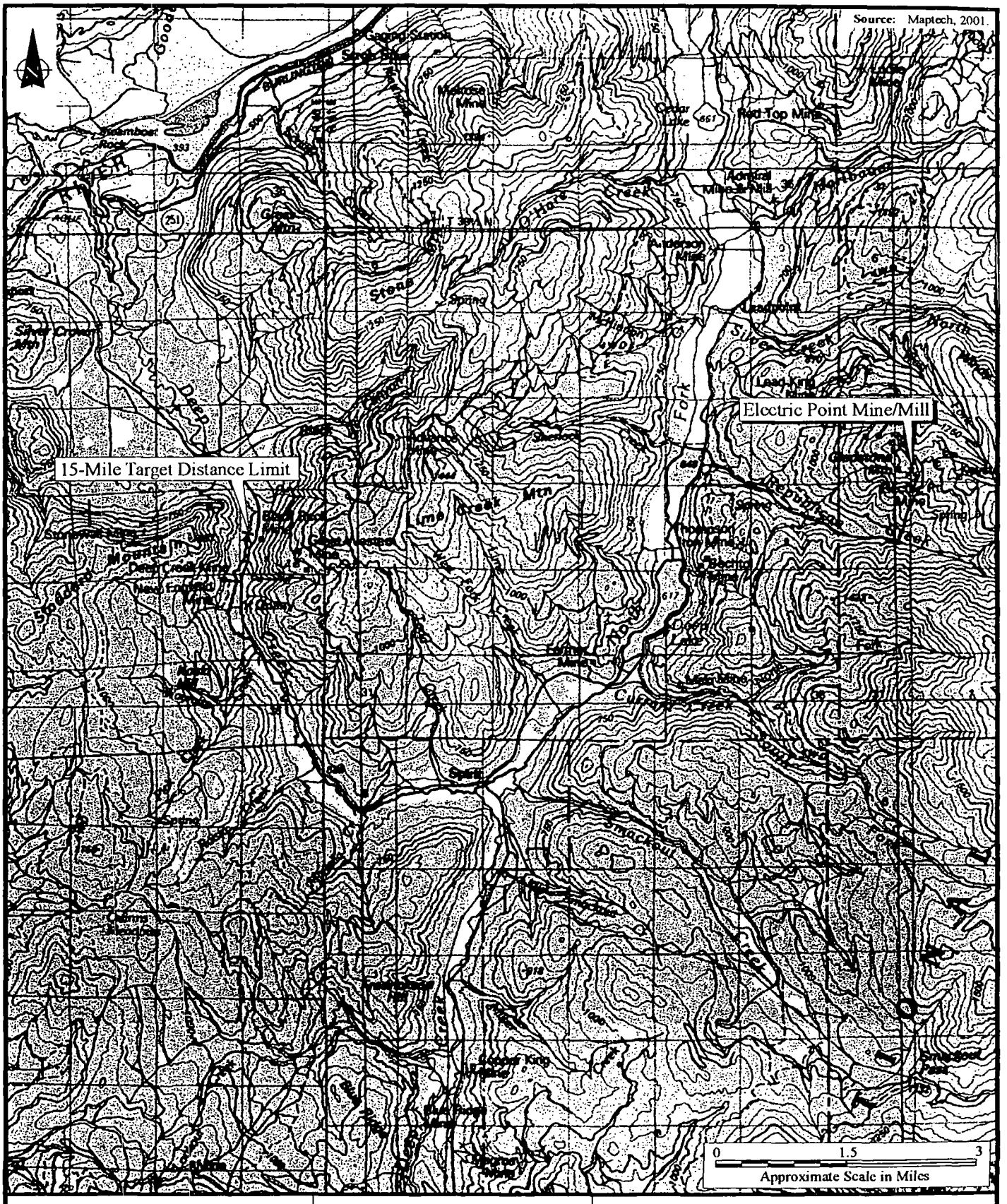

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UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
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Stevens County, Washington

Figure 7-13
ELECTRIC POINT MINE/MILL
15-MILE MAP

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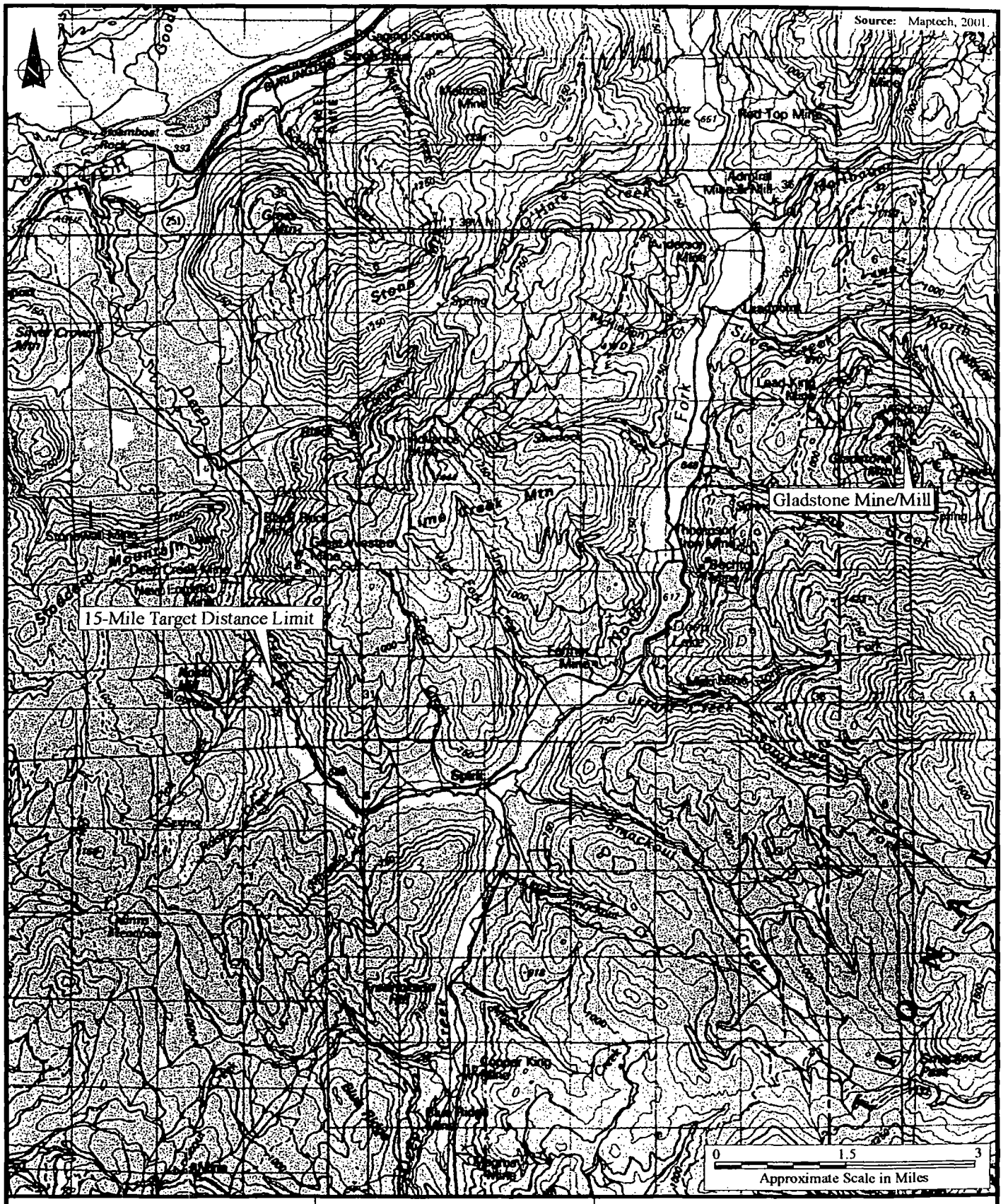

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UPPER COLUMBIA RIVER
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PRELIMINARY ASSESSMENTS
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Stevens County, Washington

Figure 7-14
GLADSTONE MINE/MILL
15-MILE MAP

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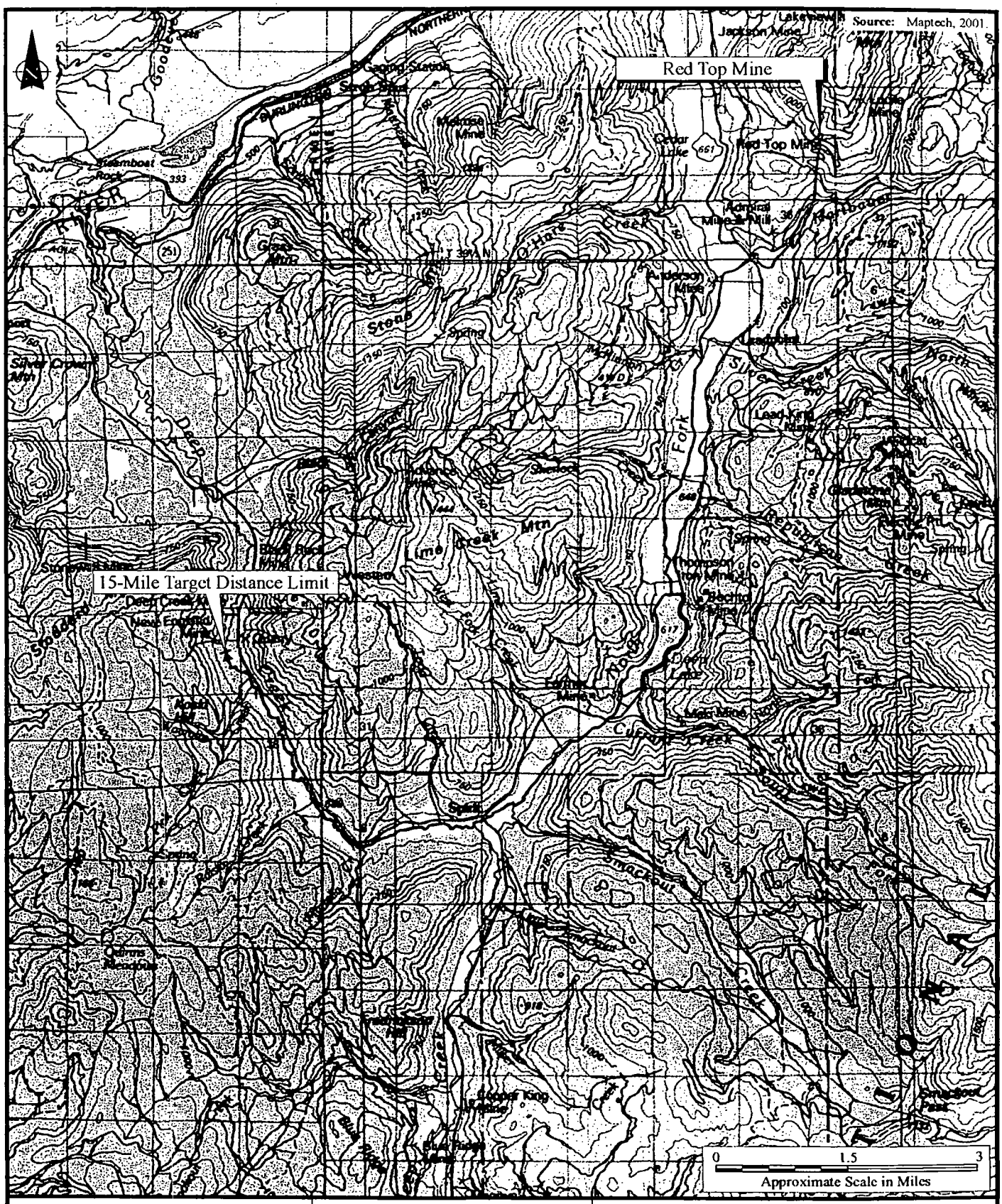

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UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
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Stevens County, Washington

Figure 7-15
RED TOP MINE
15-MILE MAP

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UPPER COLUMBIA RIVER
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Stevens County, Washington

Figure 7-16
ANDERSON CALHOUN MINE/MILL
15-MILE MAP

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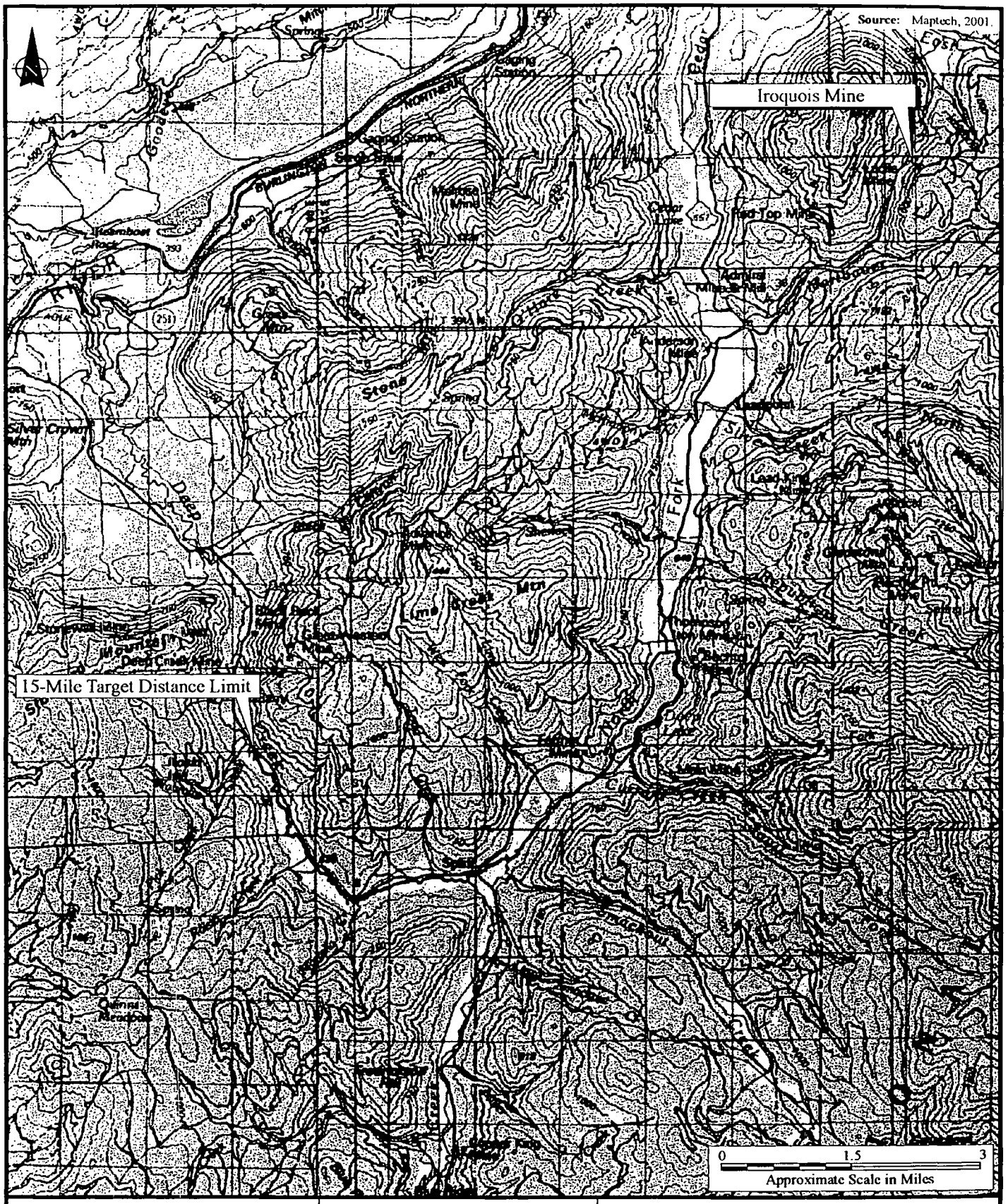

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UPPER COLUMBIA RIVER
MINES AND MILLS
PRELIMINARY ASSESSMENTS
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Stevens County, Washington

Figure 7-17
IROQUOIS MINE
15-MILE MAP

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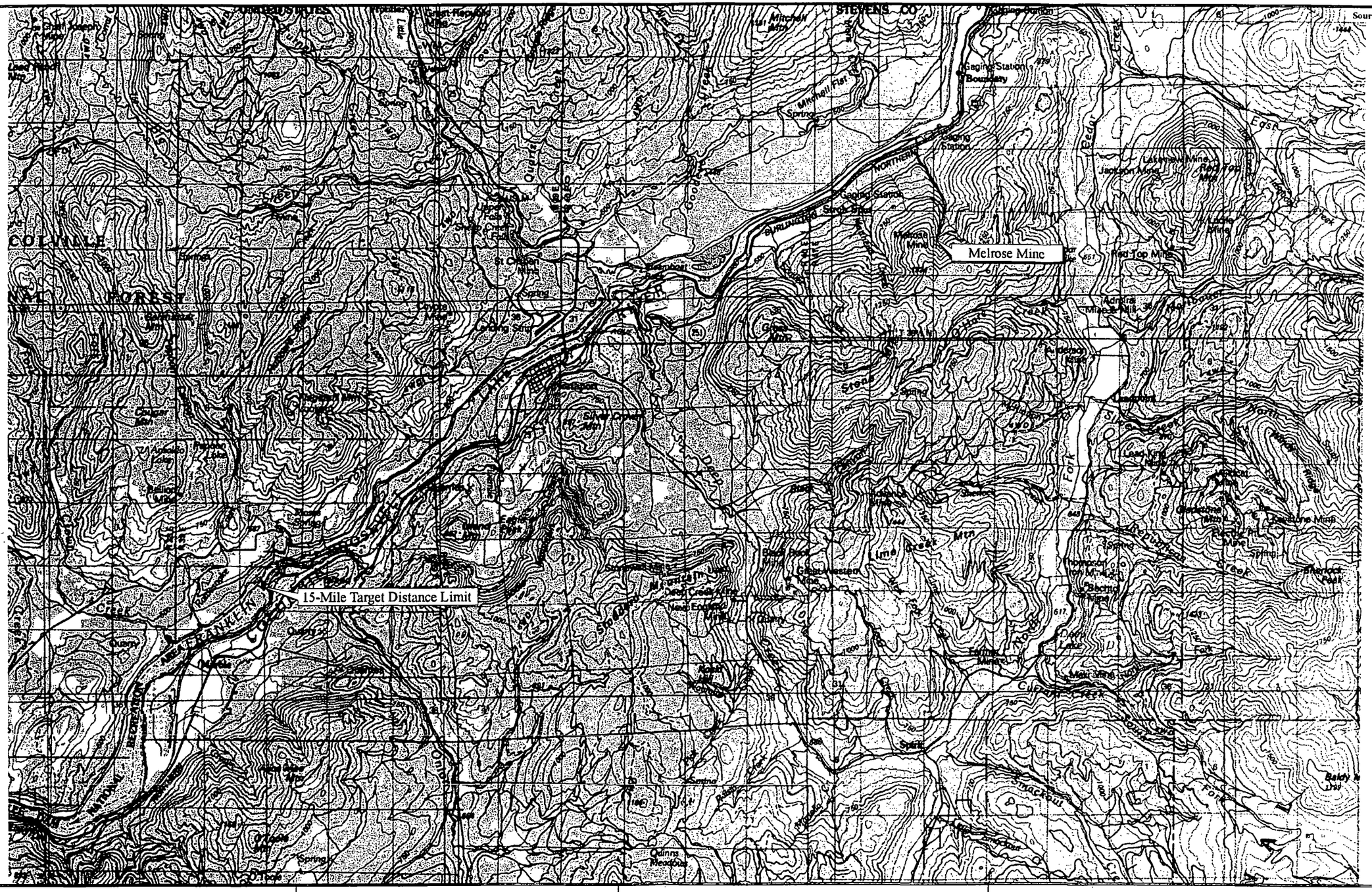
Source: Maptech, 2001.
Melrose Mine
15-Mile Target Distance Limit
STEVENS CO
COLVILLE
FOREST
NORTHERN
Gaging Station
Boundary
Mitchell Flat
Spring
Lakeview Mine
Jackson Mine
Red Top Mine
Melrose Mine
Admiral Mine
Lime Creek Mtn
Great Western Mine
Deep Creek Fire
Quinns Meadows
Smackout
Sherlock Falls
Lead King Mine
Clarkstone Mtn
Placer Hill Mine
Spring
Quarry
Dump
Falls
Lake
Mill
Mine
Creek
Fork
Ridge
Mtn
Hill
Road
Trail
Bridge
Cabin
Camp
Pond
Pasture
Tailings
Adits
Shaft
Building
Tunnel
Cut
Fill
Pit
Dump
Gate
Fence
Power Line
Pipeline
Railroad
Bridge
Culvert
Ford
Footbridge
Footpath
Trail
Road
Dirt Road
Paved Road
Parking Area
Campsite
Picnic Area
Boat Ramp
Dock
Pier
Wharf
Buoy
Lighthouse
Beacon
Tower
Antenna
Radio Tower
Water Tower
Windmill
Cemetery
Church
School
Hospital
Post Office
Town Hall
Library
Museum
Park
Golf Course
Stadium
Airport
Heliport
Helipad
Runway
Hangar
Tarmac
Apron
Taxiway
Control Tower
Terminal

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8. SUMMARY AND CONCLUSIONS

In June and September 2001, the START-2 conducted PAs and SIs of mines/mills located near the upper Columbia River in Stevens County, Washington.

The purpose of the PAs and SIs were to identify and investigate potential sources of contamination to the upper Columbia River. Of the 39 mines/mills visited, sampling was conducted at 18 properties. Sampling was conducted at those mines/mills where potential sources of contamination were identified and potential impacts to receptors via the surface water migration pathway were observed.

The PAs and SIs activities involved the collection of samples from potential hazardous substance source areas and from target areas/receptors potentially impacted by contaminant migration. A total of 216 samples submitted for EPA CLP methods of analysis were collected, including background samples but excluding QA samples. The media sampled included surface soil, tailings, waste rock, surface water and sediment. Section 8.1 summarizes the findings and conclusions for those mines/mills that were sampled. This section does not include a discussion for sites that were not sampled. Sampling was not conducted at sites where no contaminant source was observed and/or where no surface water features including overland drainage routes were identified. Recommendations for all sites are presented in Table 8-1.

8.1 FINDINGS AND CONCLUSIONS

8.1.1 Daisy Mine

Samples were collected from potential contaminant source areas at the Daisy Mine including a tailings pile and shaft. A PPE sample was also collected. The tailings pile measured 150 feet at the base, 30 feet in height with a slope of approximately 35%, and a depth of approximately 45 feet. The shaft measured 10 feet by 10 feet by unknown depth. A wet area originating from the shaft extended south approximately 25 feet. A depression south of the wet area was noted where potential pooling of water from the shaft would occur which would then flow into the ditch, past the culvert, and into Magee Creek approximately 70 feet (PPE 1).

Surface soil samples collected from the tailings pile contained significant concentrations of TAL metals including arsenic (233 mg/kg) and mercury (2.9 mg/kg).

Analytes detected in the discharge from the shaft include arsenic (95.3 μg/L), cadmium (7.1 μg/L), lead (5.2 μg/L), and zinc (829 μg/L).

No elevated concentrations of TAL metals were detected in the PPE sample.

Based on an evaluation of technical data using the EPA HRS model criteria, no further action under CERCLA is recommended at the Daisy Mine site.

8.1.2 L-Bar/Northwest Magnesite

The contaminant sources at L-Bar/Northwest Magnesite includes a magnesite pile, and flux bar and flux bar residue. The magnesite residue pile measures approximately 30 feet deep and 17 acres in area. Past operating practices and inadequate storage of flux bar and flux bar residue have resulted in elevated levels of mostly chloride and ammonia in shallow groundwater and surface water. Most of the materials remaining on the plant have continued to leach salts and ammonia into shallow groundwater and surface water in two ditches. (Ecology 2001)

Sediment samples were collected during the Phase I RI from six locations: three in the Main Ditch, two in the West Ditch, and one from the Logan Road ditch south of the property. Review of trace metals analyses shows that barium, manganese, and selenium concentrations in the Main Ditch sediment samples exceeded the concentrations detected in the background sample collected from Logan Road ditch south of the property. Trace metals results from the West Ditch samples were similar to Main Ditch samples in that background concentrations were exceeded for arsenic, barium, copper, manganese, and selenium. Concentrations of these metals were less than 2 times background levels except for selenium, which was approximately 7 times background. (CH2MHill 1998)

Sediment samples were collected at two PPEs by the START-2 in the West Ditch. One downstream sediment sample was also collected from the West Ditch and one sediment sample was collected from the Colville River.

Samples collected from the West Ditch contained elevated concentrations of TAL metals including selenium (18.0 mg/kg JK).

Lead was detected at an elevated concentration in the Colville River sample; however, this analyte was not similarly detected in PPE samples.

Based on an evaluation of technical data using the EPA HRS model criteria, further action under CERCLA or other authorities is recommended at the L-Bar/Northwest Magnesite site. A Cleanup Action

8. SUMMARY AND CONCLUSIONS

In June and September 2001, the START-2 conducted PAs and SIs of mines/mills located near the upper Columbia River in Stevens County, Washington.

The purpose of the PAs and SIs were to identify and investigate potential sources of contamination to the upper Columbia River. Of the 39 mines/mills visited, sampling was conducted at 18 properties. Sampling was conducted at those mines/mills where potential sources of contamination were identified and potential impacts to receptors via the surface water migration pathway were observed.

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Analytes detected in the discharge from the shaft include arsenic (95.3 μg/L), cadmium (7.1 μg/L), lead (5.2 μg/L), and zinc (829 μg/L).

No elevated concentrations of TAL metals were detected in the PPE sample.

Based on an evaluation of technical data using the EPA HRS model criteria, no further action under CERCLA is recommended at the Daisy Mine site.

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The contaminant sources at L-Bar/Northwest Magnesite includes a magnesite pile, and flux bar and flux bar residue. The magnesite residue pile measures approximately 30 feet deep and 17 acres in area. Past operating practices and inadequate storage of flux bar and flux bar residue have resulted in elevated levels of mostly chloride and ammonia in shallow groundwater and surface water. Most of the materials remaining on the plant have continued to leach salts and ammonia into shallow groundwater and surface water in two ditches. (Ecology 2001)

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Sediment samples were collected at two PPEs by the START-2 in the West Ditch. One downstream sediment sample was also collected from the West Ditch and one sediment sample was collected from the Colville River.

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Lead was detected at an elevated concentration in the Colville River sample; however, this analyte was not similarly detected in PPE samples.

Based on an evaluation of technical data using the EPA HRS model criteria, further action under CERCLA or other authorities is recommended at the L-Bar/Northwest Magnesite site. A Cleanup Action

Plan for the site was approved by Ecology in June 2000 requiring source removal, monitoring, and institutional controls.

8.1.3 Northwest Alloys

The plant is contained within gates and hillsides. There is no overland flow from the site directly into the Colville River due to topography. A potential overland flow exists on the western portion of the plant. The overland flow potentially flows through ditches (PPE 1) south towards Stensgar Creek. Stensgar Creek, located south of the plant, maintains brown trout. Stensgar Creek feeds into the Colville River. One PPE sample and two target/receptor samples were collected.

Samples collected in the ditch at PPE 1 contained elevated concentrations of arsenic (4.9 mg/kg), copper (18.7 mg/kg), lead (7.5 mg/kg), and zinc (47.9 mg/kg). No elevated concentrations of TAL metals were detected in target/receptor samples.

Based on an evaluation of technical data using the EPA HRS model criteria, no further action under CERCLA is recommended at the Northwest Alloys site. However, voluntary cleanup actions currently are being carried out at the site under the Model Toxics Cleanup Authority, Voluntary Cleanup Program administered by Ecology's Industrial Section.

8.1.4 Napoleon Mine/Mill

The mine/mill area consisted of an adit measuring 5 feet by 4 feet located south of the dirt road entrance. There was no evidence of tailings or waste rock present on the property. The adit discharge flowed across the dirt road, down the hillside approximately 120 feet before entering an intermittent creek (PPE 1). Iron staining was present on the soil and the dirt road. There was no adit discharge at the time of the visit. One surface water sample from the adit was collected. One PPE sample was also collected.

Analytes detected in the discharge from the adit include lead (11.3 μg/L), and zinc (937 μg/L).

Significant levels of TAL metals were detected in the PPE sample including copper (207 mg/kg) and silver (2.3 mg/kg).

Analytical results of samples collected indicate that hazardous substances are migrating to targets/receptors.

Based on an evaluation of technical data using the EPA HRS model criteria, no further action under CERCLA is recommended at the Napoleon Mine/Mill site.

8.1.5 Van Stone Mine/Mill

Samples were collected from potential contaminant source areas at the Van Stone Mine/Mill including a waste rock pile, two tailings piles, 7 stained soil areas, and mine pit water. Four PPE samples were also collected.

Surface soil samples collected from source areas contained significant concentrations of TAL metals including cadmium (940 mg/kg), lead (181,000 mg/kg), mercury (6.0 mg/kg), and zinc (431,000 mg/kg).

The PPE samples contained elevated concentrations of TAL metals including cadmium (11.9 mg/kg) and zinc (3,670 mg/kg).

In the past, the mine, slurry flume, and tailings piles were likely a source of sediment to streams in the Onion Creek watershed. Based on aerial photo evidence and anecdotal reports from area residents, the slurry flume periodically broke, and the tailings slurry was dumped into the stream north of the old tailings pile for hours at a time before the break was discovered and repaired. In addition, it is reported that the old tailings pile wall was breached at least once in the past, transporting tailings material into the stream. (Boise Cascade Corporation 1997)

The new tailings pile is not reported to have had any major erosion occurrences; however, there is a layer of tailings material several feet thick covering the stream valley north of the new tailings pile (Boise Cascade Corporation 1997).

At present, the steep outer walls of the tailings piles are subject to surface erosion, as evidenced by the rills and gullies developed on the walls. A small berm has been made around the tailings piles to contain eroded material and is effective in containing eroded material. The owner is testing erosion control methods on the tailings pile walls. (Boise Cascade Corporation 1997)

Analytical results of samples collected indicate that hazardous substances are migrating to targets/receptors.

Based on an evaluation of technical data using the EPA HRS model criteria, further action under CERCLA or other authorities is recommended at the Van Stone Mine/Mill site.

8.1.6 LeRoi/Northport Smelter

Samples were collected from potential contaminant source areas at the LeRoi/Northport Smelter including surface soil west of the former tailings area underneath slag bricks, sediment from slag areas along the Columbia River adjacent to the smelter (PPE 3), and sediment in the western portion of the recently constructed ditch where the former tailings pile was located (PPE 1 and PPE 2).

Surface soil samples from source areas contained significant concentrations of TAL metals including arsenic (297 mg/kg JL), cadmium (105 mg/kg), lead (10,500 mg/kg), mercury (0.40 mg/kg), and zinc (5,420 mg/kg).

Sediment samples collected from the Columbia River contained elevated concentrations of TAL metals including arsenic (41.4 mg/kg), cadmium (4.9 mg/kg), copper (2,960 mg/kg), lead (845 mg/kg JK), mercury (0.29 mg/kg), and zinc (16,900 mg/kg).

The ditch PPE samples contained elevated concentrations of TAL metals including arsenic (39.9 mg/kg JK), cadmium (5.9 mg/kg JK), copper (1,090 mg/kg), lead (887 mg/kg JK), and zinc (223 mg/kg).

Analytical results of samples collected indicate that hazardous substances are migrating to targets/receptors.

Based on an evaluation of technical data using the EPA HRS model criteria, further action under CERCLA or other authorities is recommended at the LeRoi/Northport Smelter site.

8.1.7 Black Rock Mine/Mill

Samples were collected from potential contaminant source areas at the Black Rock Mine/Mill including a waste rock pile and soil near the collapsed mill building. No PPEs were identified by the START-2.

Soil samples collected from source areas contained significant concentrations of TAL metals including cadmium (1,630 mg/kg), lead (6,520 mg/kg), mercury (26.4 mg/kg) and zinc (402,000 mg/kg).

Based on an evaluation of technical data using the EPA HRS model criteria, no further action under CERCLA is recommended at the Black Rock Mine/Mill site.

8.1.8 Great Western Mine

Samples were collected from potential contaminant source areas at the Great Western Mine including two waste rock piles. No PPEs were identified by the START-2.

Samples collected from the waste rock piles contained significant concentrations of TAL metals including cadmium (490 mg/kg JL), lead (24,000 mg/kg), mercury (4.3 mg/kg), and zinc (118,000 mg/kg JK).

Based on an evaluation of technical data using the EPA HRS model criteria, no further action under CERCLA is recommended at the Great Western Mine site.

8.1.9 Last Chance Mine/Mill

Samples were collected from potential contaminant source areas at the Last Chance Mine/Mill including waste rock piles, tailings pile, soil from the former mill building area, and adit discharge. Two PPE samples were also collected.

Surface soil samples collected from the waste rock piles, tailings pile, and the former mill building area contained significant concentrations of TAL metals including cadmium (518 mg/kg JH), lead (170,000 mg/kg), mercury (2.7 mg/kg), and zinc (112,000 mg/kg).

The PPE samples contained elevated concentrations of TAL metals including cadmium (56.9 mg/kg JH), lead (14,600 mg/kg), mercury (1.2 mg/kg), and zinc (13,400 mg/kg).

Analytical results of samples collected indicate that hazardous substances are migrating to targets/receptors.

Based on an evaluation of technical data using the EPA HRS model criteria, further action under CERCLA or other authorities is recommended at the Last Chance Mine/Mill site.

8.1.10 Deep Creek Mine

Samples were collected from potential contaminant source areas at the Deep Creek Mine including waste rock piles, tailings piles, and adit discharge. One PPE sample was also collected.

Surface soil samples collected from the waste rock piles and tailings piles contained significant concentrations of TAL metals including cadmium (425 mg/kg), lead (13,300 mg/kg), mercury (3.2 mg/kg), and zinc (123,000 mg/kg).

Analytes detected in the discharge from the adit include lead (12.9 μg/L), and zinc (558 μg/L).

No elevated concentrations of TAL metals were detected in the PPE sample.

Based on an evaluation of technical data using the EPA HRS model criteria, no further action under CERLCA is recommended at the Deep Creek Mine site.

8.1.11 Copper King Mine

Samples were collected from potential source areas at the Copper King Mine including waste rock pile and adit discharge. One PPE sample was also collected.

Surface soil samples collected from the waste rock pile contained significant concentrations of TAL metals including copper (1,700 mg/kg), selenium (18.9 mg/kg), and thallium (3.7 mg/kg).

Analytes detected in the discharge from the adit include lead (17.9 μg/L), and zinc (180 μg/L).

No elevated concentrations of TAL metals were detected in the PPE sample.

Based on an evaluation of technical data using the EPA HRS model criteria, no further action under CERCLA is recommended at the Copper King Mine site.

8.1.12 Sierra Zinc Mine/Mill

Samples were collected from potential contaminant source areas at the Sierra Zinc Mine/Mill including waste rock pile, tailings pile area, soil from mill area, and adit discharge.

Surface soil samples collected from the waste rock pile and tailings pile area contained significant concentrations of TAL metals including cadmium (130 mg/kg), lead (15,800 mg/kg), mercury (2.7 mg/kg JL), and zinc (33,400 mg/kg).

Analytes detected in the discharge from the adit include zinc (292 μg/L).

Based on an evaluation of technical data using the EPA HRS model criteria, no further action under CERCLA is recommended at the Sierra Zinc Mine/Mill site.

8.1.13 Electric Point Mine/Mill

Samples were collected from potential contaminant source areas at the Electric Point Mine/Mill including waste rock piles, tailings pond, and soil from the mill area. No PPEs were identified by the START-2.

Surface soil samples collected from source areas contained significant concentrations of TAL metals including cadmium (25.0 mg/kg JL), lead (97,800 mg/kg), and zinc (33,800 mg/kg).

Based on an evaluation of technical data using the EPA HRS model criteria, no further action under CERCLA is recommended at the Electric Point Mine/Mill site.

8.1.14 Gladstone Mine/Mill

Samples were collected from potential contaminant source areas at the Gladstone Mine/Mill including tailings pile and soil from the potential mill area. No PPEs were identified by the START-2.

Surface soil samples collected from source areas contained significant concentrations of lead (94,000 mg/kg), mercury (0.30 mg/kg), and zinc (10,500 mg/kg).

Based on an evaluation of technical data using the EPA HRS model criteria, no further action under CERCLA is recommended at the Gladstone Mine/Mill site.

8.1.15 Red Top Mine

Samples were collected from potential contaminant source areas at the Red Top Mine including a waste rock pile. No PPEs were identified by the START-2.

Surface soil samples collected from the waste rock pile contained significant concentrations for cadmium (177 mg/kg JH), lead (28,900 mg/kg), mercury (1.1 mg/kg), and zinc (15,700 mg/kg).

Based on an evaluation of technical data using the EPA HRS model criteria, no further action under CERCLA is recommended at the Red Top Mine site.

8.1.16 Anderson Calhoun Mine/Mill

Samples were collected from potential contaminant source areas at the Anderson Calhoun Mine/Mill including tailings piles, stained surface soil areas, and mine/mill pit water. One PPE sample was also collected.

Surface soil samples collected from the tailings pile and stained soil area contained significant concentrations of TAL metals including cadmium (129 mg/kg), lead (2,190 mg/kg), mercury (0.35 mg/kg), and zinc (49,000 mg/kg).

Analytes detected in the mine/mill pit water include lead (192 μg/L) and zinc (1,480 μg/L).

The PPE sample contained elevated concentrations of TAL metals including arsenic (10.0 mg/kg), cadmium (7.5 mg/kg), lead (320 mg/kg), mercury (0.17 mg/kg), and zinc (3,250 mg/kg). Analytical results of samples collected indicate that hazardous substances are migrating to targets/receptors.

Based on an evaluation of technical data using the EPA HRS model criteria, further action under CERCLA or other authorities is recommended at the Anderson Calhoun Mine/Mill site.

8.1.17 Iroquois Mine

Samples were collected from potential contaminant source areas at the Iroquois Mine including waste rock pile and adit discharge. No PPEs were identified by the START-2.

Surface soil samples collected from the waste rock pile contained significant concentrations of TAL metals including cadmium (39.1 mg/kg), mercury (0.49 mg/kg), and zinc (12,300 mg/kg).

Analytes detected in the adit discharge include zinc (583 μg/L).

Based on an evaluation of technical data using the EPA HRS model criteria, no further action under CERCLA is recommended at the Iroquois Mine site.

8.1.18 Melrose Mine

Samples were collected from potential contaminant source areas at Melrose Mine including adit discharge. One PPE sample was also collected.

Analytes detected in the adit discharge include zinc (433 μg/L).

The PPE sample contained elevated concentrations of TAL metals including cadmium (22.8 mg/kg JH) and zinc (1,650 mg/kg).

Analytical results of samples collected indicate that hazardous substances are migrating to targets/receptors.

Based on an evaluation of technical data using the EPA HRS model criteria, no further action under CERCLA is recommended at the Melrose Mine site.

Table 8-1

CERCLA RECOMMENDATIONS
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA CERCLIS Number	Site Name	CERCLA Activity Type	Recommendation
WAN001002371	Daisy Mine	Preliminary Assessment/Site Inspection	No further action under CERCLA.
WAD097824577	L-Bar/Northwest Magnesite	Preliminary Assessment/Site Inspection	Further action under CERCLA.
WAD094626868	Northwest Alloys	Preliminary Assessment/Site Inspection	No further action under CERCLA.
WAN001002391	Napoleon Mine/Mill	Preliminary Assessment/Site Inspection	No further action under CERCLA.
WAN001002374	First Thought Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002384	Lottie Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002378	Homestake No. 1 Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002368	Antelope Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002380	Hubbard Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002392	New Leadville Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002395	R.J. Mine	Preliminary Assessment	No further action under CERCLA.
WAD980834808	Van Stone Mine/Mill	Preliminary Assessment/Site Inspection	Further action under CERCLA.
WAN001002379	Hope & Twin Cabins Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002398	St. Crispin Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002393	Northport Mill	Preliminary Assessment	No further action under CERCLA.
WAD988507323	LeRoi/Northport Smelter	Preliminary Assessment/Site Inspection	Further action under CERCLA.
WAN001002369	Black Rock Mine/Mill	Preliminary Assessment/Site Inspection	No further action under CERCLA.
WAN001002377	Great Western Mine	Preliminary Assessment/Site Inspection	No further action under CERCLA.
WASFN1002162	Last Chance Mine/Mill	Preliminary Assessment/Site Inspection	Further action under CERCLA.
WASFN1002161	Deep Creek Mine	Preliminary Assessment/Site Inspection	No further action under CERCLA.
WAN001002370	Copper King Mine	Preliminary Assessment/Site Inspection	No further action under CERCLA.
WAN001002396	Sierra Zinc Mine/Mill	Preliminary Assessment/Site Inspection	No further action under CERCLA.
WAN001002387	Magma Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002373	Farmer Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002388	Maki Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002372	Electric Point Mine/Mill	Preliminary Assessment/Site Inspection	No further action under CERCLA.
WAN001002376	Gladstone Mine/Mill	Preliminary Assessment/Site Inspection	No further action under CERCLA.
WAN001002386	Lucky Four Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002394	Red Top Mine	Preliminary Assessment/Site Inspection	No further action under CERCLA.
WAN001002309	Anderson Calhoun Mine/Mill	Preliminary Assessment/Site Inspection	Further action under CERCLA.
WAN001002385	Lucile Mine	Preliminary Assessment	No further action under CERCLA.

Table 8-1

CERCLA RECOMMENDATIONS
UPPER COLUMBIA RIVER MINES AND MILLS
PRELIMINARY ASSESSMENTS AND SITE INSPECTIONS
STEVENS COUNTY, WASHINGTON

EPA CERCLIS Number	Site Name	CERCLA Activity Type	Recommendation
WAN001002381	Iroquis Mine	Preliminary Assessment/Site Inspection	No further action under CERCLA
WAN001002397	Silver Queen Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002389	Melrose Mine	Preliminary Assessment/Site Inspection	No further action under CERCLA.
WAN001002383	Lakeview Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002382	Jackson Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002375	Frisco-Standard Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002390	Myeerah Mine	Preliminary Assessment	No further action under CERCLA.
WAN001002399	United Treasure Mine	Preliminary Assessment	No further action under CERCLA.

Key

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980.

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APPENDIX A

PHOTOGRAPHIC DOCUMENTATION

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 6279466 **TDD No. 01-02-0028**
Lens Type: 35-70 mm zoom **Upper Columbia River ESI -Van Stone Mine**

Photo No.	Date	Time	By	Direction	Description
1-1	6/22/01	1243	LD	W	View of tailings pile No. 1 at entrance to Van Stone Mine.
1-2	6/22/01	1244	LD	NW	View of tailings pile No. 1 at entrance to Van Stone Mine.
1-3	6/22/01	1245	LD	NW	View of tailings pile No. 1 at entrance to Van Stone Mine.
1-4	6/22/01	1247	LD	W	View of south side of tailings pile No. 1 at Van Stone Mine.
1-5	6/22/01	1250	LD	W	View of south side of tailings pile No. 1 at Van Stone Mine.
1-6	6/22/01	1255	LD	NW	View of west side of tailings pile No. 1 at Van Stone Mine.
1-7	6/22/01	1258	LD	N	View of tailings pile No. 1 from entrance road to Van Stone Mine.
1-8	6/22/01	1259	LD	NE	View of tailings pile No. 1 from entrance road to Van Stone Mine.
1-9	6/22/01	1300	LD	E	View of tailings pile No. 1 from entrance road to Van Stone Mine.
1-10	6/22/01	1303	LD	S	View of sign to Van Stone Mine.
1-11	6/22/01	1315	LD	SW	View of old tailings pile No. 2 at Van Stone Mine. Note surface water drainage routes in foreground and black liner in tailings pond area in background.
1-12	6/22/01	1320	LD	NE	View of entrance road to old tailings pile No. 2 from old tailings pile at Van Stone Mine.
1-13	6/22/01	1321	LD	SE	Panoramic view of tailings pond in old tailings pile at Van Stone Mine. Note breached and dilapidated liner.
1-14	6/22/01	1322	LD	S	Panoramic view of tailings pond in old tailings pile at Van Stone Mine. Note breached and dilapidated liner.
1-15	6/22/01	1323	LD	SW	Panoramic view of tailings pond in old tailings pile at Van Stone Mine. Note breached and dilapidated liner.
1-16	6/22/01	1330	LD	N	View (from south side) of tailings pond at Van Stone Mine.
1-17	6/22/01	1331	LD	NW	View of road composed of tailings leading to old tailings pile at Van Stone Mine.
1-18	6/22/01	1332	LD	SW	View of old tailings pile and tailings pond from upper road at Van Stone Mine. Note the left side of pile, which is where the pile collapsed in 1961.
1-19	6/22/01	1333	LD	E	View of surface water drainage route leading into old tailings pile at Van Stone Mine.
1-20	6/22/01	1335	LD	NW	View of diversion trench which surrounds the old tailings pile at Van Stone Mine.
1-21	6/22/01	1336	LD	NW	Panoramic view of old tailings pile at Van Stone Mine.
1-22	6/22/01	1337	LD	SW	Panoramic view of old tailings pile at Van Stone Mine.
1-23	6/22/01	1338	LD	S	Panoramic view of old tailings pile at Van Stone Mine.
1-24	6/22/01	1340	LD	SW	View of blowout area of old tailings pile at Van Stone Mine.
2-1	6/22/01	1345	LD	SW	Panoramic view (from blowout area at Van Stone Mine) of old tailings pile.
2-2	6/22/01	1346	LD	S	Panoramic view (from blowout area at Van Stone Mine) of old tailings pile.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 6279466 **TDD No. 01-02-0028**
Lens Type: 35-70 mm zoom **Upper Columbia River ESI -Van Stone Mine**

Photo No.	Date	Time	By	Direction	Description
2-3	6/22/01	1347	LD	SE	Panoramic view (from blowout area at Van Stone Mine) of old tailings pile.
2-4	6/22/01	1348	LD	SE	Panoramic view (from blowout area at Van Stone Mine) of old tailings pile.
2-5	6/22/01	1349	LD	E	Panoramic view (from blowout area at Van Stone Mine) of old tailings pile.
2-6	6/22/01	1350	LD	NE	Panoramic view (from blowout area at Van Stone Mine) of old tailings pile.
2-7	6/22/01	1351	LD	N	Panoramic view (from blowout area at Van Stone Mine) of old tailings pile.
2-8	6/22/01	1352	LD	NW	Panoramic view (from blowout area at Van Stone Mine) of old tailings pile.
2-9	6/22/01	1352	LD	SW	View of Van Stone Mine sign located 1.1 miles from the old tailings pond and pile.
2-10	6/22/01	1406	LD	E	View of AST with secondary containment at Van Stone Mine.
2-11	6/22/01	1407	LD	NE	View of the AST with secondary containment showing standing water. Note breach in containment (front, right of the photograph).
2-12	6/22/01	1410	LD	S	View of core sample storage area, fire hose and cart, and car parking area at Van Stone Mine.
2-13	6/22/01	1415	LD	S	View of office building at Van Stone Mine.
2-14	6/22/01	1420	LD	SE	View of lab building at Van Stone Mine.
2-15	6/22/01	1423	LD	SW	View of covered parking structure at Van Stone Mine.
2-16	6/22/01	1425	LD	SE	View of shower/washroom adjacent to mine building at Van Stone Mine.
2-17	6/22/01	1430	LD	SW	View of holding tank for either lead or zinc tailings, which are concentrated toward the center and then are pumped to the tailings pond/pile area at Van Stone Mine.
2-18	6/22/01	1435	LD	NE	View of disconnected 8-inch pipe, with office building in background, at Van Stone Mine.
2-19	6/22/01	1438	LD	E	View of Van Stone Mine mine building containing jaw crusher, conveyor belts, grinder, and sieve.
2-20	6/22/01	1439	LD	SE	View of Van Stone Mine mine building containing jaw crusher, conveyor belts, grinder, and sieve.
2-21	6/22/01	1440	LD	NE	Another view of mine building at Van Stone Mine.
2-22	6/22/01	1445	LD	N	View of AST labeled A.P. gas (gauge indicated tank was empty) resting on cement blocks at Van Stone Mine.
2-23	6/22/01	1446	LD	NE	View of conveyor into upper mill building at Van Stone Mine.
2-24	6/22/01	1447	LD	E	View of conveyors into upper mill building at Van Stone Mine.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 6279466 | TDD No. 01-02-0028
Lens Type: 35-70 mm zoom | Upper Columbia River ESI -Van Stone Mine

Photo No.	Date	Time	By	Direction	Description
2-25	6/22/01	1448	LD	SE	View of conveyors into upper mill building at Van Stone Mine.
3-1	6/22/01	1450	LD	S	View of concrete foundation of potential former building at Van Stone Mine. Note transformers.
3-2	6/22/01	1455	LD	NE	Another view of mine building at Van Stone Mine.
3-3	6/22/01	1456	LD	W	View of stockpiled piping (approximately four bundles of 6- or 8-inch-diameter piping) at Van Stone Mine.
3-4	6/22/01	1500	LD	E	Panoramic view (near entrance to waste rock area) of waste rock piles at Van Stone Mine.
3-5	6/22/01	1501	LD	E	Panoramic view (near entrance to waste rock area) of waste rock piles at Van Stone Mine.
3-6	6/22/01	1502	LD	SE	Panoramic view (near entrance to waste rock area) of waste rock piles at Van Stone Mine.
3-7	6/22/01	1503	LD	S	Panoramic view (near entrance to waste rock area) of waste rock piles at Van Stone Mine.
3-8	6/22/01	1510	LD	NE	Overview of waste rock area at Van Stone Mine.
3-9	6/22/01	1511	LD	W	View of base of one waste rock pile at Van Stone Mine.
3-10	6/22/01	1518	LD	NE	View of waste rock piles at Van Stone Mine.
3-11	6/22/01	1519	LD	E	View of waste rock piles at Van Stone Mine.
3-12	6/22/01	1520	LD	SE	View of waste rock piles at Van Stone Mine.
3-13	6/22/01	1521	LD	NW	View of waste rock pile at Van Stone Mine.
3-14	6/22/01	1525	LD	N	View of disposed of garbage at Van Stone Mine.
3-15	6/22/01	1553	LD	E	Panoramic view of water-filled mining pit at Van Stone Mine.
3-16	6/22/01	1554	LD	SE	Panoramic view of water-filled mining pit at Van Stone Mine.
3-17	6/22/01	1555	LD	S	Panoramic view of water-filled mining pit at Van Stone Mine.
3-18	6/22/01	1556	LD	NE	View of tunnel and shaft at Van Stone Mine.
3-19	6/22/01	1557	LD	NE	Panoramic view of pit and hillside at Van Stone Mine.
3-20	6/22/01	1558	LD	E	Panoramic view of pit and hillside at Van Stone Mine.
3-21	6/22/01	1559	LD	S	Panoramic view of pit and hillside at Van Stone Mine.
3-22	6/22/01	1600	LD	NW	View (from mine pit) of waste rock at Van Stone Mine.
3-23	6/22/01	1608	LD	SE	View of south side of water-filled pit at Van Stone Mine.
3-24	6/22/01	1609	LD	SW	View of pit water overflowing down embankment (into an adjacent creek) at Van Stone Mine.
3-25	6/22/01	1610	LD	S	View of piping heading up to the south pit; piping is wooden at Van Stone Mine.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 6279466 **TDD No. 01-02-0028**
Lens Type: 35-70 mm zoom **Upper Columbia River ESI -Van Stone Mine**

Photo No.	Date	Time	By	Direction	Description
4-1	6/22/01	1611	LD	SW	Close-up view of creek adjacent to water-filled pit at Van Stone Mine.
4-2	6/22/01	1615	LD	SE	View of surface water runoff drainage pathways, currently dry, into the water-filled pit at Van Stone Mine.
4-3	6/22/01	1623	LD	E	View of ASTs, drums, and 5-gallon buckets at Van Stone Mine. No markings were noted on the drums.
4-4	6/22/01	1624	LD	E	Close-up view of stained soil underneath AST "TK-1" at Van Stone Mine.
4-5	6/22/01	1625	LD	NE	View of water storage tank at Van Stone Mine.
4-6	6/22/01	1627	LD	SE	View of stained soil underneath AST "N/L" at Van Stone Mine.
4-7	6/22/01	1630	LD	S	View of abandoned shed at Van Stone Mine.
4-8	6/22/01	1632	LD	W	View of loading area with eleven 55-gallon drums and two 15-gallon drums at Van Stone Mine.
4-9	6/22/01	1640	LD	SE	Close-up view of half-buried AST at Van Stone Mine.
4-10	6/22/01	1641	LD	down	View of soil stained from contents of a 55-gallon drum at Van Stone Mine.
4-11	6/22/01	1700	LD	S	View of Roundup Powder Company building at Van Stone Mine.
4-12	6/22/01	1702	LD	W	View of Roundup Powder Company building at Van Stone Mine.
4-13	6/22/01	1706	LD	N	View of five abandoned 55-gallon drums at Van Stone Mine.
4-14	6/22/01	1708	LD	N	View of shed at Van Stone Mine.
4-15	6/22/01	1708	LD	SE	View of maintenance shop at Van Stone Mine.
4-16	6/22/01	1709	LD	S	Another view of maintenance shop at Van Stone Mine.
4-17	6/22/01	1710	LD	SE	View of mill building at Van Stone Mine.
4-18	6/22/01	1711	LD	N-NE	View of another machine shop at Van Stone Mine.
4-19	6/22/01	1715	LD	NE-E	View of steel balls, stored in 55-gallon drums, and other debris at Van Stone Mine.
4-20	6/22/01	1717	LD	SW	View of metal debris at Van Stone Mine.
4-21	6/22/01	1720	LD	E	Close-up view of three transformers and piled soil (on concrete pad) at Van Stone Mine.
4-22	6/22/01	1722	LD	SE	View of the start of runoff to the concrete pad where a sheen was noted at Van Stone Mine.
4-23	6/22/01	1728	LD	N	View of orange-stained soil originating underneath mill building and green wall at Van Stone Mine.
4-24	6/22/01	1730	LD	W	View of three transformers near mill building at Van Stone Mine.
4-25	6/22/01	1732	LD	S	View of saturated soil with unknown origin at Van Stone Mine.
5-1	6/23/01	1055	TK	E	View of Van Stone Mine spring sample location VSSP01SW.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 6279466 **TDD No. 01-02-0028**
Lens Type: 35-70 mm zoom **Upper Columbia River ESI -Van Stone Mine**

Photo No.	Date	Time	By	Direction	Description
5-2	6/23/01	1125	TK	NW	View of Van Stone Mine sample location VSPP03* at the unnamed creek (below the water-filled pit).
5-3	6/23/01	1127	TK	down	View of Van Stone Mine sample VSPP03SD*.
5-4	6/23/01	1145	TK	NW	View of Van Stone Mine sample location VSMW01SD/SW. Note discharge area (left background).
5-5	6/23/01	1355	TK	SE	View of Van Stone Mine PPE No. 4* sample and location.
5-6	6/23/01	1405	TK	N	View of failure in Van Stone Mine old tailings pile. Note motorbike tracks on tailings.
5-7	6/23/01	1420	RN	W	View (from upper tailings pond) of Van Stone Mine lower tailings pond. Note breach on the right side.
5-8	6/23/01	1426	TK	N	View of Van Stone Mine tailings piles and waste rock piles (background). Photograph was taken from main entrance road.
5-9	6/23/01	1509	RN	SW	View of Van Stone Mine unnamed creek on Boise Cascade property. Location of sample VSPPBC01, potential PPE.
5-10	6/23/01	1512	RN	SW	View of Van Stone Mine additional unnamed creek on Boise Cascade property. Location of sample VSPPBC02, potential PPE.
6-1	6/23/01	1041	DW	SW	Vicinity of sample VSWP01SS* at Van Stone Mine.
6-2	6/23/01	1043	DW	SW	View of sample VSWP01SS* at Van Stone Mine.
6-3	6/23/01	1106	DW	S	Vicinity of sample VSWP02SS* at Van Stone Mine.
6-4	6/23/01	1108	DW	S	View of sample VSWP02SS* at Van Stone Mine.
6-5	6/23/01	1152	DW	SE	Vicinity of sample VSWP03SS* at Van Stone Mine.
6-6	6/23/01	1153	DW	SE	View of sample VSWP03SS* at Van Stone Mine.
6-7	6/23/01	1217	DW	E	Vicinity of sample VSWP04SS* at Van Stone Mine.
6-8	6/23/01	1219	DW	E	View of sample VSWP04SS* at Van Stone Mine.
6-9	6/23/01	1243	DW	E	Vicinity of sample VSWP05SS* at Van Stone Mine.
6-10	6/23/01	1245	DW	E	View of sample VSWP05SS* at Van Stone Mine.
6-11	6/23/01	1338	DW	E	Vicinity of sample VSWP06SS* at Van Stone Mine.
6-12	6/23/01	1339	DW	E	View of sample VSWP06SS* at Van Stone Mine.
6-13	6/23/01	1400	DW	SE	Vicinity of sample VSWP07SS* at Van Stone Mine.
6-14	6/23/01	1401	DW	SE	View of sample VSWP07SS* at Van Stone Mine.
6-15	6/23/01	1420	DW	SE	Vicinity of sample VSWP08SS* at Van Stone Mine.
6-16	6/23/01	1421	DW	SE	View of sample VSWP08SS* at Van Stone Mine.
6-17	6/23/01	1443	DW	SE	Vicinity of sample VSWP09SS* at Van Stone Mine.
6-18	6/23/01	1445	DW	SE	View of sample VSWP09SS* at Van Stone Mine.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 6279466 **TDD No. 01-02-0028**
Lens Type: 35-70 mm zoom **Upper Columbia River ESI -Van Stone Mine**

Photo No.	Date	Time	By	Direction	Description
6-19	6/23/01	1518	DW	E	Vicnity of sample VSWP10SS* at Van Stone Mine.
6-20	6/23/01	1519	DW	E	View of sample VSWP10SS* at Van Stone Mine.
6-21	6/23/01	1537	DW	E	Vicinity of sample VSWP11SS* at Van Stone Mine.
6-22	6/23/01	1538	DW	E	View of sample VSWP11SS* at Van Stone Mine.
6-23	6/23/01	1557	DW	SE	Vicinity of sample VSWP12SS* at Van Stone Mine.
6-24	6/23/01	1559	DW	SE	View of sample VSWP12SS* at Van Stone Mine.
7-1	6/22/01	1220	MW	down	View of sample VSTP01SS at Van Stone Mine.
7-2	6/22/01	1220	MW	N	Sample location VSTP01SS at Van Stone Mine.
7-3	6/22/01	1250	MW	down	View of sample VSPP01SD at tailings pile No. 1 at Van Stone Mine.
7-4	6/22/01	1250	MW	S	Cross-section of sample VSTP21SS*, collected approximately 0 to 7 inches below ground surface at Van Stone Mine.
7-5	6/22/01	1250	MW	W	Sample location VSTP21SS* at Van Stone Mine.
7-6	6/22/01	1325	MW	down	View of sample VSPP02SD at Van Stone Mine.
7-7	6/22/01	1325	MW	W	View downstream from sample location VSPP02SD at Van Stone Mine.
7-8	6/22/01	1550	MW	down	View of sample VSTP01SS at Van Stone Mine.
7-9	6/22/01	1550	MW	N	Sample location VSTP01SS at Van Stone Mine.
7-10	6/22/01	1552	MW	down	View of sample VSTP02SS at Van Stone Mine.
7-11	6/22/01	1552	MW	N	Sample location VSTP02SS at Van Stone Mine.
7-12	6/22/01	1555	AJ	down	View of sample VSTP03SS at Van Stone Mine.
7-13	6/22/01	1555	AJ	N	Sample location VSTP03SS at Van Stone Mine.
7-14	6/22/01	1600	MW	down	View of sample location VSTP04SS at Van Stone Mine.
7-15	6/22/01	1600	MW	E	Sample location VSTP04SS at Van Stone Mine.
7-16	6/22/01	1602	MW	down	View of sample VSTP05SS at Van Stone Mine.
7-17	6/22/01	1602	MW	E	Sample location VSTP05SS at Van Stone Mine.
7-18	6/22/01	1614	MW	down	View of sample VSTP06SS at Van Stone Mine.
7-19	6/22/01	1614	MW	E	Sample location VSTP06SS at Van Stone Mine.
8-1	6/22/01	1616	MW	down	View of sample VSTP07SS at Van Stone Mine.
8-2	6/22/01	1616	MW	E	Sample location VSTP07SS at Van Stone Mine.
8-3	6/22/01	1618	MW	down	View of sample VSTP08SS at Van Stone Mine.
8-4	6/22/01	1618	MW	E	Sample location VSTP08SS at Van Stone Mine.
8-5	6/22/01	1620	MW	down	View of sample VSTP09SS at Van Stone Mine.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 6279466 **TDD No. 01-02-0028**
Lens Type: 35-70 mm zoom **Upper Columbia River ESI -Van Stone Mine**

Photo No.	Date	Time	By	Direction	Description
8-6	6/22/01	1620	MW	E	Sample location VSTP09SS at Van Stone Mine.
8-7	6/23/01	0920	MW	down	View of sample VSSS01SS at Van Stone Mine.
8-8	6/23/01	0920	MW	NE	Sample location VSSS01SS at Van Stone Mine.
8-9	6/23/01	0945	MW	down	View of sample location VSSS02SS at Van Stone Mine.
8-10	6/23/01	0945	MW	N	Sample location VSSS01SS at Van Stone Mine. Note transformers and mine building.
8-11	6/23/01	1015	MW	down	Sample location VSSS03SS at Van Stone Mine.
8-12	6/23/01	1015	MW	NE	Vicinity of sample location VSSS03SS and view of AST at Van Stone Mine. Note breach in containment area.
8-13	6/23/01	1050	MW	down	View of sample location VSSS04SS where transformers were dumped at Van Stone Mine.
8-14	6/23/01	1050	MW	E	Sample location VSSS04SS where transformers were dumped at Van Stone Mine.
8-15	6/23/01	1055	MW	down	View of sample location VSSS05SS at Van Stone Mine.
8-16	6/23/01	1055	MW	E	Sample location VSSS05SS at Van Stone Mine.
8-17	6/23/01.	1057	MW	E	Overall view of sample VSSS04SS (collected from piled soil) at Van Stone Mine.
8-18	6/23/01	1057	MW	SE	Overall view of VSSS04SS (collected from piled soil) at Van Stone Mine.
8-19	6/23/01	1115	MW	E	View of drum storage area at Van Stone Mine.
8-20	6/23/01	1115	MW	W	View of AST storage area at Van Stone Mine.
8-21	6/23/01	1130	AJ	down	View of sample VSSS06SS at Van Stone Mine.
8-22	6/23/01	1130	MW	E	Sample location VSSS06SS at Van Stone Mine.
8-23	6/23/01	1135	MW	down	View of sample location VSSS07SS at Van Stone Mine.
8-24	6/23/01	1135	MW	W	Sample location VSSS07SS at Van Stone Mine.
9-1	6/23/01	1145	MW	E	View of ASTs inside containment area at Van Stone Mine. No stains or odor was noted.
9-2	6/23/01	1145	MW	N	View of ASTs inside containment area at Van Stone Mine. No stains or odor was noted.
9-3	6/23/01	1200	MW	W	View of stained soil near a 55-gallon drum at Van Stone Mine. Approximately 2 square feet of stained soil was present; no sample was collected.
9-4	6/23/01	1410	MW	down	View of sample VSTP10SS at Van Stone Mine.
9-5	6/23/01	1410	MW	SE	View (toward old tailings pile) of sample location VSTP10SS at Van Stone Mine.
9-6	6/23/01	1411	MW	down	View of sample VSTP11SS at Van Stone Mine.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 6279466 **TDD No. 01-02-0028**
Lens Type: 35-70 mm zoom **Upper Columbia River ESI -Van Stone Mine**

Photo No.	Date	Time	By	Direction	Description
9-7	6/23/01	1411	MW	SE	View (toward old tailings pile) of sample location VSTP11SS at Van Stone Mine.
9-8	6/23/01	1412	MW	down	View of sample VSTP12SS at Van Stone Mine.
9-9	6/23/01	1412	MW	SE	View (toward old tailings pile) of sample location VSTP12SS at Van Stone Mine.
9-10	6/23/01	1415	MW	down	View of sample VSTP15SS at Van Stone Mine.
9-11	6/23/01	1415	MW	SE	View (toward old tailings pile) of sample location VSTP15SS at Van Stone Mine.
9-12	6/23/01	1418	MW	down	Blurred photograph of sample VSTP18SS at Van Stone Mine.
9-13	6/23/01	1418	MW	SE	View (toward old tailings pile) of sample location VSTP18SS at Van Stone Mine.
9-14	6/23/01	1500	MW	down	View of sample VSTP13SS at Van Stone Mine.
9-15	6/23/01	1500	MW	E	View of sample location VSTP13SS at Van Stone Mine.
9-16	6/23/01	1502	MW	down	View of sample VSTP14SS at Van Stone Mine.
9-17	6/23/01	1502	MW	down	View of sample location VSTP14SS at Van Stone Mine.
9-18	6/23/01	1505	MW	down	View of sample VSTP16SS at Van Stone Mine.
9-19	6/23/01	1505	MW	E	View of sample location VSTP16SS at Van Stone Mine.
9-20	6/23/01	1506	MW	down	View of sample VSTP17SS at Van Stone Mine.
9-21	6/23/01	1506	MW	down	View of sample location VSTP17SS at Van Stone Mine.
9-22	6/23/01	1508	MW	SE	View below tailings pile No. 1 (approximately 15 feet high).
9-23	6/23/01	1508	MW	NE	View below tailings pile No. 1 (approximately 15 feet high).
9-24	6/23/01	1510	MW	down	View of pipe protruding from tailings pile No. 1 near sample location VSTP10SS.
9-25	6/23/01	1520	MW	SW	View of blowout area of old tailings pile. Note motorbike tracks.

* Station location has been changed for consistency purposes.

Key:

AJ = Alan Johnson.
AST = Aboveground storage tank.
DW = Dan Weiss.
E = East.
LD = Leatta Dahlhoff.
mm = Millimeter.
MW = Mark Woodke.
N = North.
NE = Northeast.
No. = Number.
NW = Northwest.
PPE = Probable point of entry.
RN = Renee Nordeen.
S = South.
SE = Southeast.
SW = Southwest.
TK = Tara Karamas.
W = West.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 897924 **TDD No. 01-02-0028**
Lens Type: 35 mm **Upper Columbia River ESI**

Photo No.	Date	Time	By	Direction	Description
10-1	6/18/01	1615	TK	W	View (facing lake from unnamed road off of Route 25) of area where Gold Bar Mine should be located.
10-2	6/18/01	1616	TK	NE	View of hillside where Gold Bar Mine should be located.
10-3	6/19/01	1150	TK	Down	View of potential collapsed shaft/adit (most likely exploratory) of Frisco Standard Mine.
10-4	6/19/01	1155	RN	NW	View of Frisco Standard Mine shaft (most likely collapsed).
10-5	6/19/01	1202	RN	NW	View of another Frisco Standard Mine shaft (most likely collapsed).
10-6	6/19/01	1215	TK	NE	View of the north half of the Frisco Standard Mine waste rock pile.
10-7	6/19/01	1215	TK	NE	View of the south half of the Frisco Standard Mine waste rock pile.
10-8	6/19/01	1425	RN	S	View of Myeerah Mine shack/shed. Note Pure Luck mining claim sign.
10-9	6/19/01	1426	RN	S	View of collapsed adit inside Myeerah Mine shack/shed.
10-10	6/19/01	1427	RN	SE	View of collapsed adit inside Myeerah Mine shack/shed.
10-11	6/19/01	1430	RN	Down	View of Myeerah Mine waste rock pile.
10-12	6/19/01	1432	RN	S	View of Myeerah Mine shack/shed and waste rock pile.
10-13	6/19/01	1435	RN	E	Possible United Treasure Mine structure.
10-14	6/19/01	1437	RN	S	View of United Treasure Mine collapsed structure from Frisco Standard Road.
10-15	6/19/01	1725	RN	W	View of Lakeview Mine location.
10-16	6/20/01	1000	RN	E	View of possible filled shaft of A & C Mine.
10-17	6/20/01	1120	RN	NE	View of adit No. 1 at New Leadville Mine.
10-18	6/20/01	1125	RN	E	View of discharge from New Leadville Mine adit No. 1 to adit No. 2.
10-19	6/20/01	1127	TK	NE	View of New Leadville Mine adit No. 2.
10-20	6/20/01	1129	TK	E	View of New Leadville Mine collapsed cabin structure.
10-21	6/20/01	1130	TK	E	View of New Leadville Mine waste rock pile.
10-22	6/20/01	1150	RN	NE	View of New Leadville Mine collapsed rail structure.
10-23	6/20/01	1400	RN	E	View of United Treasure Mine adit No. 1.
10-24	6/20/01	1402	RN	E	View of United Treasure Mine adits No. 2 and No. 3.
11-1	6/20/01	1610	RN	E	View of RJ Mine adit.
11-2	6/20/01	1610	RN	SE	View of RJ Mine with spray paint indicating mining claim is now known as Eureka Surprise.
11-3	6/20/01	1612	RN	E	View of RJ Mine adit water diversion piping.
11-4	6/20/01	1640	TK	E	View of RJ Mine waste rock pile.
12-1	6/22/01	1110	TK	W	View of Lucile Mine collapsed adit.
12-2	6/22/01	1115	TK	E	View of Lucile Mine waste rock descending down the hillside.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 897924 **TDD No. 01-02-0028**
Lens Type: 35 mm **Upper Columbia River ESI**

Photo No.	Date	Time	By	Direction	Description
12-3	6/22/01	1128	TK	N	View of Lucile Mine overland pathway.
12-4	6/22/01	1215	RN	N	Photograph of gate and no trespassing sign at entrance to Admiral Consolidated Mine and Mill.
12-5	6/22/01	1350	TK	SE	Iroquois Mine. View of sample IRAD01SW being collected from the adit discharge.
12-6	6/22/01	1350	TK	SE	View of Iroquois Mine adit.
12-7	6/22/01	1415	TK	SW	View (from in front of the wood pile) of Iroquois Mine building No. 1.
12-8	6/22/01	1418	TK	E	View of the east side of Iroquois Mine building No. 2. Time is incomplete on white board.
12-9	6/22/01	1419	TK	SE	View of the collapsed middle section of Iroquois Mine building No. 2. Time is incomplete on white board.
12-10	6/22/01	1422	TK	SE	View of Iroquois Mine building No. 3 on the hillside.
12-11	6/22/01	1425	TK	W	View of RN collecting sample IRAD02SW at Iroquois Mine.
12-12	6/22/01	1430	TK	NW	View of where the adit discharges from Iroquois Mine.
12-13	6/22/01	1440	TK	S	View of sample location IRWP01 at Iroquois Mine.
12-14	6/22/01	1442	TK	Down	View of sample IRWP01SS at Iroquois Mine.
12-15	6/22/01	1455	TK	Down	View of sample IRWP02SS at Iroquois Mine.
12-16	6/22/01	1457	TK	S	View of Iroquois Mine sample location IRWP02. Note stream in background where the adit discharges.
12-17	6/22/01	1524	TK	SE	View of Iroquois Mine waste rock pile. The adit discharge is to the right. Note building No. 1 in the background.
13-1	6/25/01	1500	RN	S	View of Jackson Mine adit.
13-2	6/25/01	1505	RN	W	View of Jackson Mine cabin structure.
13-3	6/25/01	1510	RN	E	View of Jackson Mine property boundary (to dead tree leaning to the left).
14-1	6/18/01	1213	DW	N	View of Melrose Mine sample location MLPP01SD.
14-2	6/18/01	1218	DW	N	View of sample MLPP01SD at Melrose Mine.
14-3	6/18/01	1223	DW	W	View of sample location MLAD01SW* at Melrose Mine.
14-4	6/18/01	1227	DW	W	View of sample MLAD01SW* at Melrose Mine.
14-5	6/18/01	1230	DW	W	View of adit at Melrose Mine.
14-6	6/18/01	1235	DW	N	View of building containing core samples at Melrose Mine.
14-7	6/18/01	1239	DW	W	View of Melrose Mine.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 897924 **TDD No. 01-02-0028**
Lens Type: 35 mm **Upper Columbia River ESI**

Photo No.	Date	Time	By	Direction	Description
14-8	6/18/01	1440	DW	S	Photograph originally was taken to show the vicinity of Copper King Mine; however, this was the wrong Copper King Mine. Note: Vicinity is the same location where the Anaconda Mine should be present, and there is no indication of any mining activities.
14-9	6/18/01	1445	DW	NE	Photograph originally was taken to show the vicinity of Copper King Mine; however, this was the wrong Copper King Mine. Note: Vicinity is the same location where the Anaconda Mine should be present, and there is no indication of any mining activities.
14-10	6/18/01	1446	DW	N	Photograph originally was taken to show the vicinity of Copper King Mine; however, this was the wrong Copper King Mine. Note: Vicinity is the same location where the Anaconda Mine should be present, and there is no indication of any mining activities. Note potential test pit in photograph.
14-11	6/18/01	1520	LD	NE	View of Red Top Mine collapsed adit.
14-12	6/18/01	1521	LD	NE	View of another Red Top Mine collapsed adit/portal.
14-13	6/18/01	1525	LD	SW	View of top of waste rock pile at Red Top Mine.
14-14	6/18/01	1527	LD	Down	View of bottom of waste rock pile at Red Top Mine.
14-15	6/18/01	1550	LD	SW	View of sample location RDWP01SS* at Red Top Mine.
14-16	6/18/01	1552	LD	SW	Close-up view of sample RDWP01SS* at Red Top Mine.
14-17	6/18/01	1555	LD	W	View of sample location RDWP02SS* at Red Top Mine.
14-18	6/18/01	1556	LD	Down	Close-up view of sample RDWP02SS* at Red Top Mine.
14-19	6/18/01	1600	LD	W	View of sample location RDWP03SS* at Red Top Mine.
14-20	6/18/01	1602	LD	Down	Close-up view of sample RDWP03SS* at Red Top Mine.
14-21	6/19/01	0940	DW	Down	View of Farmer Mine shaft.
14-22	6/19/01	0948	DW	E	View of Farmer Mine adit.
14-23	6/19/01	0950	DW	S	View of Farmer Mine vicinity.
14-24	6/19/01	1140	DW	N	View of upper Maki Mine waste rock and shaft area.
15-1	6/19/01	1143	DW	N	View of upper Maki Mine waste rock and shaft area.
15-2	6/19/01	1201	DW	Down	View of Maki Mine lower shaft.
15-3	6/19/01	1202	DW	Down	View into Maki Mine lower shaft.
15-4	6/19/01	1202	DW	S	View (from above) of lower waste rock pile at Maki Mine.
15-5	6/19/01	1205	DW	N	View (from below) of lower waste rock pile at Maki Mine.
15-6	6/19/01	1400	DW	Down	View into Copper King Mine shaft.
15-7	6/19/01	1402	DW	NW	View down Copper King Mine waste rock pile.
15-8	6/19/01	1410	DW	N	View of the top of the Copper King Mine waste rock pile.
15-9	6/19/01	1415	DW	E	Vicinity of sample CKWP01SS* at Copper King Mine.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 897924 **TDD No. 01-02-0028**
Lens Type: 35 mm **Upper Columbia River ESI**

Photo No.	Date	Time	By	Direction	Description
15-10	6/19/01	1416	DW	W	View of sample CKWP01SS* at Copper King Mine.
15-11	6/19/01	1427	DW	S	Vicinity of sample CKWP02SS* at Copper King Mine.
15-12	6/19/01	1429	DW	S	View of sample CKWP02SS* at Copper King Mine.
15-13	6/19/01	1440	DW	S	View (upward from the shaft) of waste rock at Copper King Mine.
15-14	6/19/01	1500	DW	E	View of large Copper King Mine adit.
15-15	6/19/01	1501	DW	E	Vicinity of sample CKAD01SW* at Copper King Mine.
15-16	6/19/01	1505	DW	E	View of sample CKAD01SW* at Copper King Mine.
15-17	6/19/01	1520	DW	W	Vicinity of sample CKPP01SD* at Copper King Mine.
15-18	6/19/01	1521	DW	W	View of sample CKPP01SD* at Copper King Mine.
15-19	6/19/01	1530	DW	Down	View of Copper King Mine retention area.
15-20	6/19/01	1538	DW	S	View of small waste rock pile near lowest Copper King Mine adit.
15-21	6/19/01	1715	DW	E	View of collapsed building/sorting bin at Black Rock Mine.
15-22	6/19/01	1716	DW	W	View of collapsed shaft and mill at Black Rock Mine.
15-23	6/19/01	1717	DW	N	View of waste rock pile at Black Rock Mine.
15-24	6/19/01	1718	DW	W	View (from above) of waste rock pile and collapsed sorting bin at Black Rock Mine.
16-1	6/19/01	1726	DW	S	Vicinity of sample BRWP01SS* at Black Rock Mine.
16-2	6/19/01	1728	DW	S	View of sample BRWP01SS* at Black Rock Mine.
16-3	6/19/01	1731	DW	N	Vicinity of sample BRWP02SS* at Black Rock Mine.
16-4	6/19/01	1733	DW	N	View of sample BRWP02SS* at Black Rock Mine.
16-5	6/19/01	1738	DW	NE	Vicinity of sample BRWP03SS* at Black Rock Mine.
16-6	6/19/01	1739	DW	N	View of sample BRWP03SS* at Black Rock Mine.
16-7	6/19/01	1800	DW	E	Vicinity of sample BRMS01SS* at Black Rock Mine.
16-8	6/19/01	1802	DW	E	View of sample BRMS01SS* at Black Rock Mine.
16-9	6/19/01	1805	DW	E	View of collapsed mill at Black Rock Mine.
16-10	6/19/01	1805	DW	E	View of waste rock pile and collapsed sorting bin at Black Rock Mine.
16-11	6/19/01	1805	DW	E	Vicinity of sample BRMS02SS* at Black Rock Mine.
16-12	6/19/01	1806	DW	E	View of sample BRMS02SS* at Black Rock Mine.
16-13	6/19/01	1810	DW	SE	View of waste rock pile and collapsed mill at Black Rock Mine.
16-14	6/20/01	1012	DW	E	Vicinity of sample LCMS01SS at Last Chance Mine.
16-15	6/20/01	1014	DW	W	View of sample LCMS01SS at Last Chance Mine.
16-16	6/20/01	1025	DW	E	Vicinity of sample LCMS02SS at Last Chance Mine.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 897924 | **TDD No. 01-02-0028**
Lens Type: 35 mm | **Upper Columbia River ESI**

Photo No.	Date	Time	By	Direction	Description
16-17	6/20/01	1028	DW	E	View of sample LCMS02SS at Last Chance Mine.
16-18	6/20/01	1038	DW	S	Vicinity of sample LCMS03SS at Last Chance Mine.
16-19	6/20/01	1039	DW	S	View of sample LCMS03SS at Last Chance Mine.
16-20	6/20/01	1046	DW	E	Vicinity of sample LCPP01SD* at Last Chance Mine.
16-21	6/20/01	1048	DW	E	View of sample LCPP01SD* at Last Chance Mine.
16-22	6/20/01	1105	DW	SW	View (from the side) of Last Chance Mill at Last Chance Mine.
16-23	6/20/01	1106	DW	W	View (downstream) of Last Chance Mine tailings in creek.
16-24	6/20/01	1110	DW	NW	View of ore cart at Last Chance Mine.
17-1	6/20/01	1113	DW	N	View (from below) of Last Chance Mine mill.
17-2	6/20/01	1132	DW	N	Vicinity of sample LCTP01SS* at Last Chance Mine.
17-3	6/20/01	1134	DW	S	View of sample LCTP01SS* at Last Chance Mine.
17-4	6/20/01	1141	DW	N	Vicinity of sample LCTP02SS* at Last Chance Mine.
17-5	6/20/01	1142	DW	N	View of sample LCTP02SS* at Last Chance Mine.
17-6	6/20/01	1148	DW	W	Vicinity of sample LCTP03SS* at Last Chance Mine.
17-7	6/20/01	1149	DW	W	View of sample LCTP03SS* at Last Chance Mine.
17-8	6/20/01	1315	DW	N	Vicinity of sample LCAD01SW* at Last Chance Mine.
17-9	6/20/01	1316	DW	N	View of sample LCAD01SW* at Last Chance Mine.
17-10	6/20/01	1320	DW	N	View of Last Chance Mine adit.
17-11	6/20/01	1328	DW	N	Vicinity of sample LCPP02SD* at Last Chance Mine.
17-12	6/20/01	1330	DW	N	View of sample LCPP02SD* at Last Chance Mine.
17-13	6/20/01	1338	DW	N	View of collapsed building and drums in upper portion of Last Chance Mine.
17-14	6/20/01	1339	DW	S	View of small waste rock pile in upper portion of Last Chance Mine.
17-15	6/20/01	1342	DW	SE	View of collapsed cabin in upper portion of Last Chance Mine.
17-16	6/20/01	1356	DW	S	Vicinity of sample LCWP01SS* at Last Chance Mine.
17-17	6/20/01	1358	DW	S	View of sample LCWP01SS* at Last Chance Mine.
17-18	6/20/01	1411	DW	S	Vicinity of sample LCWP02SS* at Last Chance Mine.
17-19	6/20/01	1413	DW	S	View of sample LCWP02SS* at Last Chance Mine.
17-20	6/20/01	1420	DW	N	Vicinity of sample LCWP03SS* at Last Chance Mine.
17-21	6/20/01	1423	DW	N	View of sample LCWP03SS* at Last Chance Mine.
17-22	6/20/01	1445	DW	Down	View of white poser on floor of mill building at Last Chance Mine.
17-23	6/21/01	1000	DW	N	View of upper portion of Great Western Mine shaft No. 1.

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Photo No.	Date	Time	By	Direction	Description
17-24	6/21/01	1000	DW	N	View of upper portion of Great Western Mine shaft No. 1.
18-1	6/21/01	1003	DW	S	View of upper portion of Great Western Mine waste rock pile near shaft No. 1.
18-2	6/21/01	1010	DW	Down	View of shaft No. 2 at Great Western Mine.
18-3	6/21/01	1010	DW	Down	View of shaft No. 2 at Great Western Mine.
18-4	6/21/01	1015	DW	E	View of waste rock pile at shaft No. 3 at Great Western Mine.
18-5	6/21/01	1016	DW	E	View of shaft No. 3 at Great Western Mine.
18-6	6/21/01	1023	DW	E	View of Adit at Great Western Mine.
18-7	6/21/01	1122	DW	NE	Vicinity of sample GWWP01SS* at Great Western Mine.
18-8	6/21/01	1122	DW	SE	View of sample GWWP01SS* at Great Western Mine.
18-9	6/21/01	1132	DW	N	Vicinity of sample GWWP02SS* at Great Western Mine.
18-10	6/21/01	1133	DW	N	View of sample GWWP02SS* at Great Western Mine.
18-11	6/21/01	1136	DW	N	View of Great Western Mine adit.
18-12	6/21/01	1137	DW	N	View (upward) of lower waste rock pile at Great Western Mine.
18-13	6/21/01	1138	DW	N	View (upward) of lower waste rock pile at Great Western Mine.
18-14	6/21/01	1250	DW	S	View of cabin at Tyee Mine.
18-15	6/21/01	1253	DW	SW	View downgradient where Tyee Mine workings are supposed to be along the creek.
18-16	6/21/01	1527	DW	SW	View of collapsed shaft No. 1 and building at Gladstone Mine.
18-17	6/21/01	1528	DW	N	View of shaft No. 1 at Gladstone Mine.
18-18	6/21/01	1530	DW	NE	View of waste rock pile and shaft No. 2 at Gladstone Mine.
18-19	6/21/01	1533	DW	SW	View of shaft No. 2 at Gladstone Mine.
18-20	6/21/01	1540	DW	SW	View of shaft No. 3 at Gladstone Mine.
18-21	6/21/01	1543	DW	SW	View of shaft No. 4 at Gladstone Mine.
18-22	6/21/01	1553	DW	SE	View of ore building at Gladstone Mine.
18-23	6/21/01	1559	DW	S	View of collapsed building, possibly the mill building, at Gladstone Mine.
18-24	6/21/01	1610	DW	W	Vicinity of sample GLTP01SS at Gladstone Mine.
19-1	6/21/01	1617	DW	W	View of sample GLTP01SS at Gladstone Mine.
19-2	6/21/01	1622	DW	S	Vicinity of sample GLTP02SS at Gladstone Mine.
19-3	6/21/01	1623	DW	S	View of sample GLTP02SS at Gladstone Mine.
19-4	6/21/01	1631	DW	NW	Vicinity of sample GLTP03SS at Gladstone Mine.
19-5	6/21/01	1633	DW	NW	View of sample GLTP03SS at Gladstone Mine.

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Photo No.	Date	Time	By	Direction	Description
19-6	6/21/01	1638	DW	SE	Vicinity of sample GLMS01SS* at Gladstone Mine.
19-7	6/21/01	1639	DW	SE	View of sample GLMS01SS* at Gladstone Mine.
19-8	6/21/01	1646	DW	SW	Vicinity of sample GLMS02SS* at Gladstone Mine.
19-9	6/21/01	1648	DW	SW	View of sample GLMS02SS* at Gladstone Mine.
19-10	6/21/01	1658	DW	NW	Vicinity of sample GLMS03SS* at Gladstone Mine.
19-11	6/21/01	1659	DW	NW	View of sample GLMS03SS* at Gladstone Mine.
19-12	6/22/01	1050	DW	S	View of Lucky Four Mine shaft and pulling system.
19-13	6/22/01	1055	DW	SE	View of Lucky Four Mine location.
19-14	6/22/01	1229	DW	W	View of Electric Point Mine shaft/open pit area.
19-15	6/22/01	1248	DW	N	Vicinity of sample EPWP01SS* at Electric Point Mine.
19-16	6/22/01	1249	DW	N	View of sample EPWP01SS* at Electric Point Mine.
19-17	6/22/01	1252	DW	W	Vicinity of sample EPWP02SS* at Electric Point Mine.
19-18	6/22/01	1253	DW	W	View of sample EPWP02SS* at Electric Point Mine.
19-19	6/22/01	1259	DW	W	Vicinity of sample EPWP03SS* at Electric Point Mine.
19-20	6/22/01	1300	DW	W	View of sample EPWP03SS* at Electric Point Mine.
19-21	6/22/01	1304	DW	N	View of collapsed mill at Electric Point Mine.
19-22	6/22/01	1310	DW	N	Vicinity of sample EPMS01SS* at Electric Point Mine.
19-23	6/22/01	1312	DW	N	View of sample EPMS01SS* at Electric Point Mine.
19-24	6/22/01	1316	DW	S	Vicinity of sample EPMS02SS* at Electric Point Mine.
20-1	6/22/01	1318	DW	S	View of sample EPMS02SS* at Electric Point Mine.
20-2	6/22/01	1326	DW	W	Vicinity of sample EPMS03SS* at Electric Point Mine.
20-3	6/22/01	1328	DW	W	View of sample EPMS03SS* at Electric Point Mine.
20-4	6/22/01	1331	DW	W	View of ore loading building at Electric Point Mine.
20-5	6/22/01	1336	DW	W	View (looking up) of waste rock pile No. 2 at Electric Point Mine.
20-6	6/22/01	1410	DW	NE	View of tailings pond at Electric Point Mine.
20-7	6/22/01	1411	DW	NW	View of tailings pond at Electric Point Mine.
20-8	6/22/01	1418	DW	NW	Vicinity of sample EPWP04SS* at Electric Point Mine.
20-9	6/22/01	1419	DW	NW	View of sample EPWP04SS* at Electric Point Mine.
20-10	6/22/01	1426	DW	E	Vicinity of sample EPWP05SS* at Electric Point Mine.
20-11	6/22/01	1427	DW	E	View of sample EPWP05SS* at Electric Point Mine.
20-12	6/22/01	1436	DW	SE	Vicinity of sample EPTP01SS* at Electric Point Mine.
20-13	6/22/01	1437	DW	SE	View of sample EPTP01SS* at Electric Point Mine.

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Camera Serial No. 897924 **TDD No. 01-02-0028**
Lens Type: 35 mm **Upper Columbia River ESI**

Photo No.	Date	Time	By	Direction	Description
20-14	6/22/01	1442	DW	NW	Vicinity of sample EPTP02SS* at Electric Point Mine.
20-15	6/22/01	1443	DW	NW	View of sample EPTP02SS* at Electric Point Mine.
20-16	6/22/01	1448	DW	SW	Vicinity of sample EPTP03SS* at Electric Point Mine.
20-17	6/22/01	1449	DW	SW	View of sample EPTP03SS* at Electric Point Mine.
20-18	6/22/01	1515	DW	S	Location of Keystone Mine.
20-19	6/22/01	1515	DW	W	Location of Keystone Mine.
20-20	6/22/01	1516	DW	N	Location of Keystone Mine.
20-21	6/22/01	1602	DW	NW	Location of Lead Trust Mine.
20-22	6/22/01	1603	DW	SE	Location of Lead Trust Mine.
21-1	6/18/01	1053	MW	SW	Tree farm sign at road intersection; unknown mine.
21-2	6/18/01	1053	MW	NW	Slide area NW of Photograph 21-1; unknown mine.
21-3	6/18/01	1054	MW	NW	Slide area NW of Photograph 21-1; unknown mine.
21-4	6/18/01	1054	MW	NW	Slide area NW of Photograph 21-1; unknown mine.
21-5	6/18/01	1140	MW	NW	Rocks near shed at Lottie Mine.
21-6	6/18/01	1140	MW	NW	Rocks near shed at Lottie Mine.
21-7	6/18/01	1140	MW	NW	Shed near Lottie Mine shaft.
21-8	6/18/01	1140	MW	NW	Building across the road from Lottie Mine.
21-9	6/19/01	1000	MW	E	A-frame near possible Ibex Mine shaft.
21-10	6/19/01	1000	MW	E	Waste rock near possible Ibex Mine shaft.
21-11	6/19/01	1000	MW	W	A-frame and soil at possible Ibex Mine.
21-12	6/19/01	1000	MW	W	A-frame and soil at possible Ibex Mine.
21-13	6/19/01	1000	MW	Down	Mine shaft at possible Ibex Mine.
21-14	6/19/01	1050	CG	Down	Water-filled mine shaft at possible Big Iron Mine.
21-15	6/19/01	1050	CG	Down	Mine shaft and soil at possible Big Iron Mine.
21-16	6/19/01	1310	CG	E	Mine shaft and soil at possible Big Iron Mine.
21-17	6/19/01	1550	CG	W	Possible Bullion Mine and rock slide.
21-18	6/19/01	1620	CG	E	West side of possible Big Iron Mine.
21-19	6/19/01	1622	CG	N	Upgradient from possible Big Iron Mine.
21-20	6/19/01	1624	CG	NE	Shaft at possible Big Iron Mine.
21-21	6/20/01	1135	MW	W	DCWP01SS* sample location at Deep Creek Mine.
21-22	6/20/01	1135	MW	SW	DCWP01 area at Deep Creek Mine.
21-23	6/20/01	1136	MW	Down	DCWP02SS* sample location at Deep Creek Mine.

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Photo No.	Date	Time	By	Direction	Description
21-24	6/20/01	1136	MW	E	DCWP03SS area at Deep Creek Mine.
22-1	6/20/01	1137	MW	Down	DCWP03SS sample location at Deep Creek Mine.
22-2	6/20/01	1137	MW	E	DCWP03SS area at Deep Creek Mine.
22-3	6/20/01	1139	MW	Down	DCWP04SS sample location at Deep Creek Mine.
22-4	6/20/01	1139	MW	E	DCWP04SS area at Deep Creek Mine.
22-5	6/20/01	1142	MW	Down	DCWP02SS sample location at Deep Creek Mine.
22-6	6/20/01	1142	MW	E	DCWP02SS area at Deep Creek Mine.
22-7	6/20/01	1155	MW	Down	DCTP01SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCWP05SS.
22-8	6/20/01	1155	MW	N	DCTP01SS area at Deep Creek Mine. Note: White board incorrectly lists sample DCWP05SS.
22-9	6/20/01	1156	MW	Down	DCTP02SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCWP06SS.
22-10	6/20/01	1156	MW	W	DCTP02SS area at Deep Creek Mine. Note: White board incorrectly lists sample DCWP06SS.
22-11	6/20/01	1157	MW	Down	DCTP03SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCWP07SS.
22-12	6/20/01	1157	MW	N	DCTP03SS area at Deep Creek Mine. Note: White board incorrectly lists sample DCWP07SS.
22-13	6/20/01	1159	MW	Down	DCTP04SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCWP08SS.
22-14	6/20/01	1159	MW	S	DCTP04SS area at Deep Creek Mine. Note: White board incorrectly lists sample DCWP08SS.
22-15	6/20/01	1202	MW	Down	DCTP05SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCWP09SS.
22-16	6/20/01	1202	MW	S	DCTP05SS area at Deep Creek Mine. Note: White board incorrectly lists sample DCWP09SS.
22-17	6/20/01	1204	MW	Down	DCTP06SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCWP10SS.
22-18	6/20/01	1204	MW	S	DCTP06SS area at Deep Creek Mine. Note: White board incorrectly lists sample DCWP10SS.
22-19	6/20/01	1205	MW	Down	DCTP07SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCWP11SS.
22-20	6/20/01	1205	MW	S	DCTP07SS area at Deep Creek Mine. Note: White board incorrectly lists sample DCWP11SS.
22-21	6/20/01	1208	MW	Down	DCTP08SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCWP12SS.

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Photo No.	Date	Time	By	Direction	Description
22-22	6/20/01	1208	MW	S	DCTP08SS area at Deep Creek Mine. Note: White board incorrectly lists sample DCWP12SS.
22-23	6/20/01	1210	MW	Down	DCTP09SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCWP13SS.
22-24	6/20/01	1210	MW	W	DCTP09SS area at Deep Creek Mine. Note: White board incorrectly lists sample DCWP13SS.
23-1	6/20/01	1220	MW	Down	DCTP10SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCTP11SS.
23-2	6/20/01	1220	MW	NW	DCTP10SS area at Deep Creek Mine. Note: White board incorrectly lists sample DCTP11SS.
23-3	6/20/01	1222	MW	Down	DCTP11SS sample location at Deep Creek Mine.
23-4	6/20/01	1222	MW	NW	DCTP11SS area at Deep Creek Mine. Note: White board incorrectly lists sample DCWP12SS.
23-5	6/20/01	1225	MW	Down	DCTP12SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCWP13SS.
23-6	6/20/01	1225	MW	W	DCTP12SS area at Deep Creek Mine. Note: White board incorrectly lists sample DCWP13SS.
23-7	6/20/01	1243	MW	W	DCWP05* sample location at Deep Creek Mine.
23-8	6/20/01	1243	MW	W	DCWP05* area at Deep Creek Mine.
23-9	6/20/01	1330	MW	Down	DCAD01SW sample location at Deep Creek Mine.
23-10	6/20/01	1331	MW	W	DCAD01SW area at Deep Creek Mine.
23-11	6/20/01	1335	MW	Down	DCTP13SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCWP05SS.
23-12	6/20/01	1335	MW	W	DCTP13SS area at Deep Creek Mine.
23-13	6/20/01	1345	MW	Down	DCTP14SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCWP06SS.
23-14	6/20/01	1345	MW	W	DCTP14SS area at Deep Creek Mine.
23-15	6/20/01	1347	MW	Down	DCTP15SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCWP07SS.
23-16	6/20/01	1347	MW	W	DCTP15SS area at Deep Creek Mine. Note: White board incorrectly lists sample DCWP07SS.
23-17	6/20/01	1357	MW	Down	DCTP16SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCTP14SS.
23-18	6/20/01	1357	MW	W	DCTP16SS area at Deep Creek Mine.
23-19	6/20/01	1403	MW	Down	DCTP17SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCTP15SS.
23-20	6/20/01	1403	MW	Down	DCTP17SS area at Deep Creek Mine. Note: White board incorrectly lists sample DCTP15SS.

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Photo No.	Date	Time	By	Direction	Description
23-21	6/20/01	1407	MW	Down	DCTP18SS sample location at Deep Creek Mine. Note: White board incorrectly lists sample DCTP16SS.
23-22	6/20/01	1407	MW	W	DCTP18SS area at Deep Creek Mine.
23-23	6/20/01	1515	MW	W	Overview of Deep Creek Mine.
23-24	6/20/01	1515	MW	W	Overview of Deep Creek Mine.
24-1	6/20/01	1612	MW	W	Large waste rock pile at Deep Creek Mine.
24-2	6/20/01	1615	MW	W	Waste rock near adit at Deep Creek Mine.
24-3	6/20/01	1617	MW	W	Water in shaft and adit at Deep Creek Mine.
24-4	6/20/01	1620	MW	W	Old buildings on site at Deep Creek Mine.
24-5	6/20/01	1621	MW	S	Transformers at Deep Creek Mine.
24-6	6/20/01	1622	MW	S	Close-up view of subject of Photograph 24-5.
24-7	6/20/01	1622	MW	Down	Waste inside buildings at Deep Creek Mine.
24-8	6/20/01	1625	CG	Down	Surface water/sediment sample location (DCSD01 and DCSW01) at Deep Creek Mine.
24-9	6/20/01	1645	CG	S	Approximate location of Magma Mine.
24-10	6/21/01	0950	GG	S	View (from NW corner) of tailings pile at Sierra Zinc Mine.
24-11	6/21/01	0950	GG	E	View (from NW corner) of tailings pile at Sierra Zinc Mine.
24-12	6/21/01	0954	GG	Down	Sandy material on surface of Sierra Zinc Mine tailings pile.
24-13	6/21/01	0957	GG	S	Tailings pile at Sierra Zinc Mine.
24-14	6/21/01	1000	GG	N	Panoramic view of Sierra Zinc Mine tailings pile.
24-15	6/21/01	1000	GG	N	Panoramic view of Sierra Zinc Mine tailings pile.
24-16	6/21/01	1003	GG	E	South end of tailings pile at Sierra Zinc Mine.
24-17	6/21/01	1004	GG	E	West side of mill at Sierra Zinc Mine.
24-18	6/21/01	1005	GG	W	Portal at Sierra Zinc Mine.
24-19	6/21/01	1005	GG	W	Discharge from portal at Sierra Zinc Mine.
24-20	6/21/01	1007	GG	SE	North side of mill at Sierra Zinc Mine.
24-21	6/21/01	1007	GG	S	North side of mill at Sierra Zinc Mine.
24-22	6/21/01	1009	GG	SE	View of north end of mill and a gas pump at Sierra Zinc Mine.
24-23	6/21/01	1012	GG	S	Mill equipment inside building at Sierra Zinc Mine.
24-24	6/21/01	1015	GG	N	West side of tailings pile at Sierra Zinc Mine.
25-1	6/21/01	1115	MW	Down	SZTP01SS* sample location at Sierra Zinc Mine.
25-2	6/21/01	1115	MW	W	SZTP01 area at Sierra Zinc Mine.
25-3	6/21/01	1118	MW	Down	SZTP02SS* sample location at Sierra Zinc Mine.

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Camera Serial No. 897924 **TDD No. 01-02-0028**
Lens Type: 35 mm **Upper Columbia River ESI**

Photo No.	Date	Time	By	Direction	Description
25-4	6/21/01	1118	MW	S	SZTP02 area at Sierra Zinc Mine.
25-5	6/21/01	1121	MW	Down	SZTP03SS* sample location at Sierra Zinc Mine.
25-6	6/21/01	1121	MW	W	SZTP03 area at Sierra Zinc Mine.
25-7	6/21/01	1125	MW	Down	SZTP04SS sample and location at Sierra Zinc Mine.
25-8	6/21/01	1125	MW	S	SZTP04SS area at Sierra Zinc Mine.
25-9	6/21/01	1126	MW	Down	SZTP05SS sample and location at Sierra Zinc Mine.
25-10	6/21/01	1126	MW	S	SZTP05SS area at Sierra Zinc Mine.
25-11	6/21/01	1127	MW	Down	SZTP06SS sample location at Sierra Zinc Mine.
25-12	6/21/01	1127	MW	S	SZTP06SS area at Sierra Zinc Mine.
25-13	6/21/01	1128	MW	Down	SZTP07SS sample and location at Sierra Zinc Mine.
25-14	6/21/01	1128	MW	S	SZTP07SS area at Sierra Zinc Mine.
25-15	6/21/01	1129	MW	Down	SZTP08SS sample and location at Sierra Zinc Mine.
25-16	6/21/01	1129	MW	S	SZTP08SS area at Sierra Zinc Mine.
25-17	6/21/01	1130	MW	Down	SZTP09SS sample and location at Sierra Zinc Mine.
25-18	6/21/01	1130	MW	S	SZTP09SS area at Sierra Zinc Mine.
25-19	6/21/01	1132	MW	Down	SZTP10SS sample and location at Sierra Zinc Mine.
25-20	6/21/01	1132	MW	S	SZTP10SS area at Sierra Zinc Mine.
25-21	6/21/01	1133	MW	Down	SZTP11SS sample and location at Sierra Zinc Mine.
25-22	6/21/01	1133	MW	S	SZTP11SS area at Sierra Zinc Mine.
25-23	6/21/01	1135	MW	Down	SZTP12SS sample and location at Sierra Zinc Mine.
25-24	6/21/01	1135	MW	S	SZTP12SS area at Sierra Zinc Mine.
26-1	6/21/01	1245	MW	Down	SZTP13SS sample and location at Sierra Zinc Mine.
26-2	6/21/01	1245	MW	W	SZTP13SS area at Sierra Zinc Mine.
26-3	6/21/01	1247	MW	Down	SZTP14SS sample and location at Sierra Zinc Mine.
26-4	6/21/01	1247	MW	N	SZTP14SS area at Sierra Zinc Mine.
26-5	6/21/01	1248	MW	Down	SZTP15SS sample and location at Sierra Zinc Mine.
26-6	6/21/01	1248	MW	W	SZTP15SS area at Sierra Zinc Mine.
26-7	6/21/01	1249	MW	Down	SZTP16SS sample and location at Sierra Zinc Mine.
26-8	6/21/01	1249	MW	W	SZTP16SS area at Sierra Zinc Mine.
26-9	6/21/01	1250	MW	Down	SZTP17SS sample and location at Sierra Zinc Mine.
26-10	6/21/01	1250	MW	W	SZTP17SS area at Sierra Zinc Mine.
26-11	6/21/01	1252	MW	Down	SZTP18SS sample and location at Sierra Zinc Mine.

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Lens Type: 35 mm | **Upper Columbia River ESI**

Photo No.	Date	Time	By	Direction	Description
26-12	6/21/01	1252	MW	W	SZTP18SS area at Sierra Zinc Mine.
26-13	6/21/01	1254	MW	Down	SZTP19SS sample and location at Sierra Zinc Mine.
26-14	6/21/01	1254	MW	W	SZTP19SS area at Sierra Zinc Mine.
26-15	6/21/01	1256	MW	Down	SZTP20SS sample and location at Sierra Zinc Mine.
26-16	6/21/01	1256	MW	W	SZTP20SS area at Sierra Zinc Mine.
26-17	6/21/01	1258	MW	Down	SZTP21SS sample and location at Sierra Zinc Mine.
26-18	6/21/01	1258	MW	W	SZTP21SS area at Sierra Zinc Mine.
26-19	6/21/01	1259	MW	W	Overview of tailings pile at Sierra Zinc Mine.
26-20	6/21/01	1259	MW	W	Overview of tailings pile at Sierra Zinc Mine.
26-21	6/21/01	1259	MW	W	Drainage area from tailings pile at Sierra Zinc Mine.
26-22	6/21/01	1339	CG	W	Vicinity of sample SZAD01SW* at Sierra Zinc Mine.
26-23	6/21/01	1339	CG	W	Vicinity of sample SZAD01SW* at Sierra Zinc Mine.
26-24	6/21/01	1339	CG	W	Vicinity of sample SZAD01SW* at Sierra Zinc Mine.
27-1	6/21/01	1515	MW	Down	SZWP01SS sample location at Sierra Zinc Mine.
27-2	6/21/01	1515	MW	W	SZWP01SS area at Sierra Zinc Mine.
27-3	6/21/01	1517	MW	Down	SZWP02SS sample location at Sierra Zinc Mine.
27-4	6/21/01	1517	MW	W	SZWP02SS area at Sierra Zinc Mine.
27-5	6/21/01	1519	MW	Down	SZWP03SS sample location at Sierra Zinc Mine.
27-6	6/21/01	1519	MW	W	SZWP03SS area at Sierra Zinc Mine.
27-7	6/21/01	1521	MW	Down	SZWP04SS sample location at Sierra Zinc Mine.
27-8	6/21/01	1521	MW	N	SZWP04SS area at Sierra Zinc Mine.
27-9	6/21/01	1523	MW	Down	SZWP05SS sample and location at Sierra Zinc Mine.
27-10	6/21/01	1523	MW	N	SZWP05SS area at Sierra Zinc Mine.
27-11	6/21/01	1525	MW	Down	SZWP06SS sample location at Sierra Zinc Mine (photograph incorrectly lists sample SZWP05SS).
27-12	6/21/01	1525	MW	N	SZWP06SS area at Sierra Zinc Mine (photograph incorrectly lists sample SZWP05SS).
27-13	6/21/01	1527	MW	Down	SZWP07SS sample and location at Sierra Zinc Mine.
27-14	6/21/01	1527	MW	N	SZWP07SS area at Sierra Zinc Mine.
27-15	6/21/01	1528	MW	Down	SZWP08SS sample and location at Sierra Zinc Mine.
27-16	6/21/01	1528	MW	N	SZWP08SS area at Sierra Zinc Mine.
27-17	6/21/01	1529	MW	Down	SZWP09SS sample and location at Sierra Zinc Mine.
27-18	6/21/01	1530	MW	N	SZWP09SS area at Sierra Zinc Mine.

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Photo No.	Date	Time	By	Direction	Description
27-19	6/21/01	1531	MW	Down	SZWP10SS sample and location at Sierra Zinc Mine.
27-20	6/21/01	1531	MW	N	SZWP10SS area at Sierra Zinc Mine.
27-21	6/21/01	1532	MW	Down	SZWP11SS sample and location at Sierra Zinc Mine.
27-22	6/21/01	1532	MW	N	SZWP11SS area at Sierra Zinc Mine.
27-23	6/21/01	1534	MW	Down	SZWP12SS sample and location at Sierra Zinc Mine.
27-24	6/21/01	1534	MW	N	SZWP12SS area at Sierra Zinc Mine.
28-1	6/21/01	1536	MW	Down	SZMS01SS sample location at Sierra Zinc Mine (photograph incorrectly lists sample SZMA01SS).
28-2	6/21/01	1536	MW	S	SZMS01SS area at Sierra Zinc Mine (photograph incorrectly lists sample SZMA01SS).
28-3	6/21/01	1557	MW	S	Potential Burrus Mine area-lower section.
28-4	6/21/01	1557	MW	S	Potential Burrus Mine area-upper section.
28-5	6/21/01	1557	MW	S	Potential Burrus Mine area-overview.
29-1	6/24/01	0805	MW	Down	Sample location BK01SS* (near Colville hotel).
29-2	6/24/01	0805	MW	N	Vicinity of sample BK01SS* from near Colville hotel.
29-3	6/24/01	0957	MW	Down	Shaft at Antelope Mine.
29-4	6/24/01	0957	MW	S	Top of shaft at Antelope Mine.
29-5	6/24/01	1100	MW	Down	Upper area at Homestake Mine.
29-6	6/24/01	1100	MW	N	Upper area at Homestake Mine.
29-7	6/24/01	1105	MW	Down	Middle area waste rock at Homestake Mine.
29-8	6/24/01	1105	MW	NE	Middle area waste rock at Homestake Mine.
29-9	6/24/01	1110	MW	SE	Middle area waste rock at Homestake Mine.
29-10	6/24/01	1112	MW	Down	Middle area waste rock at Homestake Mine.
29-11	6/24/01	1116	MW	S	Middle area waste rock at Homestake Mine.
29-12	6/24/01	1120	MW	Down	Lower area waste rock at Homestake Mine.
29-13	6/24/01	1122	MW	N	Lower area waste rock at Homestake Mine.
29-14	6/24/01	1125	MW	Down	Lower area shaft at Homestake Mine.
29-15	6/24/01	1125	MW	N	Lower area waste rock at Homestake Mine.
29-16	6/24/01	1205	MW	Down	Upper area hole at Lottie Mine.
29-17	6/24/01	1208	MW	Down	Upper area hole at Lottie Mine.
29-18	6/24/01	1210	MW	W	Largest waste rock pile at Lottie Mine.
29-19	6/24/01	1245	MW	W	Area of Minorca Mine (not found).
29-20	6/24/01	1245	MW	E	Area of Minorca Mine (not found).

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Lens Type: 35 mm **Upper Columbia River ESI**

Photo No.	Date	Time	By	Direction	Description
32-3	6/28/01	1158	MW	Down	Sediment sample DCPP01SD from Deep Creek Mine (collected near the on-site bridge).
32-4	6/28/01	1158	MW	E	Area of Deep Creek Mine sampling.
32-5	6/28/01	1205	MW	NW	Deep Creek Mine (near the bridge).
32-6	6/28/01	1209	MW	W	Waste rock pile near Deep Creek Mine.
32-7	6/28/01	1230	MW	S	No trespassing sign near Morning Mine.
32-8	6/28/01	1310	MW	E	Collapsed shaft area at Magma Mine.
32-9	6/28/01	1310	MW	E	View (from a distance) of collapsed shaft area at Magma Mine.
32-10	6/28/01	1315	MW	E	Waste rock pile at Magma Mine.
32-11	6/28/01	1325	MW	S	Building at Magma Mine.
32-12	6/28/01	1345	MW	Down	Sample BK06SS collected near Magma Mine.
32-13	6/28/01	1345	MW	S	Vicinity of sample BK06SS collected near Magma Mine.
32-14	6/28/01	1415	MW	N	"Private Property" sign near Burrus Mine.
32-15	6/28/01	1445	MW	W	Area of Lone Star Mine.
32-16	6/28/01	1505	MW	Down	Sample BK07SS (collected near Silver Creek Road).
32-17	6/28/01	1505	MW	S	Vicinity of sample BK07SS (collected near Silver Creek Road).
32-18	6/28/01	1545	MW	W	Sample BK08SS (collected near Iroquois Mine).
32-19	6/28/01	1545	MW	W	Vicinity of sample BK08SS (collected near Iroquois Mine).
32-20	6/28/01	1615	MW	E	Bechtol and Thompson Mines area from the road.
33-1	6/29/01	1133	CG	E	View of beach area at Northport Smelter.
33-2	6/29/01	1133	CG	NE	View of Smelter Rock (island) and surrounding area at Northport Smelter.
33-3	6/29/01	1133	CG	NE	View of Smelter Rock (island) and surrounding area at Northport Smelter.
33-4	6/29/01	1215	CG	N	View of sluiceway from the boat dock near Northport Smelter.
33-5	6/29/01	1215	CG	N	Close-up view of slag in dump area at Northport Smelter.
33-6	6/29/01	1225	CG	E	Wider view of slag at Northport Smelter.
33-7	6/29/01	1225	CG	E	View of sluiceway from the boat dock near Northport Smelter.
33-8	6/29/01	1228	CG	NW	View of boat ramp and dock from sluiceway at Northport Smelter.
33-9	6/29/01	1231	CG	S	Close-up view near sluiceway at Northport Smelter.
33-10	6/29/01	1231	CG	S	Close-up view near sluiceway at Northport Smelter.
33-11	6/29/01	1233	CG	E	Close-up view near sluiceway at Northport Smelter.
33-12	6/29/01	1315	MT	N	Sample NSSL01SD and location at Northport Smelter.

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Photo No.	Date	Time	By	Direction	Description
33-13	6/29/01	1315	MT	N	View of sample NSSL01SD at Northport Smelter.
33-14	6/29/01	1350	CG	SW	View of sample NSSL02SD at Northport Smelter.
33-15	6/29/01	1400	CG	down	View of floating black particles at Northport Smelter.
33-16	6/29/01	1400	CG	down	View of floating black particles at Northport Smelter.
33-17	6/29/01	1410	MT	N	View of sample NSSL03SD at Northport Smelter.
33-18	6/29/01	1420	MT	N	View of sample NSSL04SD at Northport Smelter.
33-19	6/29/01	1430	MT	N	View of sample NSSL05SD at Northport Smelter.
33-20	6/29/01	1445	CG	N	View of sample location areas for NSSL03SD through NSSL05SD at Northport Smelter.
33-21	6/29/01	1445	CG	N	Close-up view of sample location areas for NSSL03SD through NSSL05SD at Northport Smelter.
33-22	6/29/01	1510	CG	NW	View of recreational boaters at boat dock near Northport Smelter.
33-23	6/29/01	1515	MT	N	View of sample NSSL06SD at Northport Smelter.
33-24	6/29/01	1530	MT	N	View of sample NSSL07SD at Northport Smelter.
33-25	6/29/01	1545	MT	N	View of sample NSSL08SD at Northport Smelter.
33-26	6/29/01	1550	MT	N	Close-up view of slag in dump area at Northport Smelter.
34-1	6/29/01	1625	MT	S	View of sample NSSL09SD at Northport Smelter.
34-2	6/29/01	1710	CG	W	View of boat launch and beach area near Northport Smelter.
34-3	6/29/01	1711	CG	W	View of boat launch and beach area near Northport Smelter.
34-4	6/29/01	1712	CG	W	View of boat launch and beach area near Northport Smelter.

* Station location has been changed for consistency purposes.

Key:

AJ = Alan Johnson.
CG = Charles Gregory.
DW = Dan Weiss.
E = East
GG = Guy Gregory.
LD = Leatta Dahlhoff.
mm = Millimeter.
MT = Monica Tonel.
MW = Mark Woodke.
N = North.
NA = Neal Amick.
NE = Northeast.
No. = Number.
NW = Northwest.
RN = Renee Nordeen.
S = South.
SE = Southeast.
SW = Southwest.
TK = Tara Karamas.
W = West.

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Photo No.	Date	Time	By	Direction	Description
35-1	9/11/01	0850	LD	W	View of newly constructed fence at Anderson/Calhoun Mine.
35-2	9/12/01	0928	LD	NE	View of stained soil and staged drums at Anderson/Calhoun Mine.
35-3	9/12/01	0930	LD	SW	View of debris and drums on concrete pad at Anderson/Calhoun Mine.
35-4	9/12/01	0931	LD	W	View of debris and drums on concrete pad at Anderson/Calhoun Mine.
35-5	9/12/01	0932	LD	NW	View of debris and drums on concrete pad at Anderson/Calhoun Mine.
35-6	9/12/01	0935	LD	SE	View of former storage shed. Note remnants of "Cebar Barite" at Anderson/Calhoun Mine.
35-7	9/12/01	0945	LD	N	View of mine building and waste rock conveyor belt at Anderson/Calhoun Mine.
35-8	9/12/01	0946	LD	NE	View of mine building and remnant storage shed at Anderson/Calhoun Mine.
35-9	9/12/01	0947	LD	W	View of transformers at Anderson/Calhoun Mine.
35-10	9/12/01	0950	LD	down	View of standing water in flotation vat in mine building at Anderson/Calhoun Mine.
35-11	9/12/01	0951	LD	NE	View of conveyor belt leading to waste rock pile at Anderson/Calhoun Mine.
35-12	9/12/01	0952	LD	W	View of waste rock storage building at Anderson/Calhoun Mine.
35-13	9/12/01	0955	LD	S	View of mine building and conveyor belt at Anderson/Calhoun Mine.
35-14	9/12/01	1010	LD	SE	Overview of buildings at Anderson/Calhoun Mine.
35-15	9/12/01	1010	LD	SW	View of waste rock, flotation building, and storage building at Anderson/Calhoun Mine.
35-16	9/12/01	1011	LD	SW	View of mine pit water area at Anderson/Calhoun Mine.
35-17	9/12/01	1012	LD	S	View of stream flowing adjacent to tailings pond/pile and extending the entire length of Anderson/Calhoun Mine.
35-18	9/12/01	1015	LD	SE	View tailings pile at Anderson/Calhoun Mine.
35-19	9/12/01	1016	LD	S	View tailings pile at Anderson/Calhoun Mine.
35-20	9/12/01	1017	LD	SW	View tailings pile at Anderson/Calhoun Mine.
35-21	9/12/01	1018	LD	SW	View tailings pile at Anderson/Calhoun Mine.
35-22	9/12/01	1019	LD	SW	View tailings pile at Anderson/Calhoun Mine.
35-23	9/12/01	1020	LD	W	View tailings pile at Anderson/Calhoun Mine.
35-24	9/12/01	1030	LD	SW	View of depression in tailings pile and 4x4 vehicle and bicycle tracks at Anderson/Calhoun Mine.
36-1	9/12/01	1130	LD	E	View of piping protruding from hillside behind first aid building and mining activities toward tailings pile to the north and evaporation pond to the south at Anderson/Calhoun Mine.
36-2	9/12/01	1131	LD	SE	View of shaft and conveyor belt at Anderson/Calhoun Mine.

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Photo No.	Date	Time	By	Direction	Description
36-3	9/12/01	1132	LD	E	View of shaft and conveyor belt at Anderson/Calhoun Mine.
36-4	9/12/01	1133	LD	SE	View of three transformers at Anderson/Calhoun Mine.
36-5	9/12/01	1134	LD	SE	View of mill building and staged drums at Anderson/Calhoun Mine.
36-6	9/12/01	1135	LD	S	View of mill building and staged drums at Anderson/Calhoun Mine.
36-7	9/12/01	1136	LD	SW	View of mill building and staged drums at Anderson/Calhoun Mine.
36-8	9/12/01	1137	LD	SE	View of concrete pads and soil beneath transformers at Anderson/Calhoun Mine.
36-9	9/12/01	1143	LD	SE	View of staged drums punctured from gunfire at Anderson/Calhoun Mine.
36-10	9/12/01	1145	LD	E	View of staged drums punctured from gunfire at Anderson/Calhoun Mine.
36-11	9/12/01	1146	LD	E	View of staged drums punctured from gunfire and unknown liquid on floor at Anderson/Calhoun Mine.
36-12	9/12/01	1150	LD	S	view of inside stripped mill building with tailings covering the floor at Anderson/Calhoun Mine.
36-13	9/12/01	1155	LD	W	View of transformer at Anderson/Calhoun Mine.
36-14	9/12/01	1156	LD	NW	View of substation at Anderson/Calhoun Mine.
36-15	9/12/01	1157	LD	W	View of concrete floor under substation at Anderson/Calhoun Mine.
36-16	9/12/01	1200	LD	N	View of fallen powerline and compromised transformer at Anderson/Calhoun Mine.
36-17	9/12/01	1201	LD	S	View of fenced transformers staged on concrete pad at Anderson/Calhoun Mine.
36-18	9/12/01	1202	LD	E	View of staged transformers and powerline at Anderson/Calhoun Mine.
36-19	9/12/01	1203	LD	S	Close view of staged transformers on concrete pad and surrounding soil at Anderson/Calhoun Mine.
36-20	9/12/01	1205	LD	E	View of south side of mill building with scattered debris in addition to three staged transformers to the south at Anderson/Calhoun Mine.
36-21	9/12/01	1206	LD	E	Close view of staged transformers on concrete pad and surrounding soil at Anderson/Calhoun Mine.
36-22	9/12/01	1208	LD	NE	View of portal and conveyor belt to mill building at Anderson/Calhoun Mine.
36-23	9/12/01	1210	LD	E	View of crushed 55-gallon drums mixed with tailings at Anderson/Calhoun Mine.

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Lens Type: 35 mm | **Upper Columbia River ESI**

Photo No.	Date	Time	By	Direction	Description
36-24	9/12/01	1211	LD	NE	View of abandoned vehicle and drums at Anderson/Calhoun Mine.
37-1	9/12/01	1213	LD	E	View of drums south of the mill building at Anderson/Calhoun Mine.
37-2	9/12/01	1215	LD	NE	View of stained soil surrounding AST at Anderson/Calhoun Mine.
37-3	9/12/01	1216	LD	SW	View of stained soil surrounding staged drums at Anderson/Calhoun Mine. Note cow prints.
37-4	9/12/01	1217	LD	NE	View of staged 55-gallon drums at Anderson/Calhoun Mine.
37-5	9/12/01	1218	LD	N	View of staged 55-gallon drums and surrounding soil at Anderson/Calhoun Mine.
37-6	9/12/01	1305	LD	W	View of concrete supports where a potential AST was located at Anderson/Calhoun Mine.
37-7	9/12/01	1306	LD	E	View of scattered ebris and crushed 55-gallon drums at Anderson/Calhoun Mine.
37-8	9/12/01	1307	LD	W	View of dry marsh/wetland area south of mill building at Anderson/Calhoun Mine.
37-9	9/12/01	1308	LD	SW	View of dry marsh/wetland area south of mill building at Anderson/Calhoun Mine.
37-10	9/12/01	1309	LD	S	View of dry marsh/wetland area south of mill building at Anderson/Calhoun Mine.
37-11	9/12/01	1310	LD	S	View of dry marsh/wetland area south of mill building at Anderson/Calhoun Mine.
37-12	9/12/01	1311	LD	SE	View of dry marsh/wetland area south of mill building at Anderson/Calhoun Mine.
37-13	9/12/01	1312	LD	NW	View of mill building from the south side at Anderson/Calhoun Mine.
37-14	9/12/01	1313	LD	N	View of dispersed 55-gallon drums and debris at Anderson/Calhoun Mine.
37-15	9/12/01	1314	LD	N	View of dispersed 55-gallon drums and debris at Anderson/Calhoun Mine.
37-16	9/12/01	1315	LD	NE	View of dispersed 55-gallon drums and debris at Anderson/Calhoun Mine.
37-17	9/12/01	1316	LD	NE	View of dispersed 55-gallon drums and debris at Anderson/Calhoun Mine.
37-18	9/12/01	1317	LD	E	View of dispersed 55-gallon drums and debris at Anderson/Calhoun Mine.
37-19	9/12/01	1320	LD	W	View of discarded garbage at Anderson/Calhoun Mine.
37-20	9/12/01	1321	LD	SW	View of wooden debris and garbage at Anderson/Calhoun Mine.
37-21	9/12/01	1322	LD	S	View of cows on adjacent farmland to Anderson/Calhoun Mine.

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Photo No.	Date	Time	By	Direction	Description
37-22	9/12/01	1323	LD	N	View of swampy marshland between shaft to the west and the tailings pile and pond to the east at Anderson/Calhoun Mine.
37-23	9/12/01	1325	LD	NE	View of evaporation pond at Anderson/Calhoun Mine.
37-24	9/12/01	1326	LD	E	View of swampy area surrounding tailings pile and pond and evaporation pond at Anderson/Calhoun Mine.
37-25	9/12/01	1329	LD	W	View of piping protruding from hillside into evaporation pond at Anderson/Calhoun Mine.
38-1	9/12/01	1335	LD	SW	View of pipe protruding from bank into evaporation pond at Anderson/Calhoun Mine.
38-2	9/12/01	1336	LD	N	View of south side of tailings pile and swampy area adjacent in foreground at Anderson/Calhoun Mine.
38-3	9/12/01	1435	LD	E	View of first aid building at Anderson/Calhoun Mine.
38-4	9/12/01	1445	LD	SE	View of conveyor belt and cover over shaft at Anderson/Calhoun Mine.
38-5	9/12/01	1446	LD	W	View of mill building from hillside at Anderson/Calhoun Mine.
38-6	9/12/01	1447	LD	E	View of evaporation pnd and abandoned drums in foreground at Anderson/Calhoun Mine.
38-7	9/12/01	1448	LD	N	View of stream and tailings pile/pond at Anderson/Calhoun Mine.
38-8	9/12/01	1449	LD	NE	View of tailings pile/pond at Anderson/Calhoun Mine.
38-9	9/12/01	1500	LD	S	View of breached tailings to swampy area at Anderson/Calhoun Mine.
38-10	9/12/01	1555	LD	W	View of stream and side channels adjacent to Anderson/Calhoun Mine.
Photos 39-1 to 39-6 removed for use in the Lower Pend Oreille River Mines and Mills Preliminary Assessments and Site Investigations.					
39-7	9/12/01	1200	MT	down	View of sample KRBK01SD at Kettle River.
39-8	9/12/01	1415	MT	N	Sample location KRBK01SD at Kettle River.
39-9	9/12/01	1417	MT		View of sample KRBK02SD at Kettle River.
39-10	9/12/01	1418	MT	N	Sample location KRBK02SD at Kettle River.
40-1	9/10/01	1025	RL	N	View of south ditch filled in at Northwest Magnesite/L-Bar.
40-2	9/10/01	1030	RL	NE	View of south edge of magnesite pile at Northwest Magnesite/L-Bar.
40-3	9/10/01	1033	RL	SW	View of junk pile at Northwest Magnesite/L-Bar.
40-4	9/10/01	1035	RL	W	View of south ditch and wetlands at Northwest Magnesite/L-Bar.
40-5	9/10/01	1050	RL	N	View of west ditch, magnesite pile, and wetlands at Northwest Magnesite/L-Bar.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 897924 | **TDD No. 01-02-0028**
Lens Type: 35 mm | **Upper Columbia River ESI**

Photo No.	Date	Time	By	Direction	Description
40-6	9/10/01	1110	RL	S	View of west ditch with little vegetation at Northwest Magnesite/L-Bar.
40-7	9/10/01	1125	RL	SE	View of thermax pile and monitoring well in center of pile at Northwest Magnesite/L-Bar.
40-8	9/10/01	1130	RL	S	View of weir on dry west ditch at Northwest Magnesite/L-Bar.
40-9	9/10/01	1132	RL	NW	View of Colville River. Note mouth of west ditch at stake at Northwest Magnesite/L-Bar.
40-10	9/10/01	1140	RL	S	View of main ditch to the west with people present on the dam. Stormwater runoff ditch to the east at Northwest Magnesite/L-Bar.
40-11	9/10/01	1145	RL	SE	View of stormwater runoff with liner and the main ditch to the right at Northwest Magnesite/L-Bar.
40-12	9/10/01	1155	RL	SE	Portion of main ditch with ponded water at Northwest Magnesite/L-Bar.
40-13	9/10/01	1159	RL	NE	View of covered pile with section removed at Northwest Magnesite/L-Bar.
40-14	9/10/01	1430	TK	NW	Sample location LBDT01SD at Northwest Magnesite/L-Bar.
40-15	9/10/01	1430	TK	down	View of sample LBDT01SD at Northwest Magnesite/L-Bar.
40-16	9/10/01	1500	TK	SW	Sample location LBDT02SD at Northwest Magnesite/L-Bar.
40-17	9/10/01	1500	TK	down	View of sample LBDT02SD at Northwest Magnesite/L-Bar.
40-18	9/10/01	1530	TK	down	Sample location LBDT03SD at Northwest Magnesite/L-Bar.
40-19	9/10/01	1530	TK	down	View of sample LBDT03SD at Northwest Magnesite/L-Bar.
40-20	9/10/01	1535	TK	SW	View of confluence of south ditch with west ditch at Northwest Magnesite/L-Bar.
40-21	9/10/01	1620	TK	SE	Background ditch location at Northwest Magnesite/L-Bar.
40-22	9/10/01	1625	TK	down	View of sample LBBK01SD at Northwest Magnesite/L-Bar.
40-23	9/10/01	1715	TK	S	Sample location NAPP01SD at Northwest Alloys at confluence with Colville River and Stensgar Creek.
40-24	9/10/01	1717	TK	down	View of sample NAPP01SD at Northwest Alloys.
40-25	9/10/01	1747	TK	down	Sample location NACK01SD at Northwest Alloys.
41-1	9/10/01	1804	TK	down	View of sample NACK01SD at Northwest Alloys. Note whiteboard reads NADT01SD and should be NACK01SD.
41-2	9/10/01	1812	TK	down	Sample location NADT01SD at Northwest Alloys.
41-3	9/10/01	1817	TK	down	View of sample NADT01SD at Northwest Alloys.
41-4	9/10/01	1830	TK	NW	Sample location NABK01SD at Northwest Alloys.
41-5	9/10/01	1841	TK	down	View of sample NABK01SD at Northwest Alloys.
41-6	9/11/01	0815	TK	down	View of sample NABK02SD at Northwest Alloys.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 897924 **TDD No. 01-02-0028**
Lens Type: 35 mm **Upper Columbia River ESI**

Photo No.	Date	Time	By	Direction	Description
43-3	9/10/01	1240	JM	S	View of tailings at Daisy Mine looking towards the Columbia River.
43-4	9/10/01	1242	JM	W	View of center tailings pile approximately 20 yards east of the adit at Daisy Mine.
43-5	9/10/01	1246	JM	S	View from top of tailings pile at Daisy Mine.
43-6	9/10/01	1250	JM	W	View from top of west tailings pile at Daisy Mine.
43-7	9/10/01	1305	JM	N	View of Daisy Mine adit.
43-8	9/10/01	1306	JM	N	Veiw of adit discharge at Daisy Mine.
43-9	9/10/01	1308	JM	N	Debris located approximately 30 feet east of mine adit at Daisy Mine.
43-10	9/10/01	1309	JM	E	East tailings pile at Daisy Mine.
43-11	9/10/01	1335	JM	S	Depression south of mine adit at Daisy Mine.
43-12	9/10/01	1336	JM	SW	Potential overland drainage pathway at Daisy Mine to the Columbia River.
43-13	9/10/01	1405	JM	N	Daisy Mine.
43-14	9/10/01	1406	JM	SE	View of drainage pipe south of Daisy Mine.
43-15	9/10/01	1407	JM	E	View of drainage discharge to adjacent property to Daisy Mine.
43-16	9/10/01	1600	JM	W	View of sample DTPP01SD at Daisy Mine. Note whiteboard reads DTPP01SS and should read DTPP01SD.
43-17	9/10/01	1630	JM	N	Sample location DTAD01SW at Daisy Mine. Note whiteboard reads DTAD02SW and should read DTAD01SW.
43-18	9/10/01	1657	JM	N	Sample location DTBK01SS at Daisy Mine. Note whiteboard reads DTBK03SS and should read DTBK01SS.
43-19	9/10/01	1712	JM	N	Sample location DTTP01SS at Daisy Mine. Note whiteboard reads DTTP04SS and should read DTTP01SS.
43-20	9/10/01	1727	JM	N	Sample location DTTP02SS at Daisy Mine. Note whiteboard reads DTTP05SS and should read DTTP02SS.
43-21	9/10/01	1825	JM	N	Sample location DTTP03SS at Daisy Mine. Note whiteboard reads DTTP06SS and should read DTTP03SS.
44-1	9/11/01	1020	JM	S	Silver Queen Mine and the Columbia River in the background.
44-2	9/11/01	1025	JM	E	View of mine building on upper slope of Silver Queen Mine.
44-3	9/11/01	1027	JM	NE	View of additional mine building on upper slope of Silver Queen Mine.
44-4	9/11/01	1035	JM	E	Mine adit on upper slope containing sand bags and standing water at Silver Queen Mine.
44-5	9/11/01	1042	JM	E	View of tailings pile at Silver Queen Mine.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 897924 **TDD No. 01-02-0028**
Lens Type: 35 mm **Upper Columbia River ESI**

Photo No.	Date	Time	By	Direction	Description
44-6	9/11/01	1043	JM	E	View of tailings pile at Silver Queen Mine.
44-7	9/11/01	1044	JM	NE	View of tailings pile at Silver Queen Mine.
44-8	9/11/01	1044	JM	NE	View of tailings pile at Silver Queen Mine.
44-9	9/11/01	1047	JM	W	Columbia River viewed from Silver Queen mine adit.
44-10	9/11/01	1055	JM	NW	Dilapidated mill building at Silver Queen Mine.
44-11	9/11/01	1120	JM	S	View of overland drainage route approximately 60 feet from mine adit.
44-12	9/11/01	1125	JM	S	Powerlines at Silver Queen Mine approximately 50 feet southwest from mine adit.
44-13	9/11/01	1135	JM	S	Possible pump house at base of Silver Queen Mine.
44-14	9/11/01	1145	JM	S	Middle slope located on the north side of the main mill building at Silver Queen Mine.
44-15	9/11/01	1520	JM	NW	View of mine pit water at Anderson/Calhoun Mine.
44-16	9/11/01	1525	JM	W	Sample location ANAD01SW at Anderson/Calhoun Mine.
44-17	9/11/01	1530	JM	W	View of mine pit water at Anderson/Calhoun Mine.
44-18	9/11/01	1533	JM	S	Silo near mine pit water at Anderson/Calhoun Mine.
44-19	9/11/01	1535	JM	E	View of tailings pile from mine pit water at Anderson/Calhoun Mine.
44-20	9/11/01	1537	JM	S	View of waste rock conveyor belt from mine pit water at Anderson/Calhoun Mine.
44-21	9/12/01	0940	JM	E	View of sample ANSS01SS at stained soil area next to storage shed at Anderson/Calhoun Mine.
44-22	9/12/01	0941	JM	E	Sample location ANSS01SS at Anderson/Calhoun Mine.
44-23	9/12/01	0943	JM	E	Sample location ANSS02SS at Anderson/Calhoun Mine.
44-24	9/12/01	0945	JM	E	View of sample ANSS02SS at Anderson/Calhoun Mine.
45-1	9/12/01	1040	JM	SE	Sample location ANTP01SS at Anderson/Calhoun Mine.
45-2	9/12/01	1045	JM	SE	View of sample ANTP01SS at Anderson/Calhoun Mine.
45-3	9/12/01	1050	JM	N	Sample location ANTP02SS at Anderson/Calhoun Mine.
45-4	9/12/01	1100	JM	N	View of sample ANTP02SS at Anderson/Calhoun Mine.
45-5	9/12/01	1102	JM	W	Sample location ANTP03SS at Anderson/Calhoun Mine.
45-6	9/12/01	1105	JM	W	View of sample ANTP03SS at Anderson/Calhoun Mine.
45-7	9/12/01	1107	JM	W	Sample location ANTP04SD at Anderson/Calhoun Mine.
45-8	9/12/01	1110	JM	W	View of sample ANTP04SD at Anderson/Calhoun Mine.
45-9	9/12/01	1115	JM	E	Sample location ANTP05SD at Anderson/Calhoun Mine.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No. 897924 **TDD No. 01-02-0028**
Lens Type: 35 mm **Upper Columbia River ESI**

Photo No.	Date	Time	By	Direction	Description
45-10	9/12/01	1120	JM	E	View of sample ANTP05SD at Anderson/Calhoun Mine.
45-11	9/12/01	1127	JM	SE	Sample location ANTP06SD at Anderson/Calhoun Mine.
45-12	9/12/01	1145	JM	SE	View of sample ANTP06SD at Anderson/Calhoun Mine.
45-13	9/12/01	1258	JM	E	Sample location ANSS03SS at Anderson/Calhoun Mine.
45-14	9/12/01	1315	JM	E	View of sample ANSS03SS at Anderson/Calhoun Mine.
45-15	9/12/01	1318	JM	NE	Sample location ANSS04SS at Anderson/Calhoun Mine.
45-16	9/12/01	1325	JM	NE	View of sample ANSS04SS at Anderson/Calhoun Mine.
45-17	9/12/01	1340	JM	NE	Sample location ANCK01SD at Anderson/Calhoun Mine.
45-18	9/12/01	1400	JM	SW	View of sample ANCK01SD at Anderson/Calhoun Mine.
46-1	9/12/01	1510	JM	W	Viewof sample ANPP01SD at Anderson/Calhoun Mine.
46-2	9/12/01	1530	JM	N	Sample location ANBK01SD at Anderson/Calhoun Mine.
46-3	9/12/01	1545	JM	N	View of sample ANBK01SD at Anderson/Calhoun Mine.
46-4	9/13/01	0925	JM	N	Sample locations NSSL01SS through NSSL03SS at Northport Smelter.
46-5	9/13/01	1015	JM	W	View of sample NSSL01SS at Northport Smelter.
46-6	9/13/01	1045	JM	W	View of sample NSSL02SS at Northport Smelter.
46-7	9/13/01	1046	JM	SW	Sample location NSSL01SS at Northport Smelter.
46-8	9/13/01	1050	JM	W	View of sample NSSL02SS at Northport Smelter.
46-9	9/13/01	1100	JM	N	Sample location NSSL03SS at Northport Smelter.
46-10	9/13/01	1110	JM	N	View of sample NSSL03SS at Northport Smelter.
46-11	9/13/01	1425	JM	W	Sample location ANBK02SS at Anderson/Calhoun Mine.
46-12	9/13/01	1435	JM	W	View of sample ANBK02SS at Anderson/Calhoun Mine.

Key:

E = East
JM = Joy Marshall.
JS = Jessica Spiegel.
LD = Leatta Dahlhoff.
mm = Millimeter.
MT = Monica Tonel.
N = North.
NE = Northeast.
No. = Number.
NW = Northwest.
RL = Ralph Lambert.
S = South.
SE = Southeast.
SW = Southwest.
TK = Tara Karamas.
W = West.

PHOTOGRAPHIC IDENTIFICATION SHEET

Camera Serial No. EPA# 6279466
Lens Type: 35 mm super compact zoom

Upper Columbia River ESI-
Sheep Creek/Northport Mill

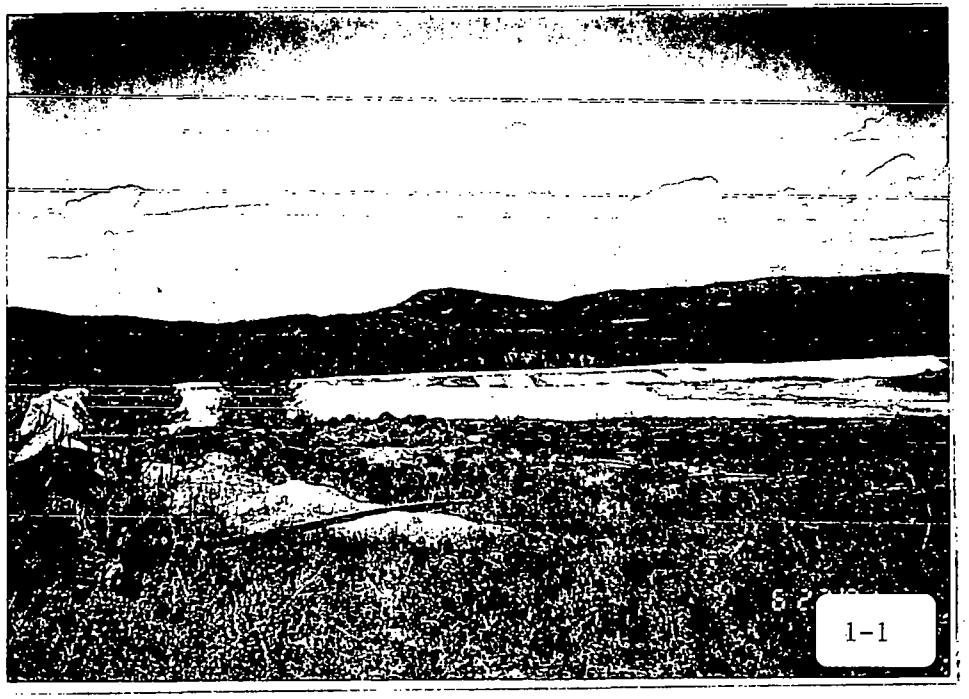
Photo No.	Date	By	Direction	Description
47-1	11/28/01	MT	NW	View of Sheep Creek and US25 from property adjacent to Sheep Creek Mill site.
47-2	11/28/01	MT	NW	View of salvaged material/debris on property adjacent to Sheep Creek Mill site.
47-3	11/28/01	MT	NW	View of salvaged material on property adjacent to Sheep Creek Mill site.
47-4	11/28/01	MT	NW	View of salvaged material on property adjacent to Sheep Creek Mill site.
47-5	11/28/01	MT	SW	View of above ground storage tanks on property adjacent to Sheep Creek Mill site. Entrance road and gate to Mill site in foreground. Highway US25 in background.
47-6	11/28/01	MT	SW	View of above ground storage tanks on adjacent property. Entrance road and gate to Sheep Creek Mill site in foreground. Mill building to right.
47-7	11/28/01	MT	NE	View of drums at Sheep Creek Mill site.
47-8	11/28/01	MT	N	View of containers/drums at Sheep Creek Mill site.
47-9	11/28/01	MT	W	View of silo at Sheep Creek Mill site.
47-10	11/28/01	MT	W	View of conveyor plant at Sheep Creek Mill site.
47-11	11/28/01	MT	E	View of unfinished tailings pond at Sheep Creek Mill site.
47-12	11/28/01	MT	SW	View of tailings pond at Sheep Creek Mill site. Storage silo in background.
47-13	11/28/01	MT	W	View of tailings pond at Sheep Creek Mill site. Pump equipment at right. Rock pile in background.
47-14	11/28/01	MT	S	View of rock pile at Sheep Creek Mill site.
47-15	11/28/01	MT		View of air flotation cells inside process building at Sheep Creek Mill site.
47-16	11/28/01	MT		View of chemical feeder inside process building at Sheep Creek Mill site.
47-17	11/28/01	MT		View of thickener room at Sheep Creek Mill site.

PHOTOGRAPHIC IDENTIFICATION SHEET

Camera Serial No. EPA# 6279466
Lens Type: 35 mm super compact zoom

Upper Columbia River ESI-
Sheep Creek/Northport Mill

Photo No.	Date	By	Direction	Description
47-18	11/28/01	MT	N	View of dryer at Sheep Creek Mill site.
47-19	11/28/01	MT	N	View of dryer at left and mill building at right at Sheep Creek Mill site.
47-20	11/28/01	MT		View inside assay lab at Sheep Creek Mill site.
47-21	11/28/01	MT		View inside assay lab at Sheep Creek Mill site.



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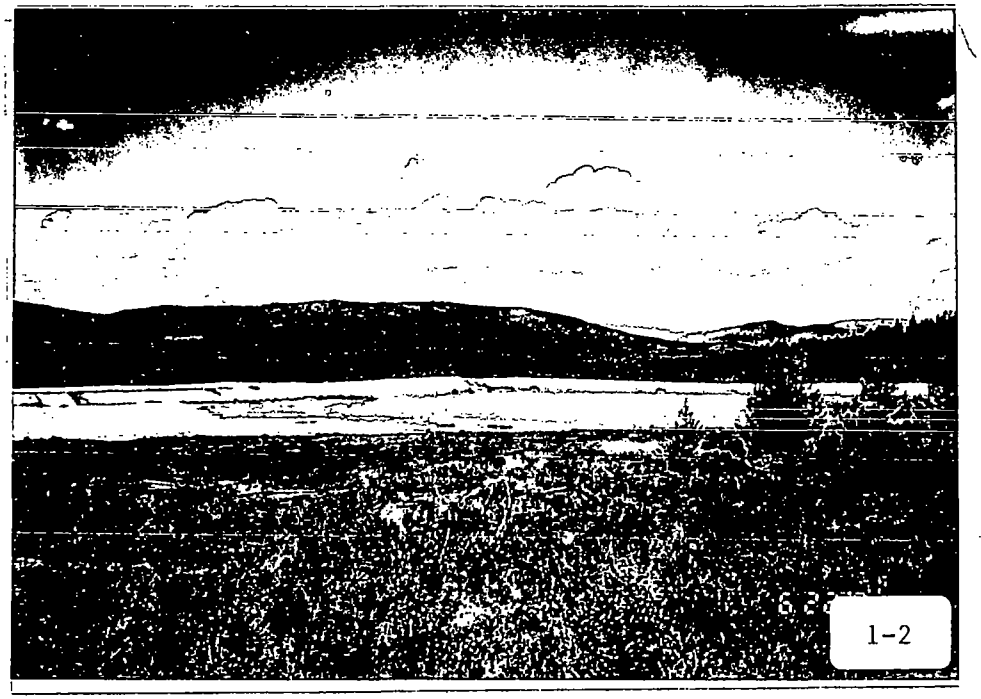

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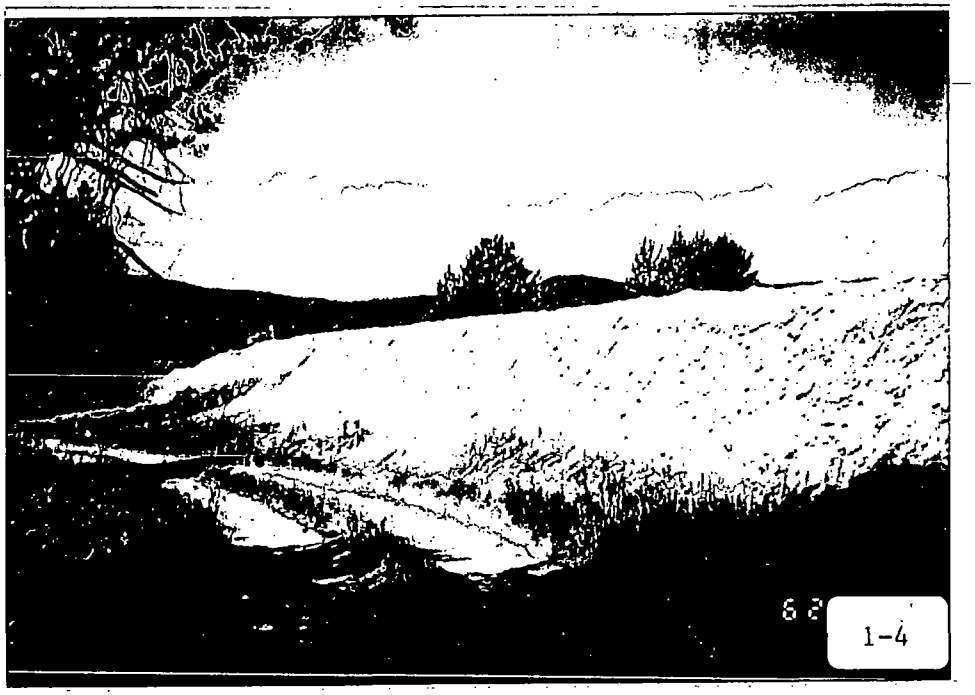

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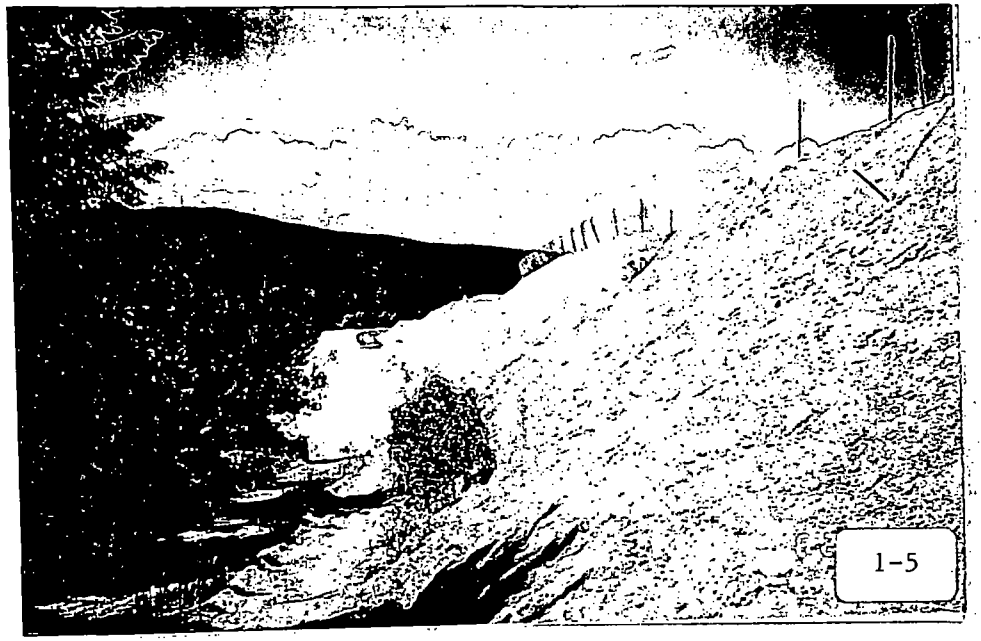

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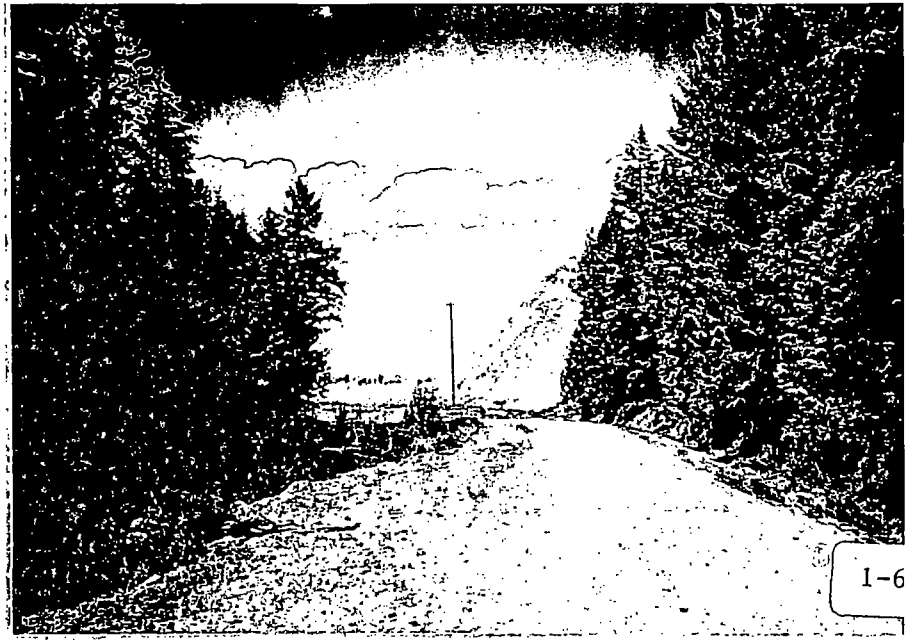

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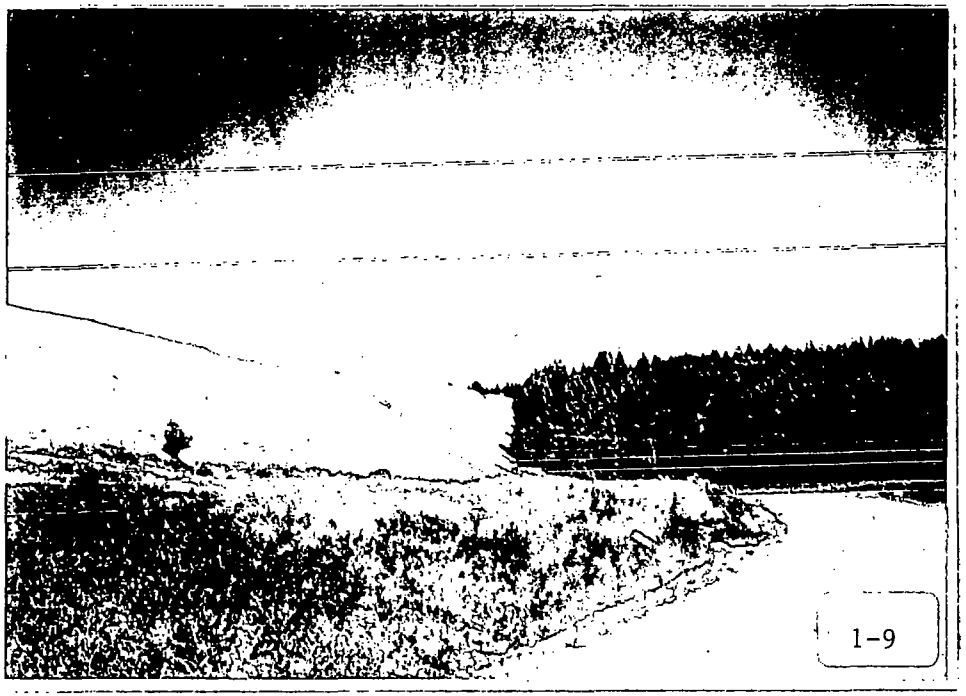

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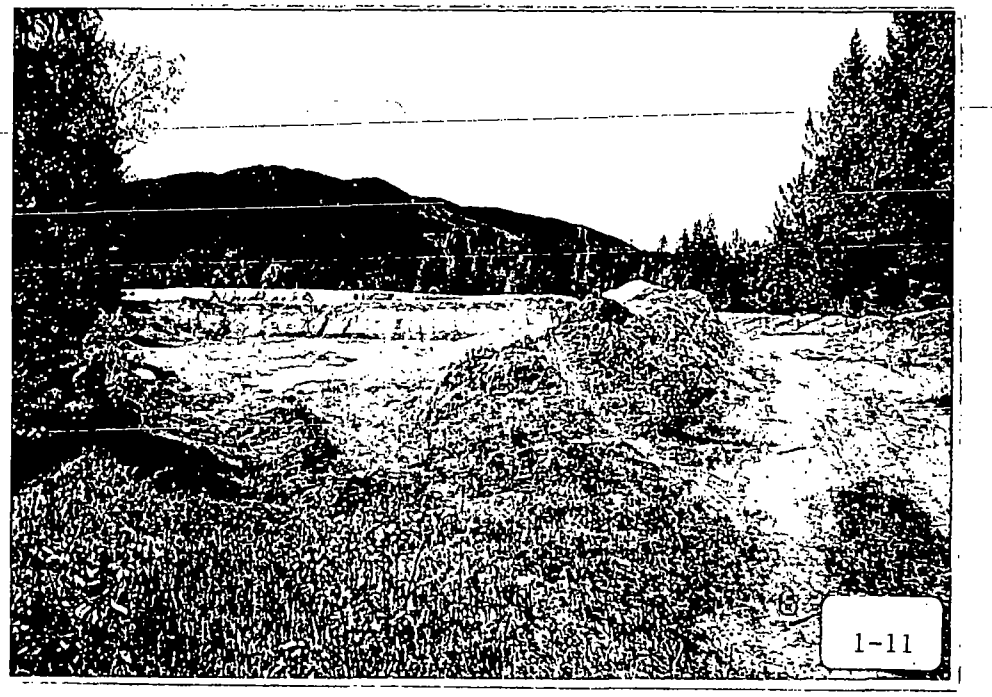

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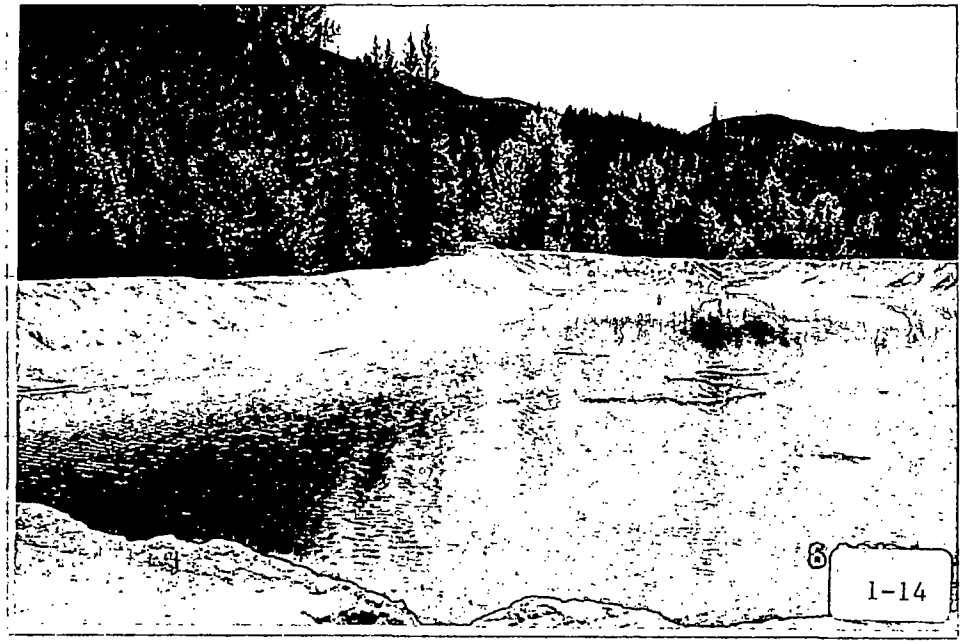

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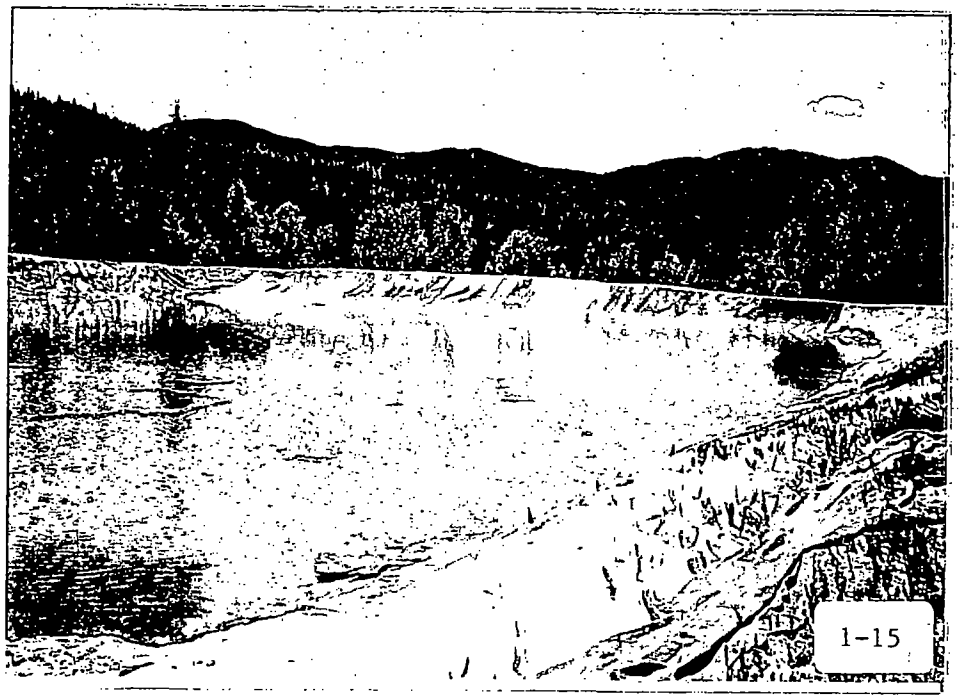

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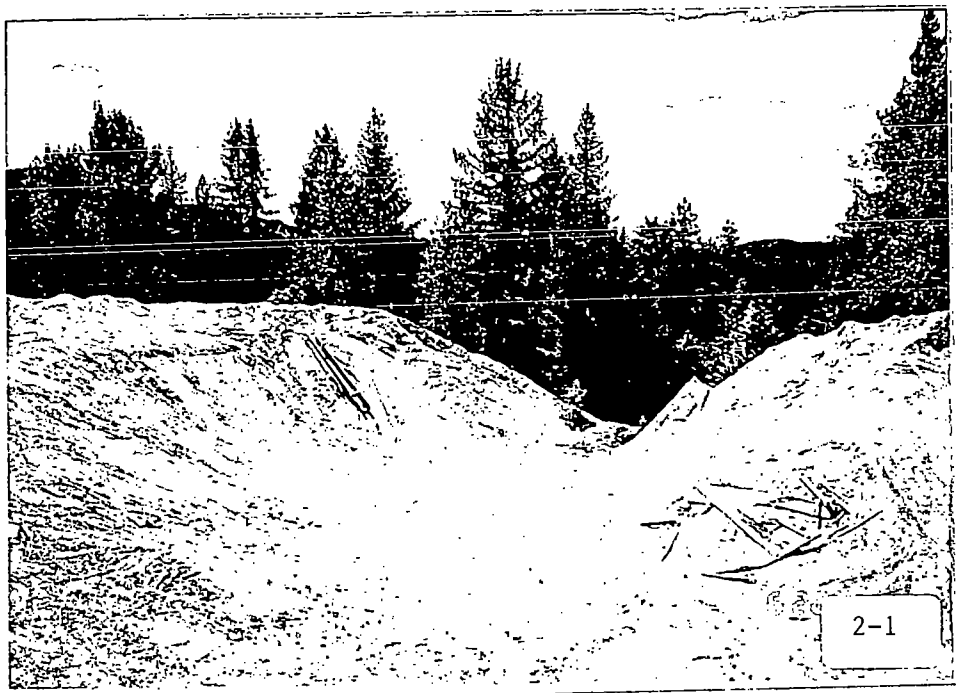

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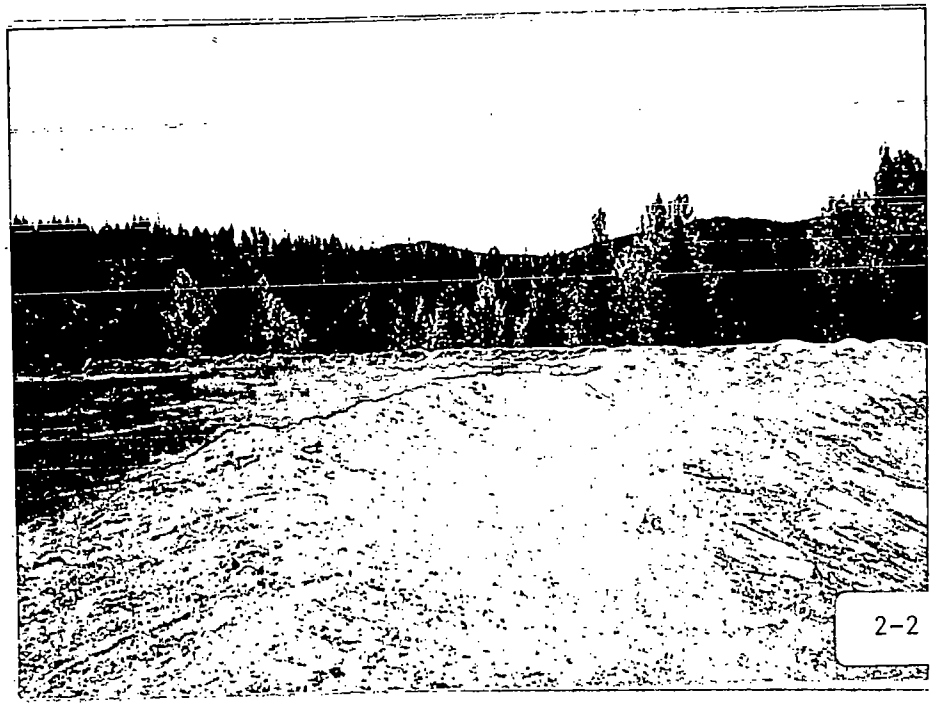

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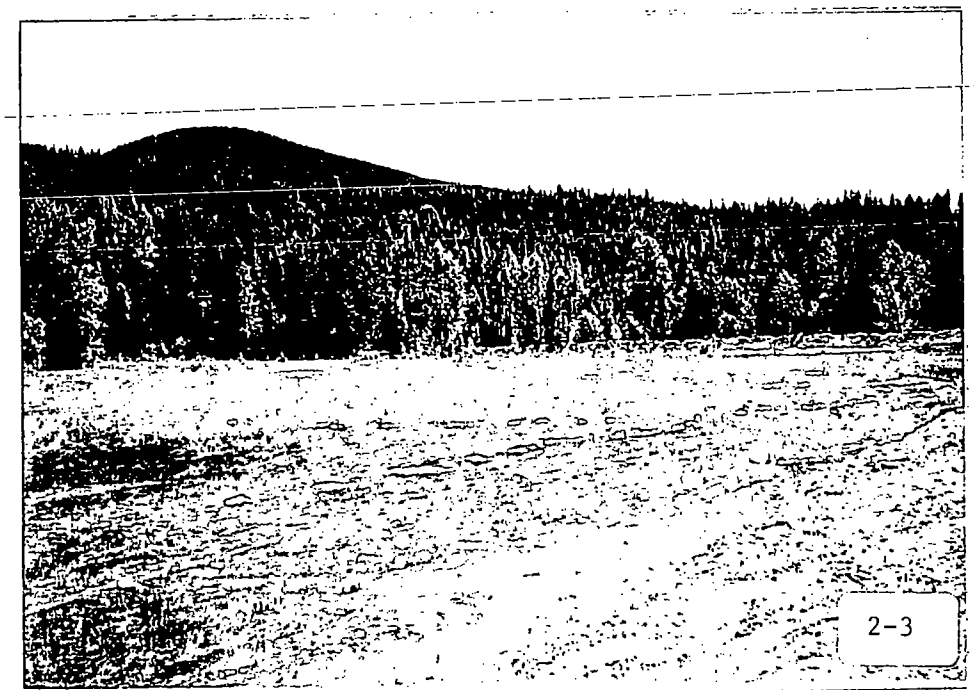

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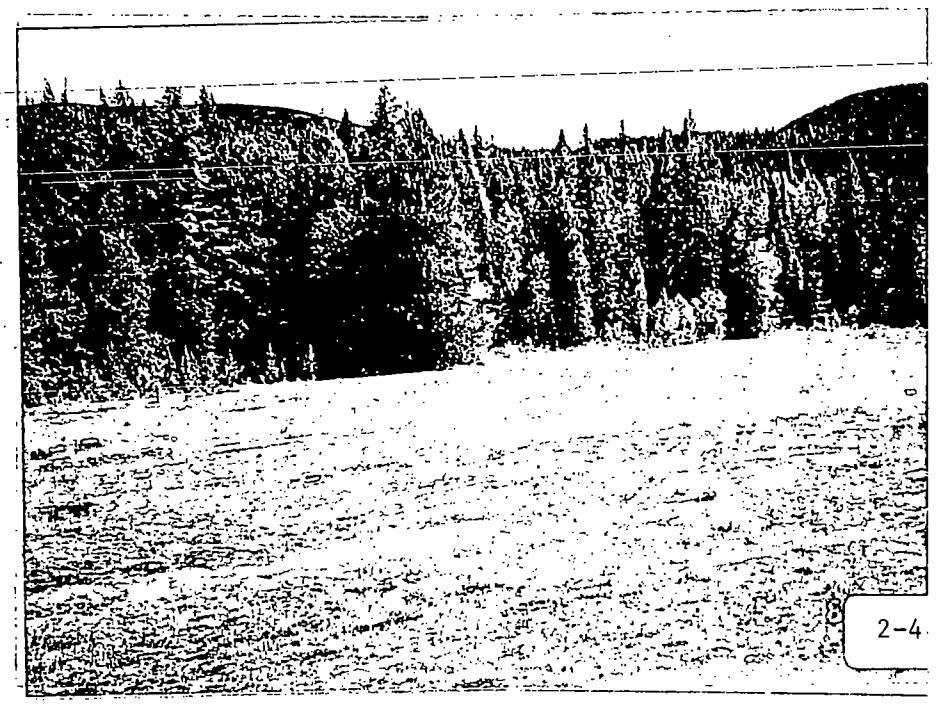

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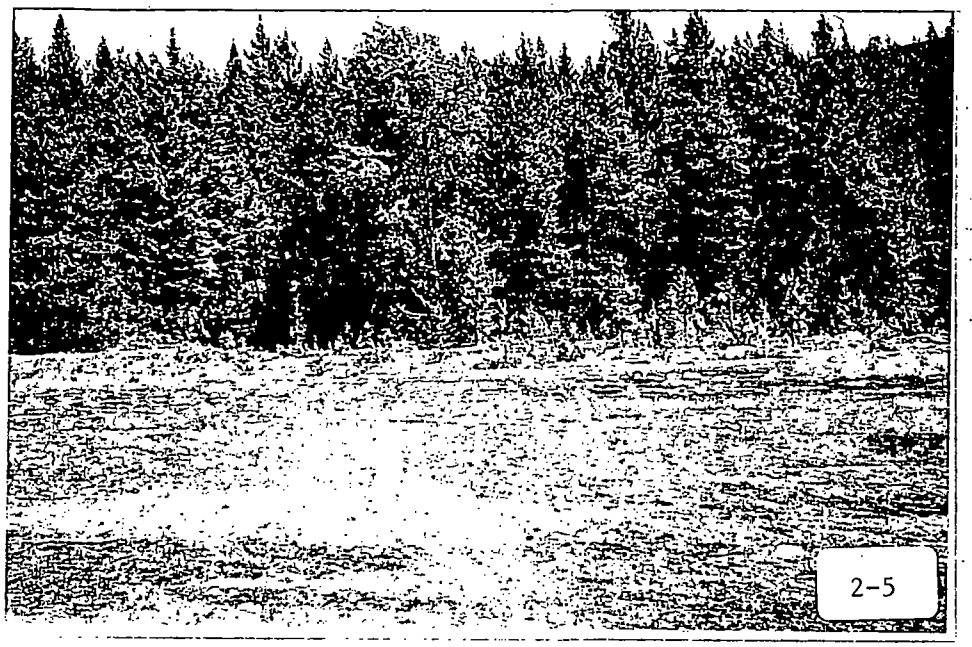

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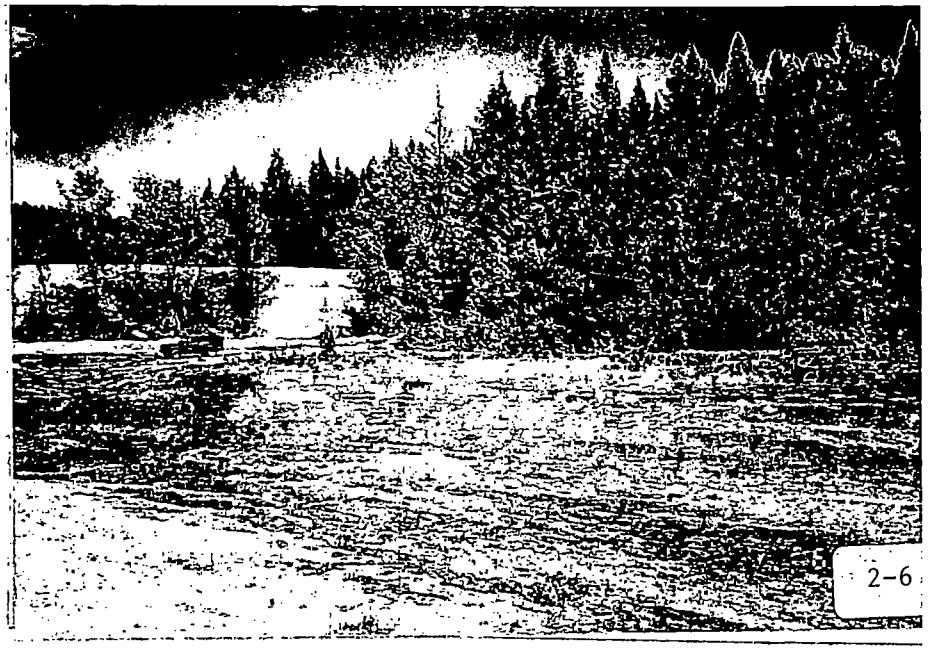

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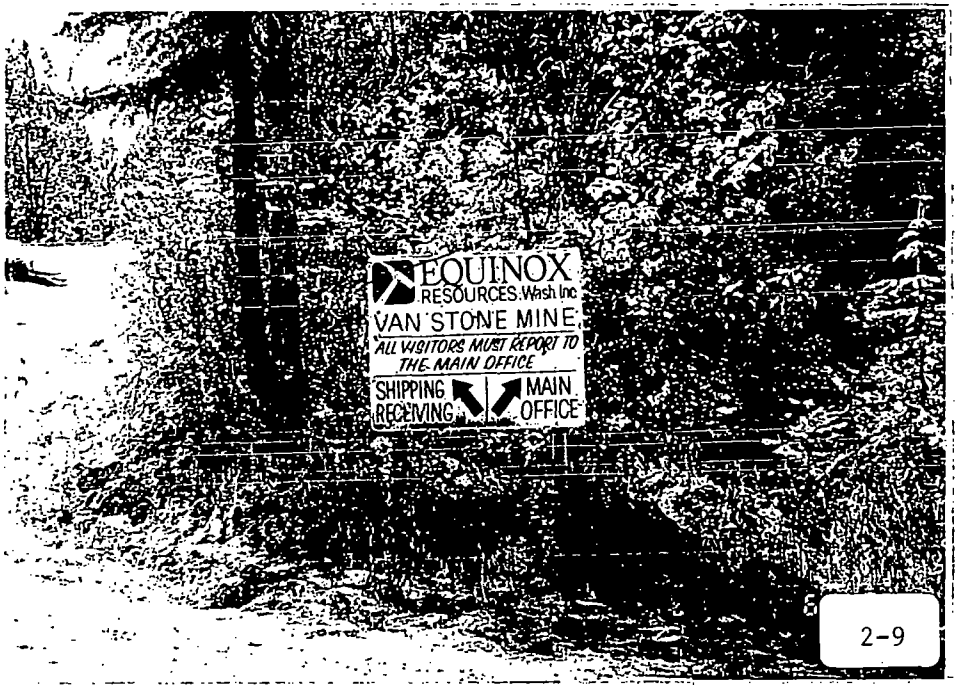

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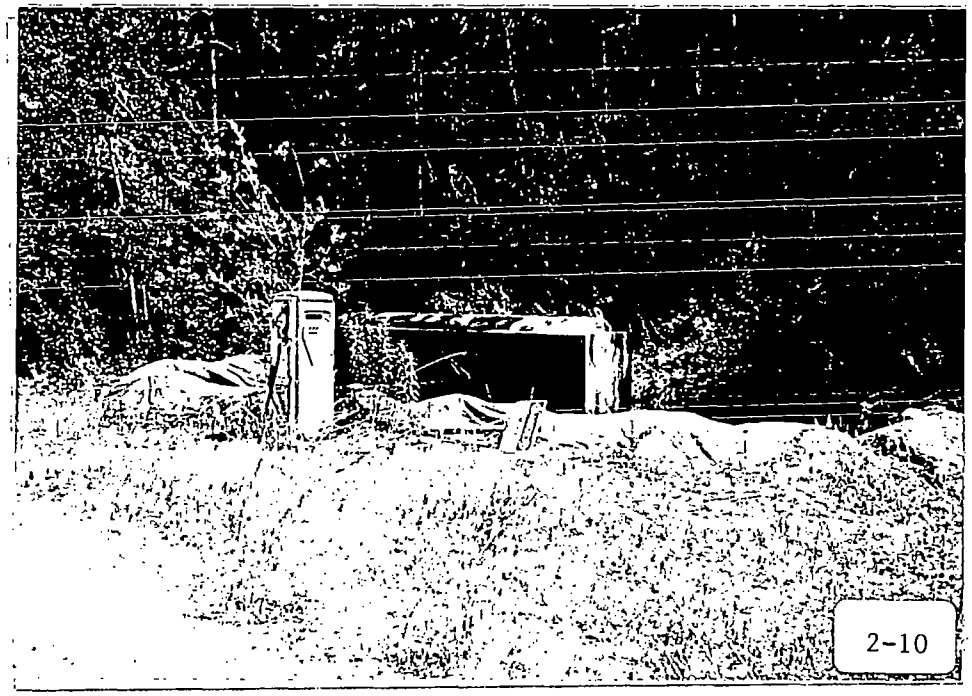

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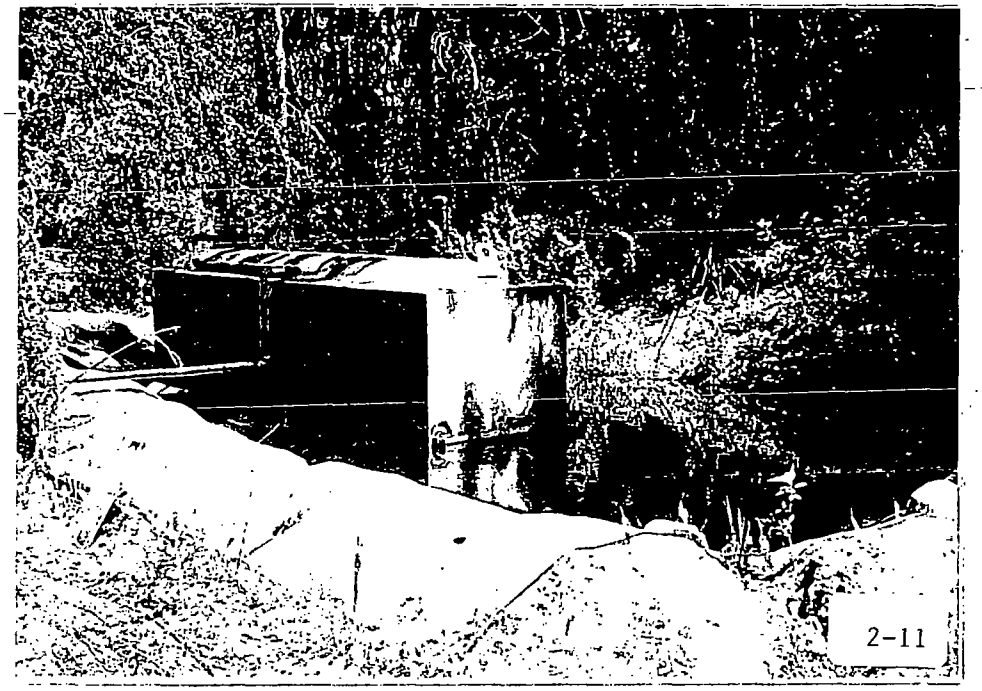

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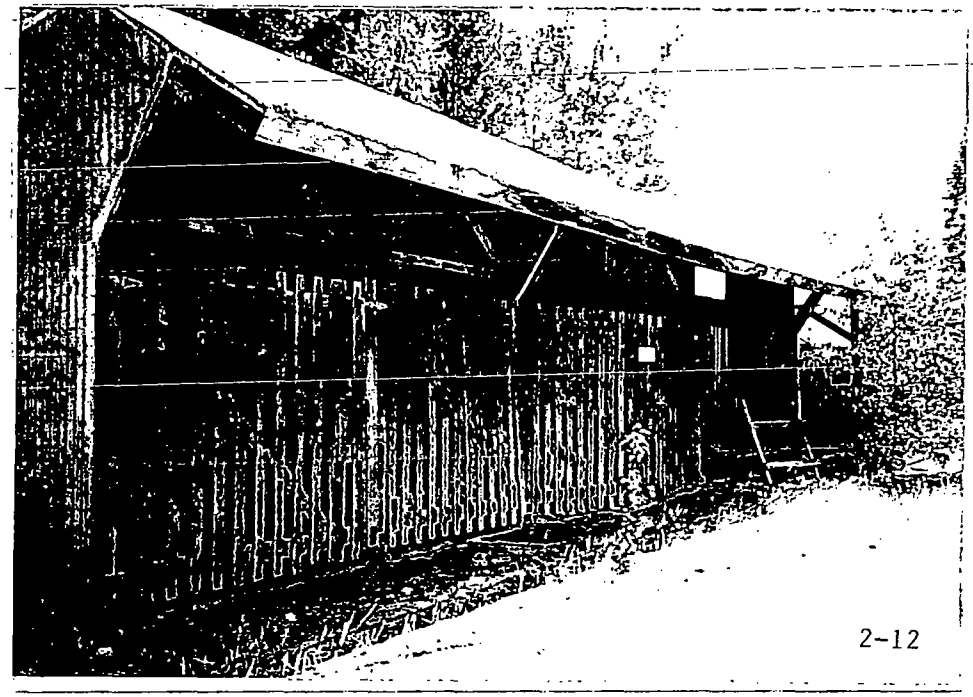

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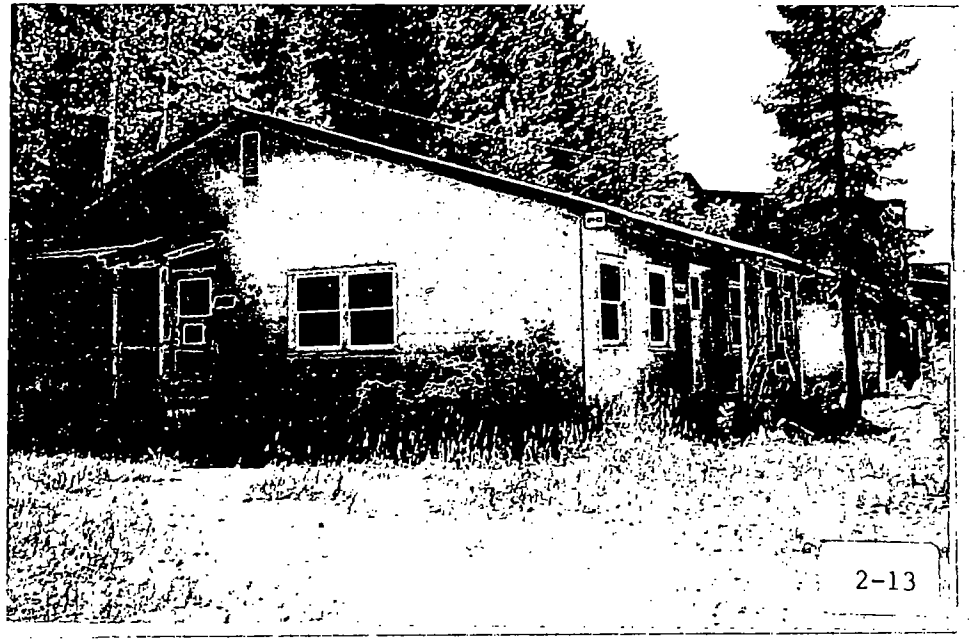

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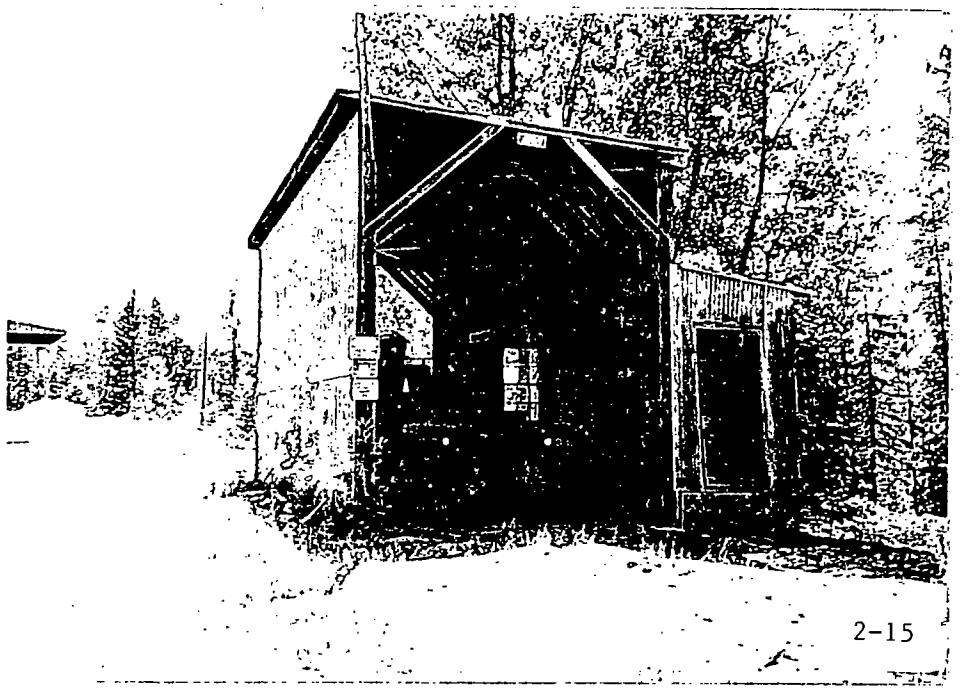

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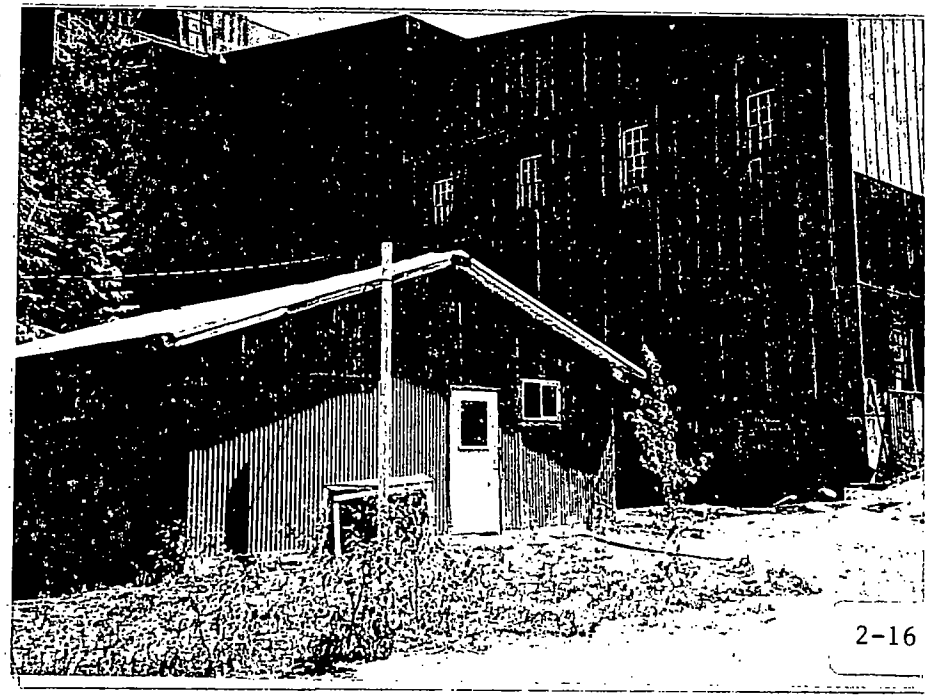

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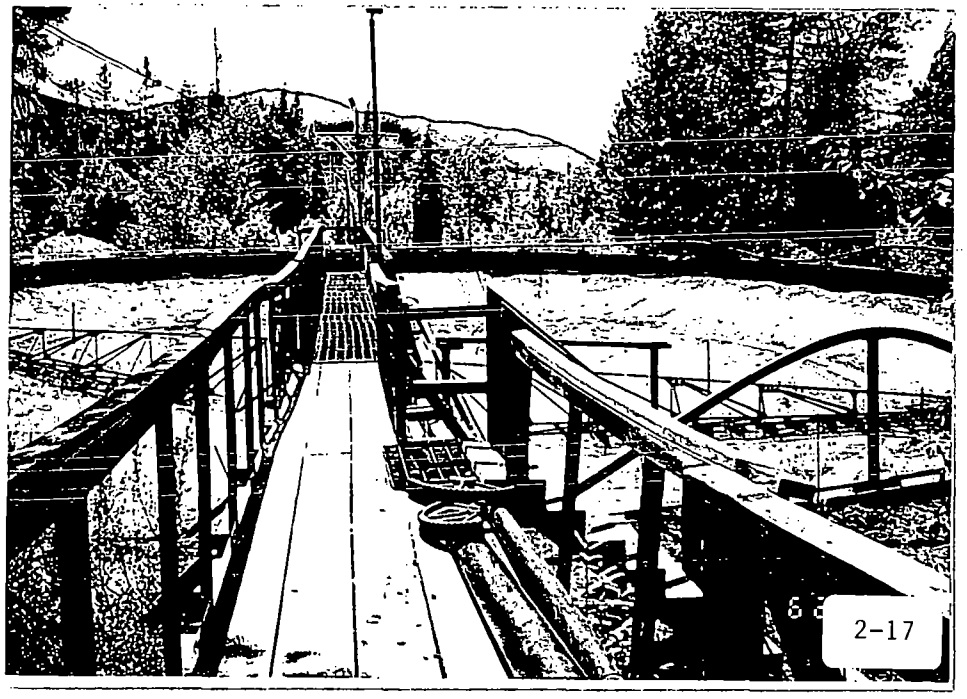

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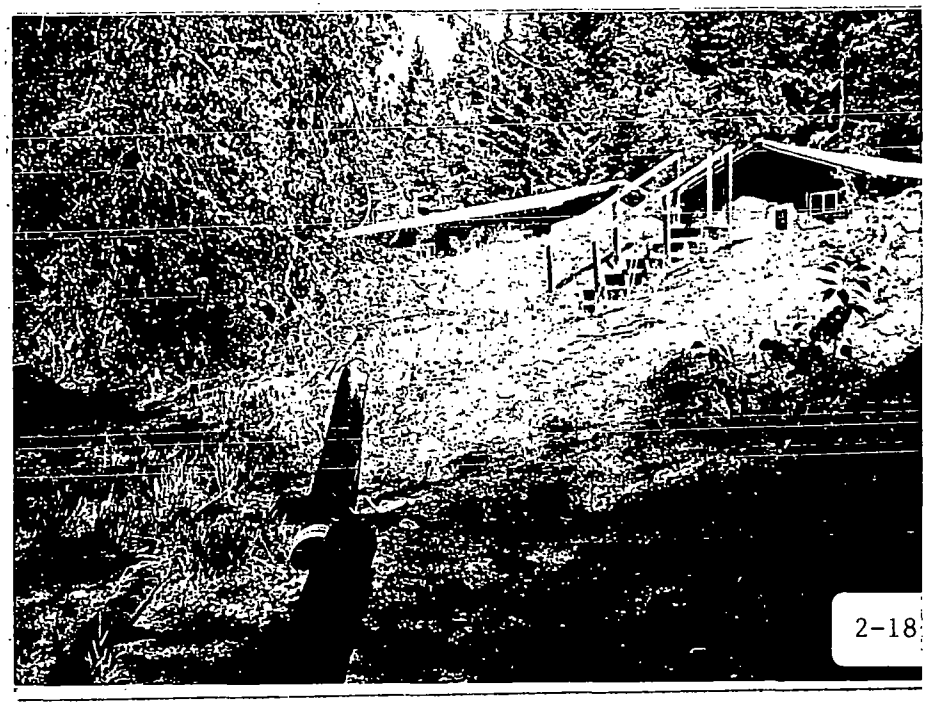

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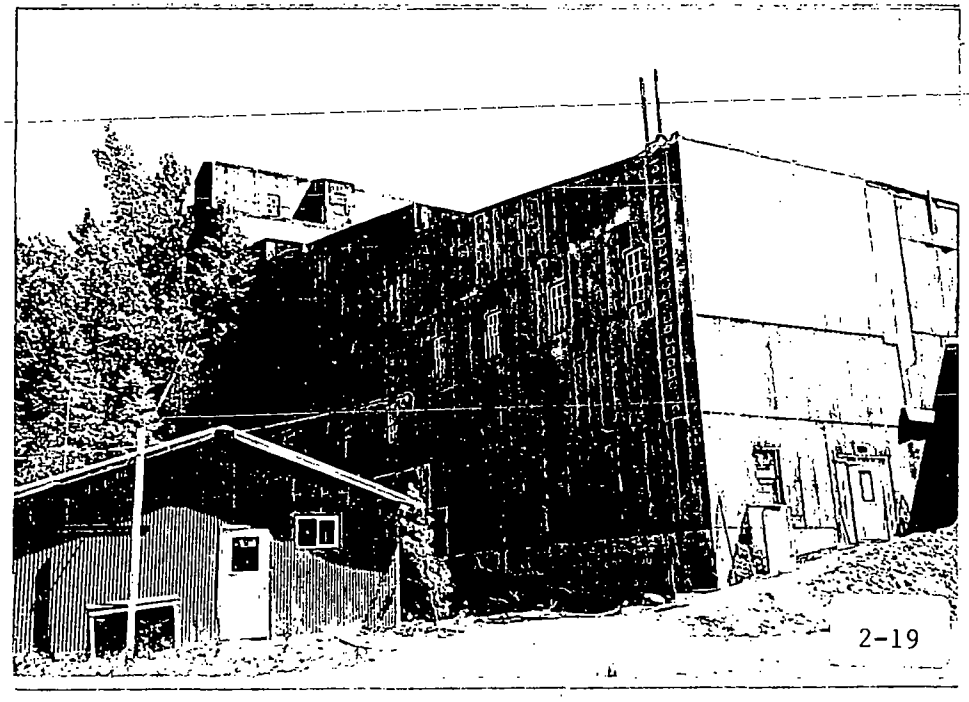

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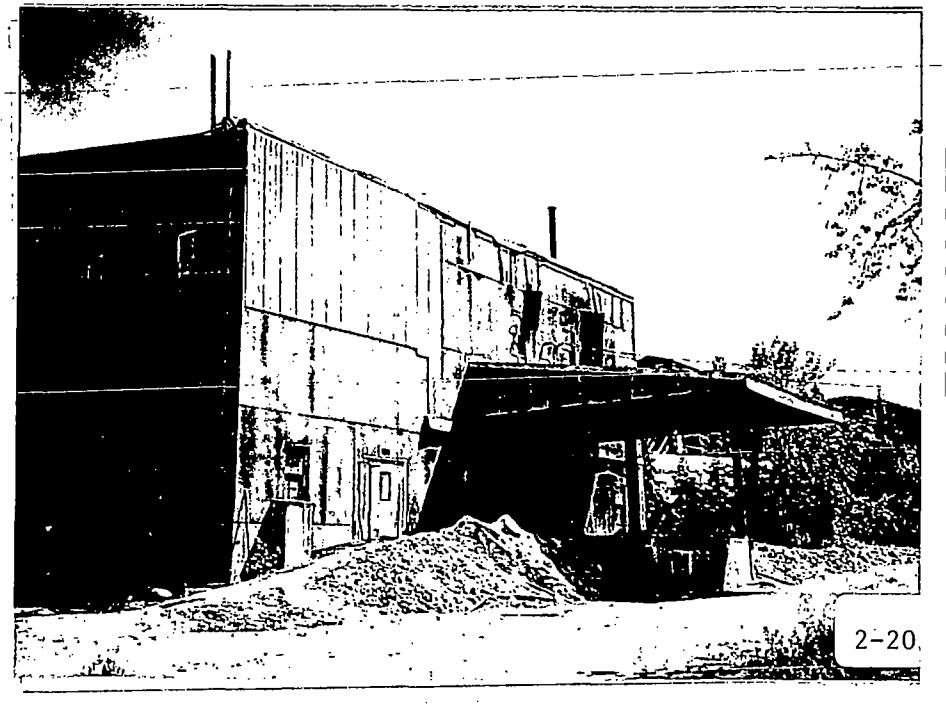

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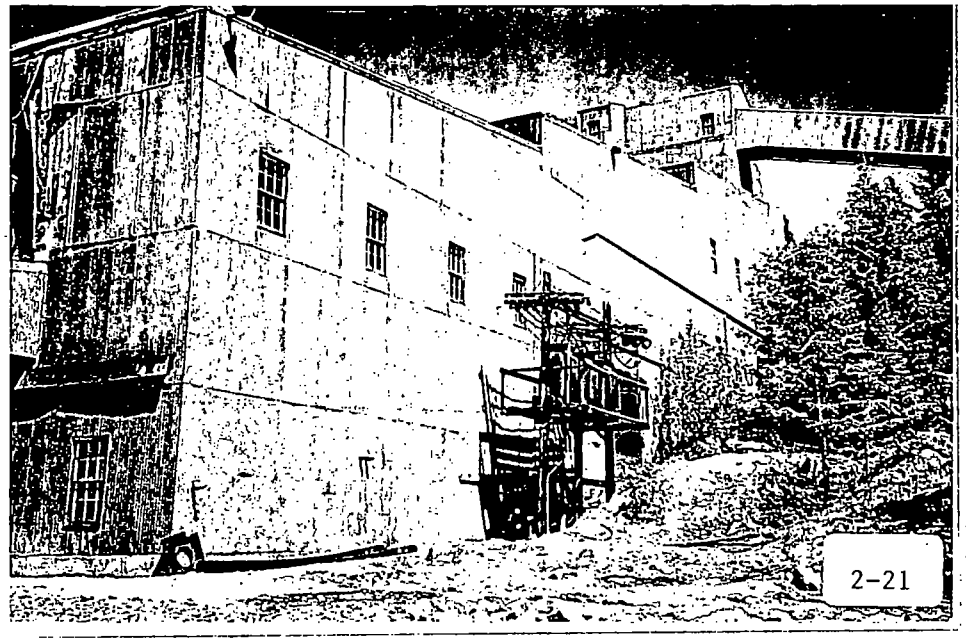

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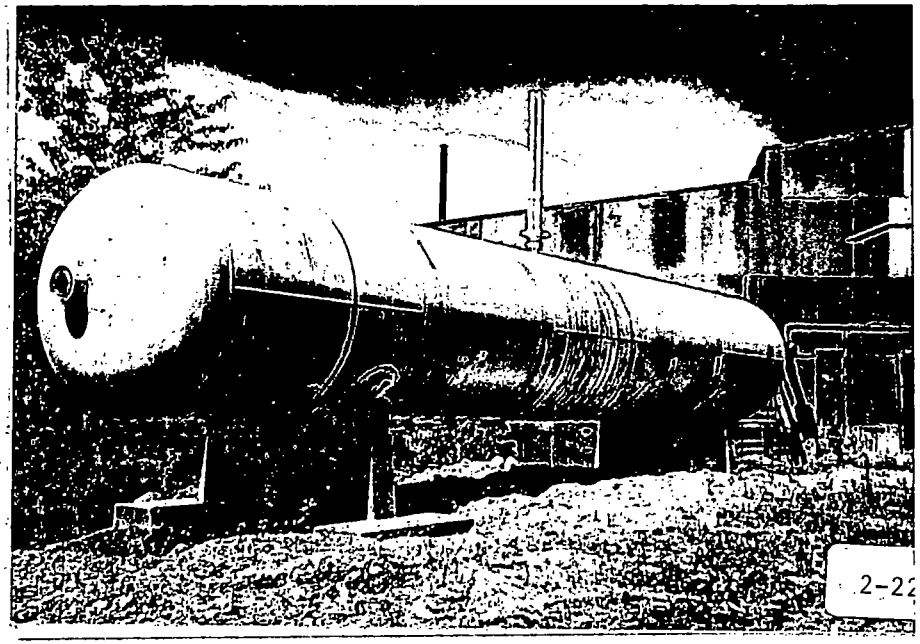

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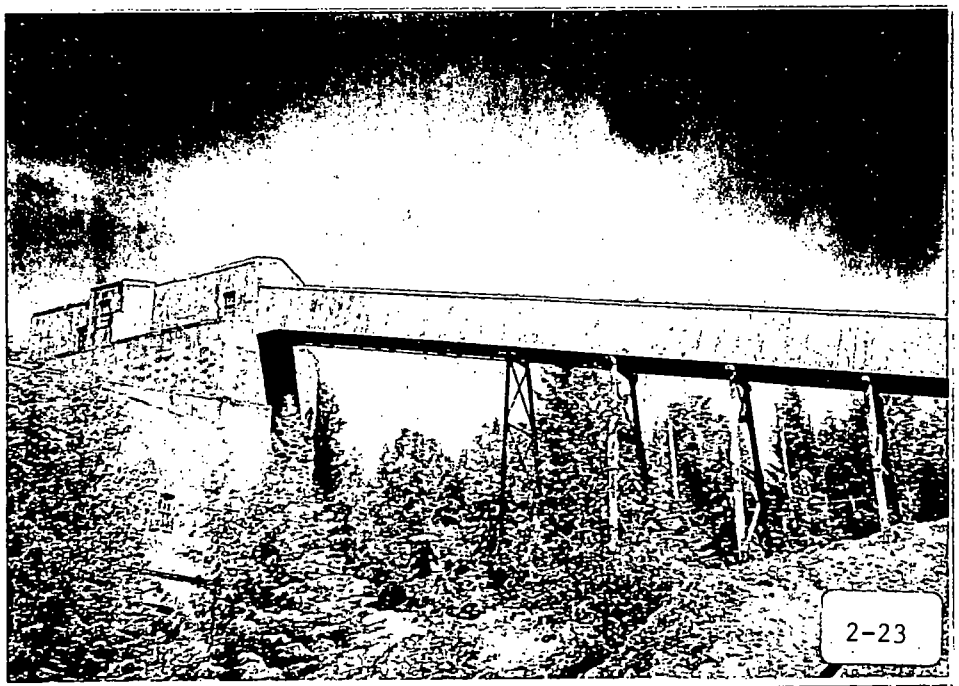

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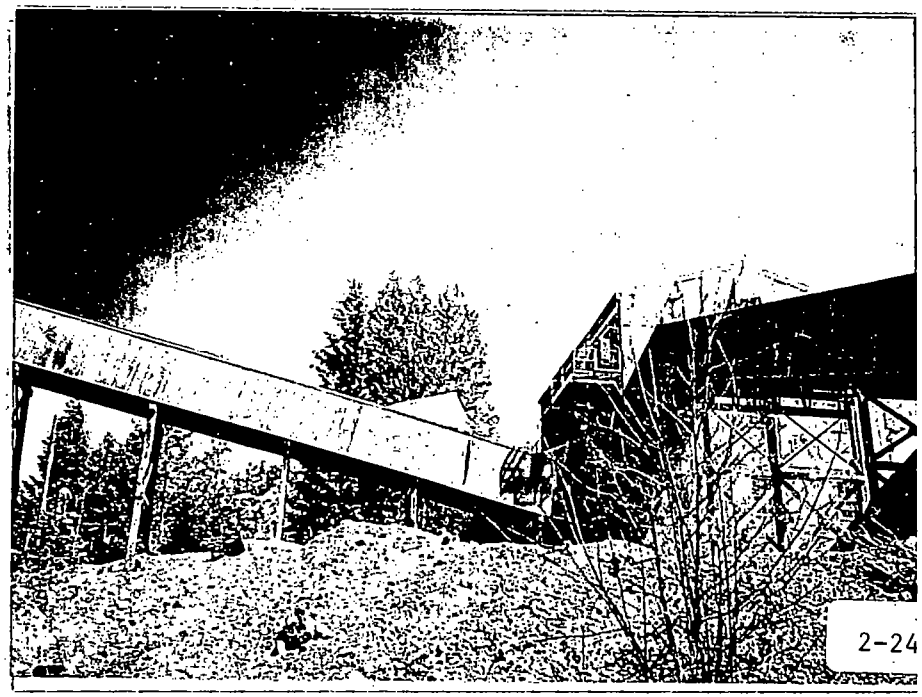

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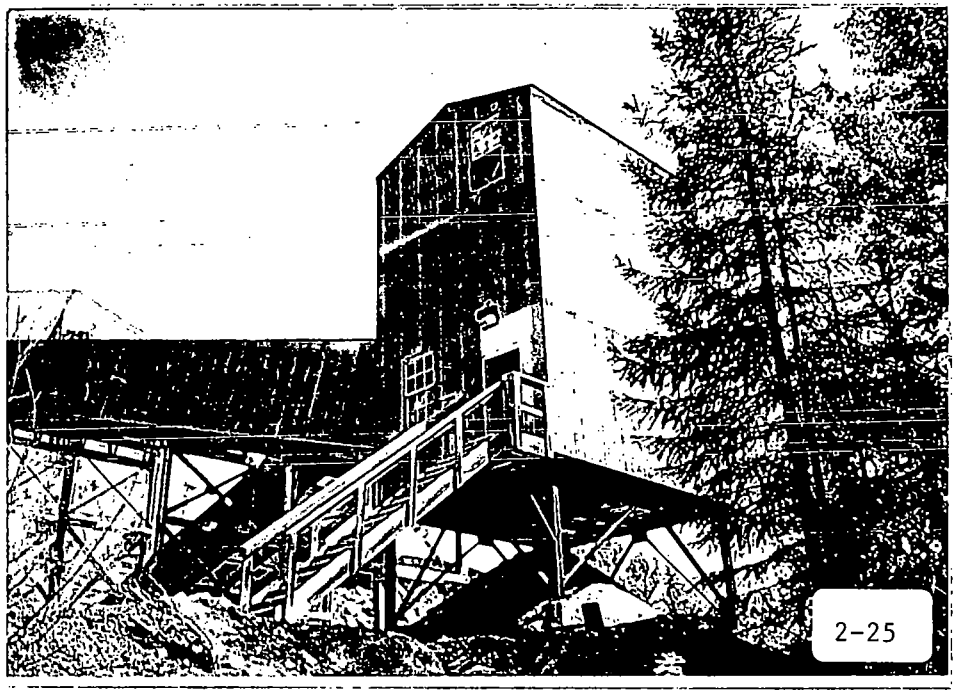

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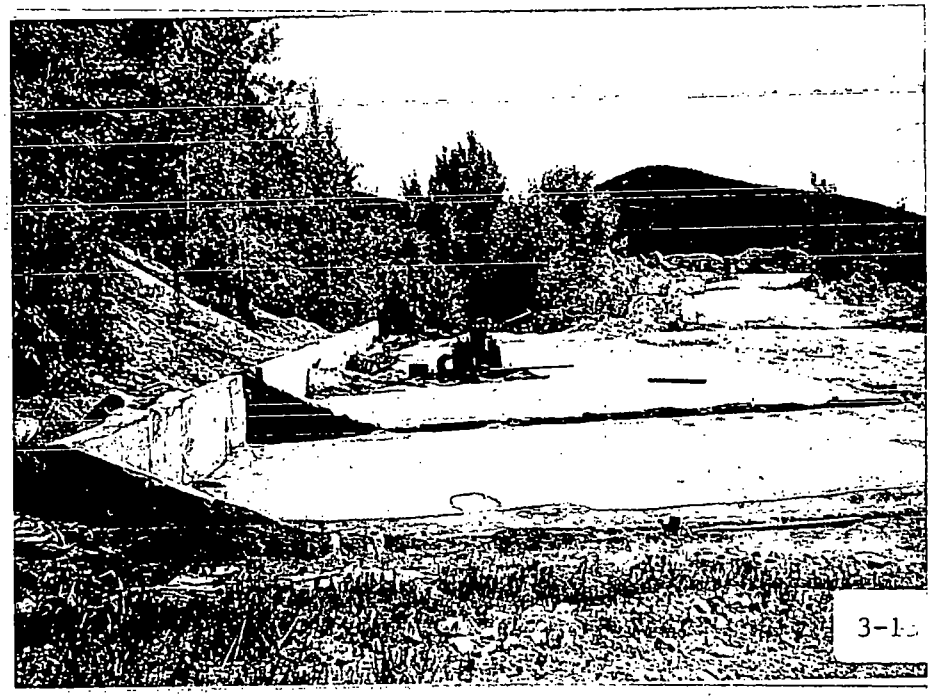

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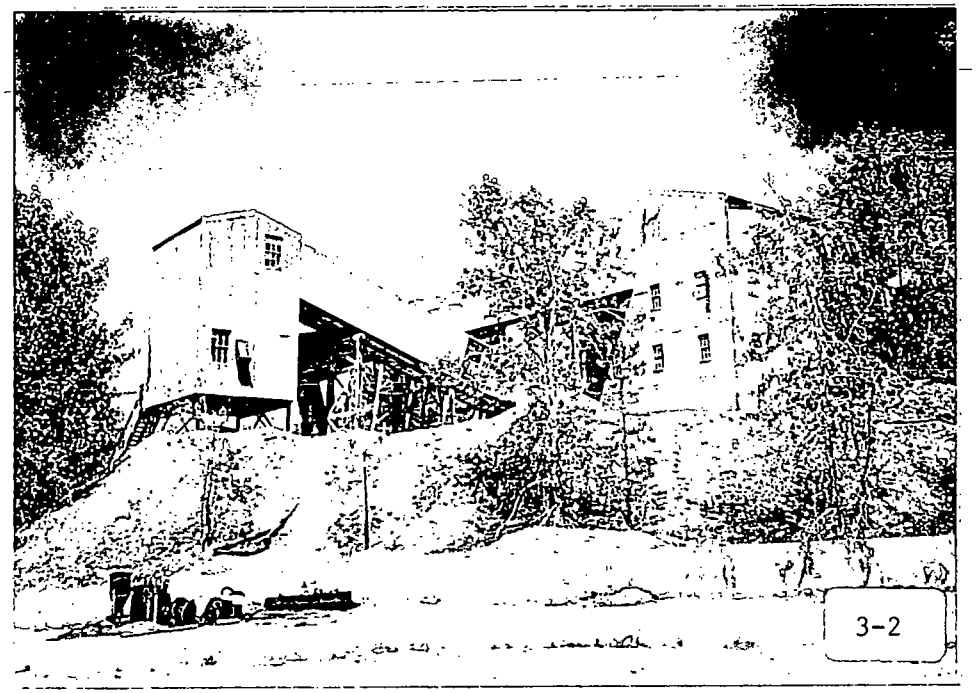

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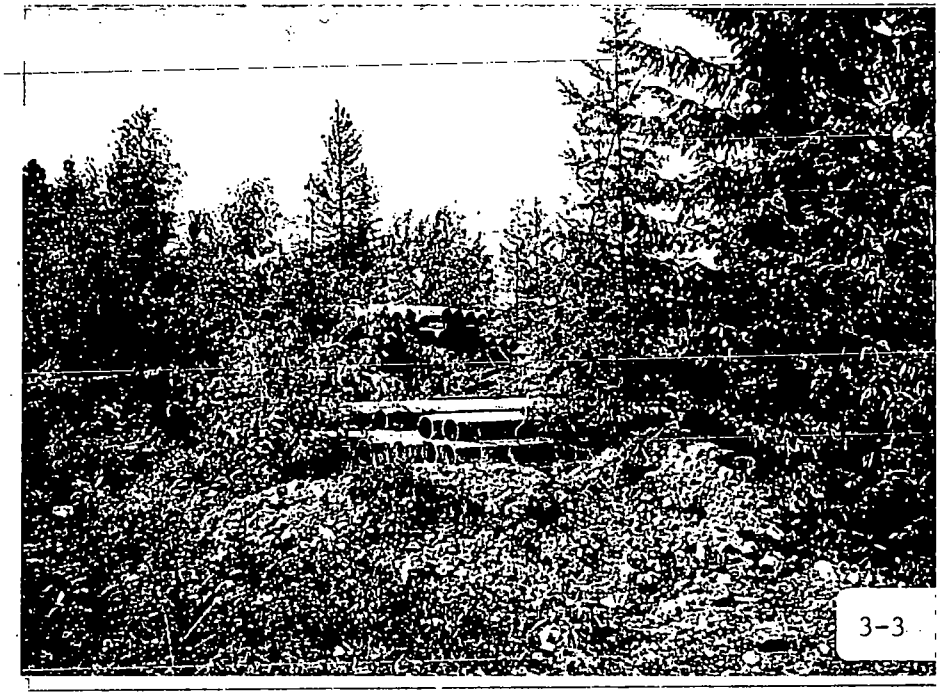

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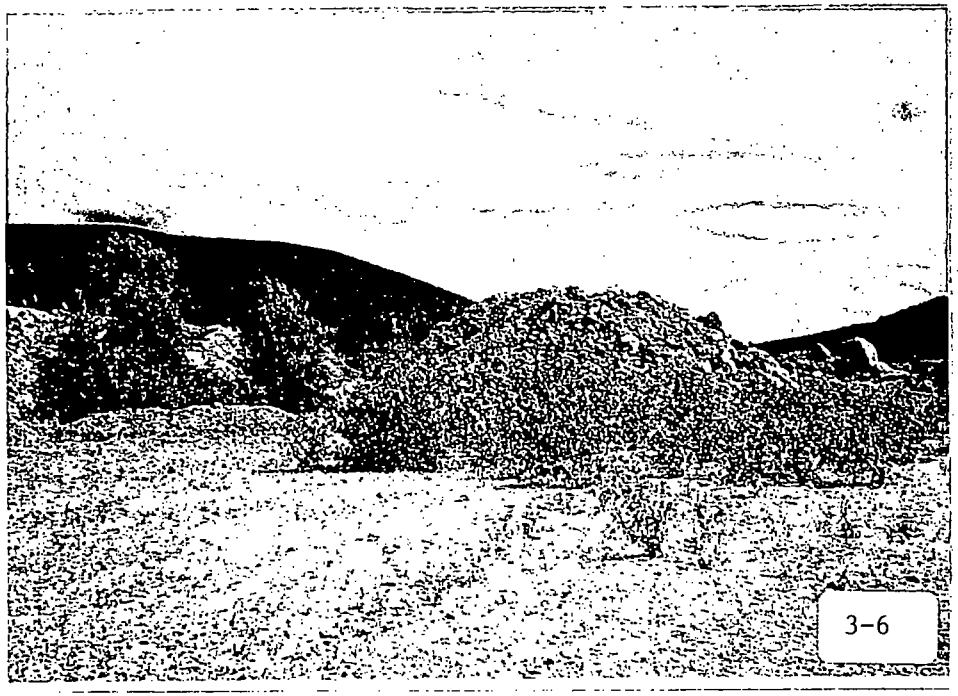

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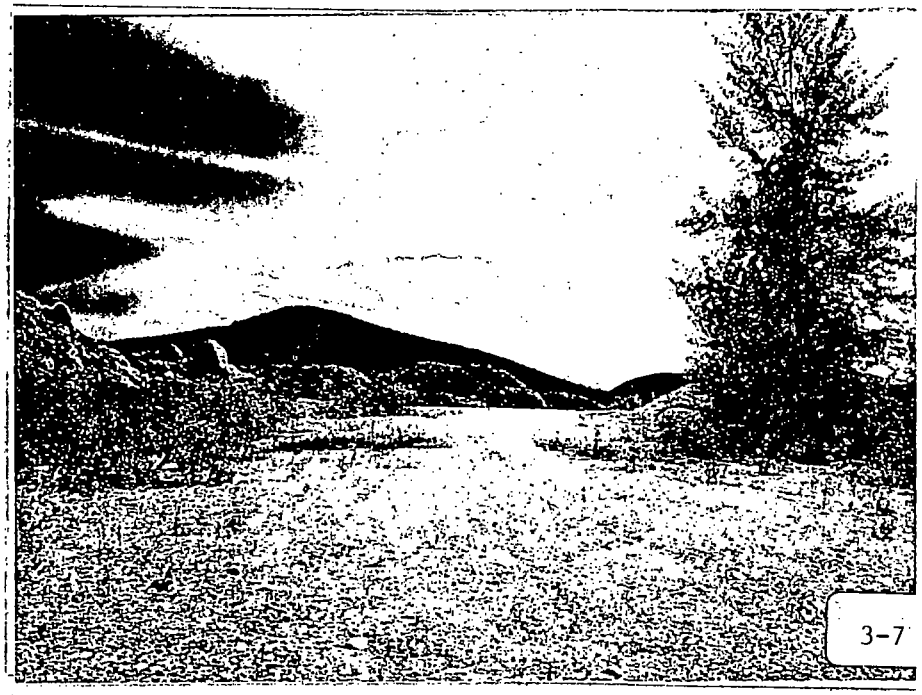

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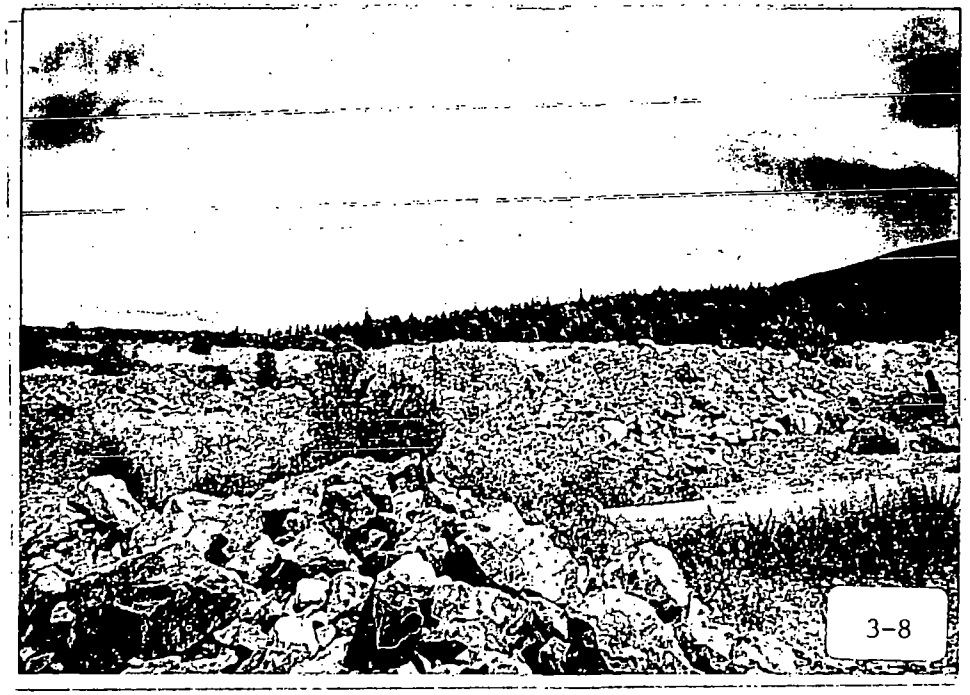

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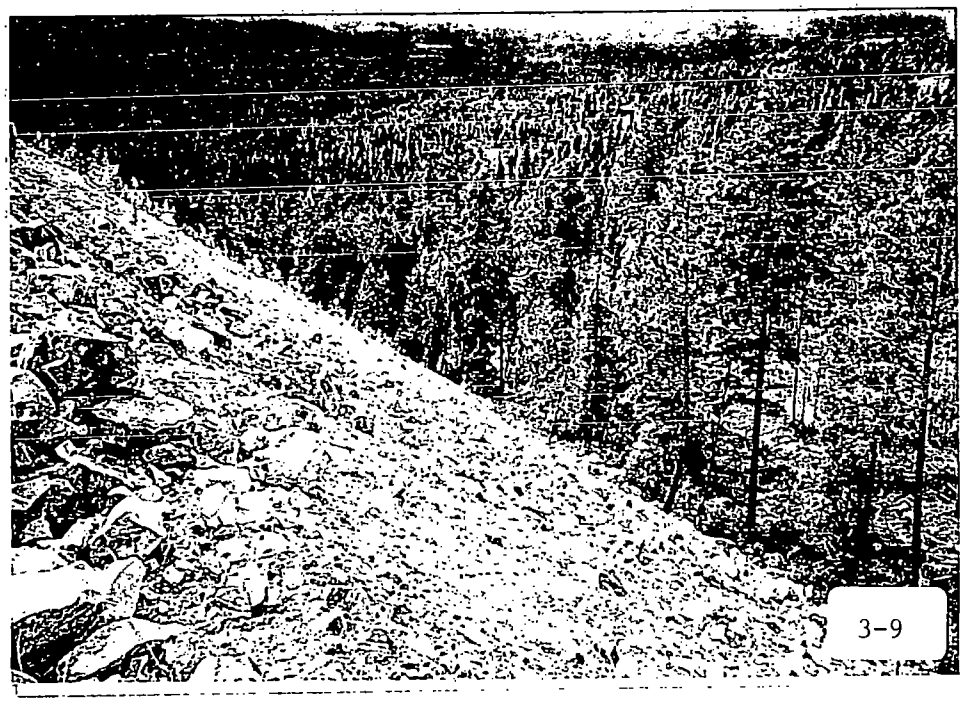

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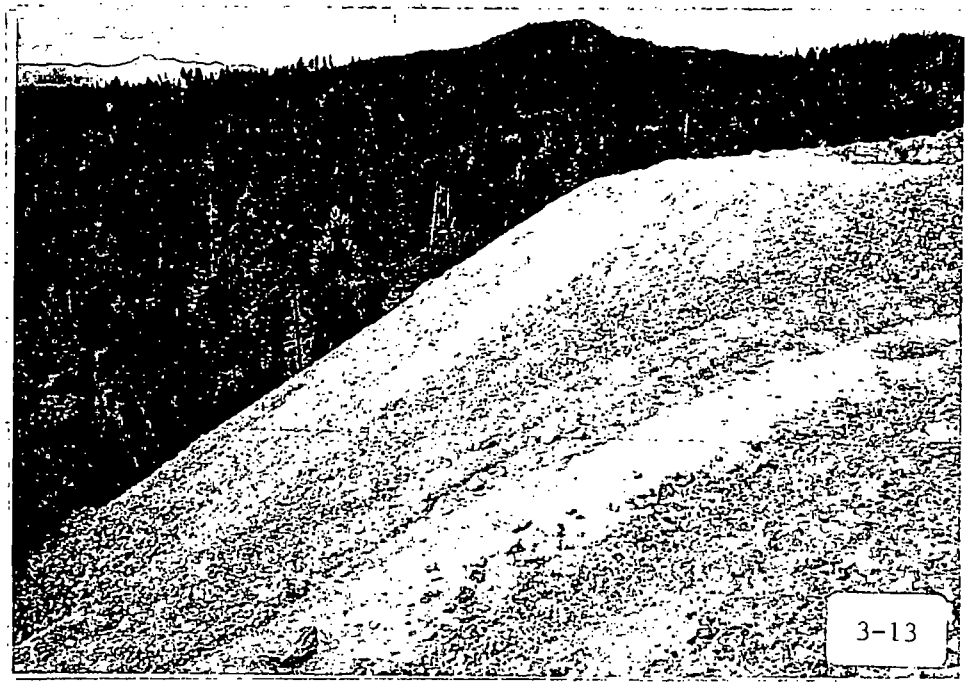

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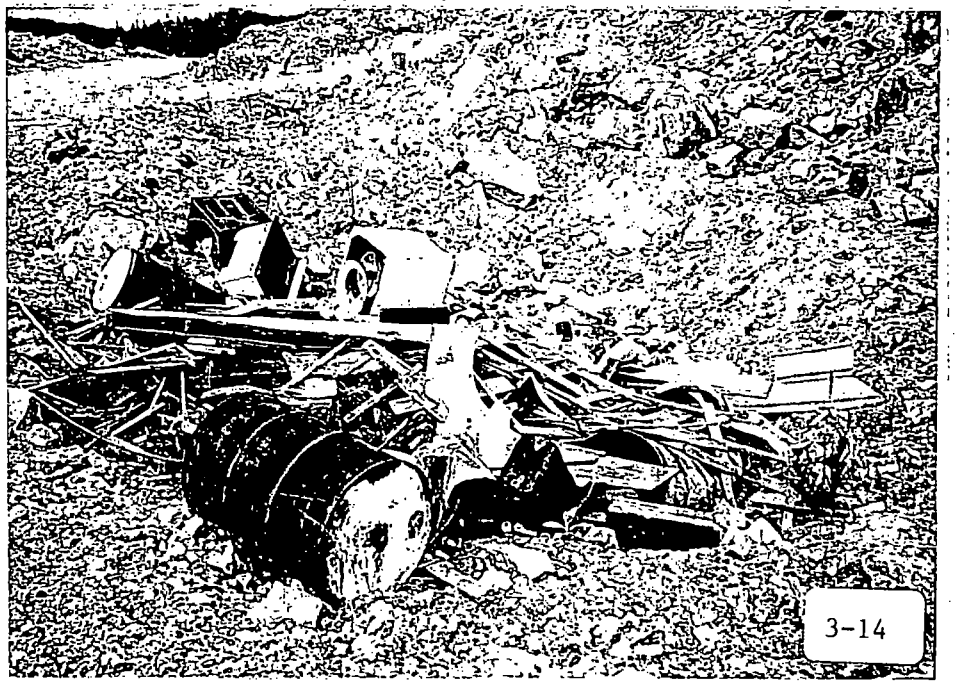

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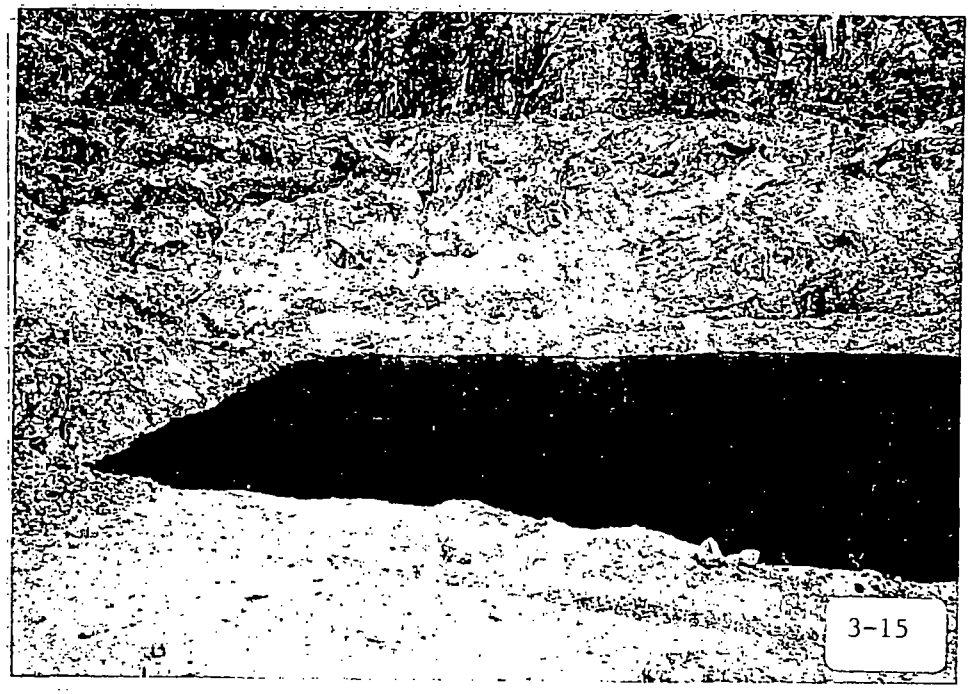

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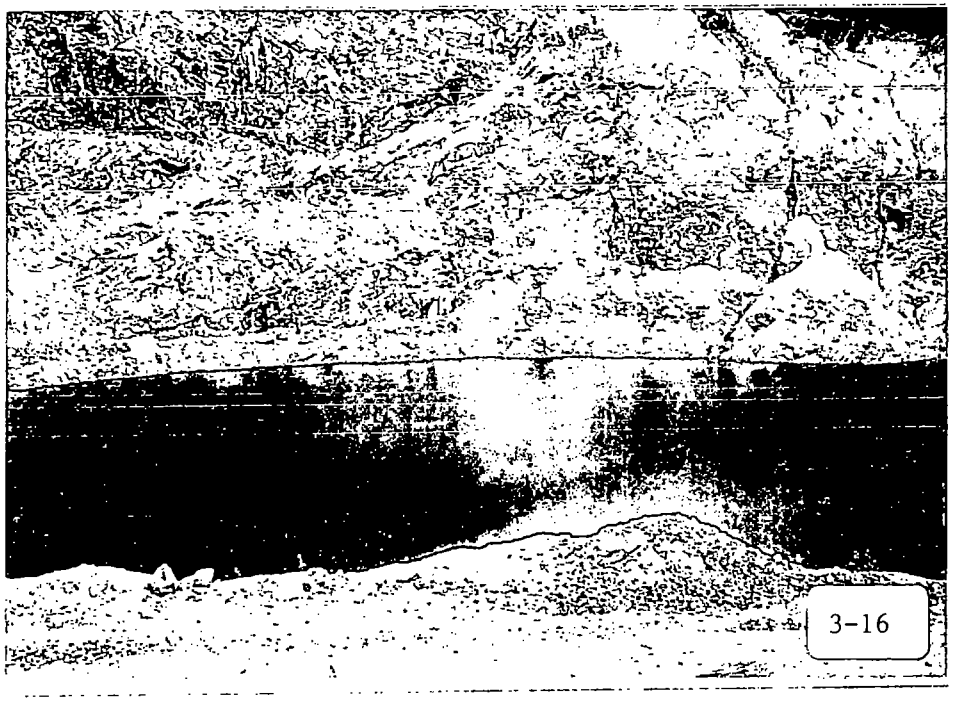

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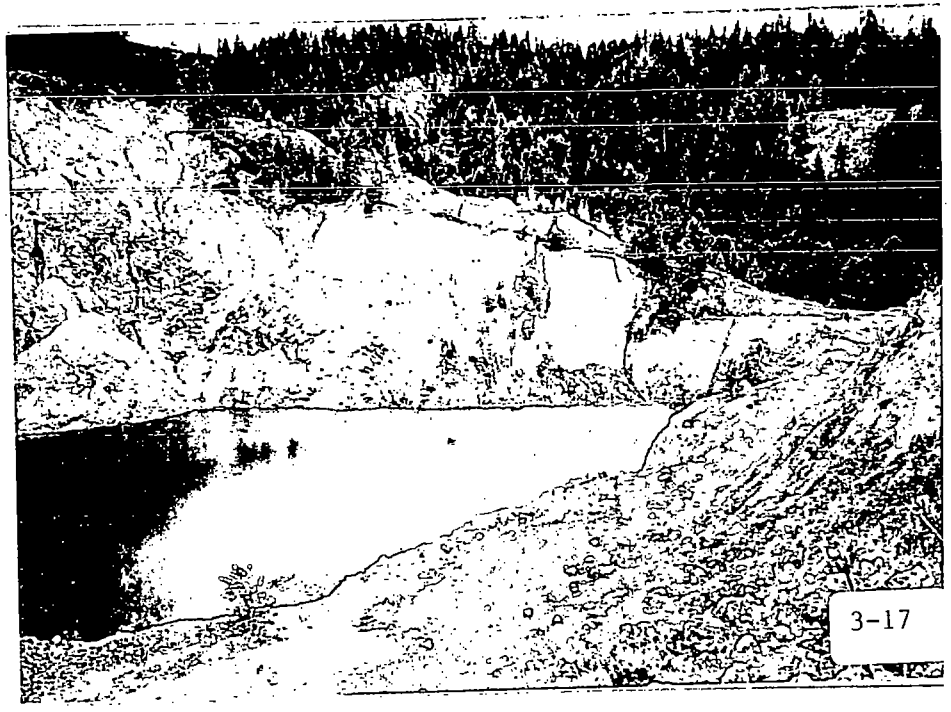

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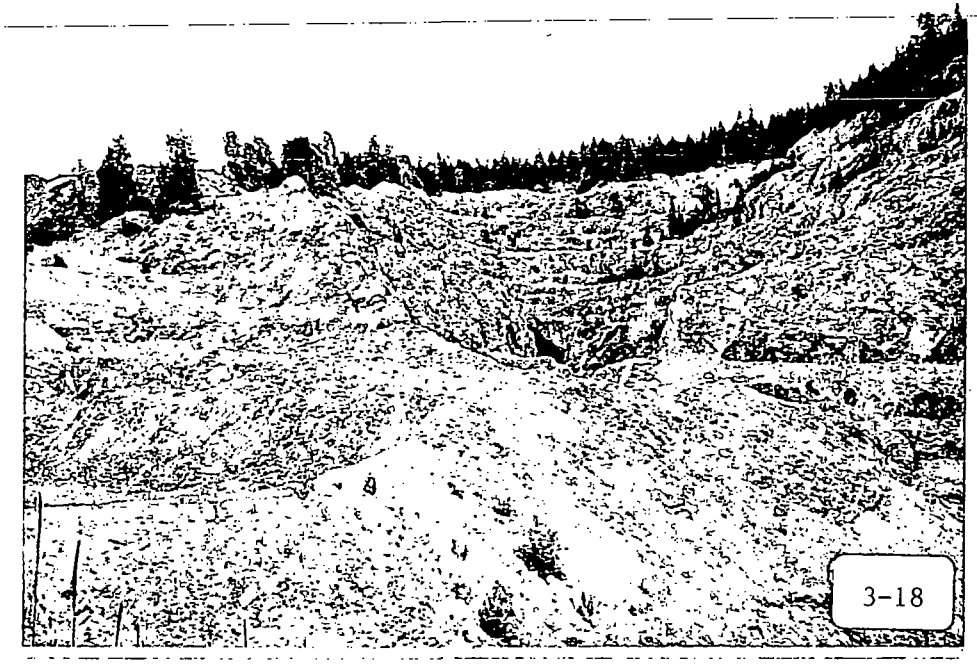

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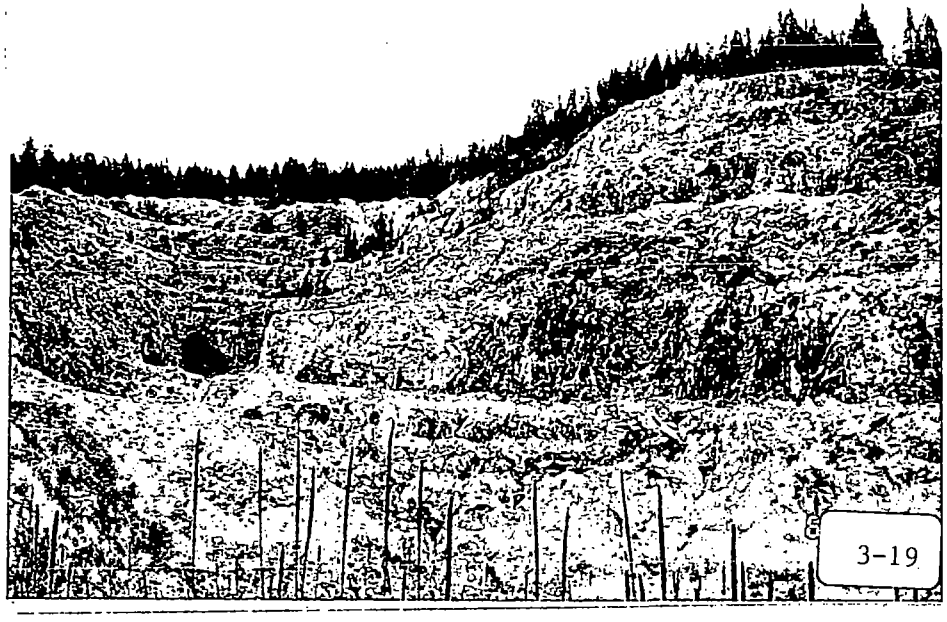

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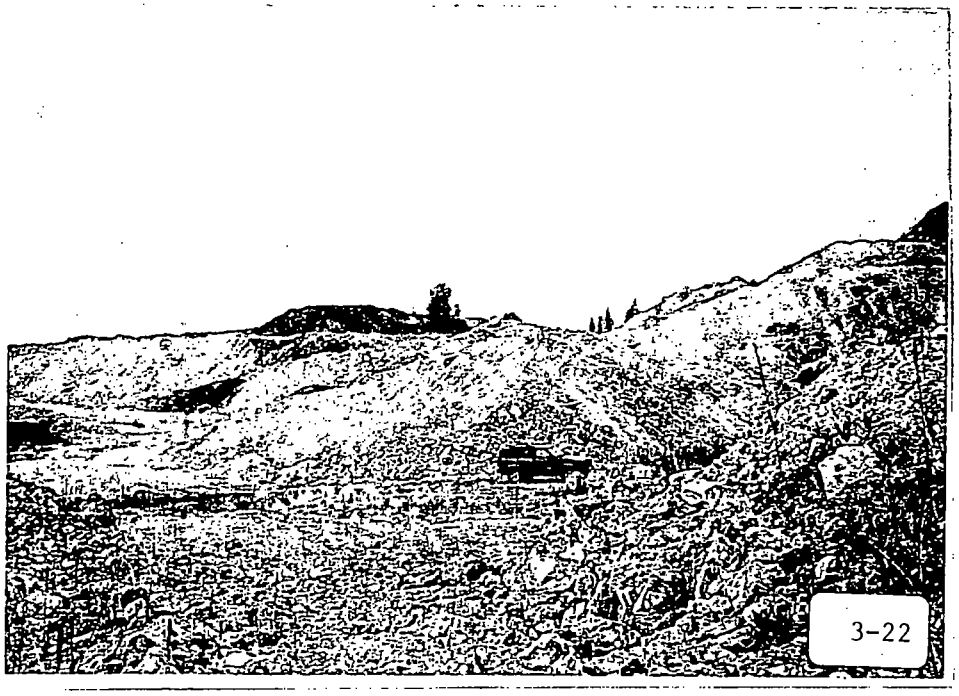

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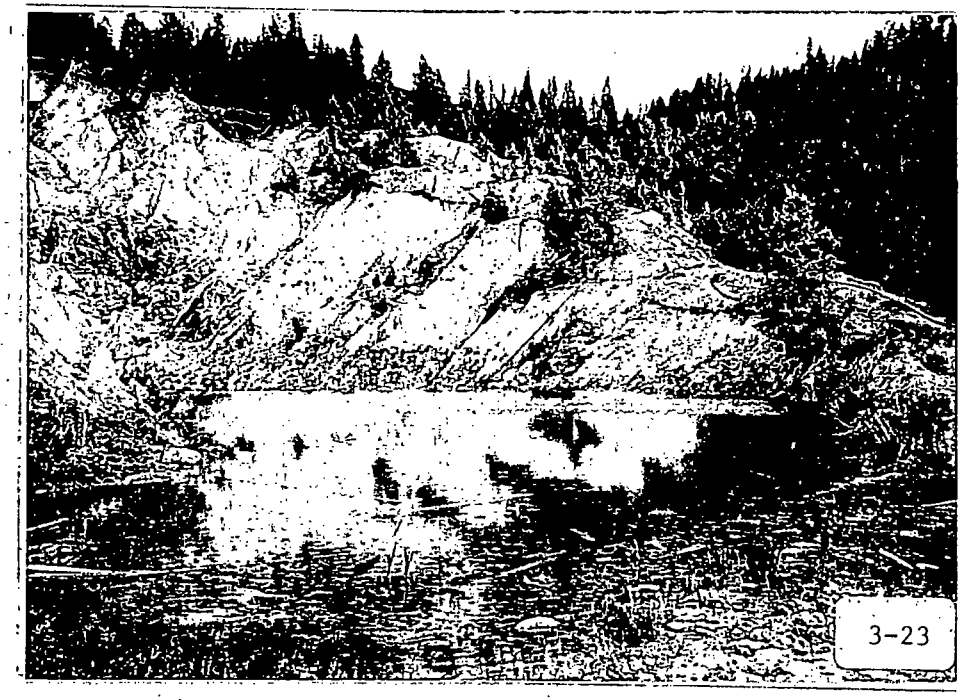

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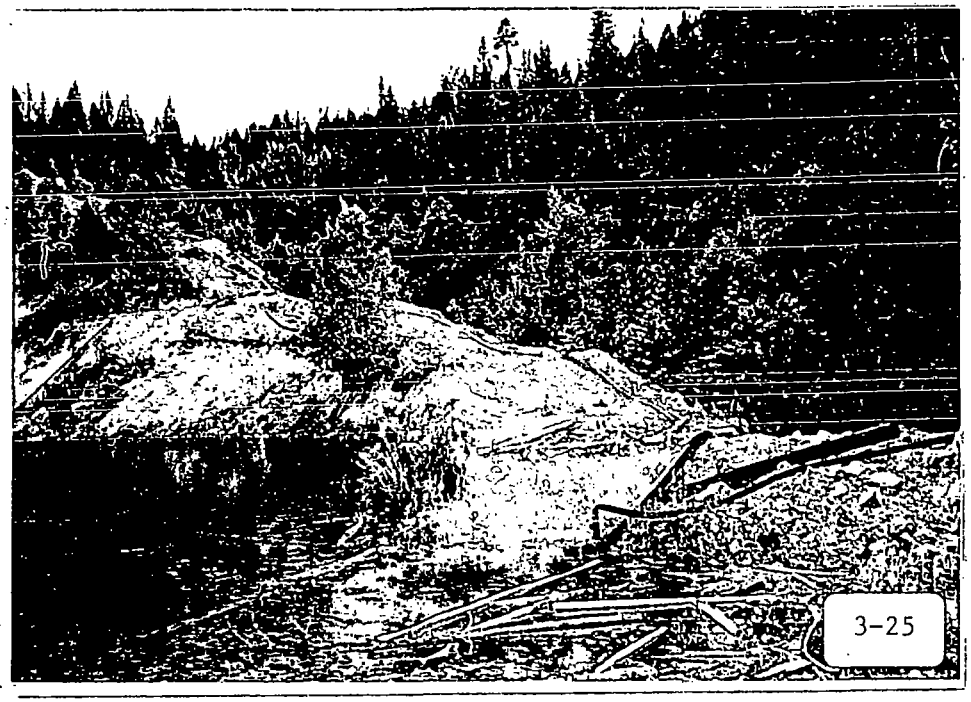

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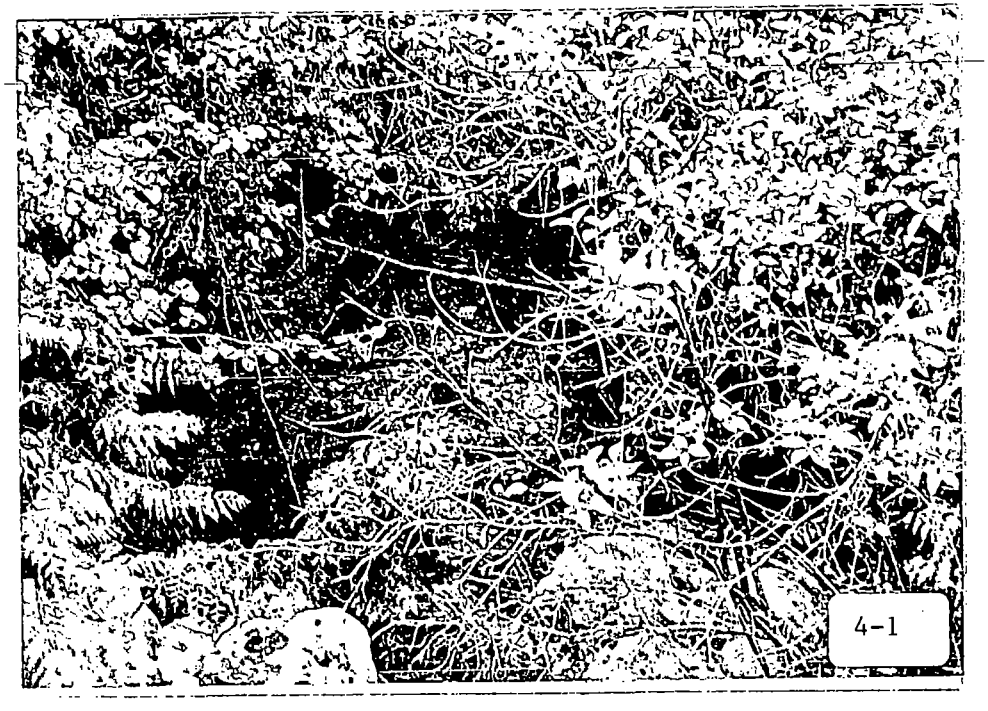

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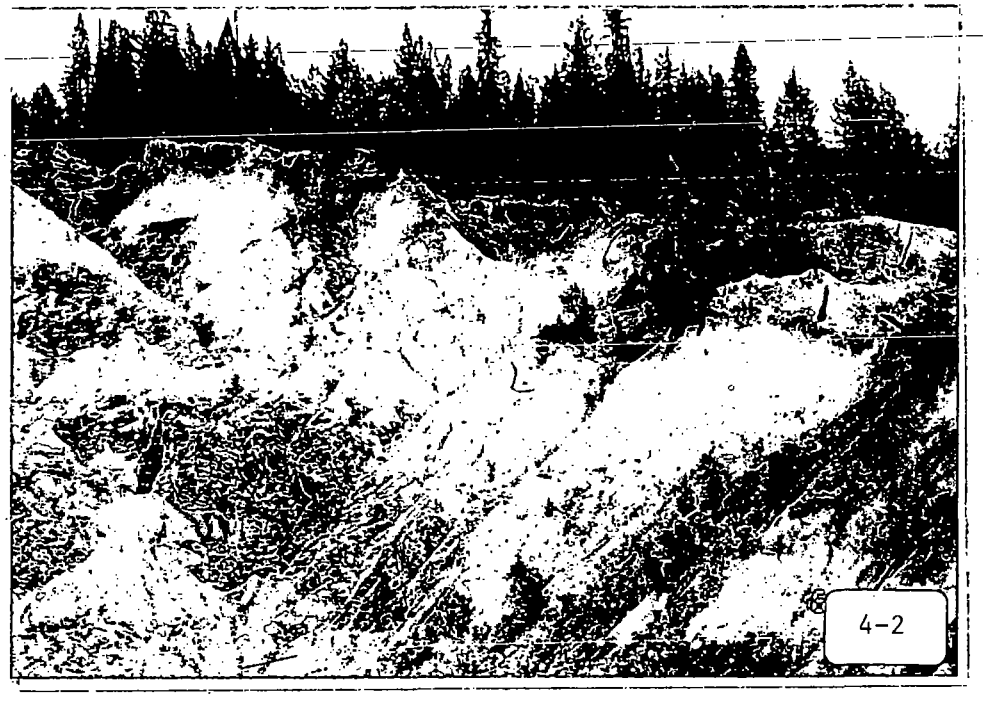

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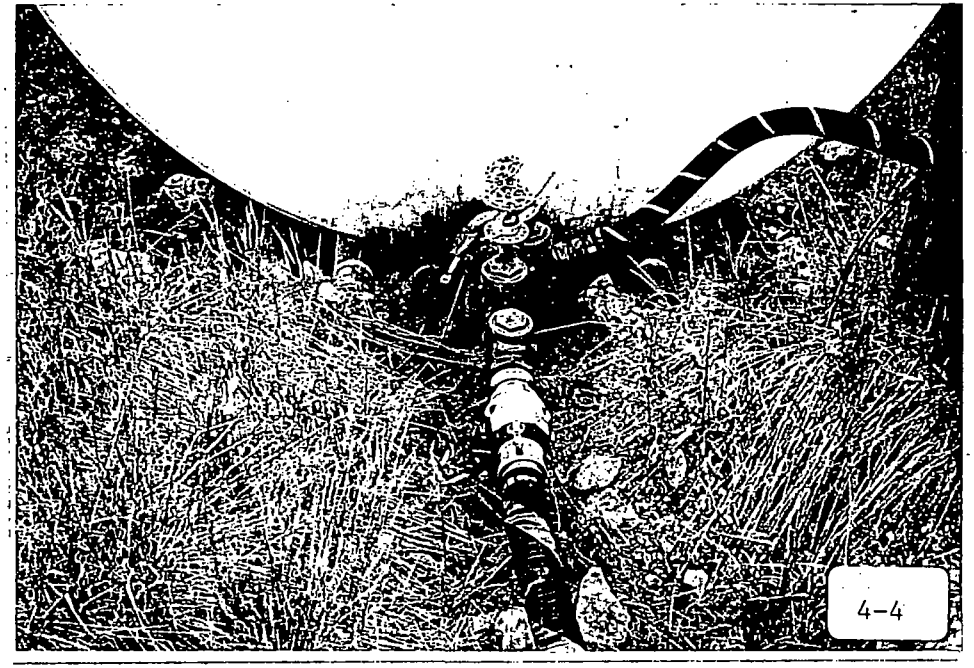

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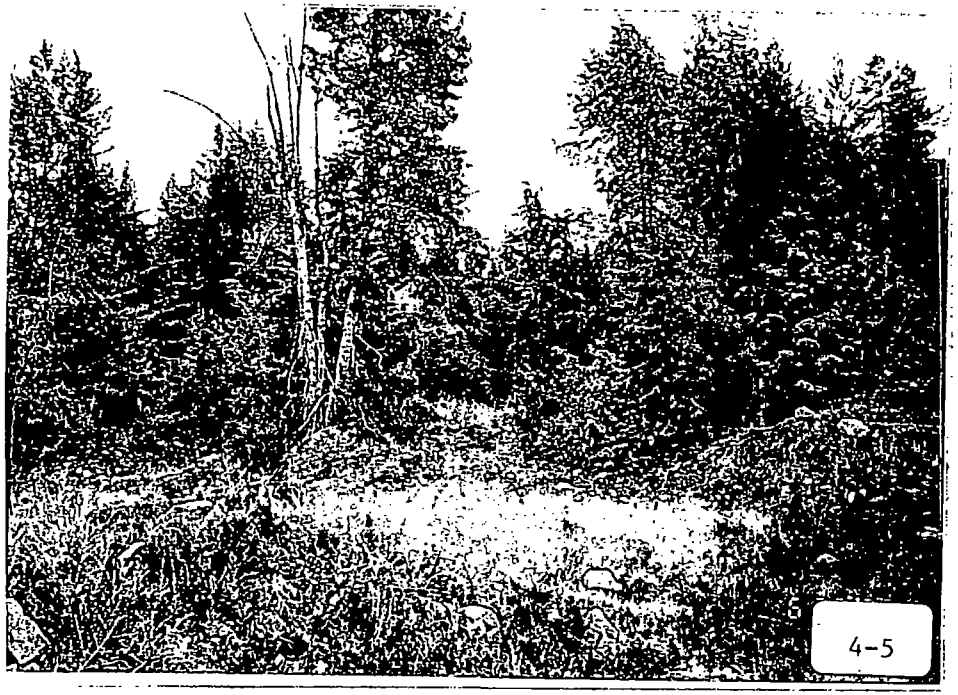

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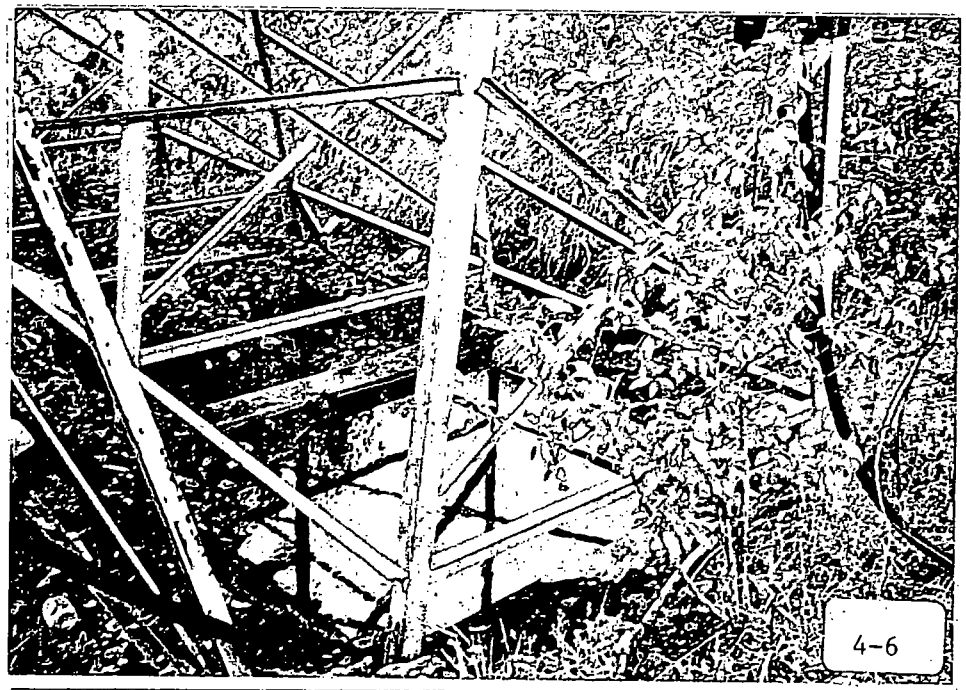

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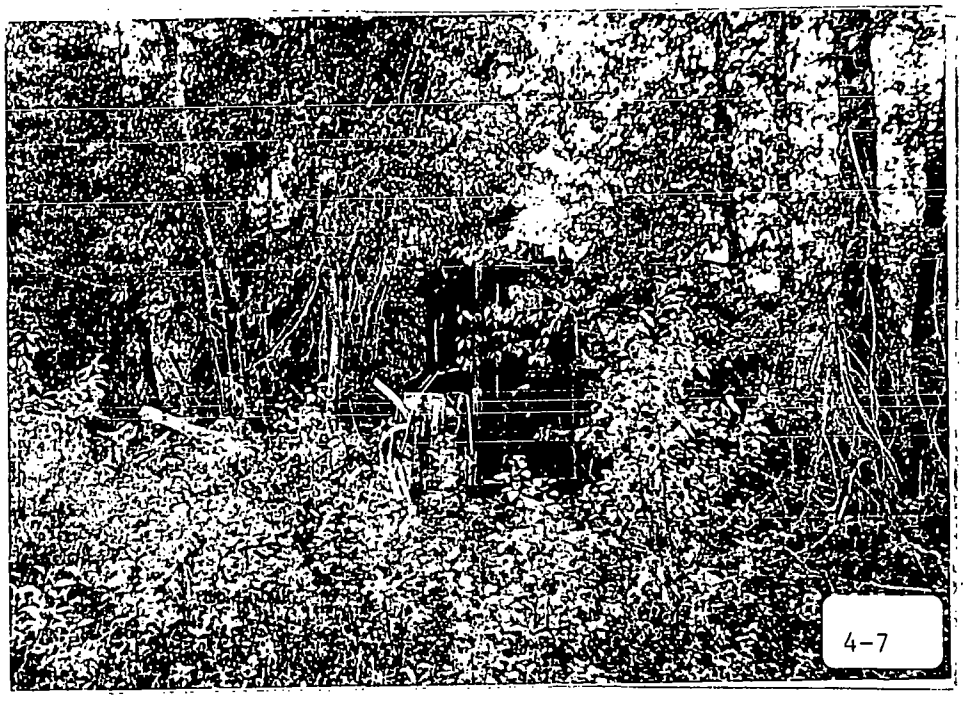

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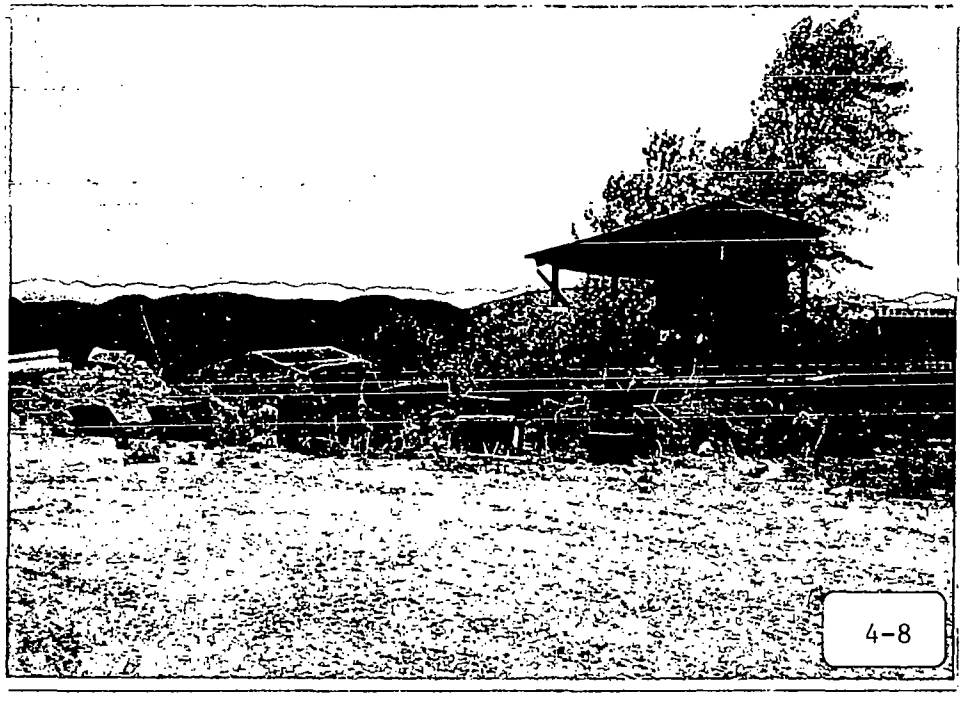

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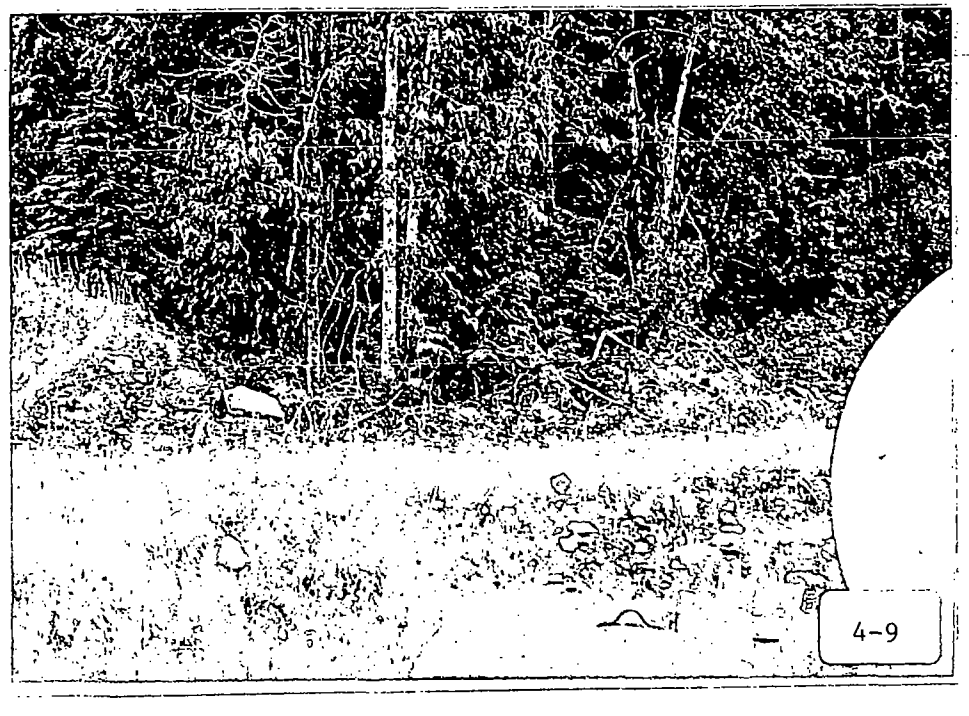

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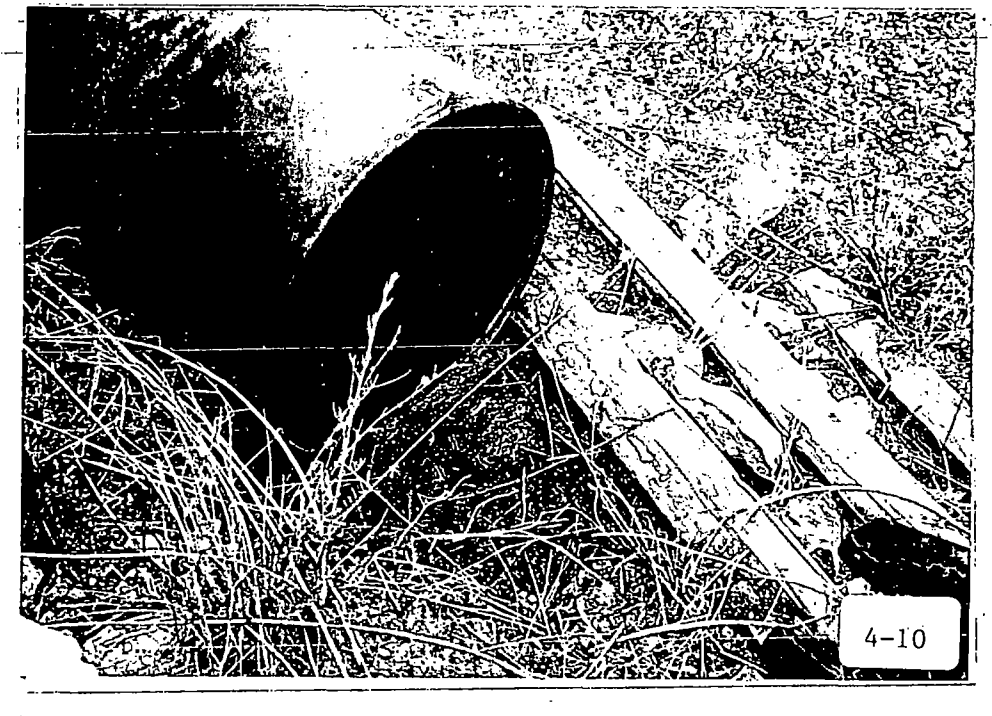

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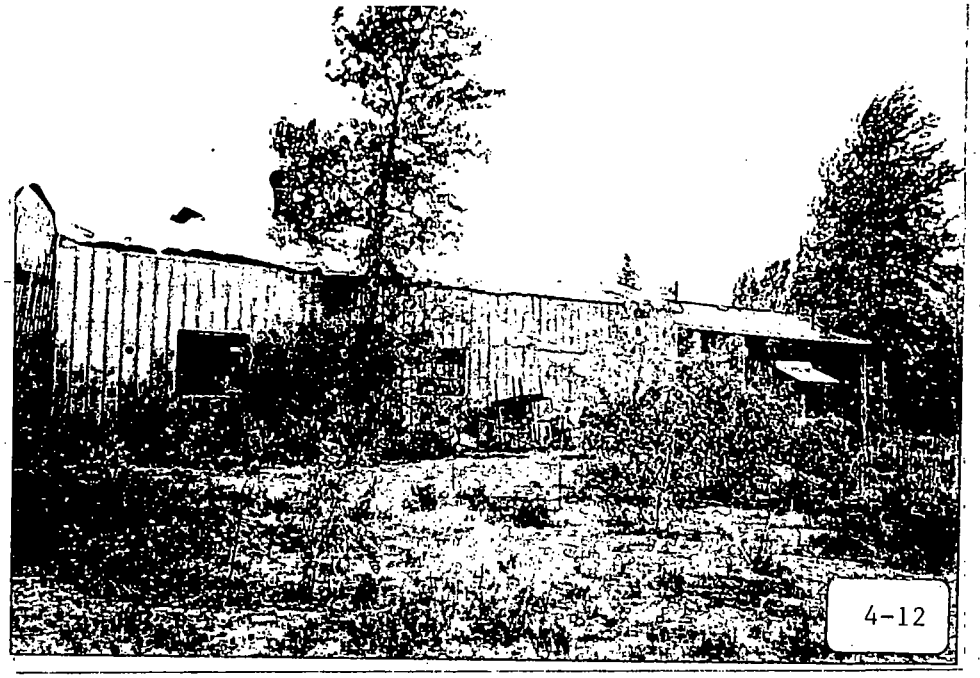

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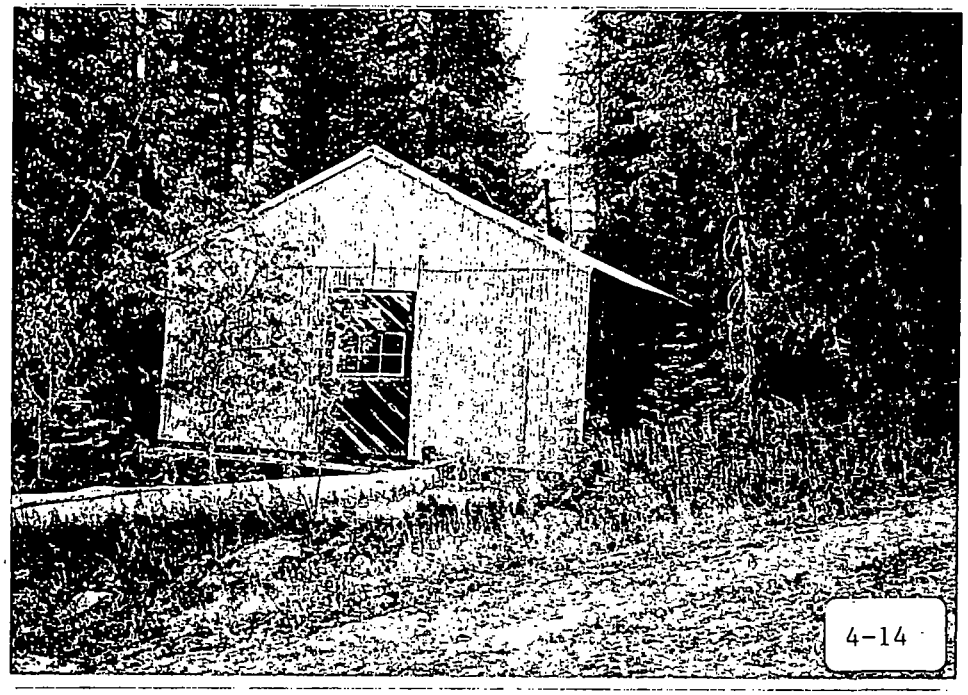

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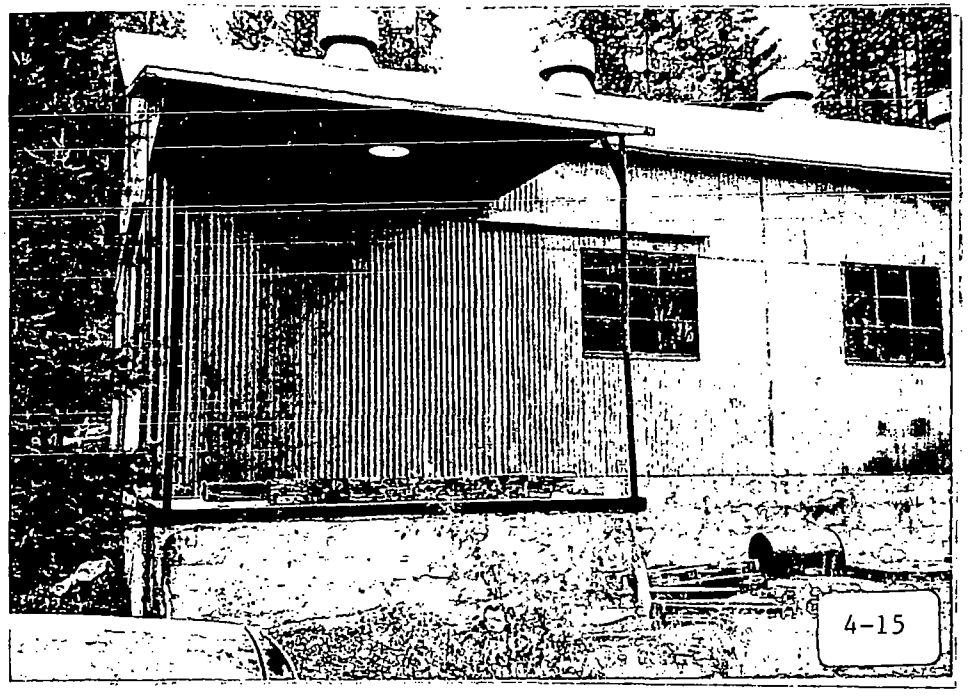

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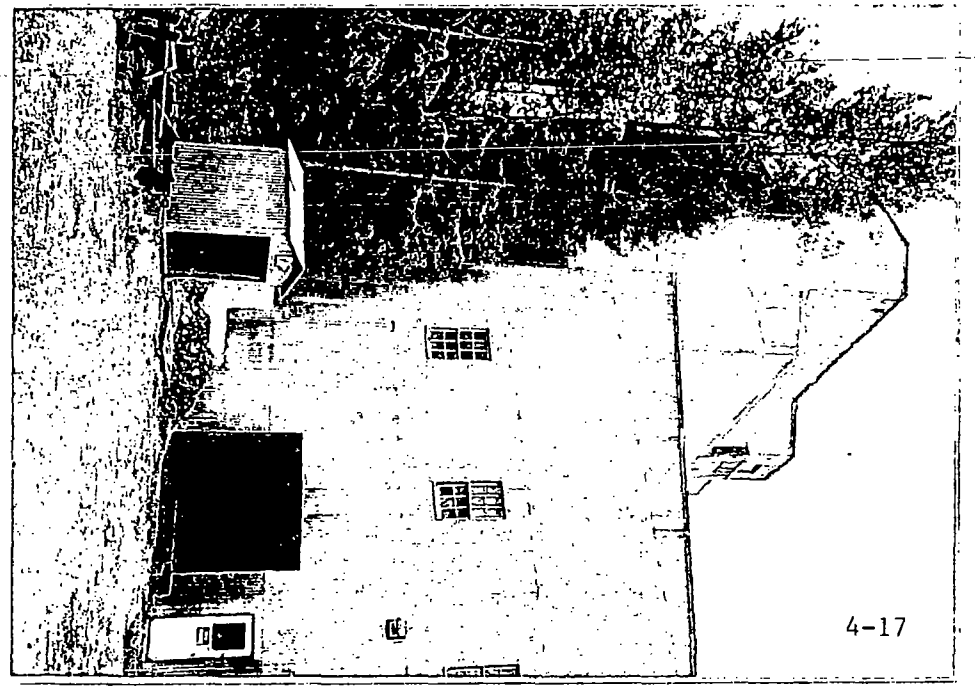

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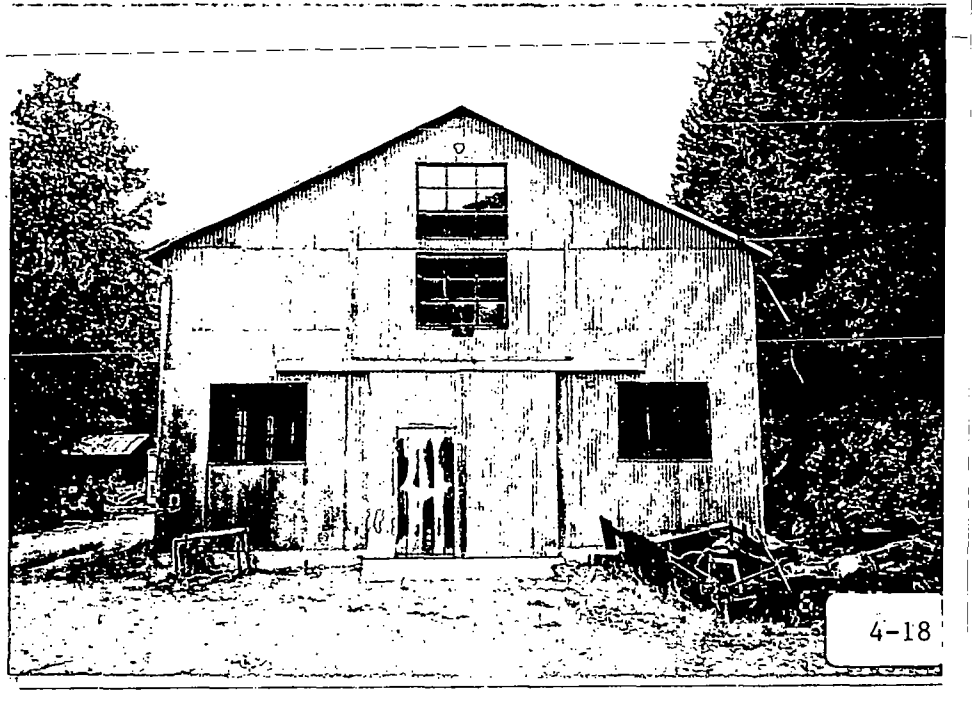

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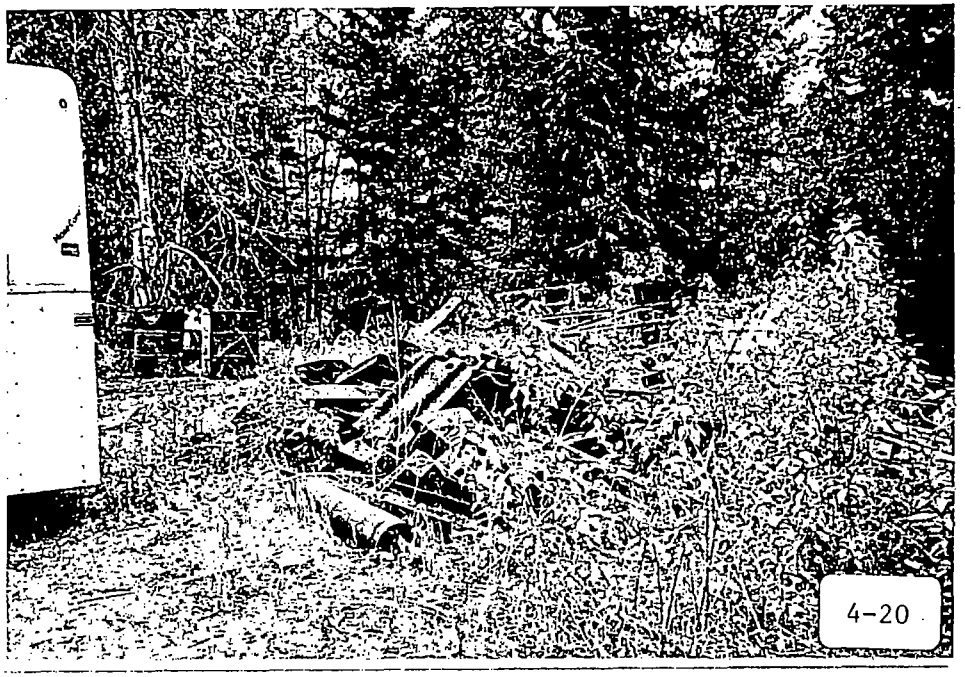

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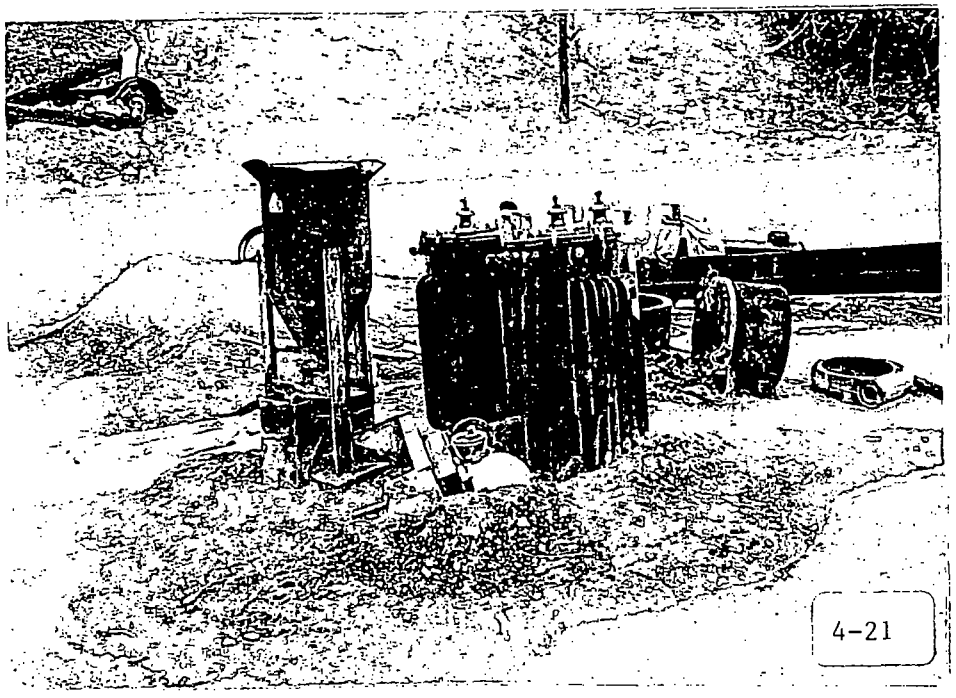

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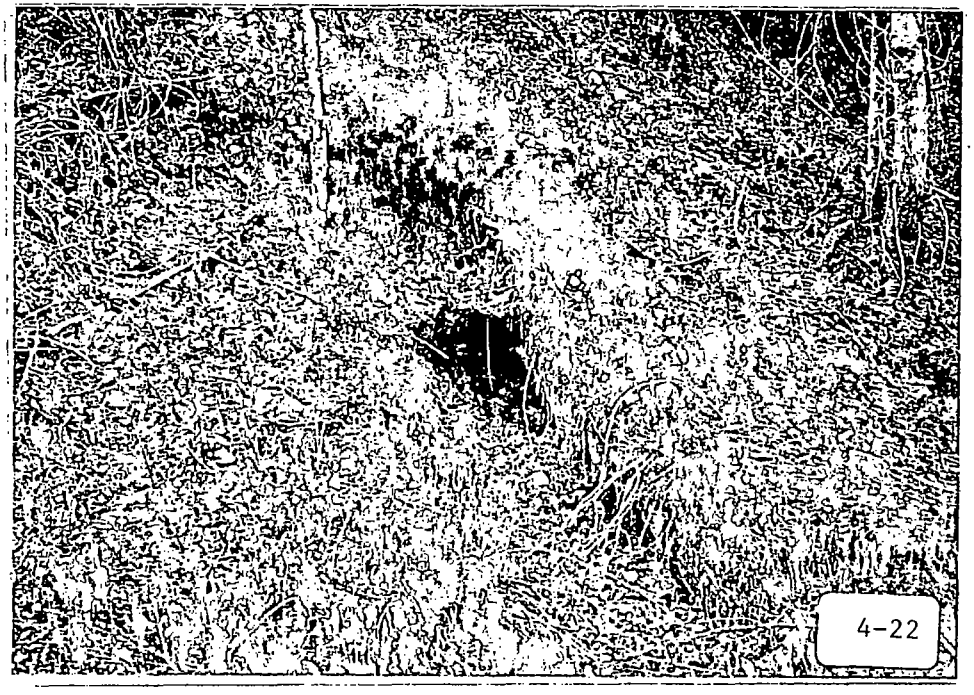

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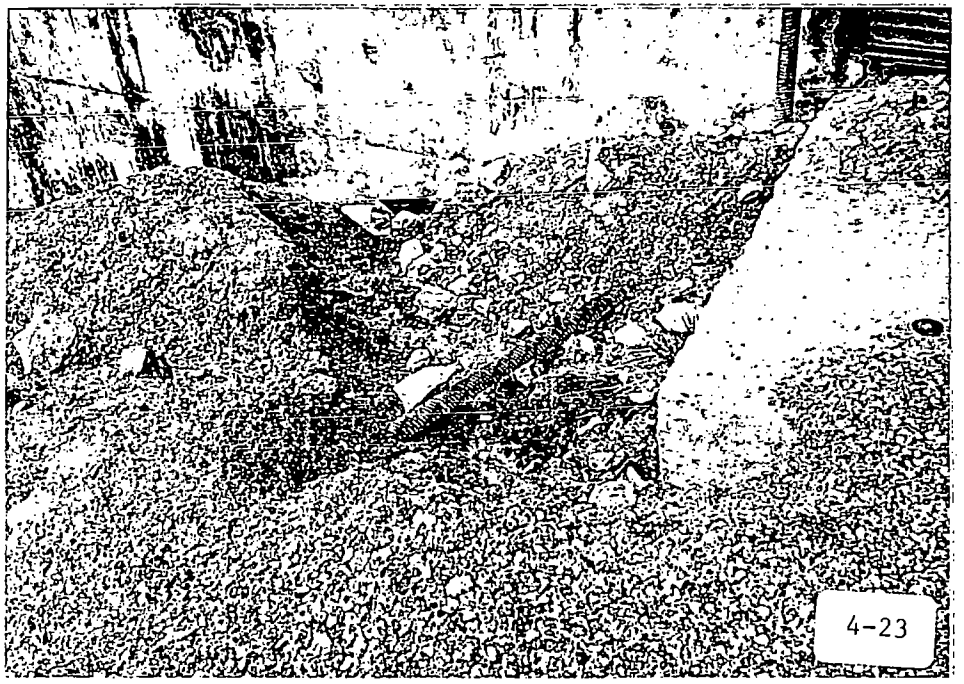

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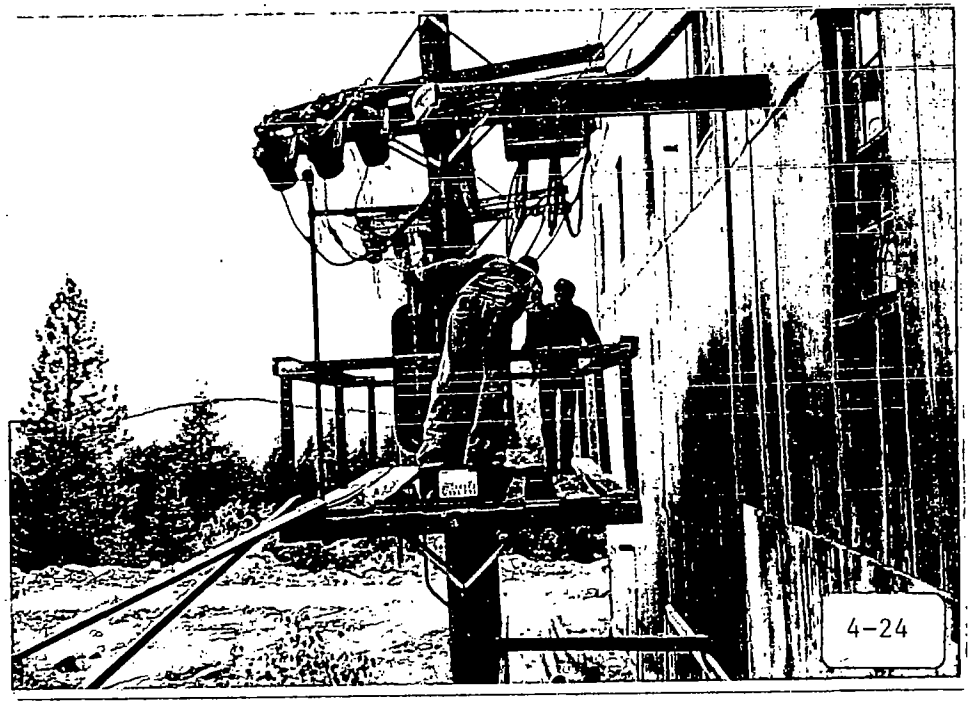

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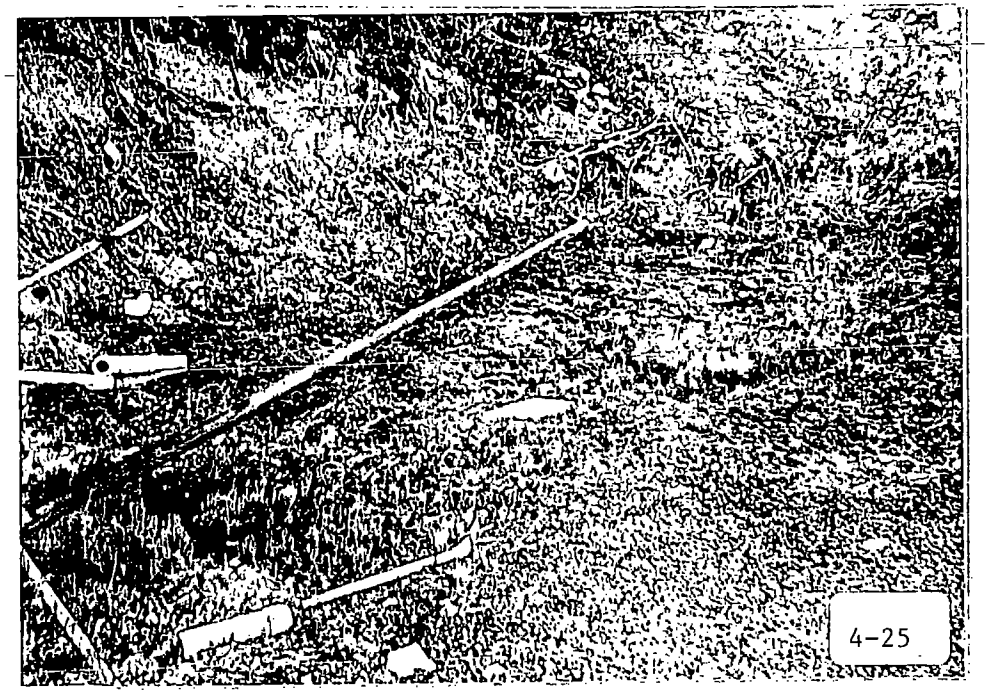

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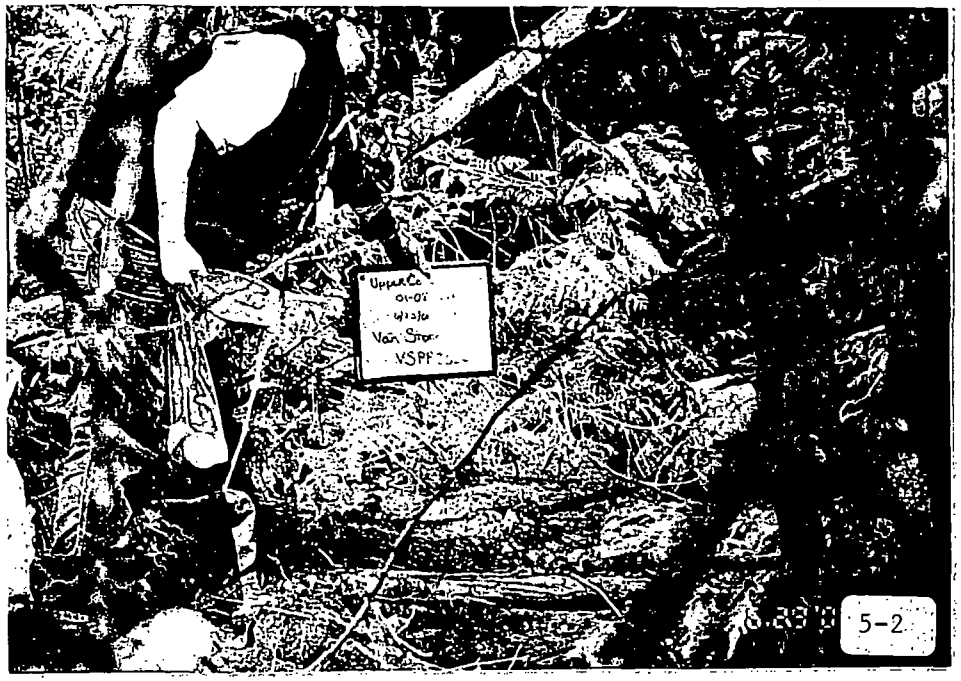
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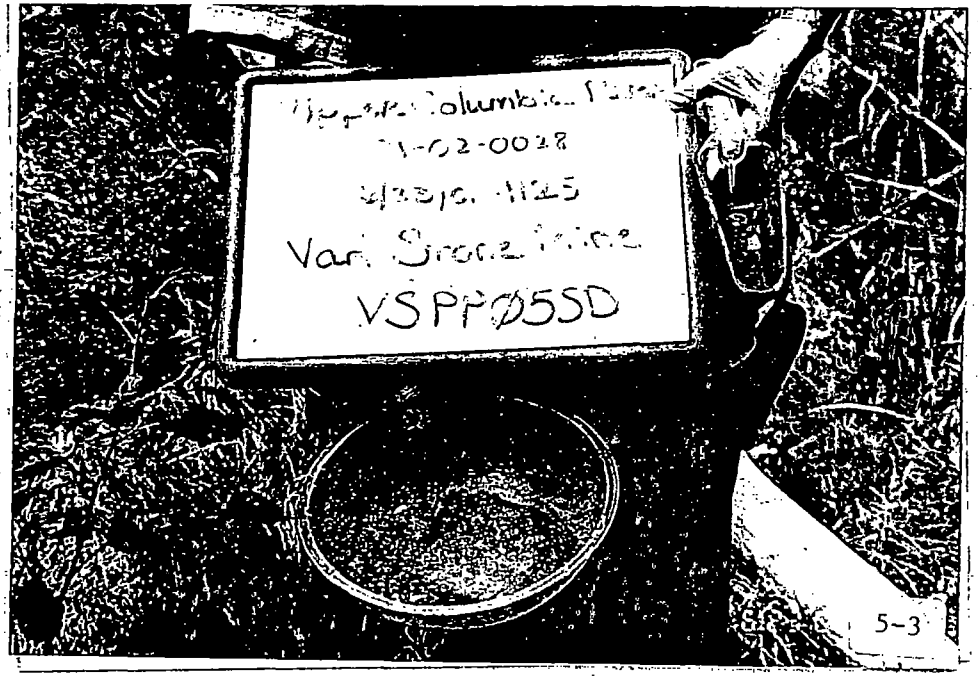
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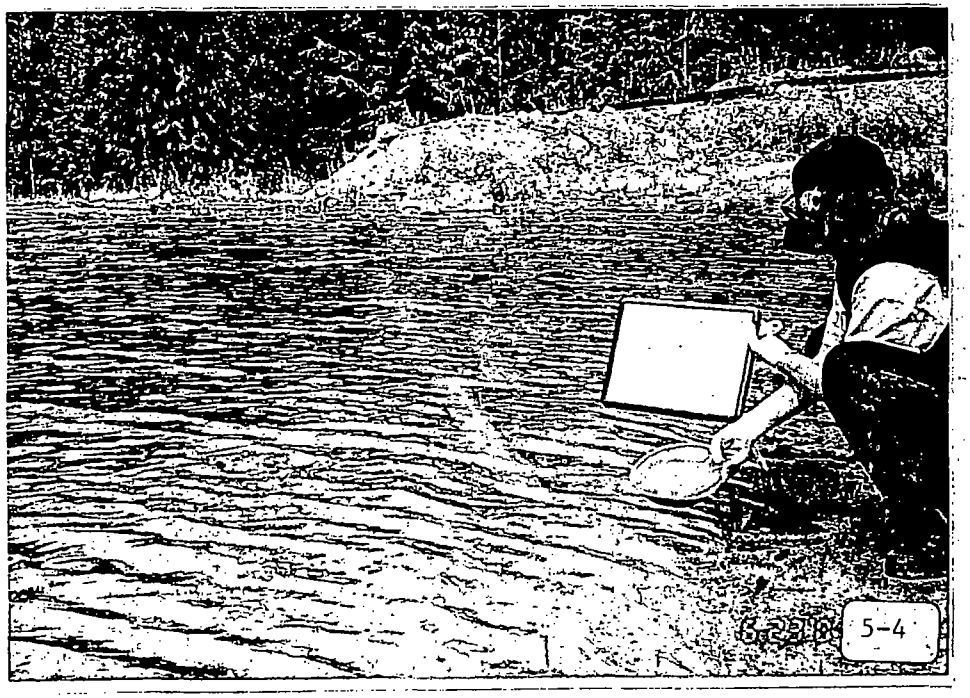
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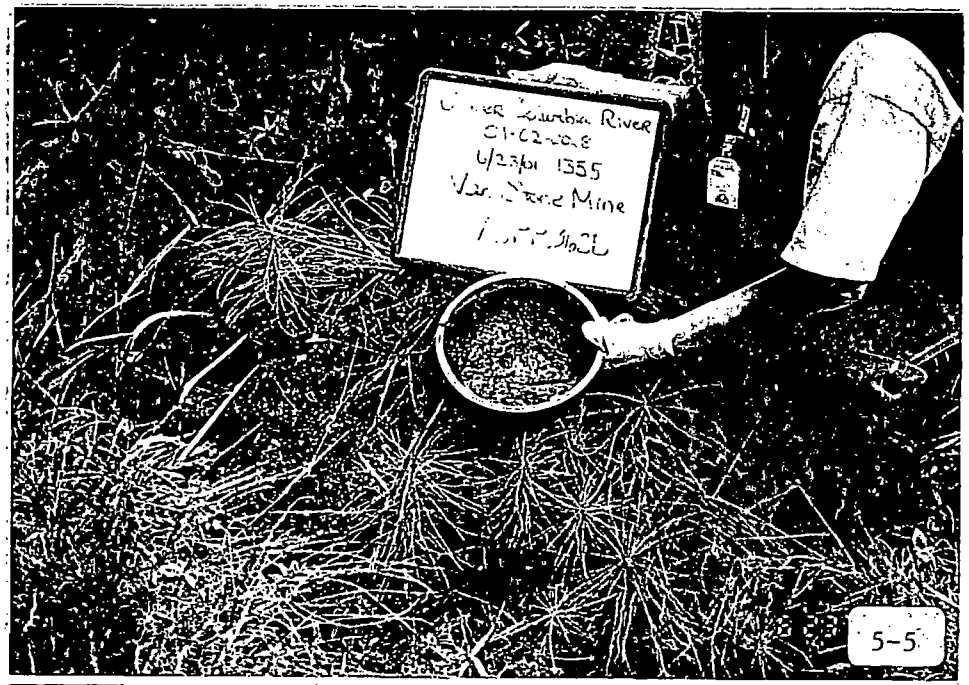
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01-02-0028
6/23/01 1355
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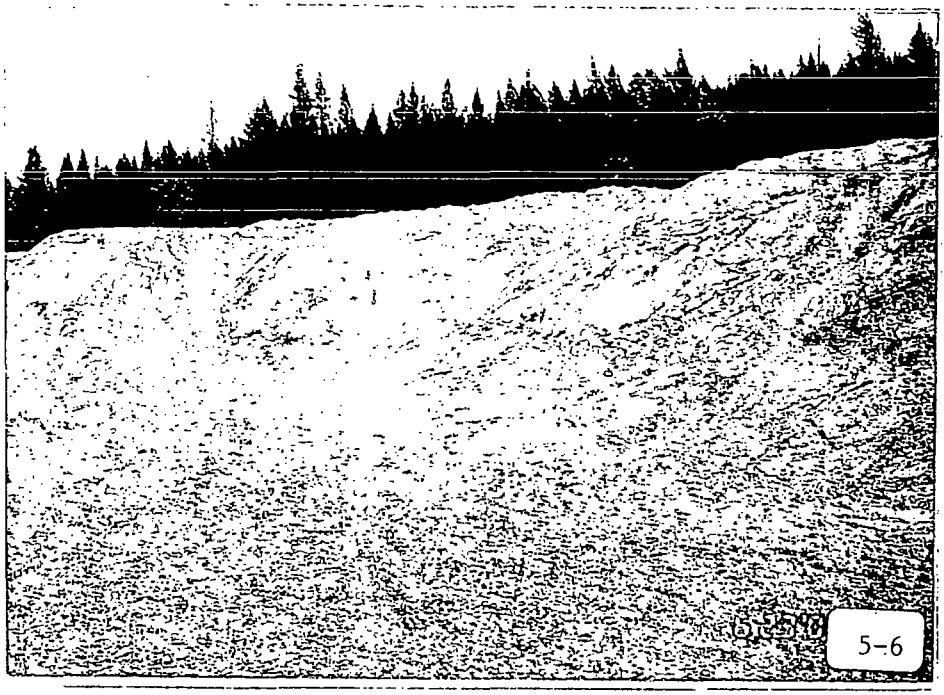

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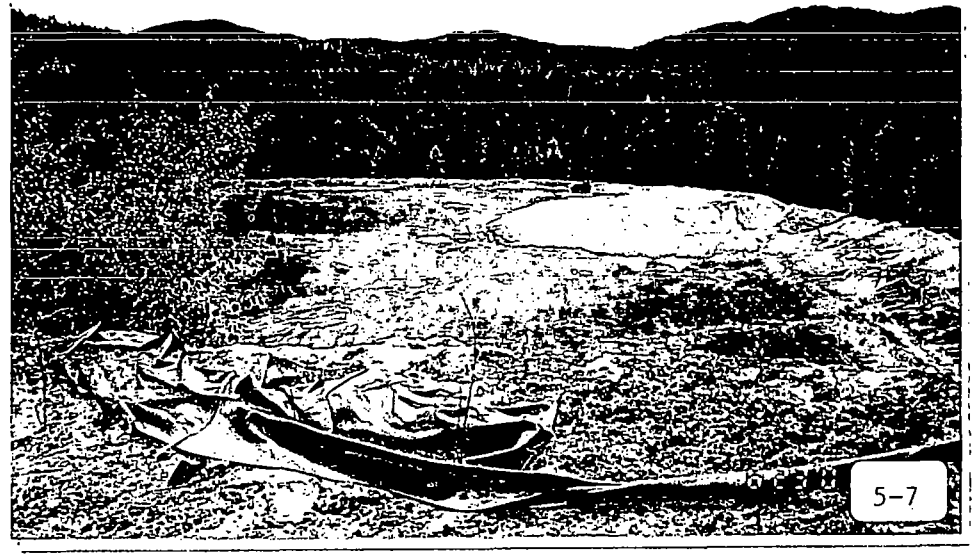

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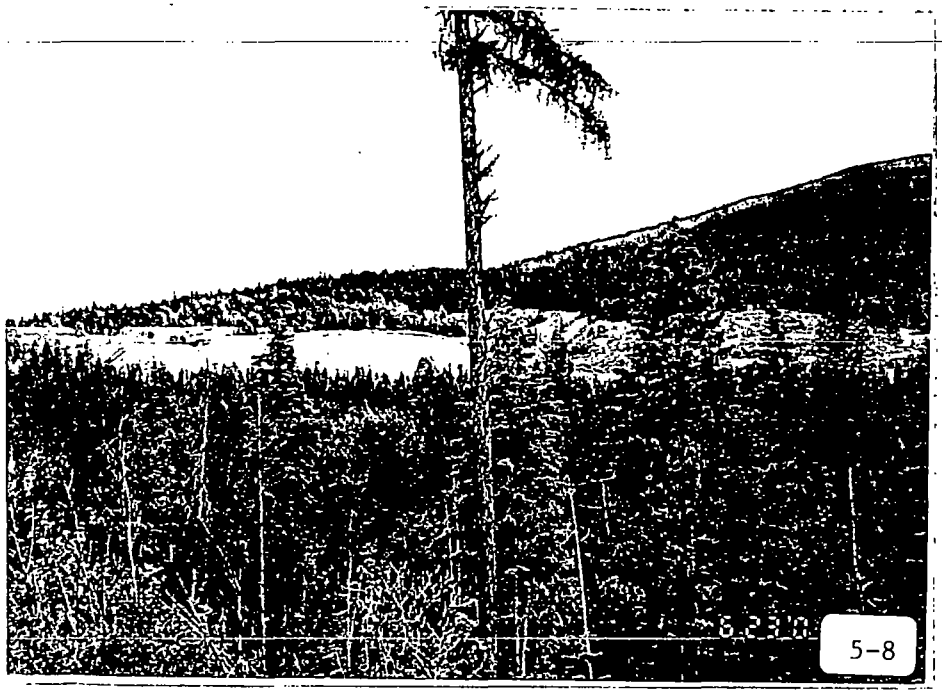

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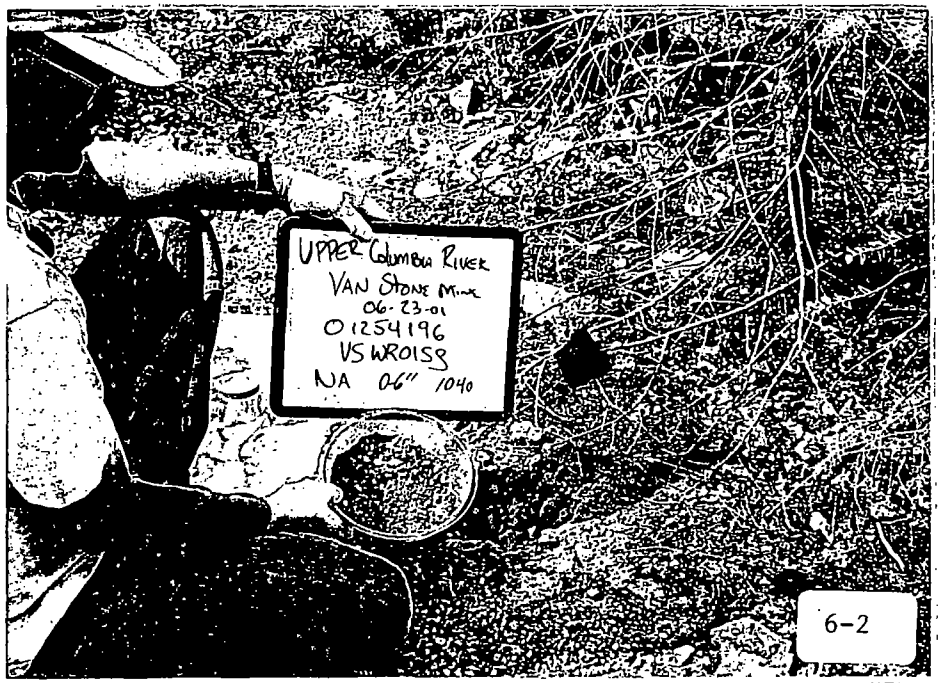

UPPER Columbia River
VAN Stone Mine
06-23-01
O1254196
VS WR01S8
NA 06" 1040

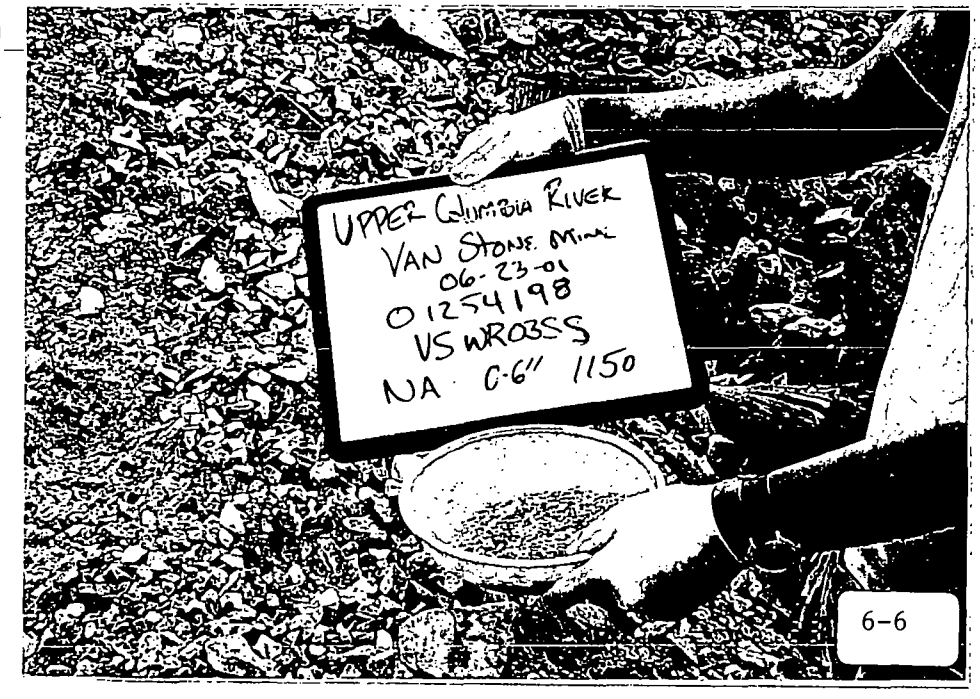
6-2

6-3

UPPER COLUMBIA RIVER
VAN STONE MINE
06-23-01
0125419
VS WR01SS
NA 0-6" 1115

6-4

6-5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VAN STONE MINE
06-23-01
0125419B
VS WR03SS
NA 0-6" 1150

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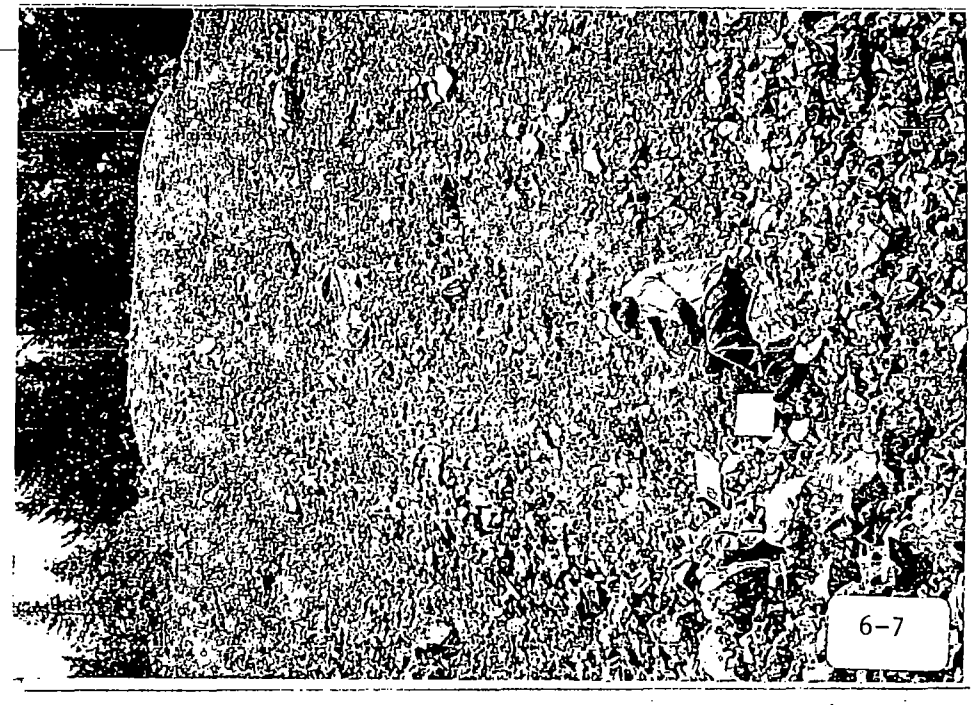

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UPPER WIMBIA RIVER
VAN STONS. MINE
06-23-01
01254199
VSWROYSS
N/A 0-6" 1215

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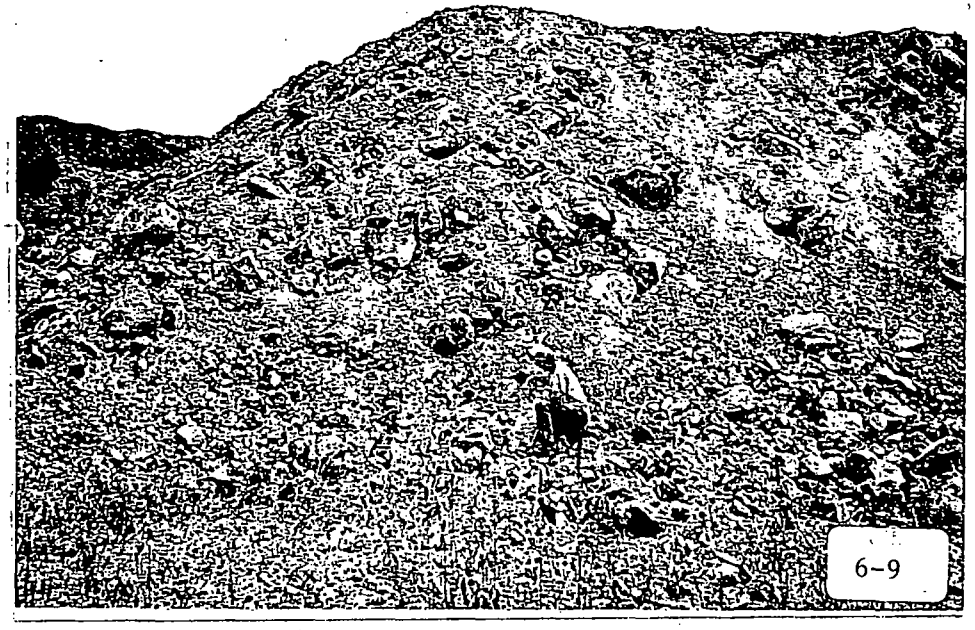

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UPPER WIMBIA RIVER
VAN STONS. MINE
06-23-01
01254200
VSWROSSS
NA 0-6" 1240

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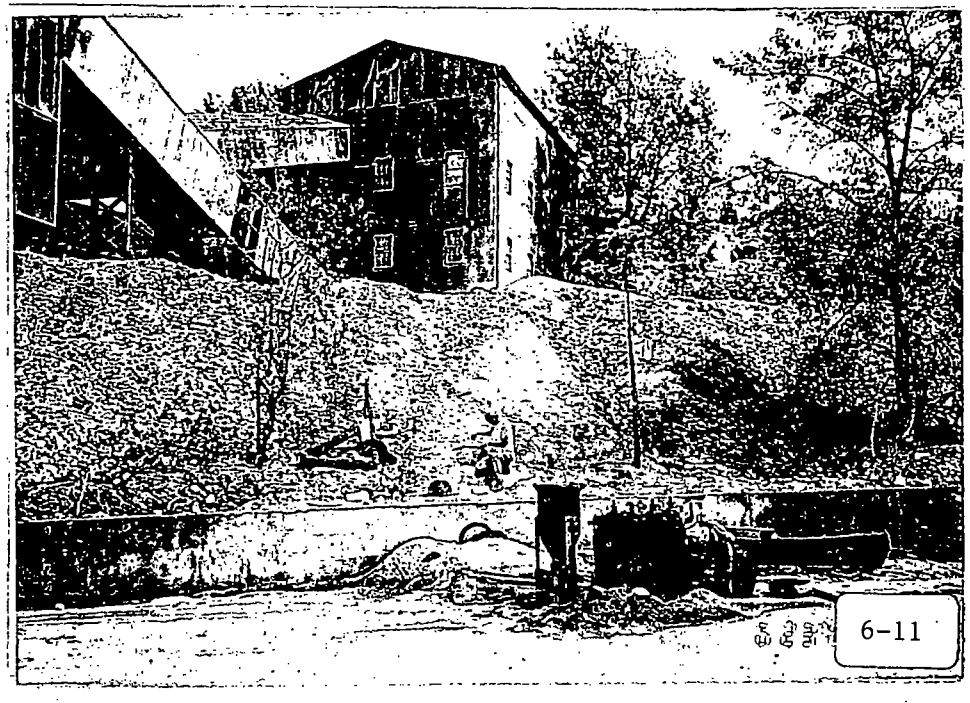

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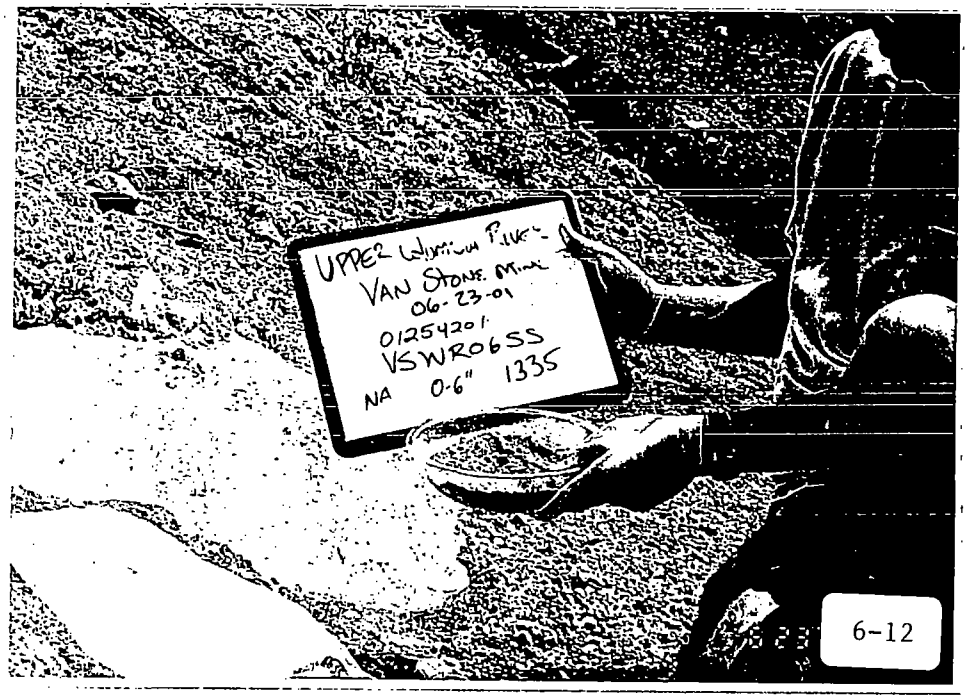

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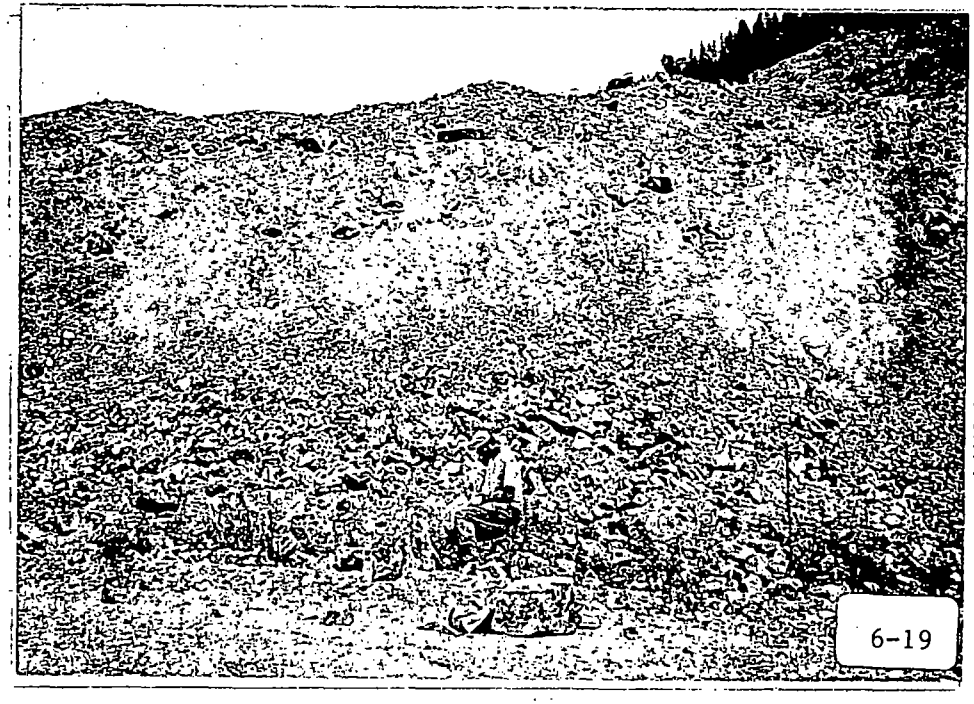

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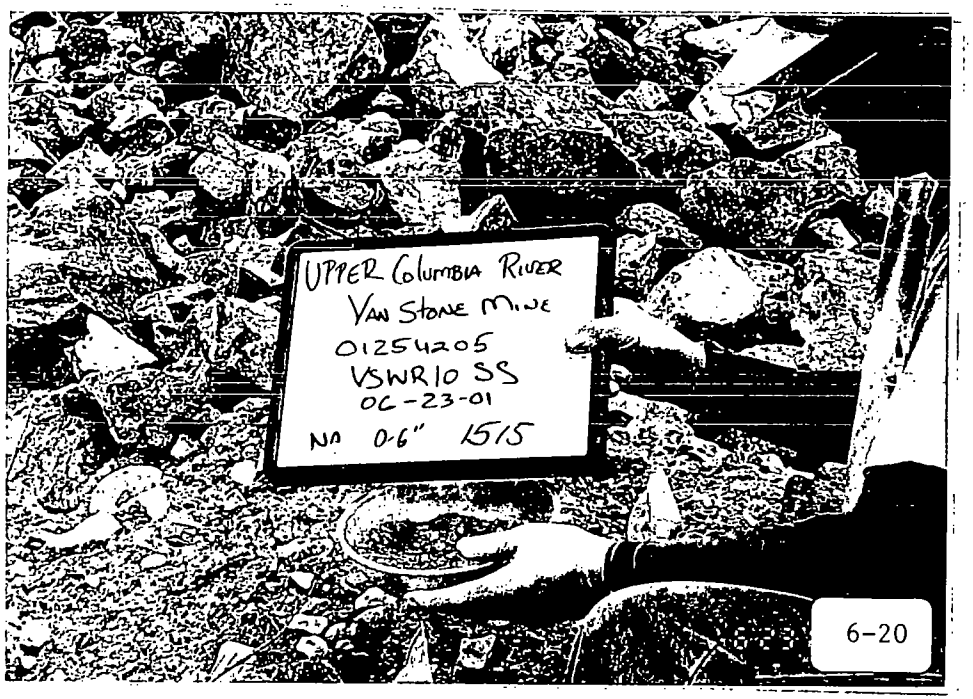

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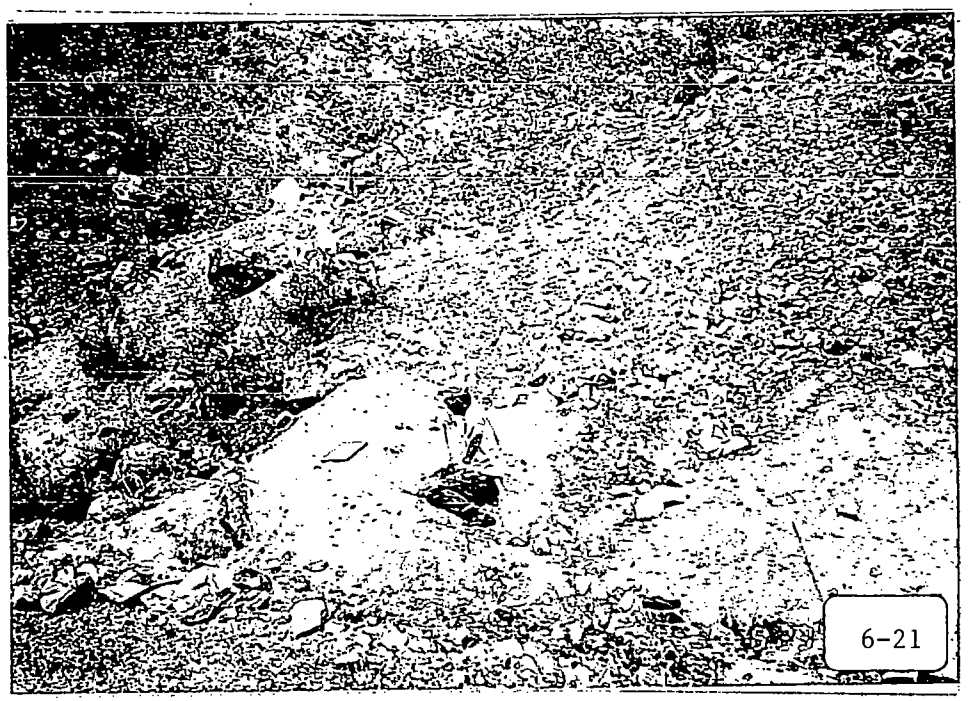

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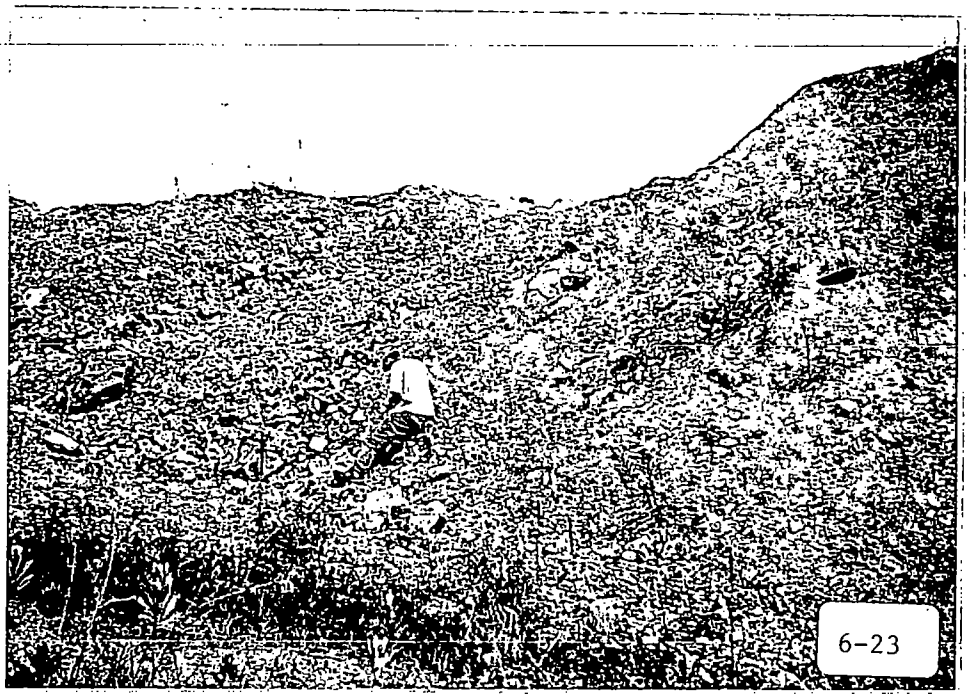

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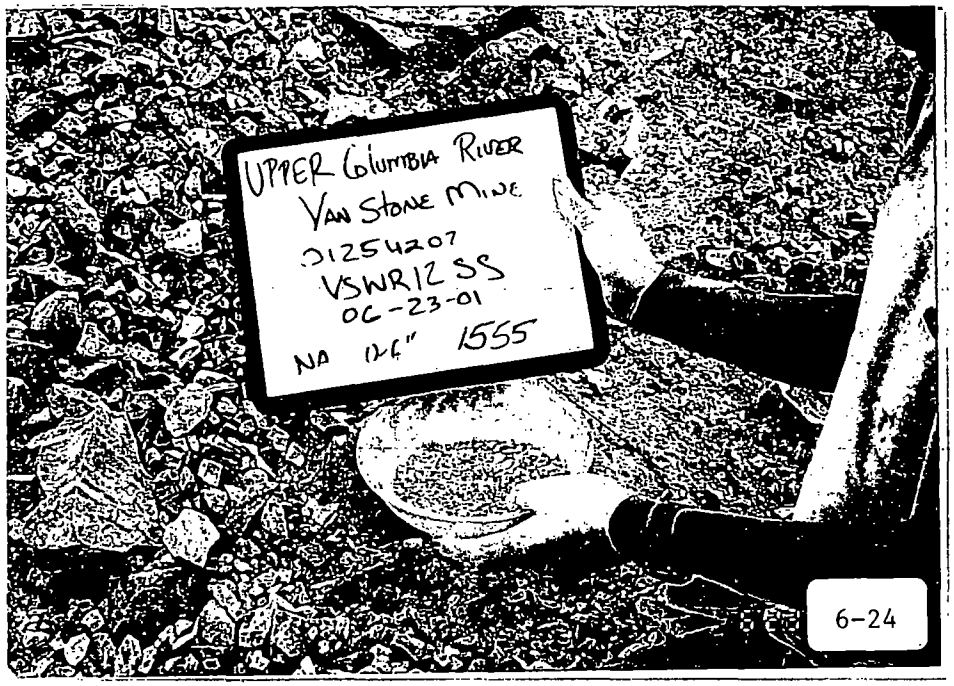
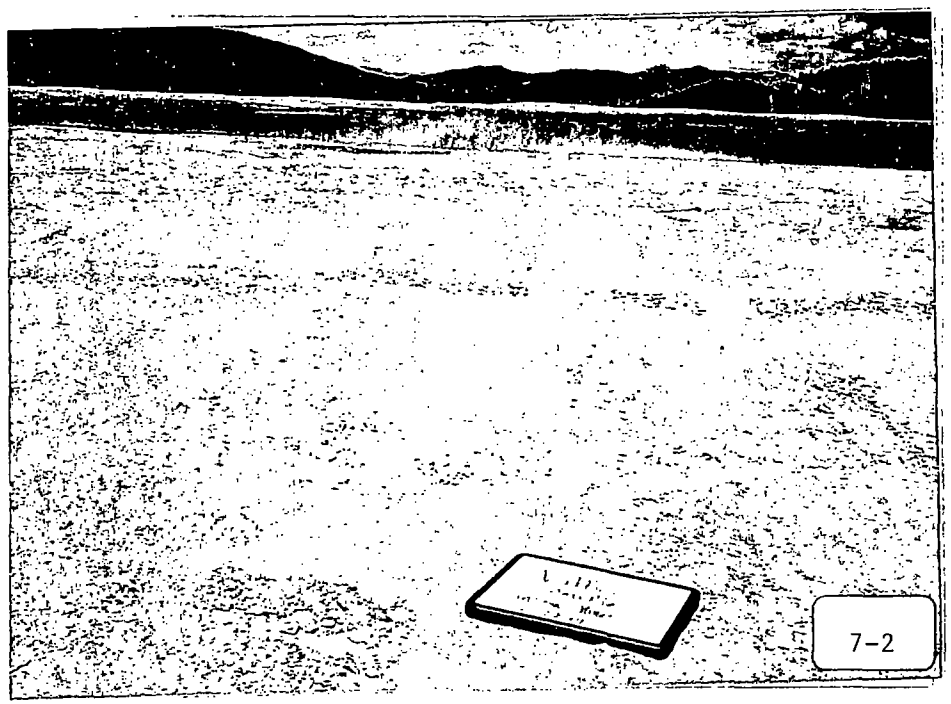

UPPER Columbia River
Van Stone Mine
01254207
VSWR12 SS
OC-23-01
NA 12.6" 1555

6-24

VSTPØSS
Tailings Pile
Van Stone Mine
6-22-01

7-1



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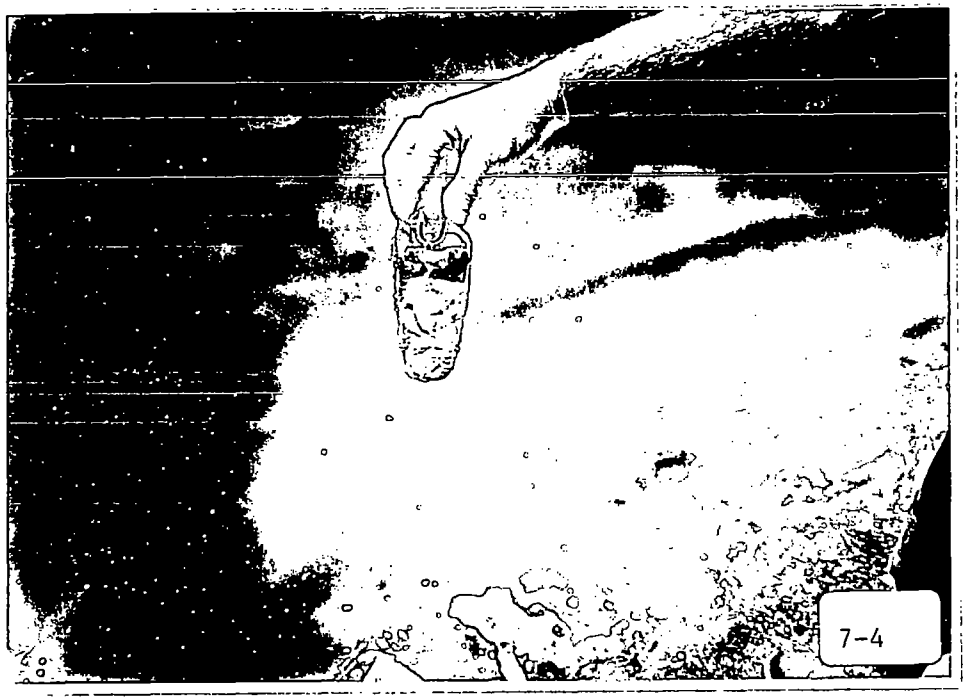
VSPPØ1SD
North of Tailing Pile
Van Stone Mine
6-22-01

7-3



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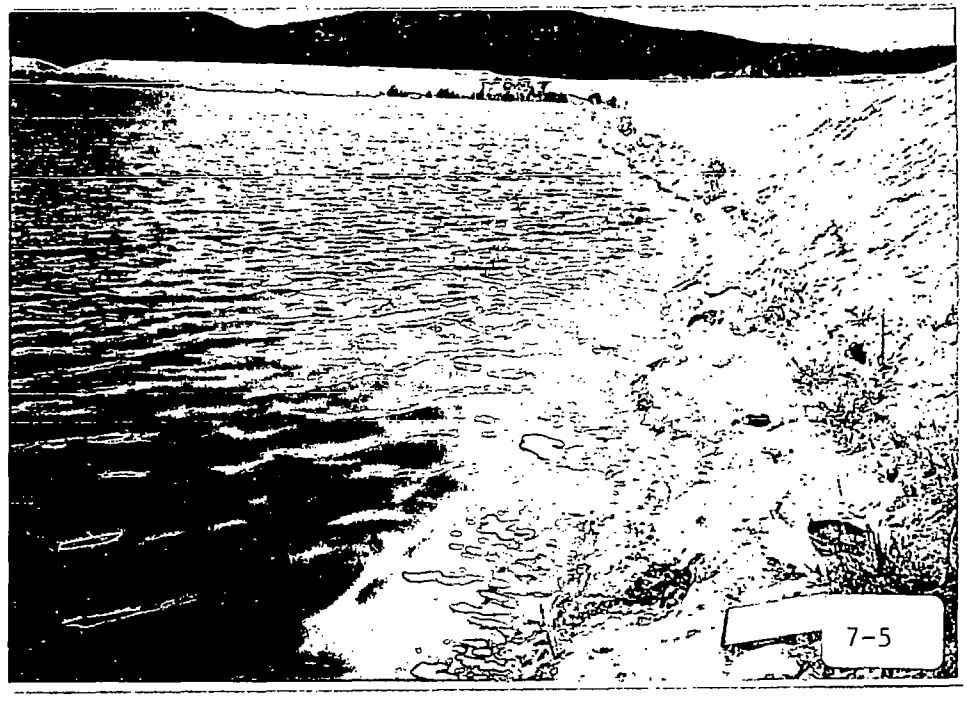

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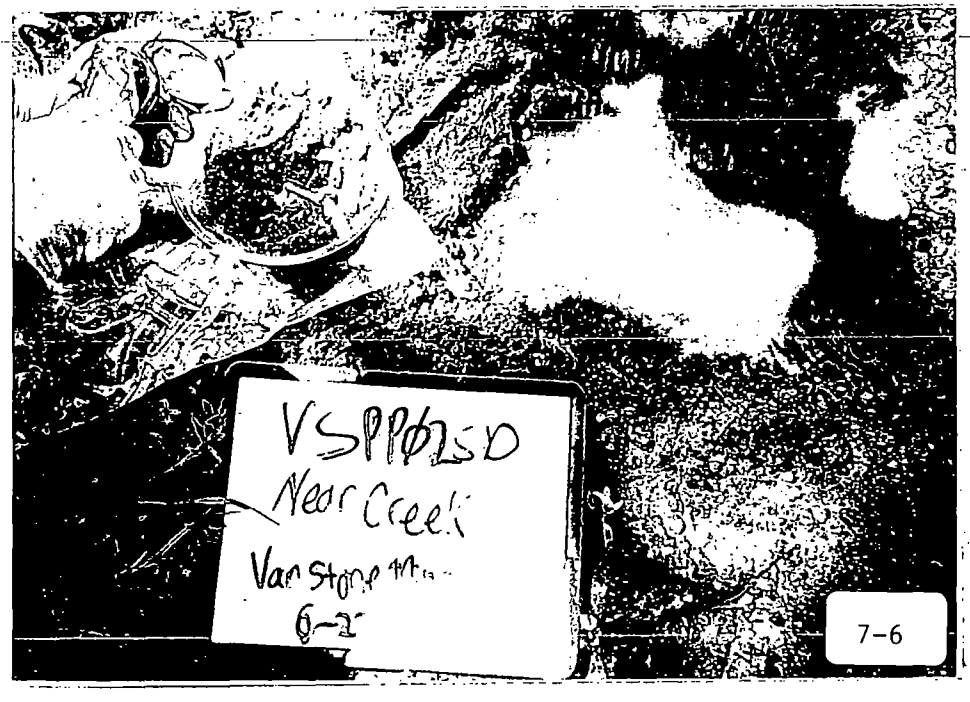

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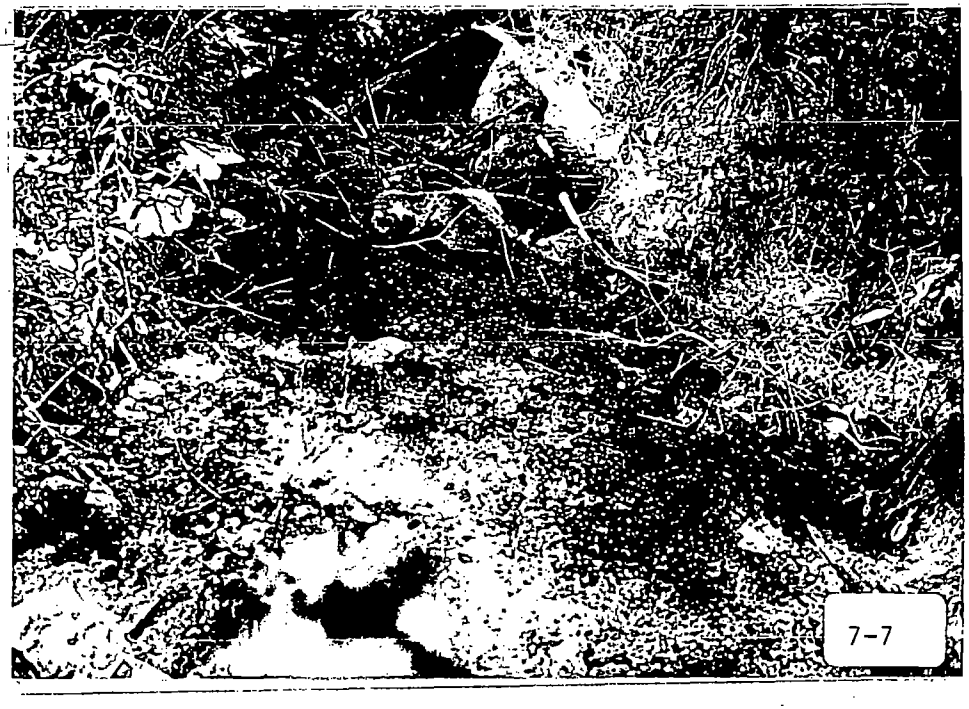

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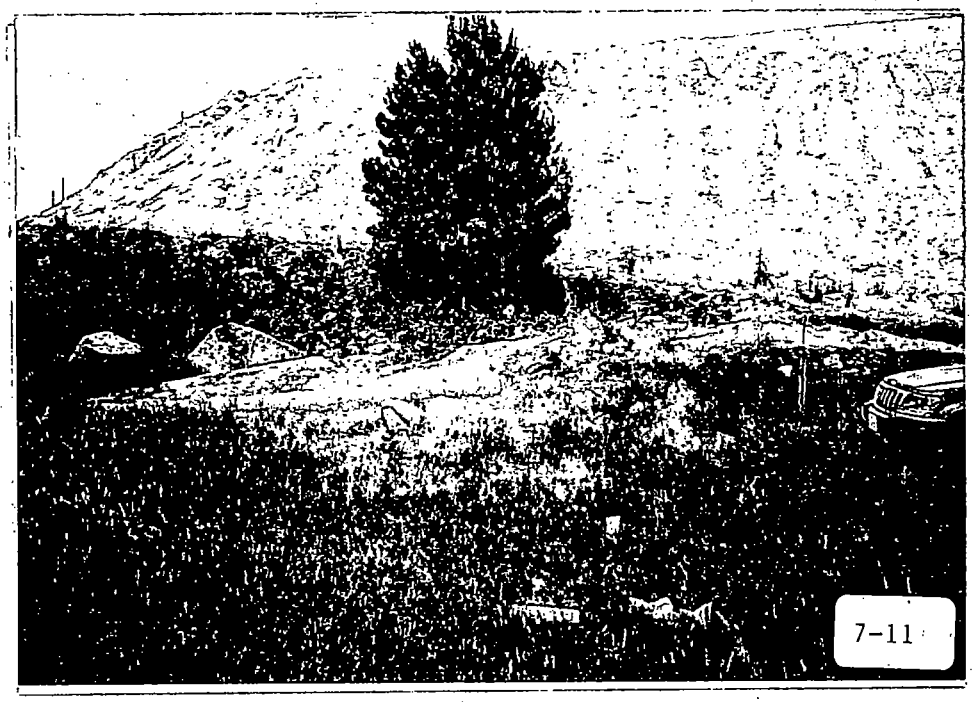

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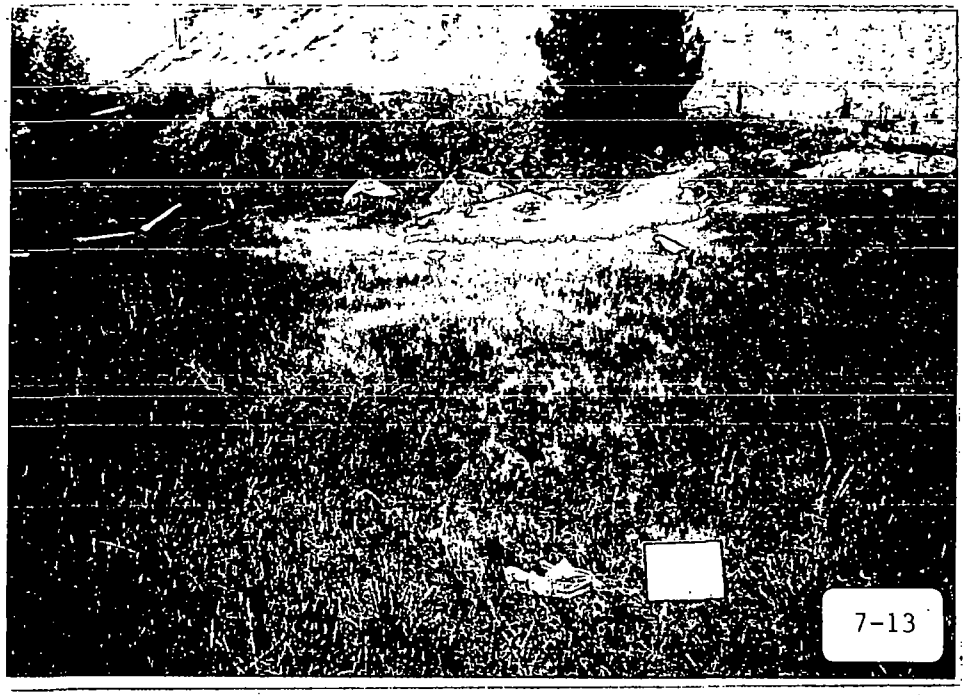

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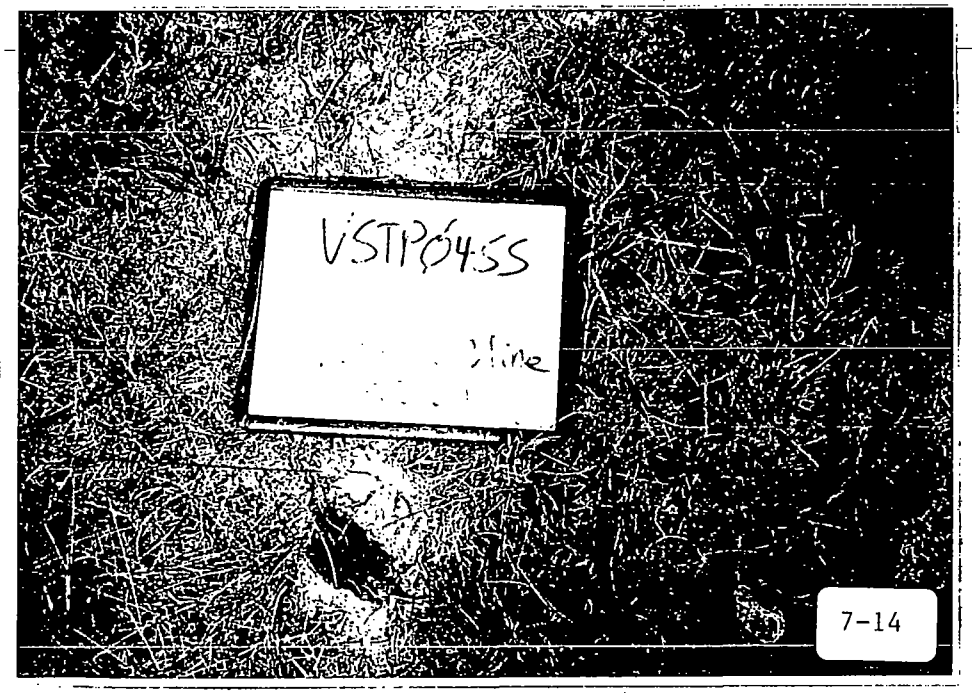

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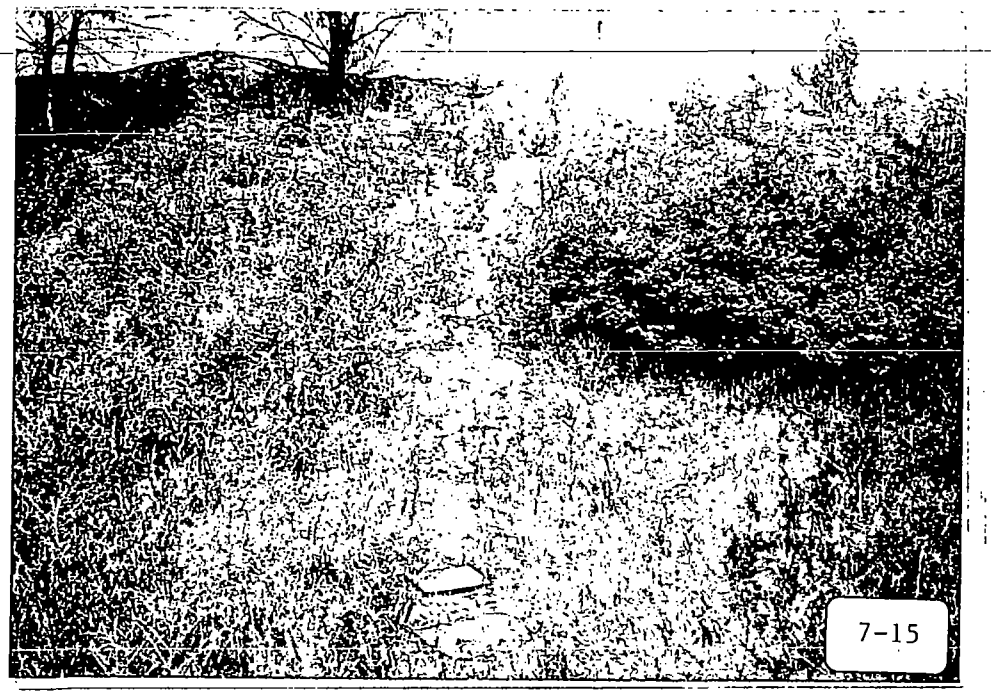

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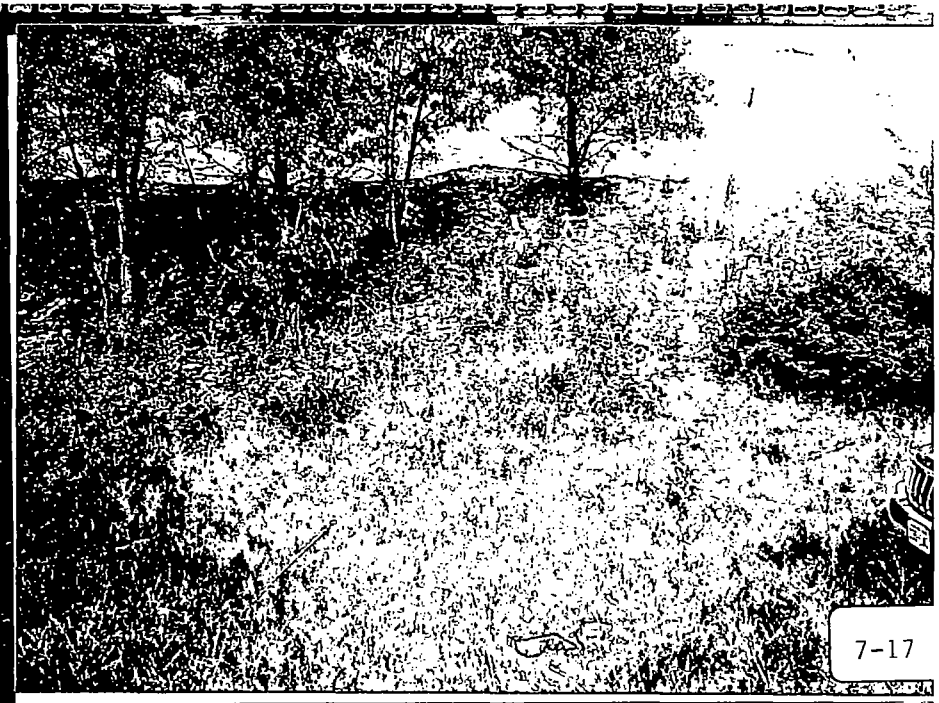

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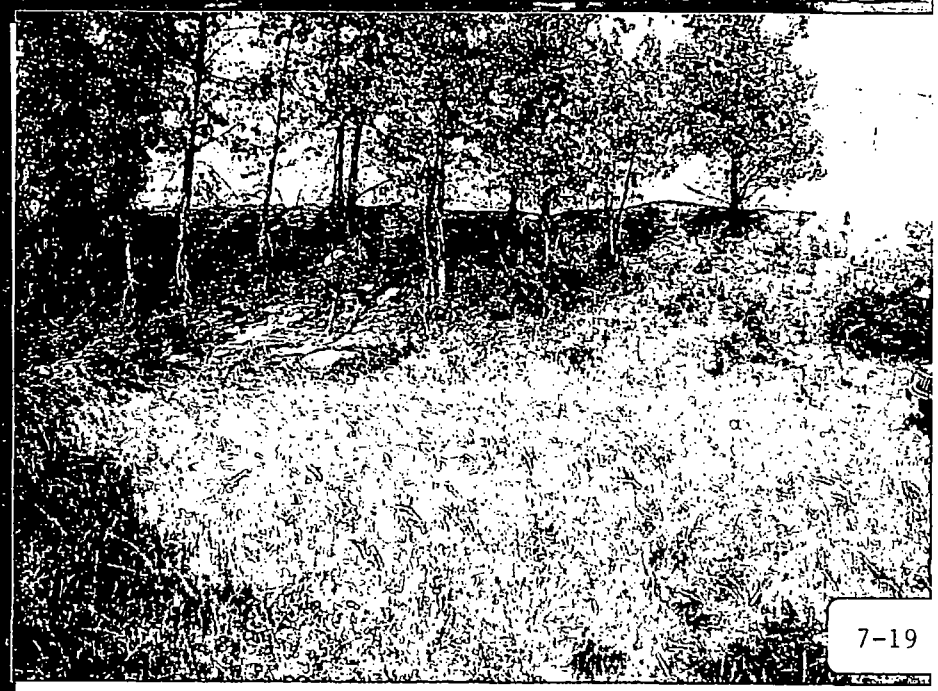

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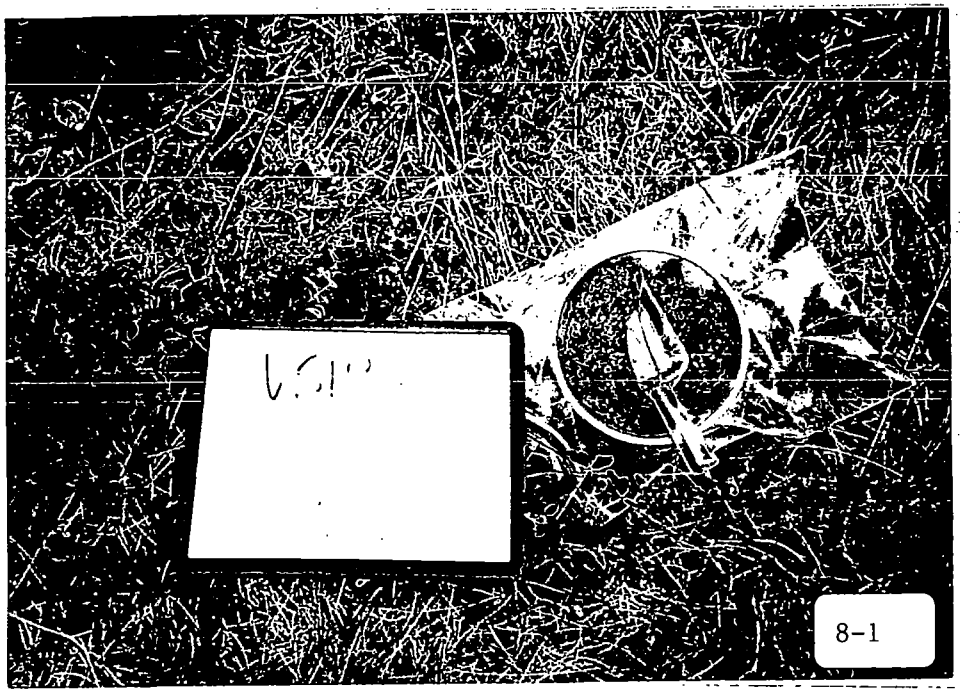
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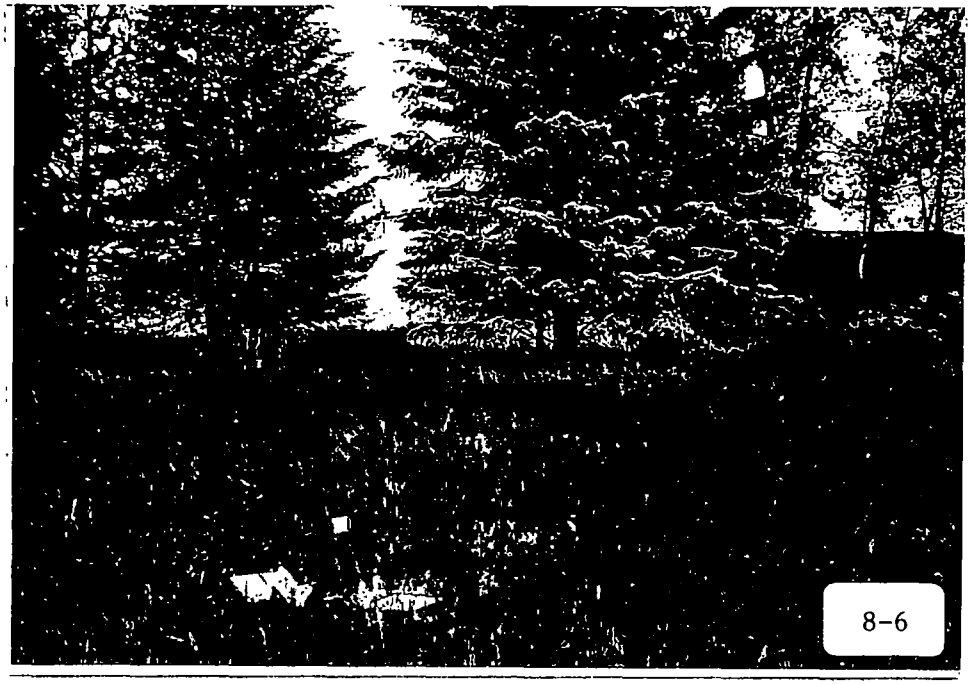

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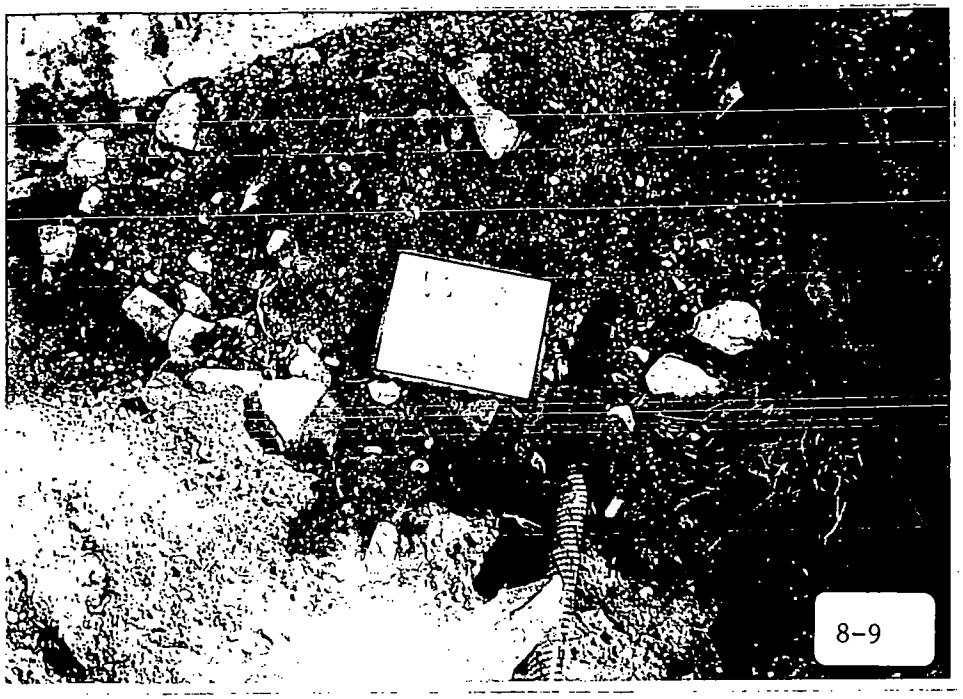

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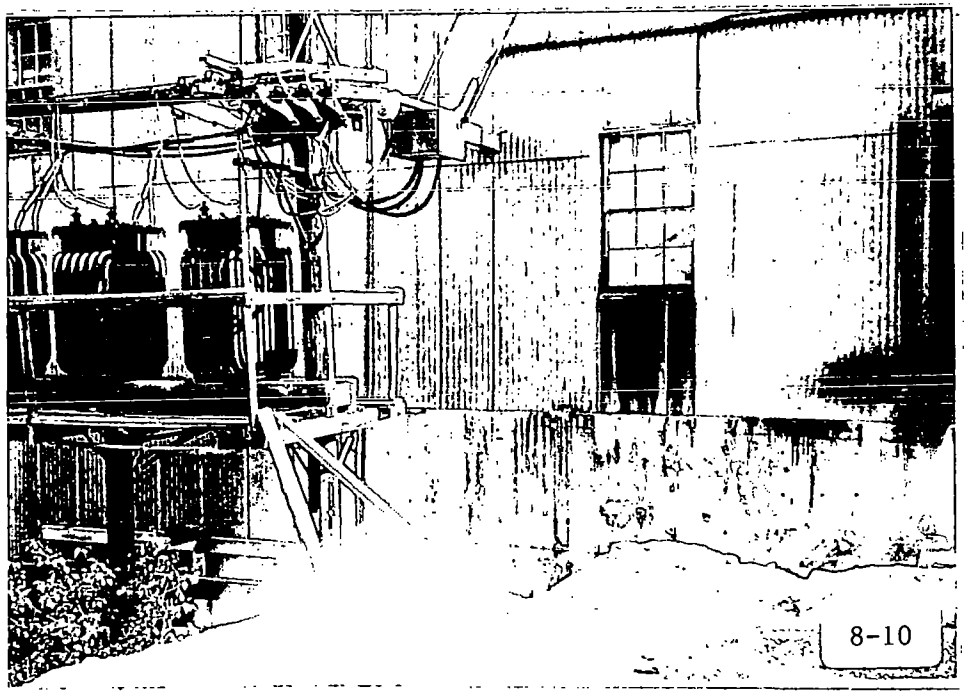

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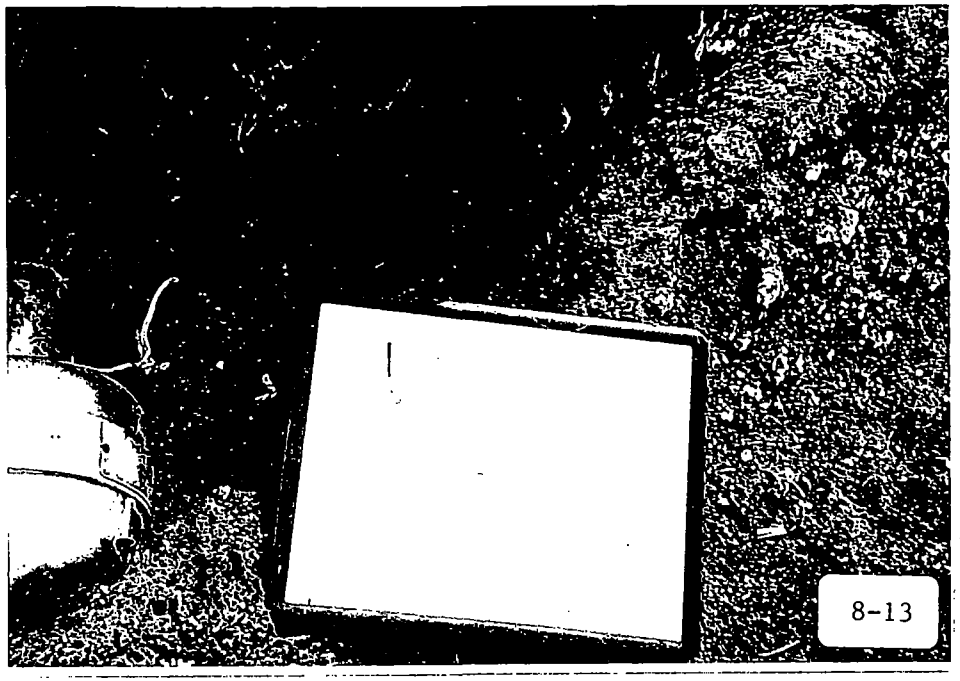

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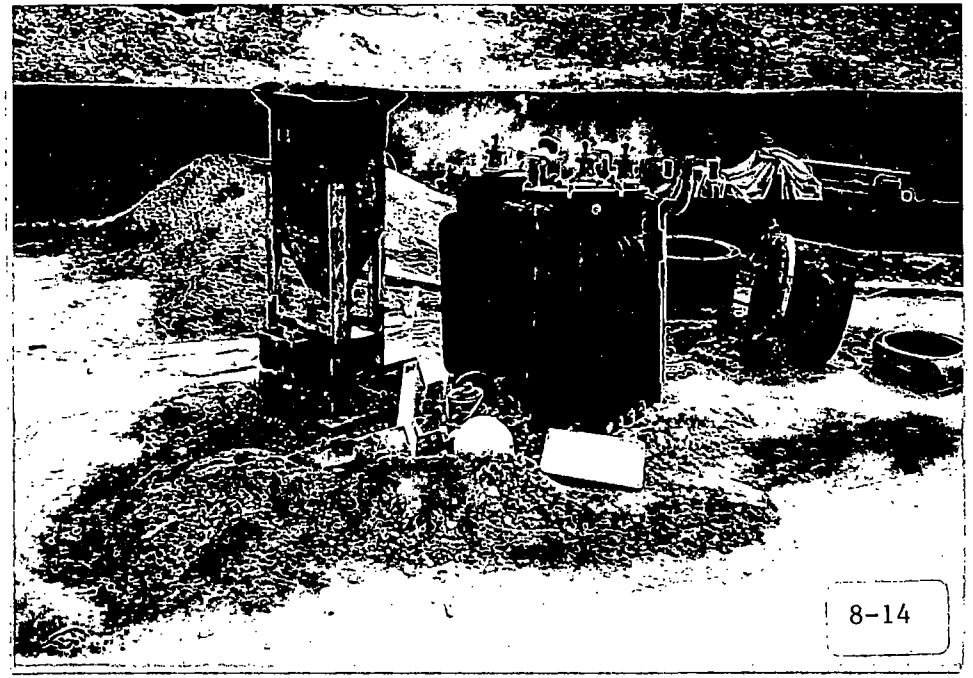

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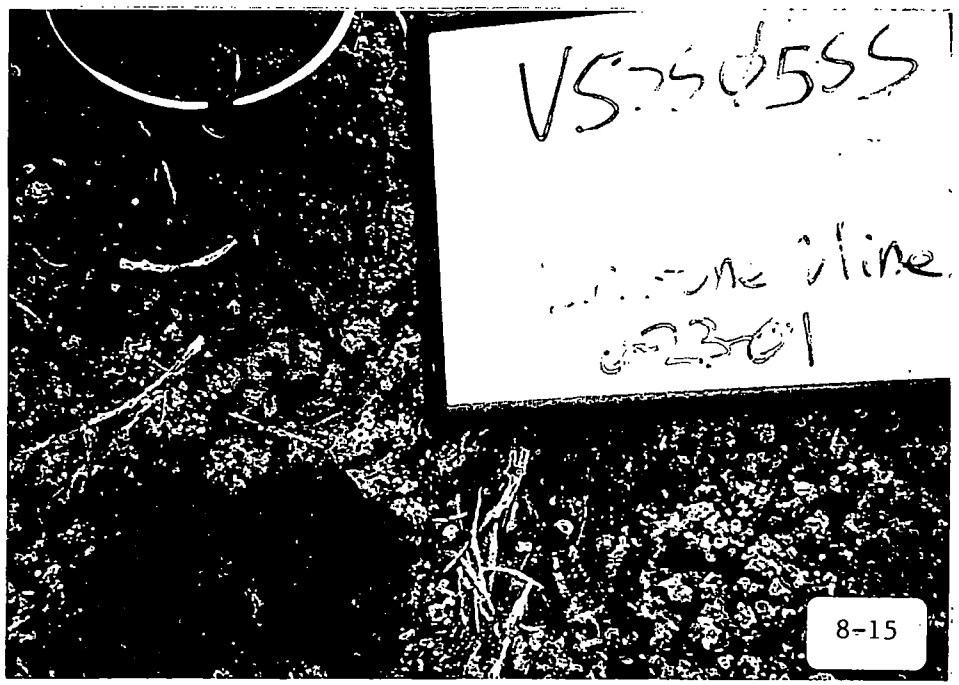

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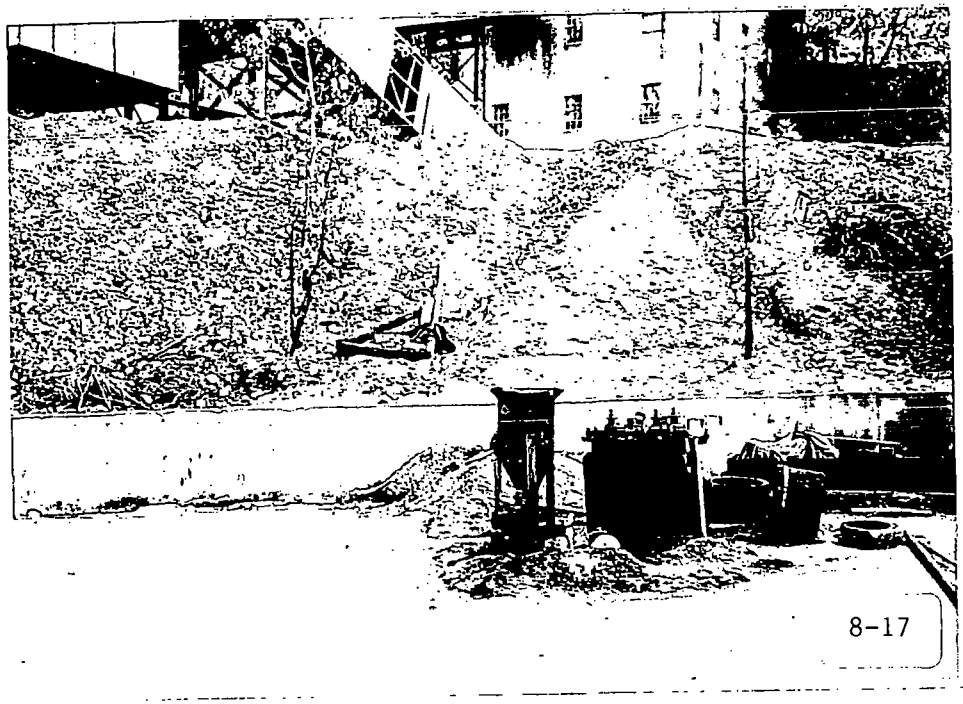

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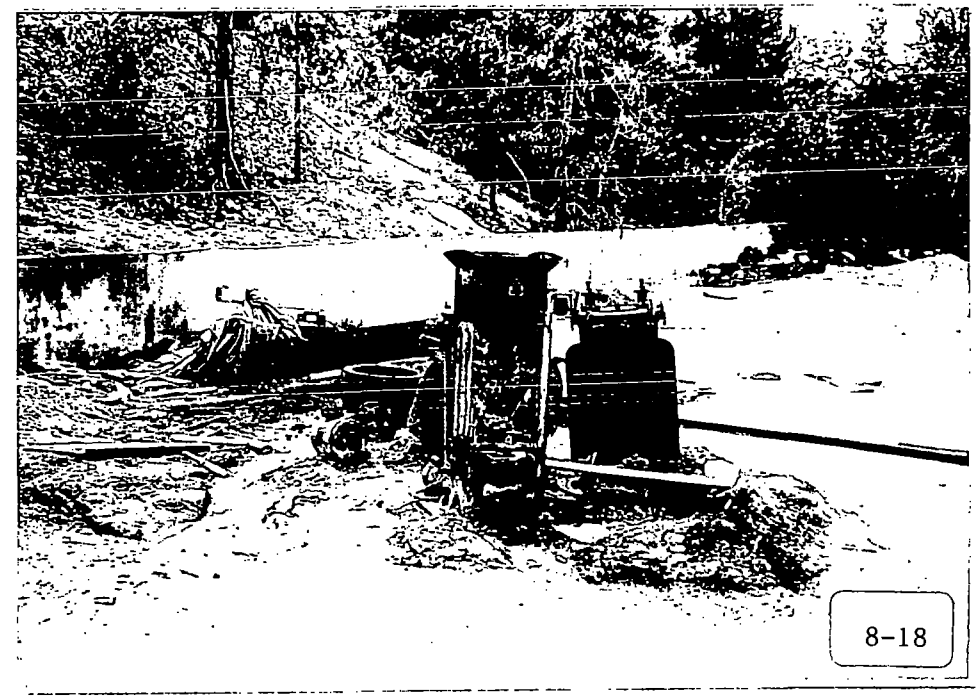

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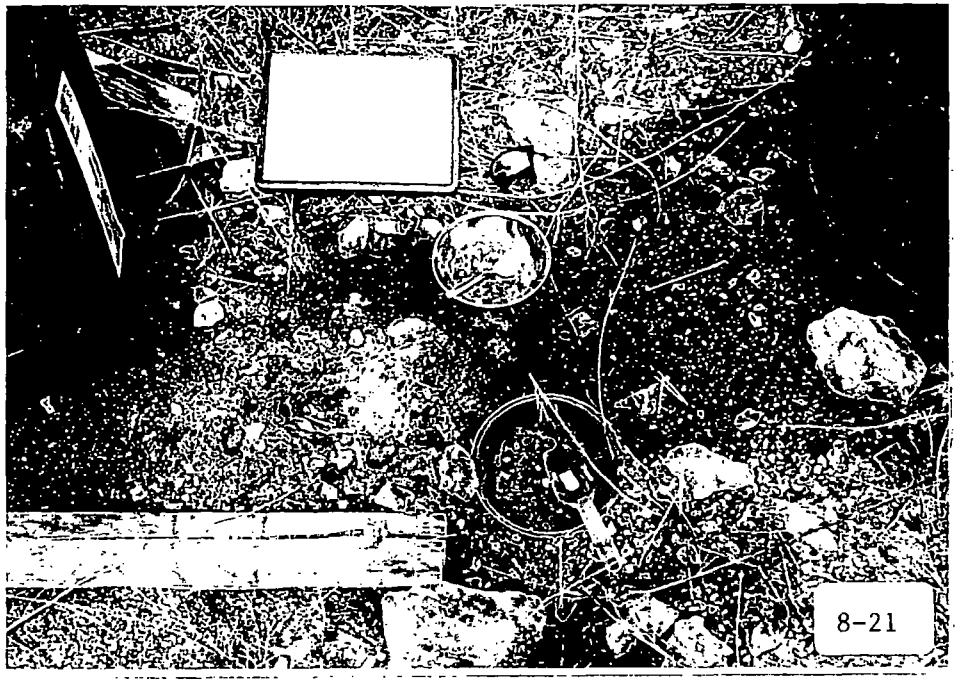

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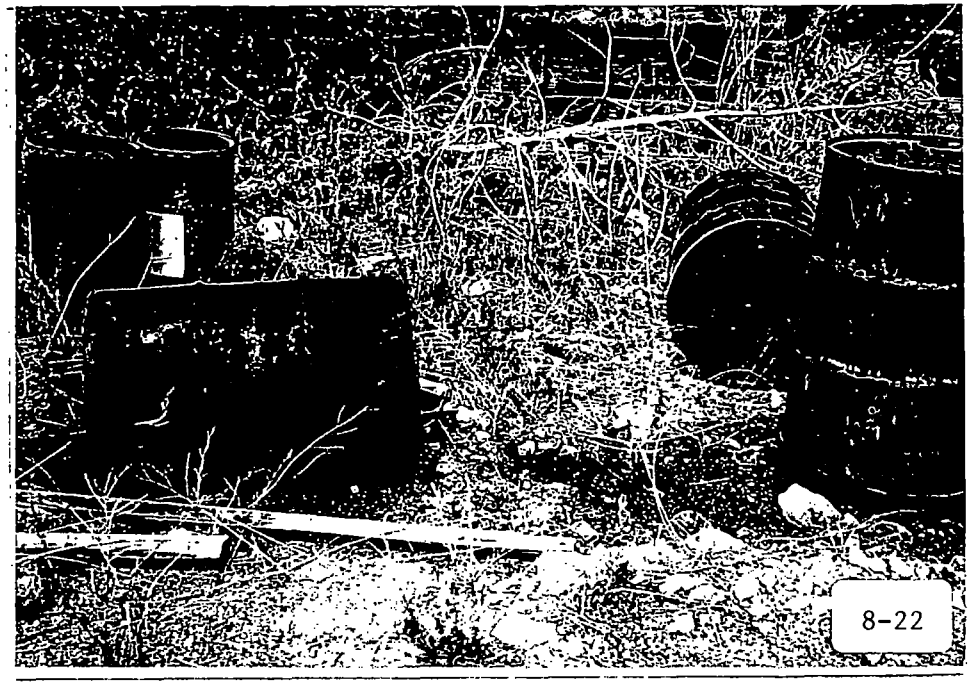

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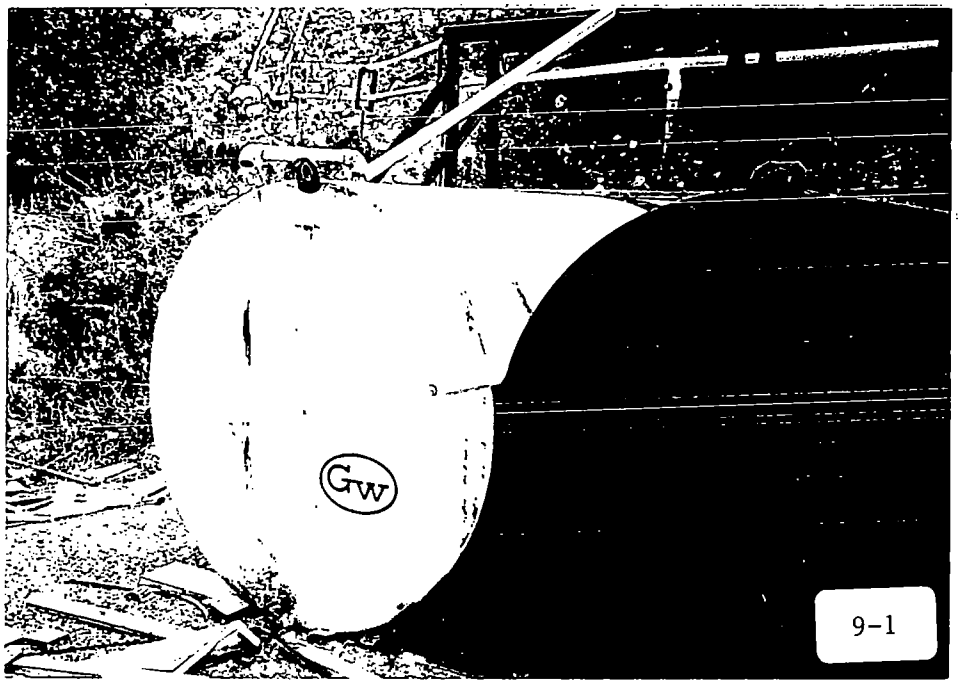

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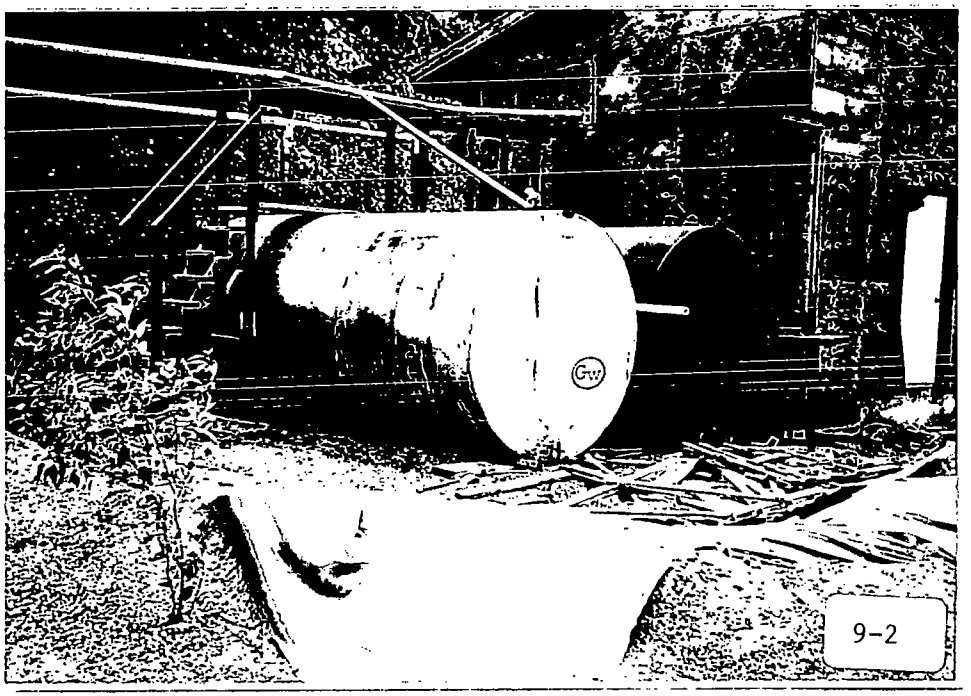

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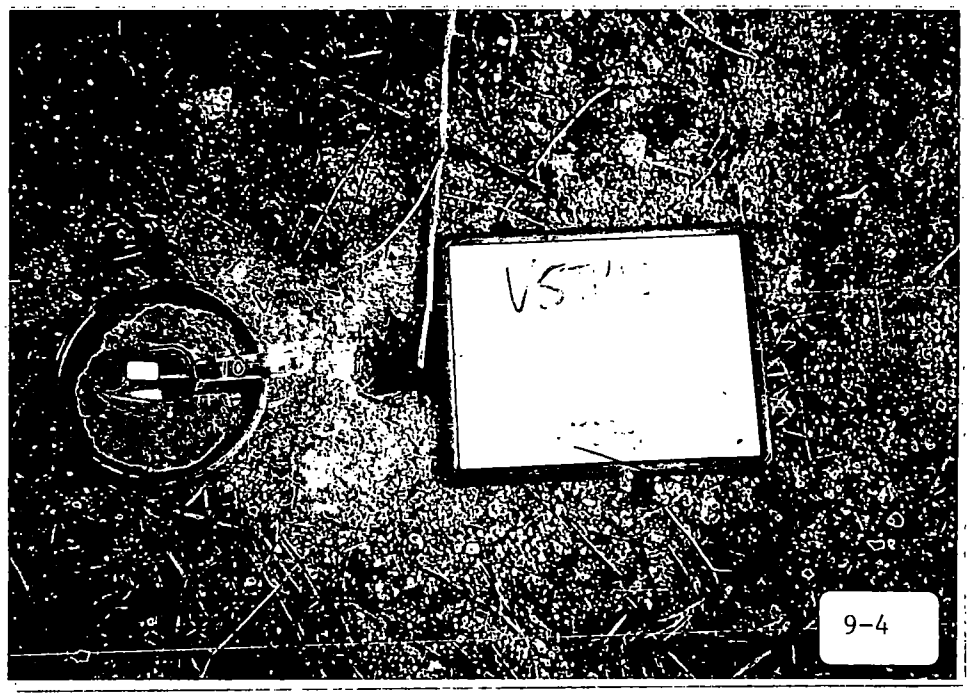

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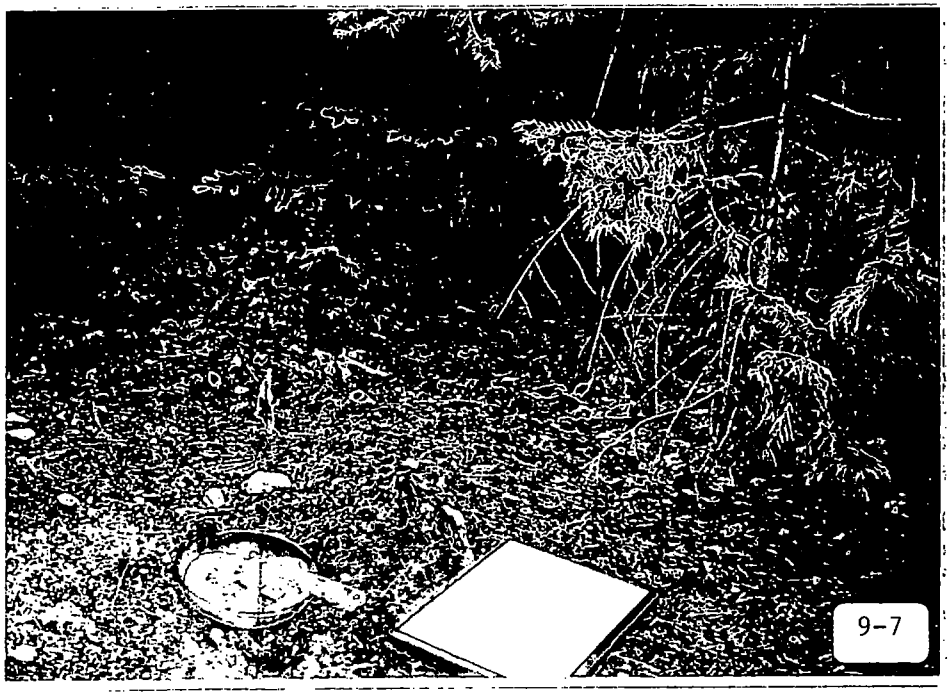

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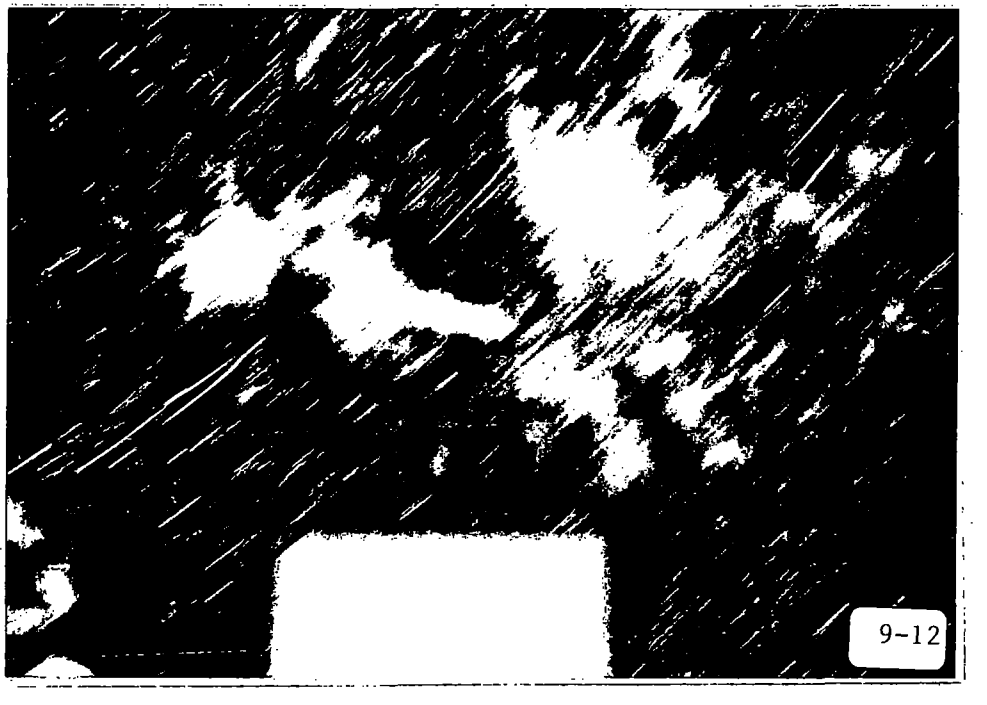

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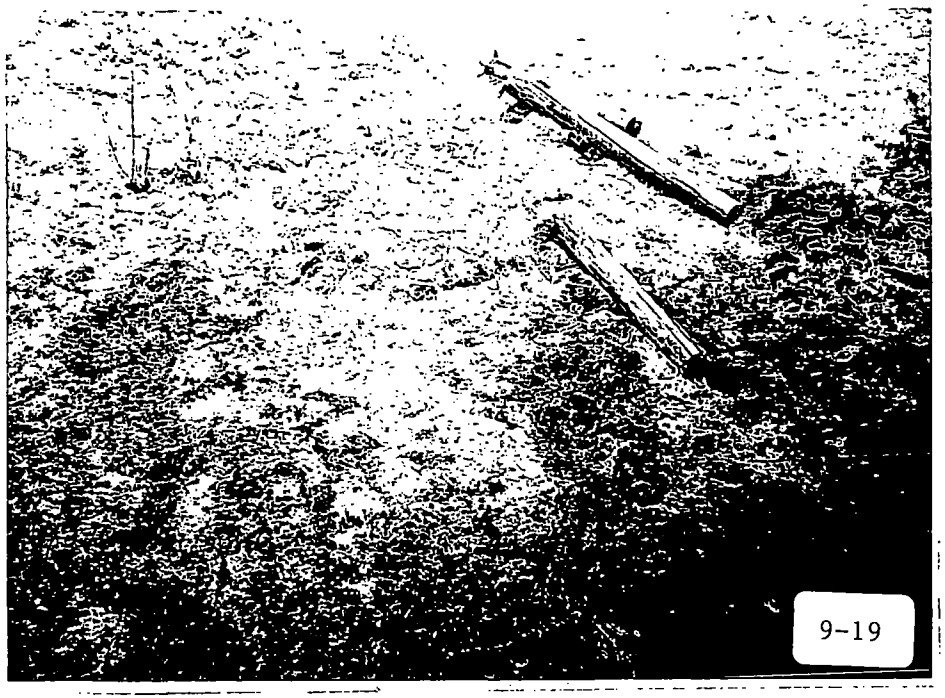

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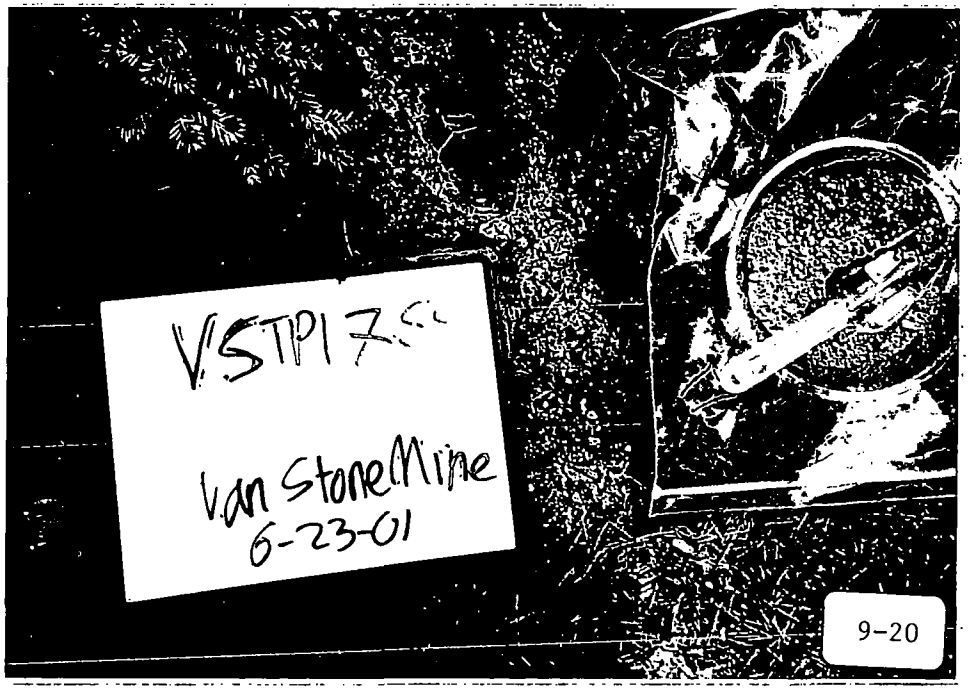

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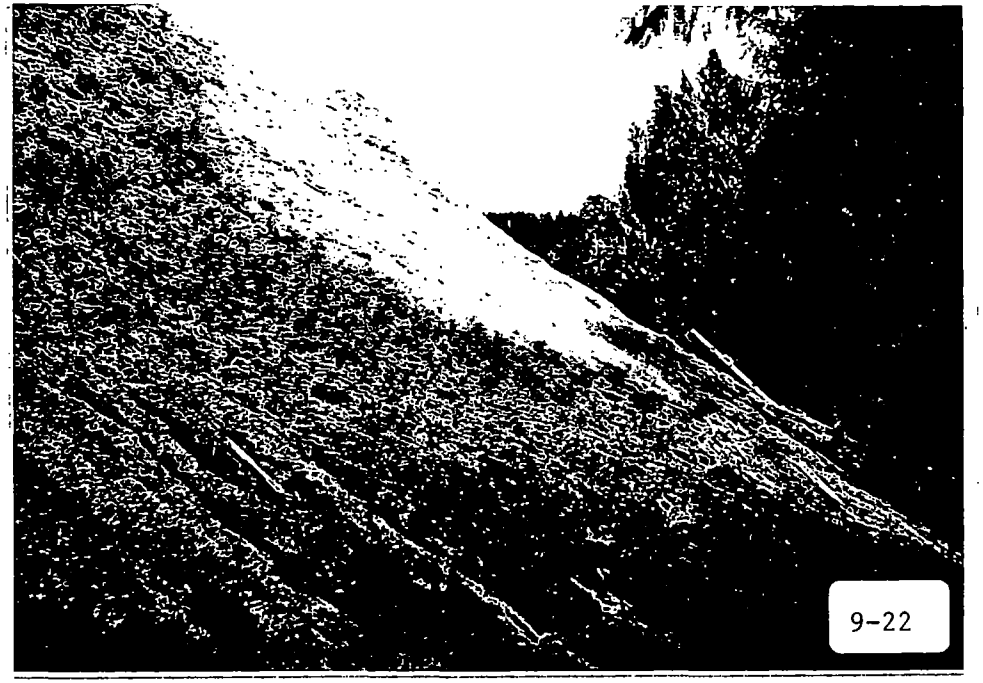

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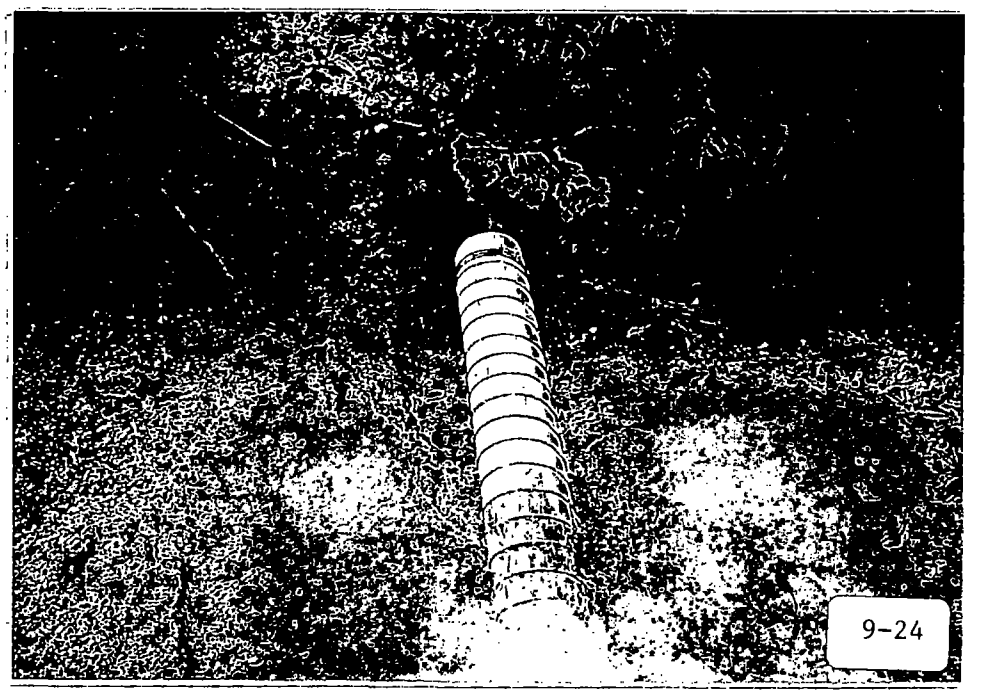

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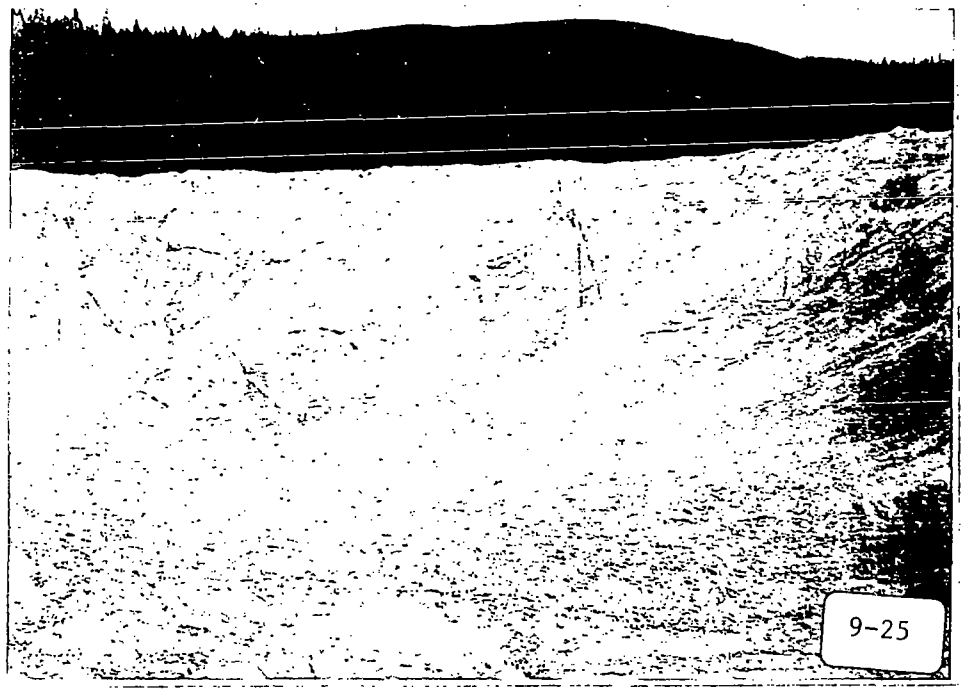

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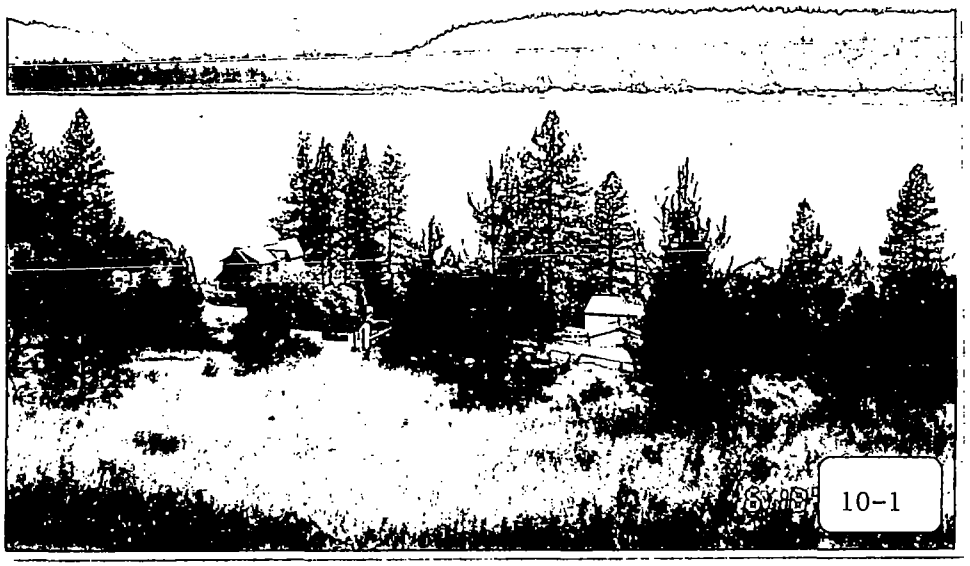

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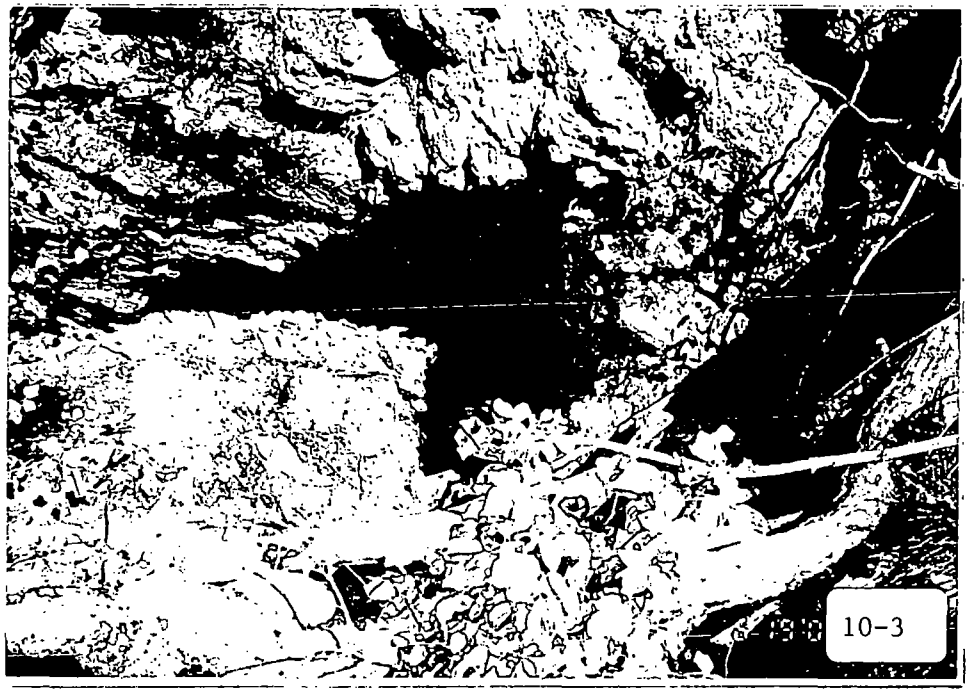

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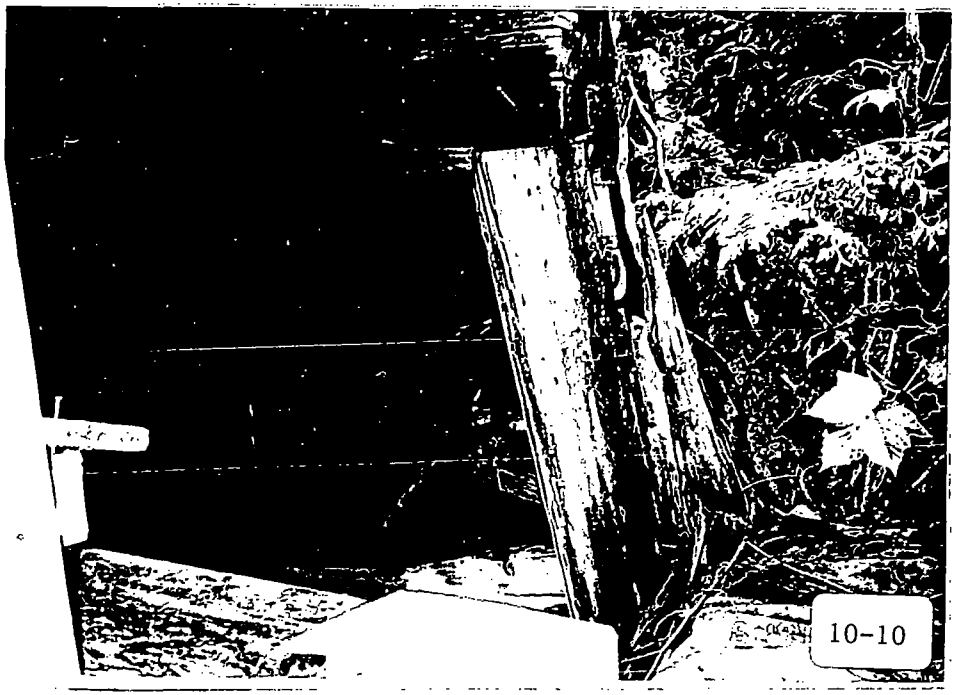

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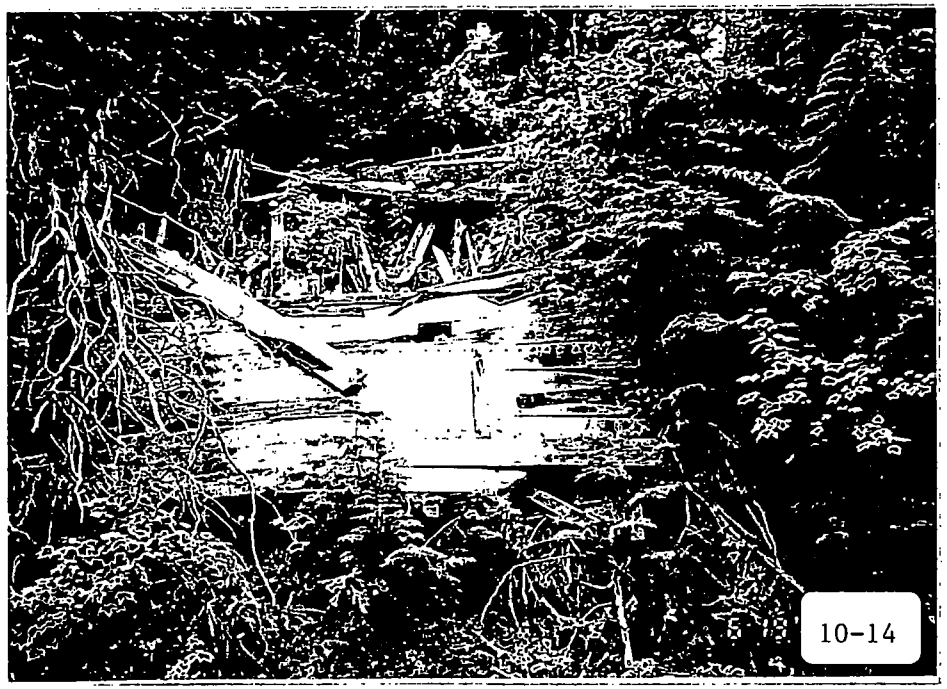

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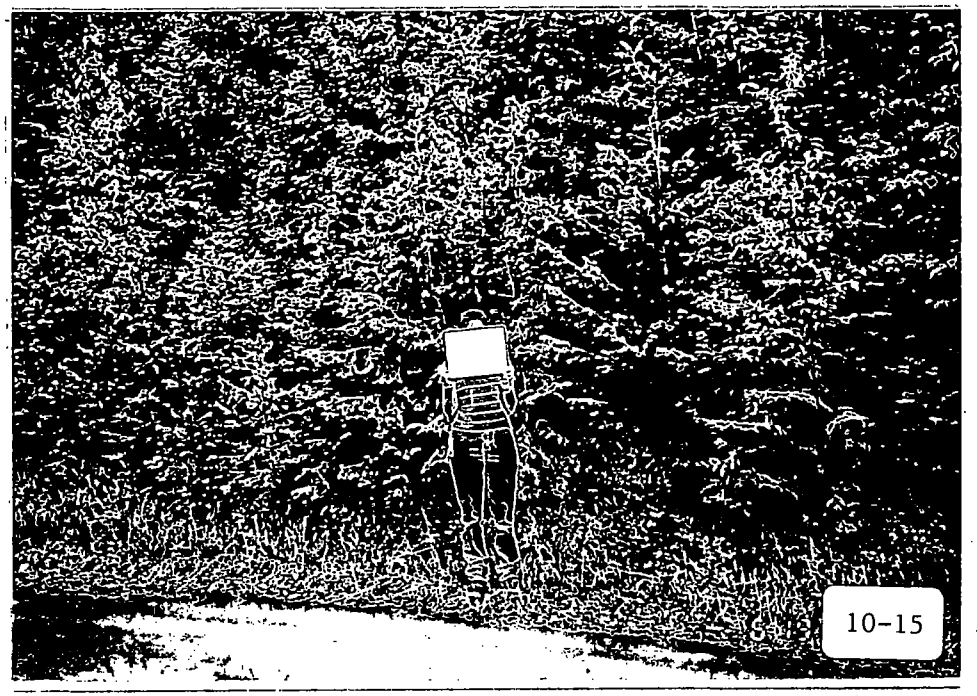

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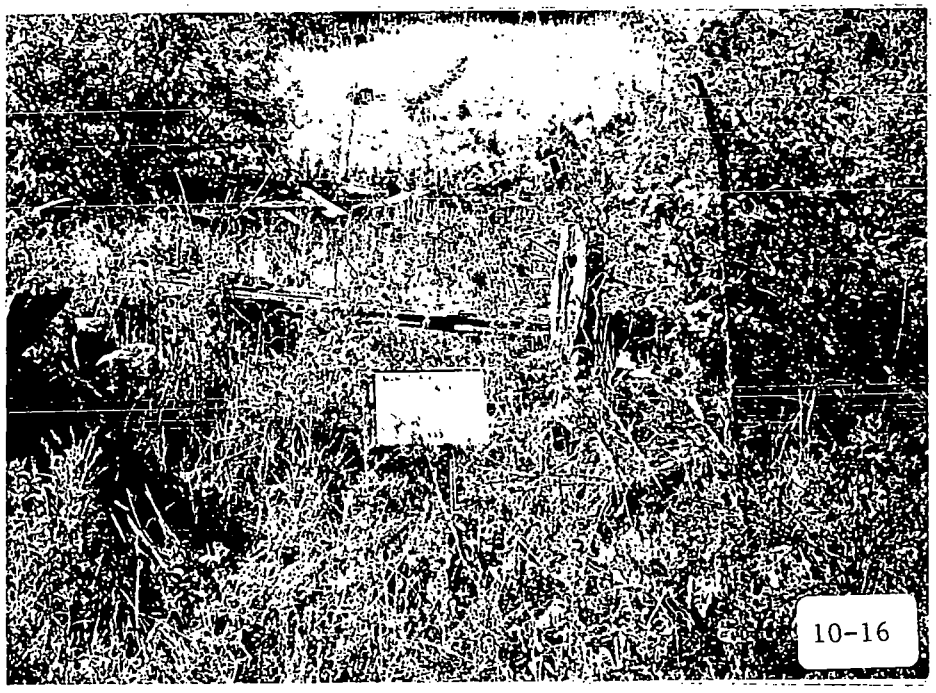

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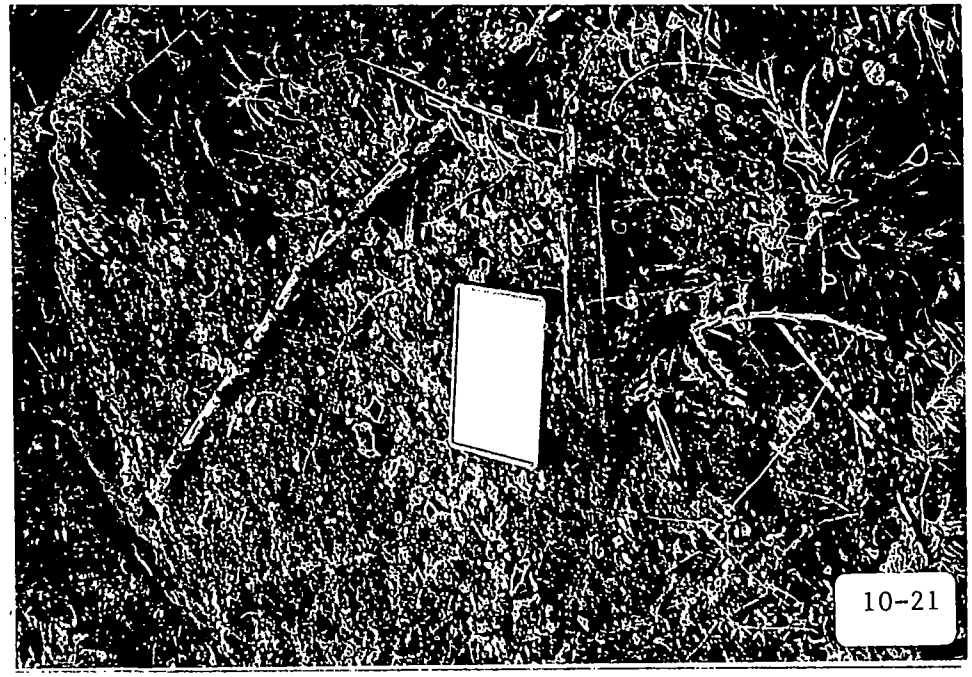
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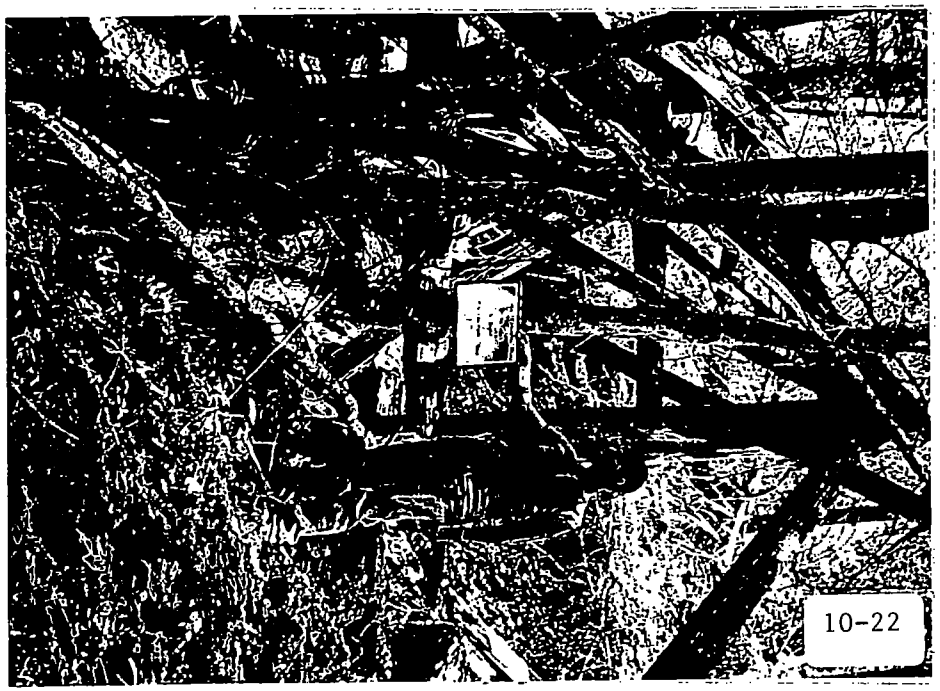
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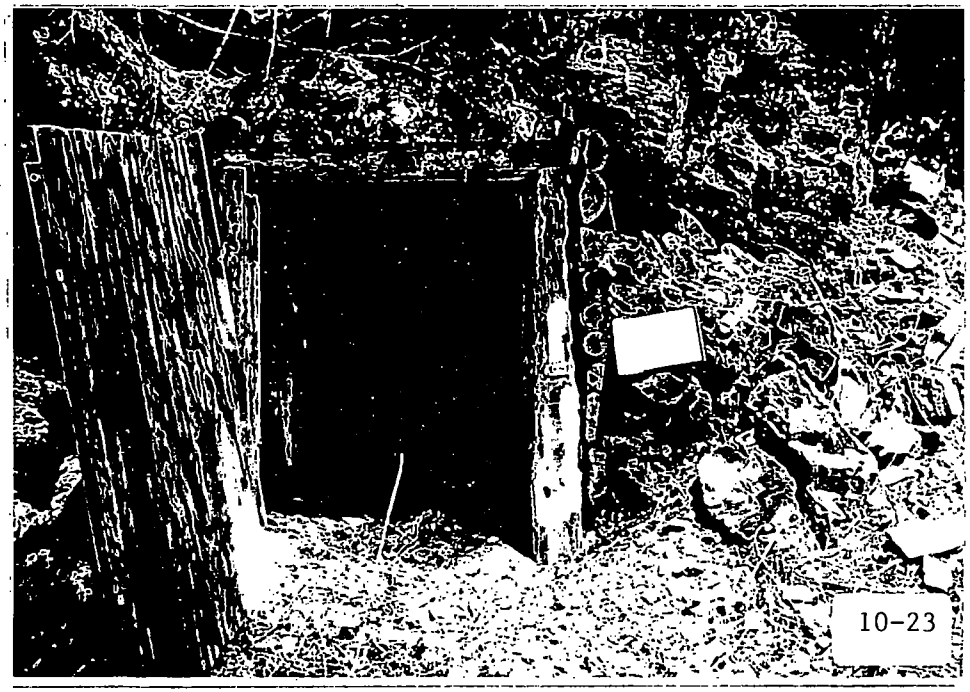
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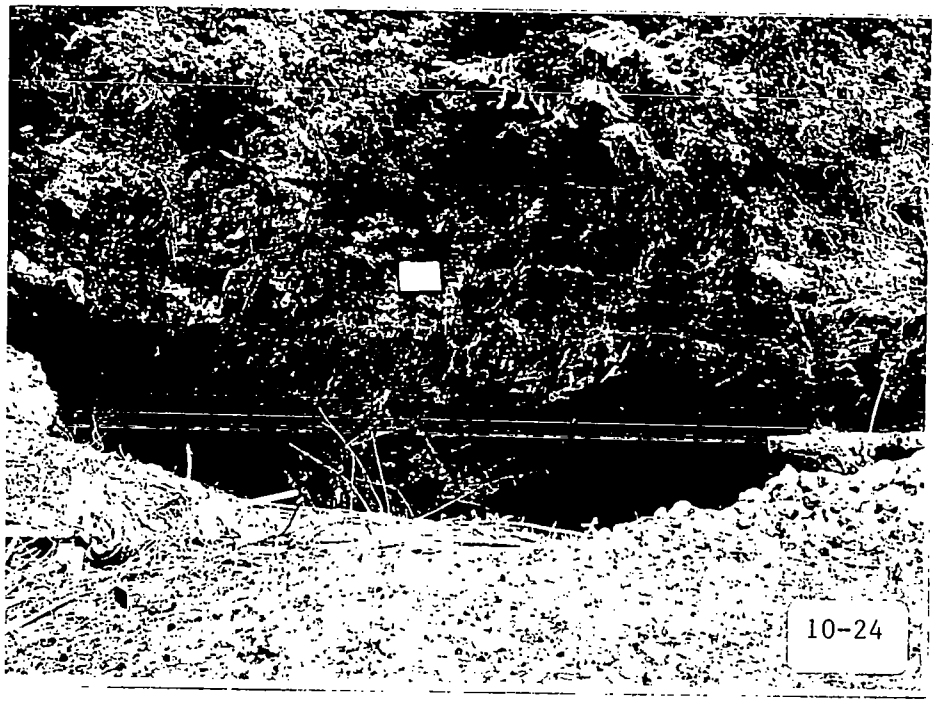
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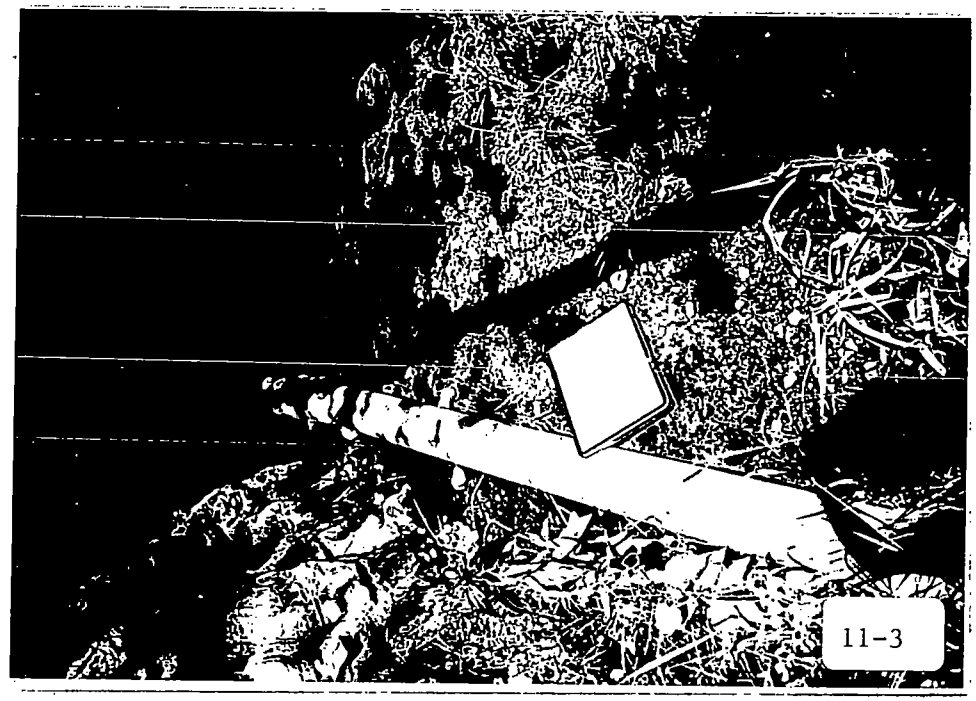
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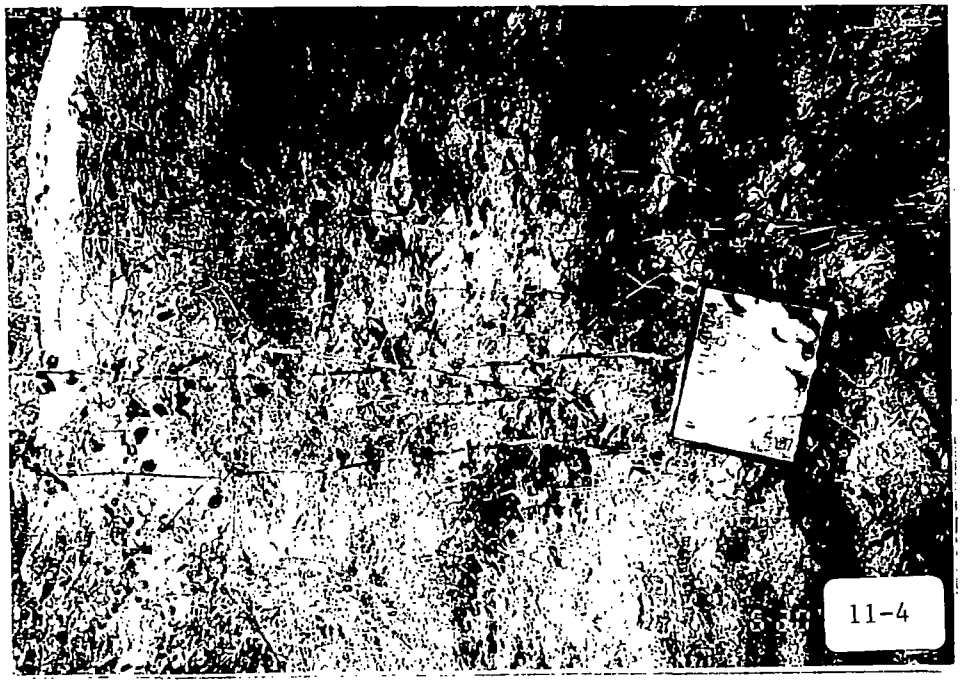

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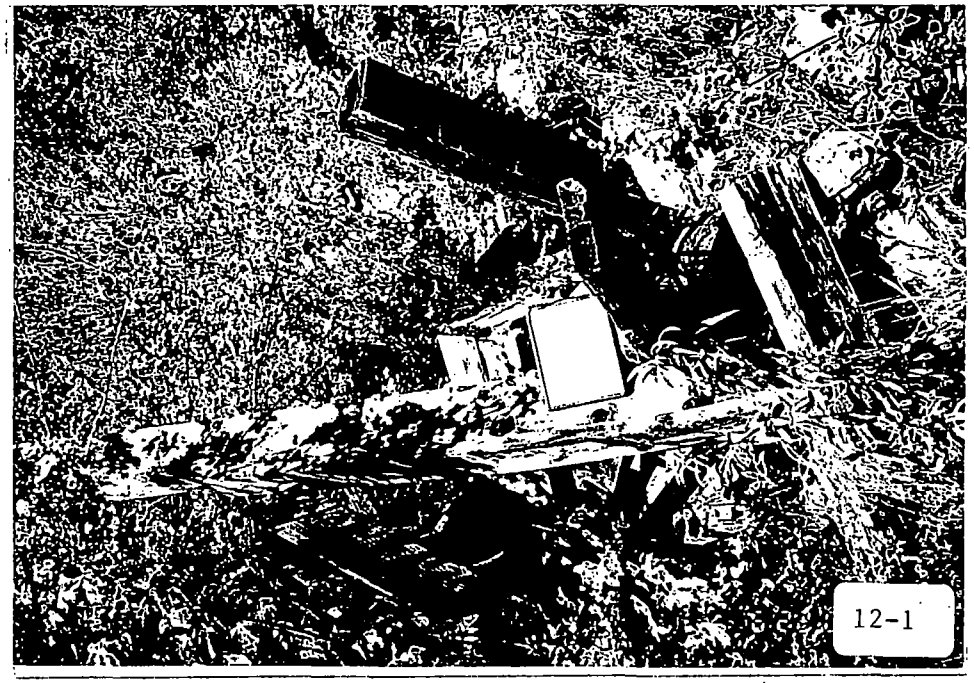

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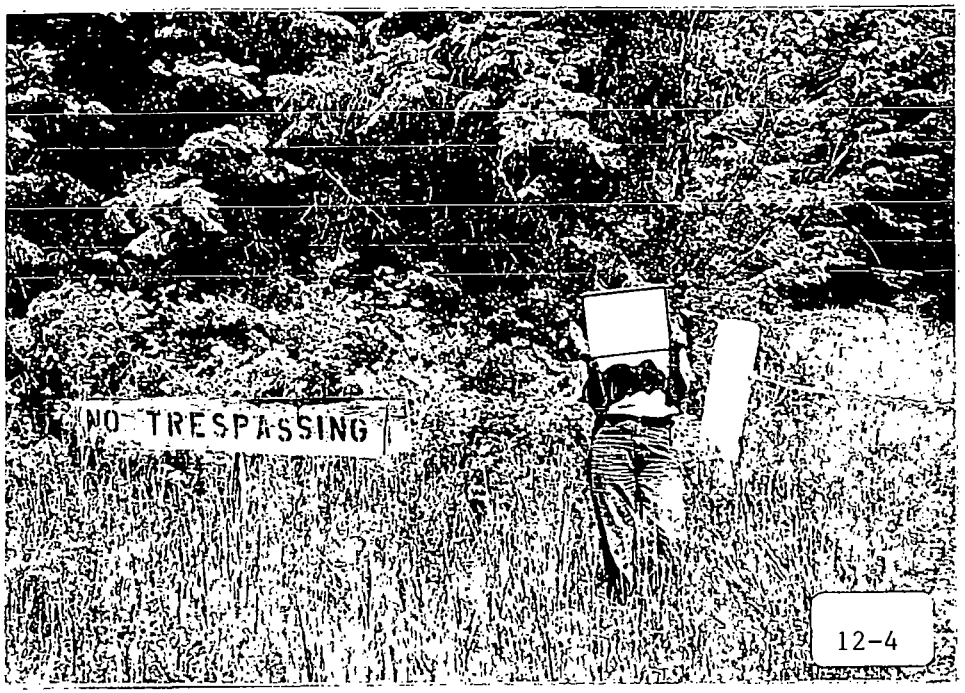

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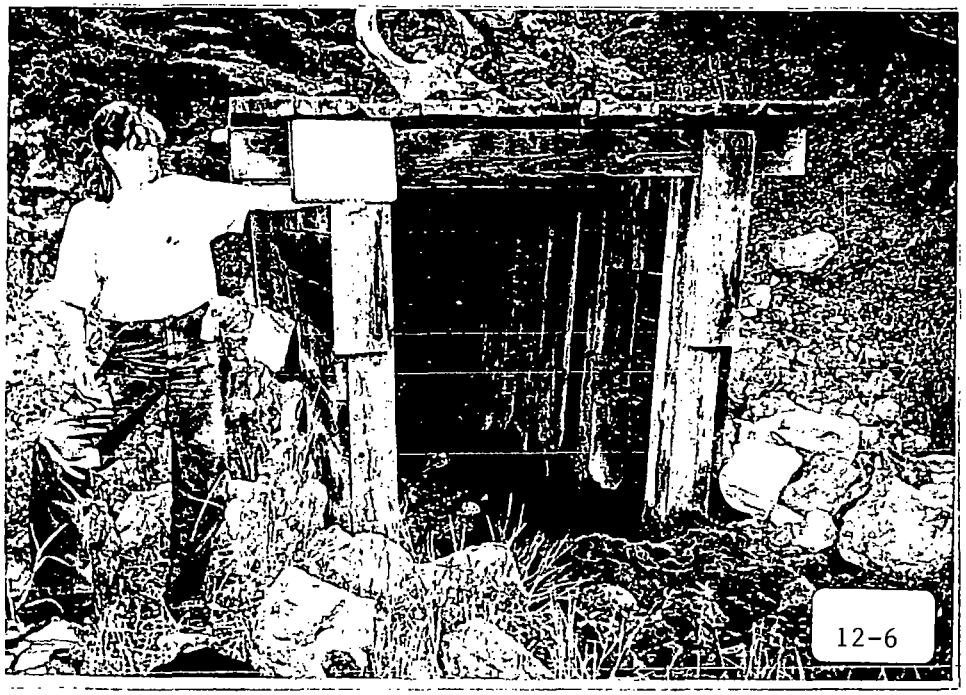

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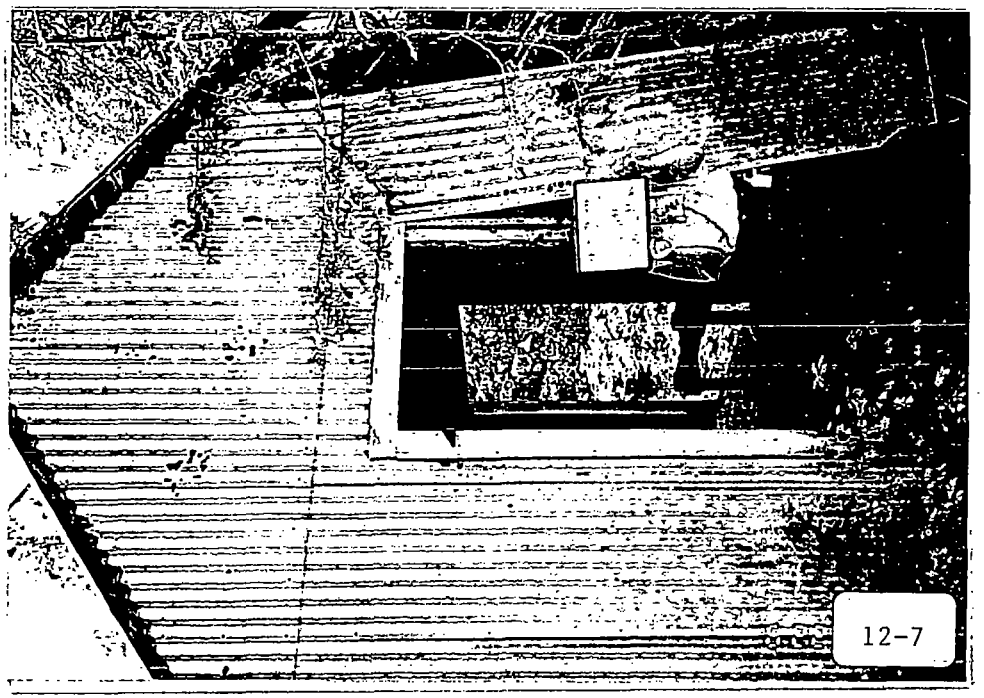

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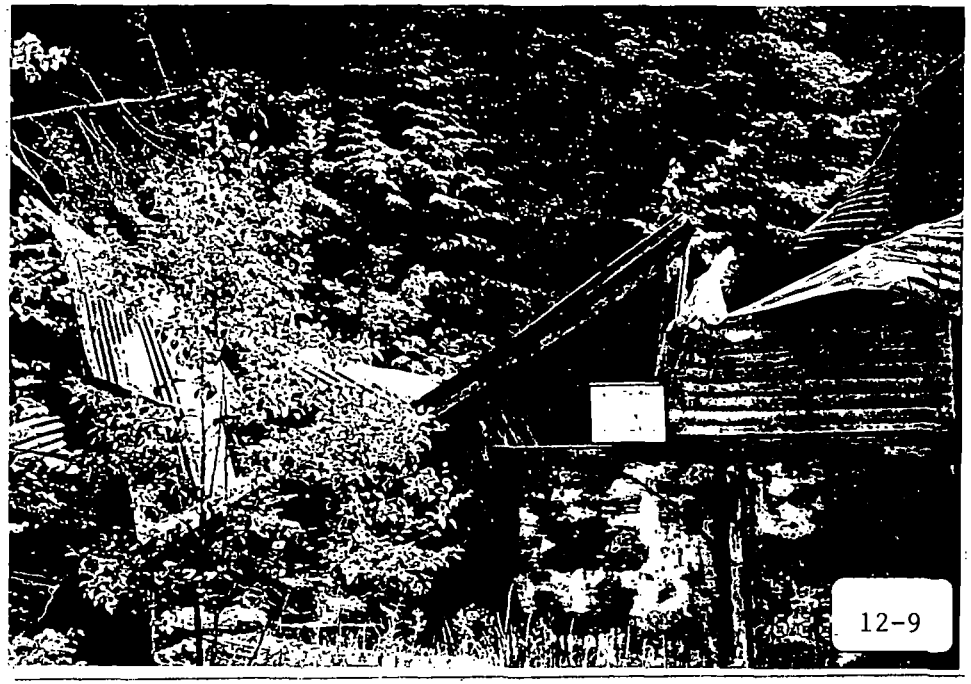

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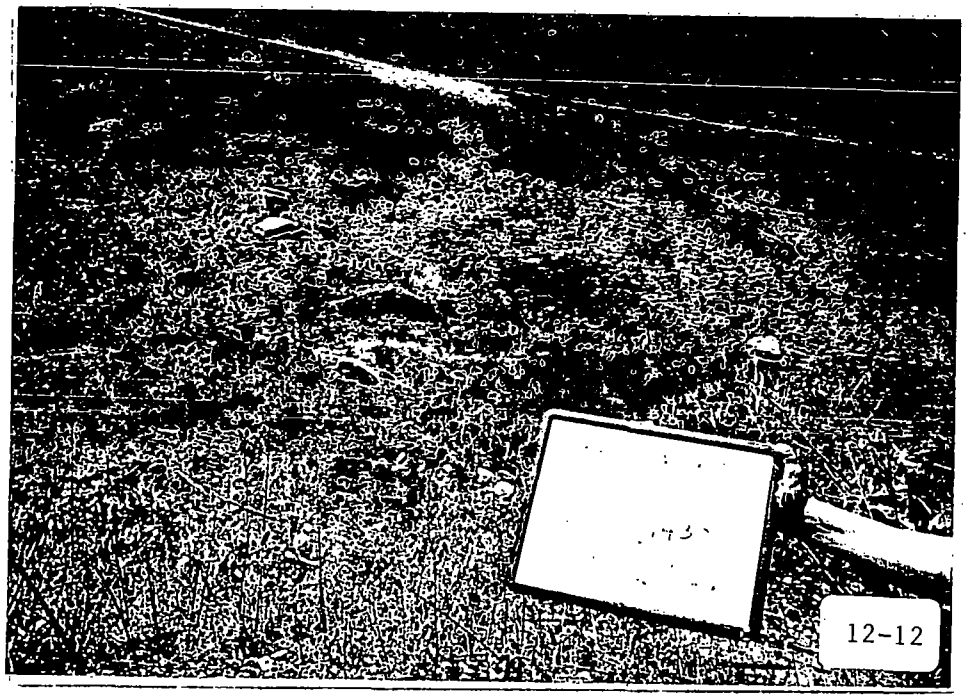

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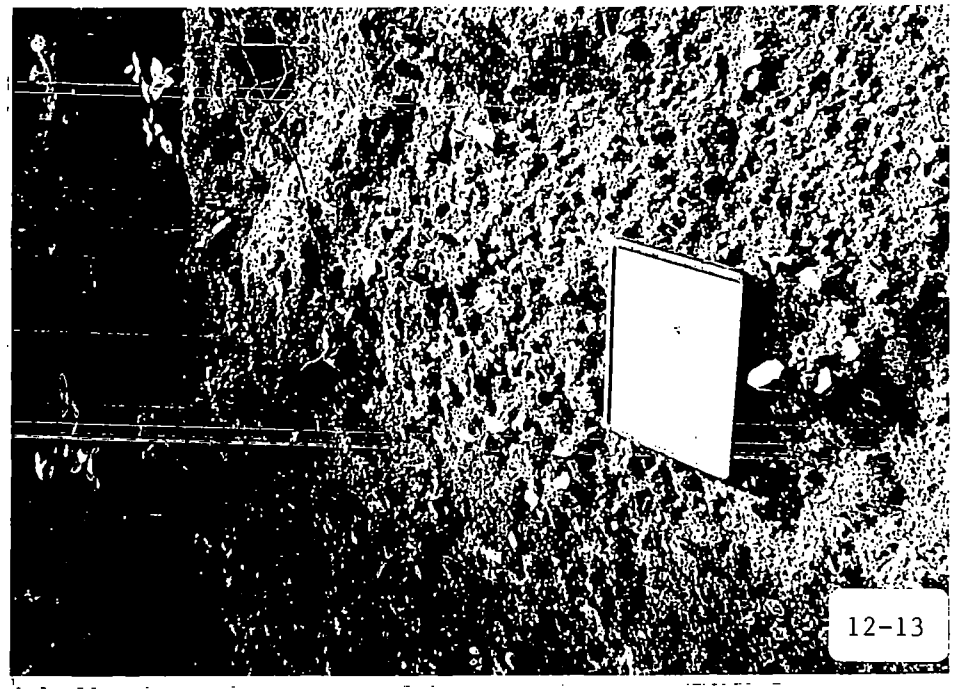

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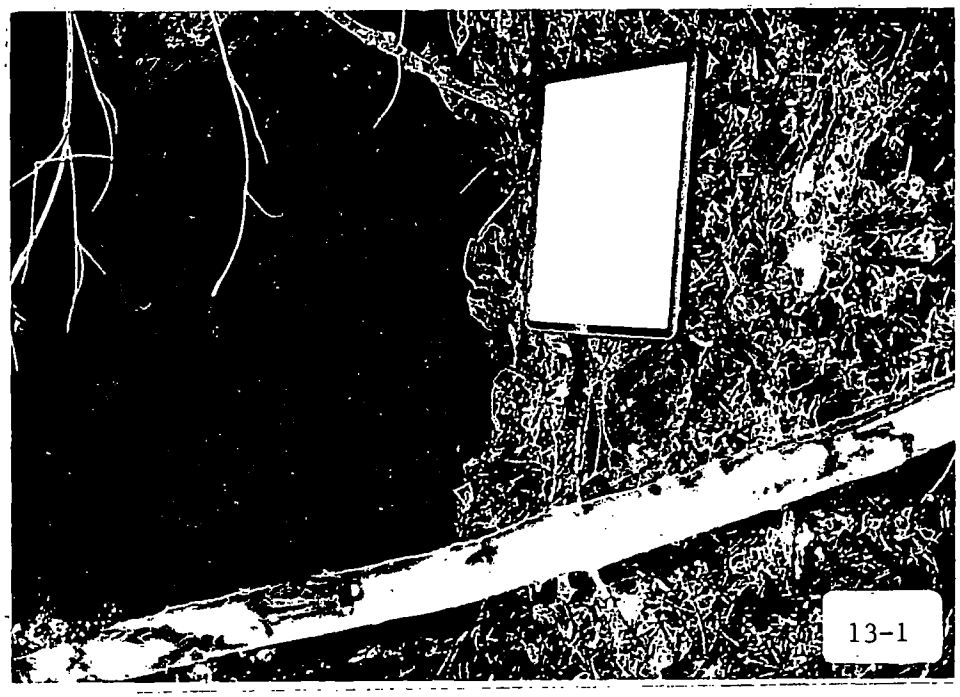

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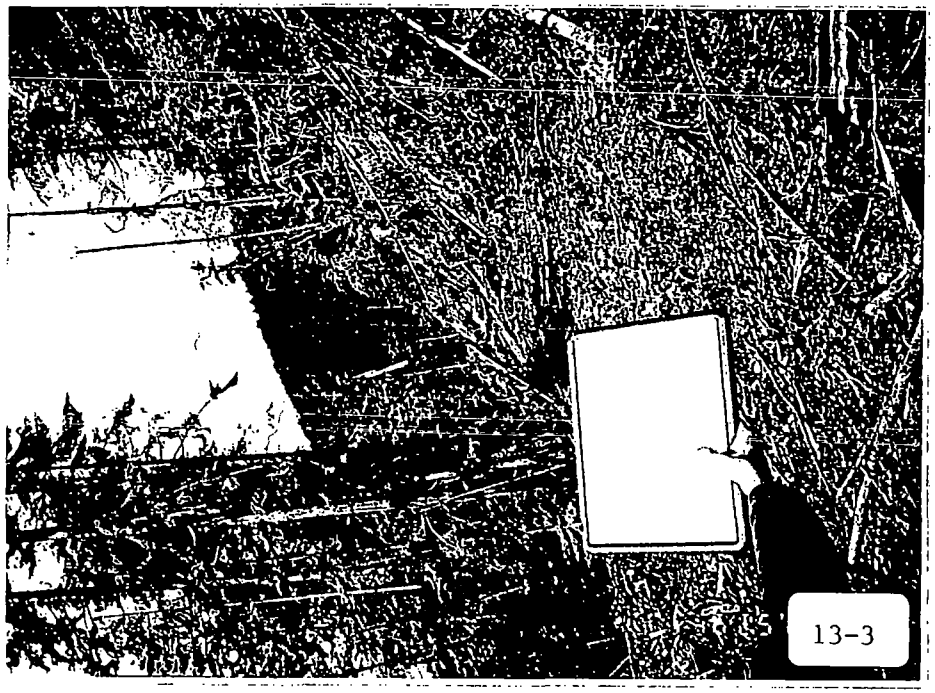

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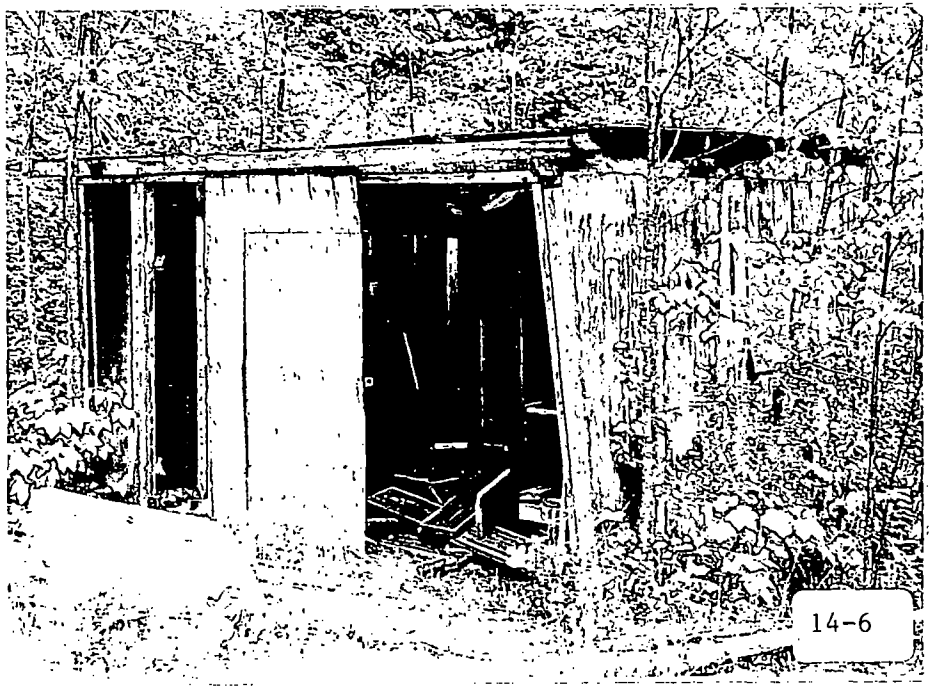

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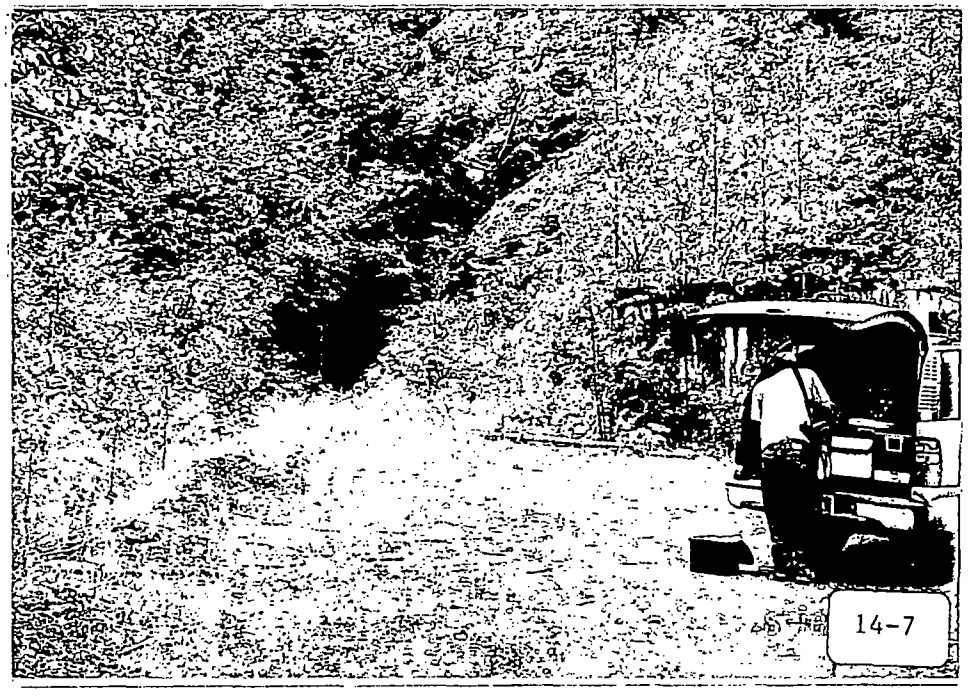

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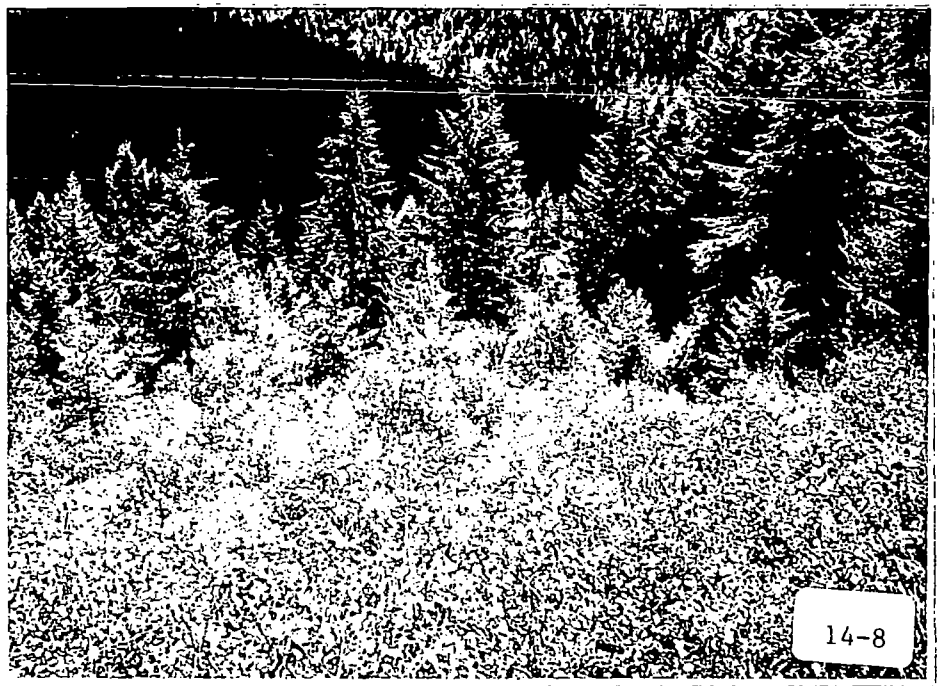

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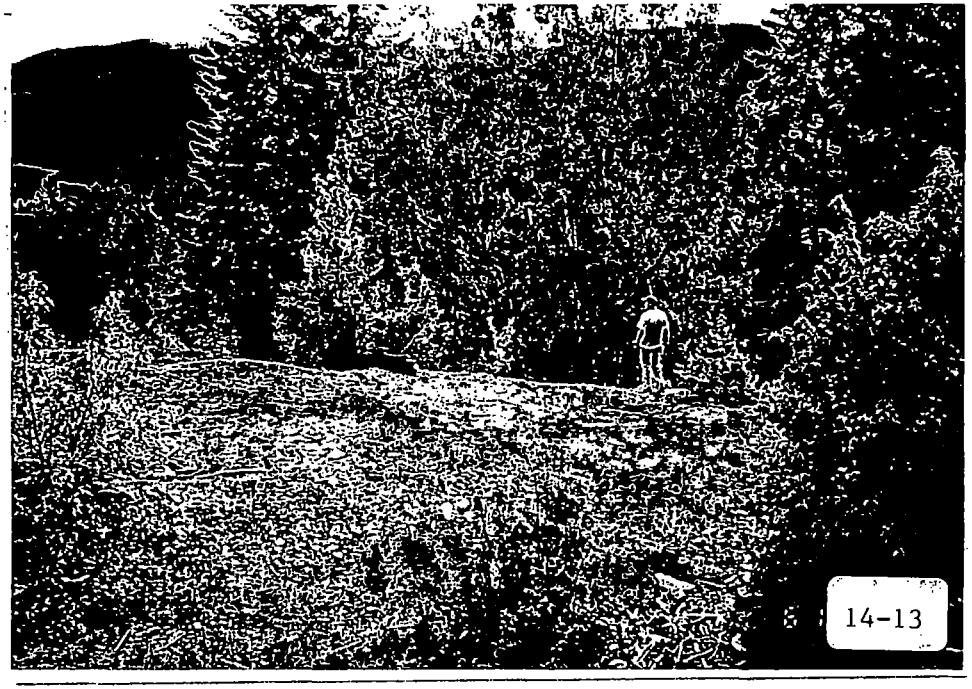

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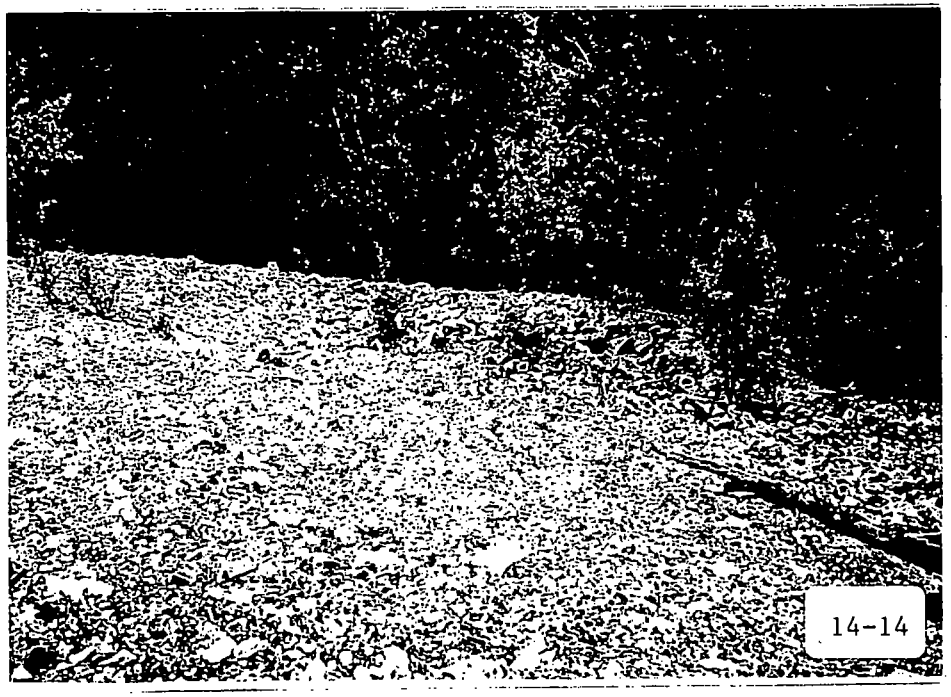

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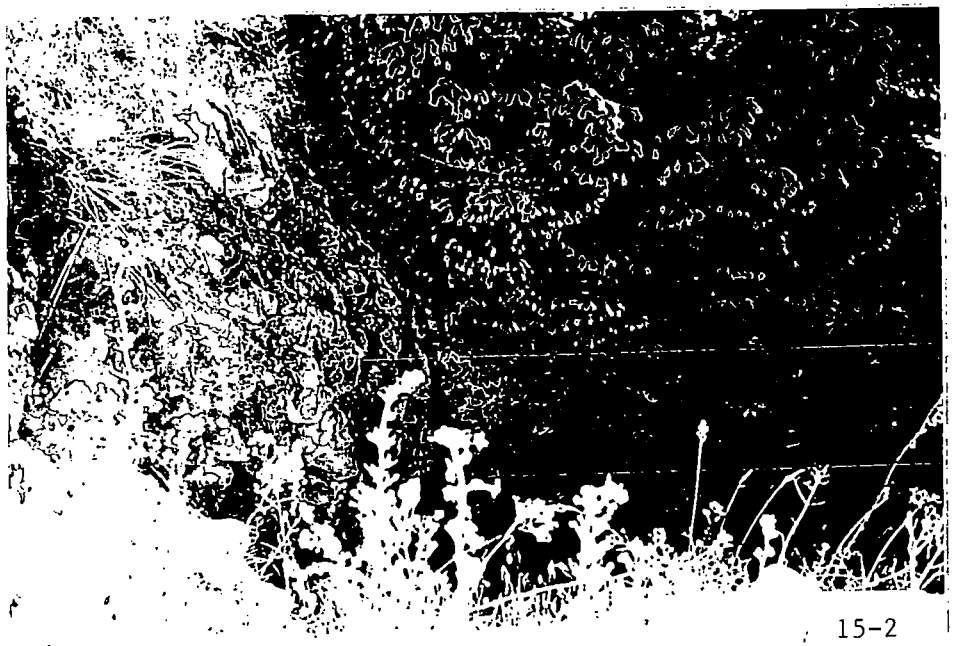

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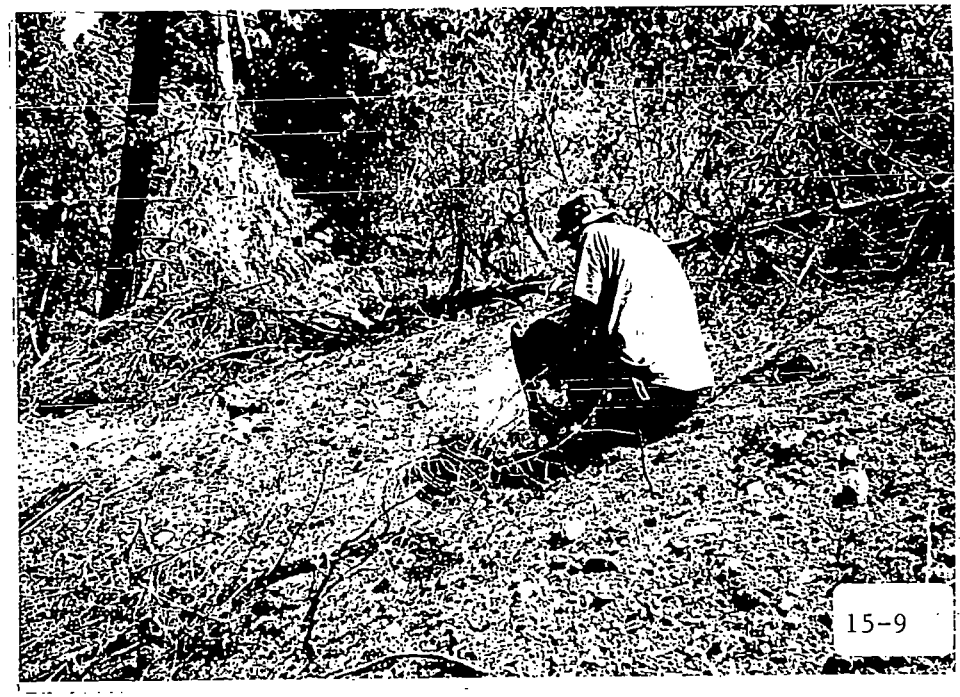

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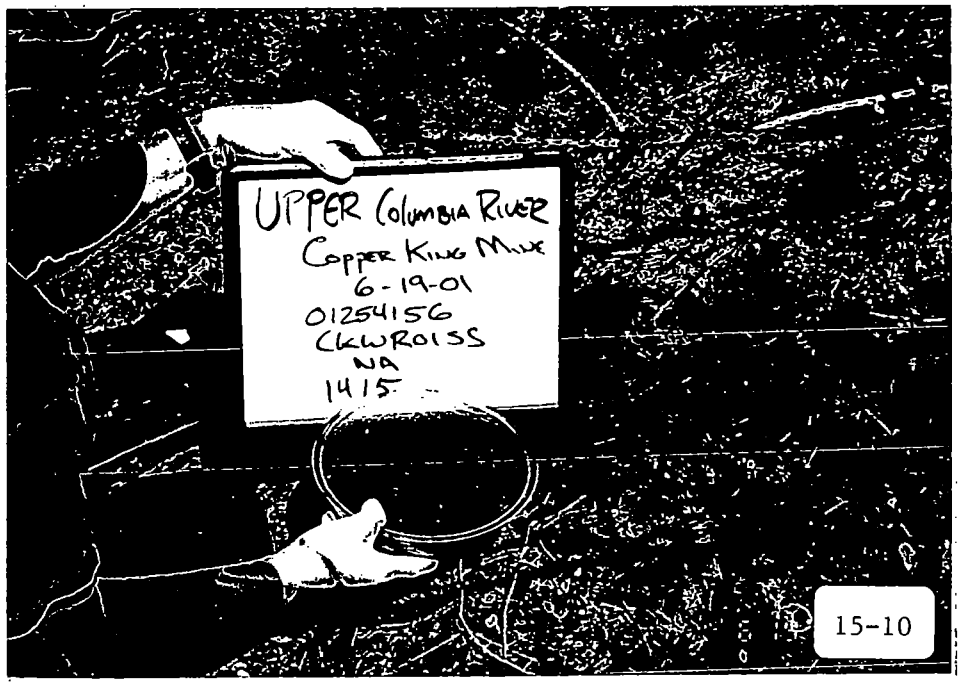

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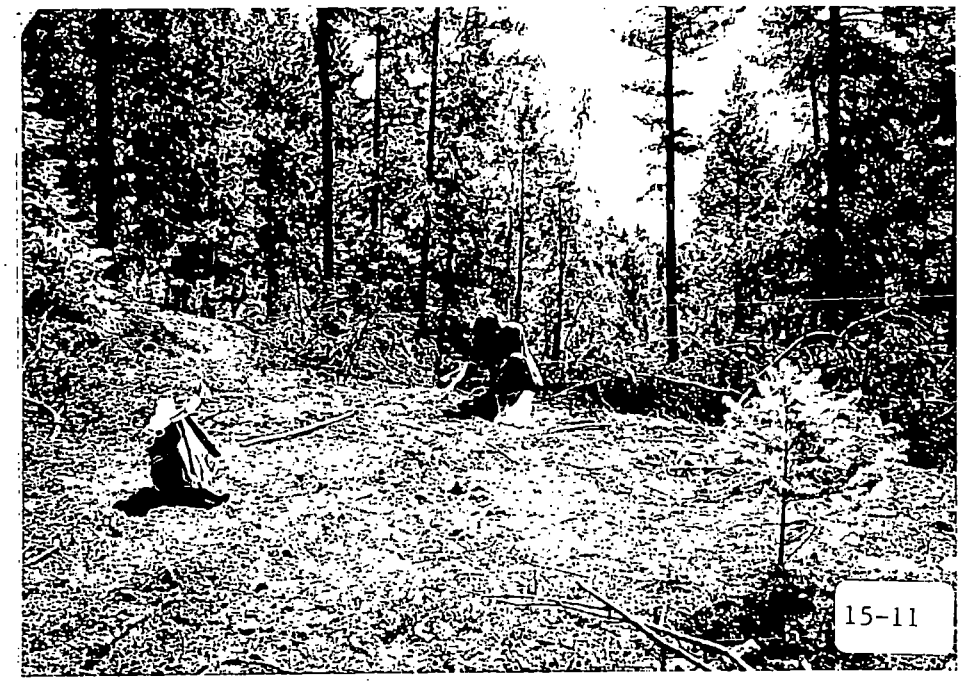

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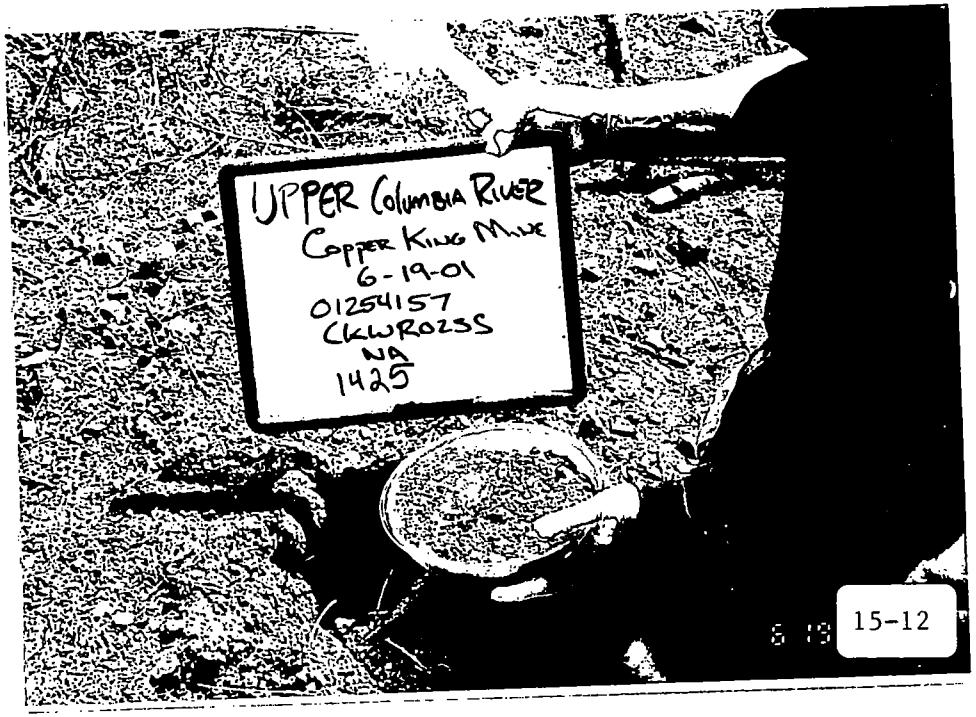

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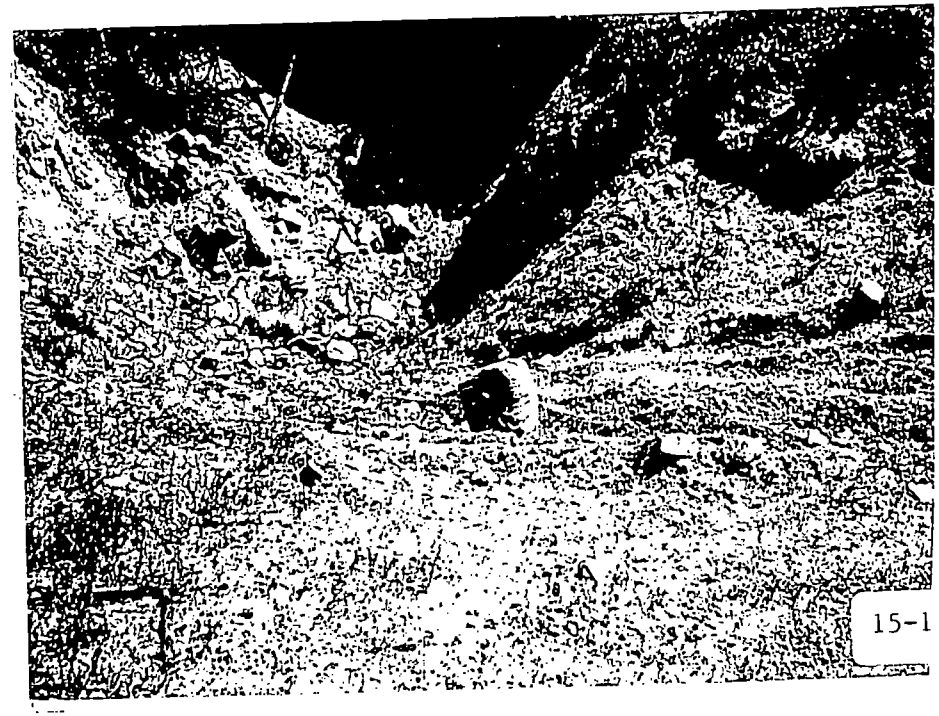

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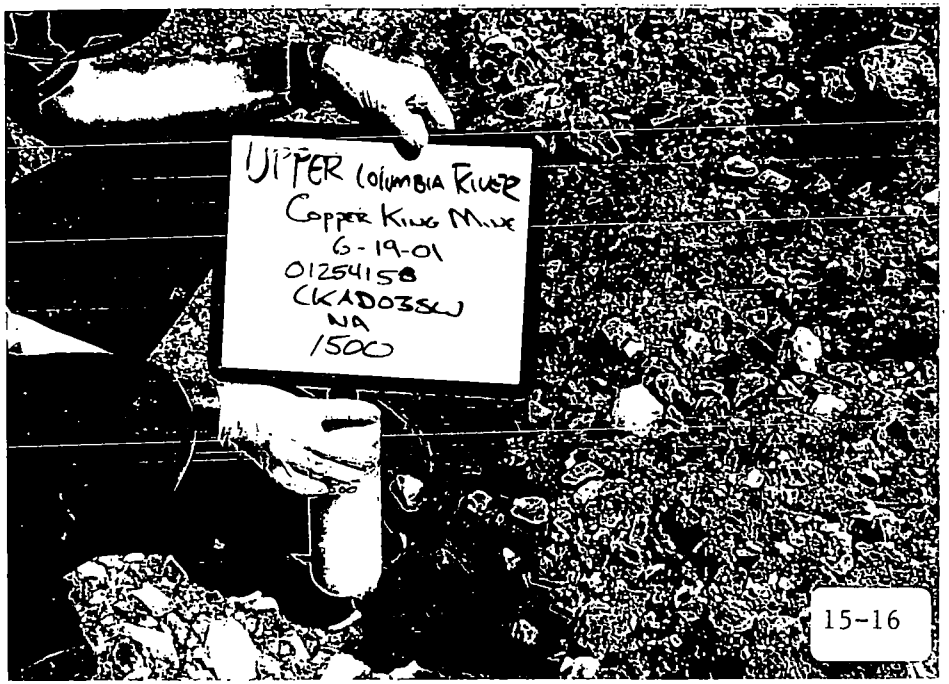

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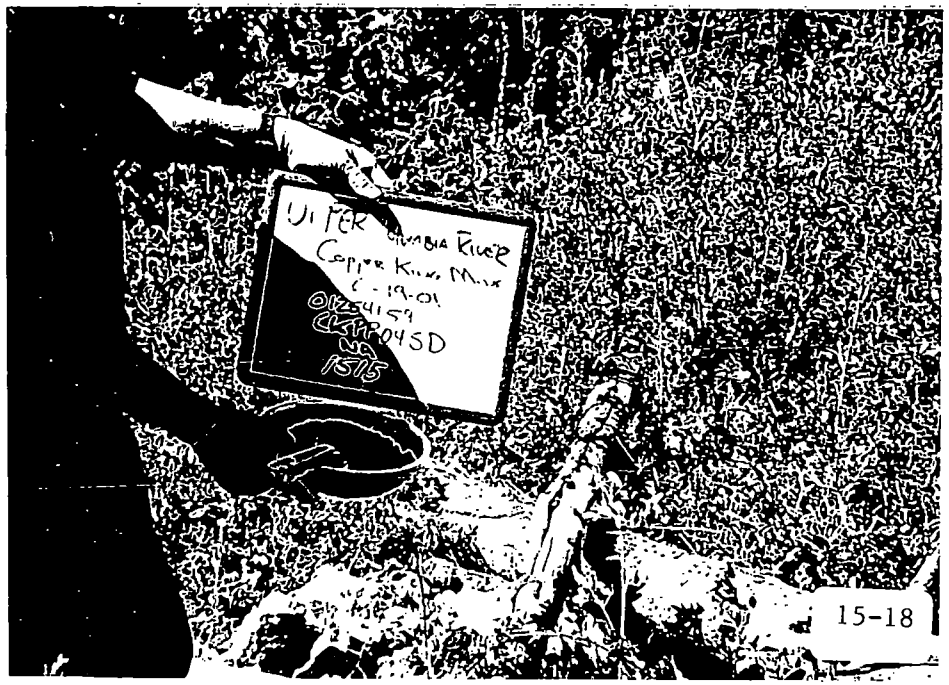

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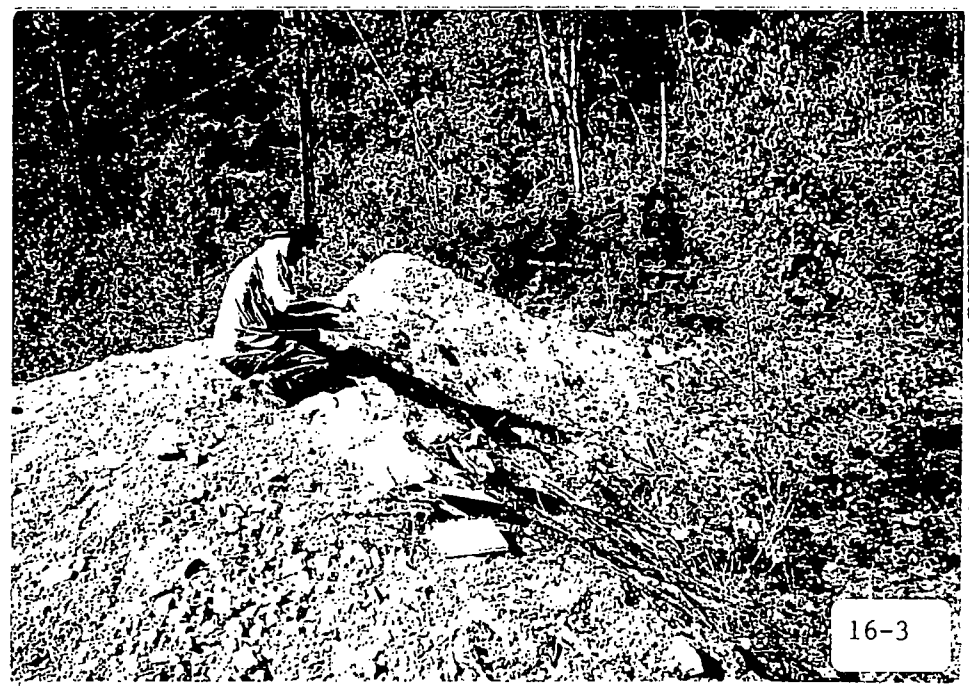
UPPER COLUMBIA RIVER
BLACK ROCK MILE
06-19-01
01254160
BRWROISS
NA
1725
16-2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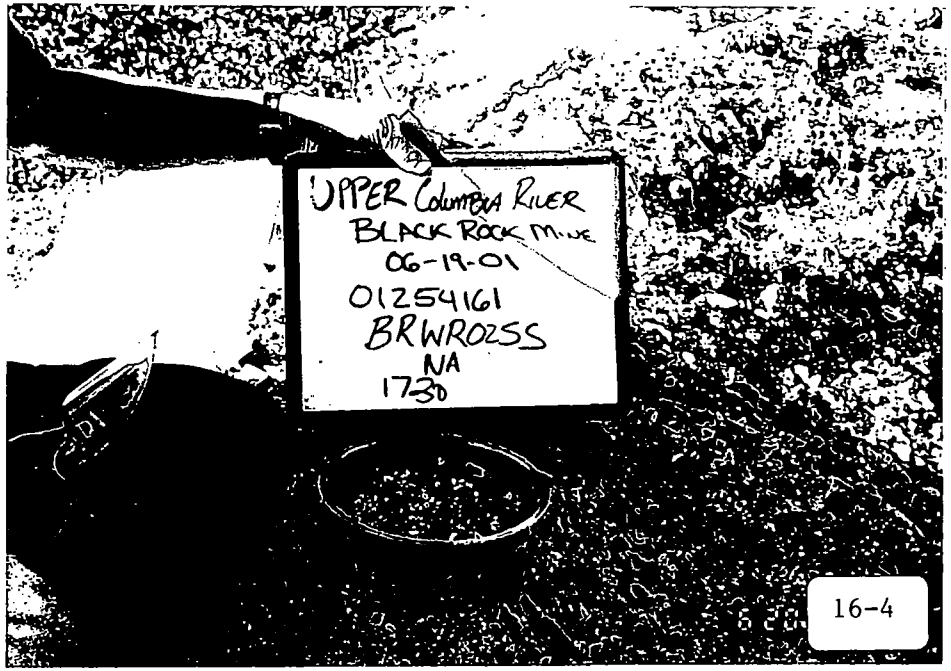

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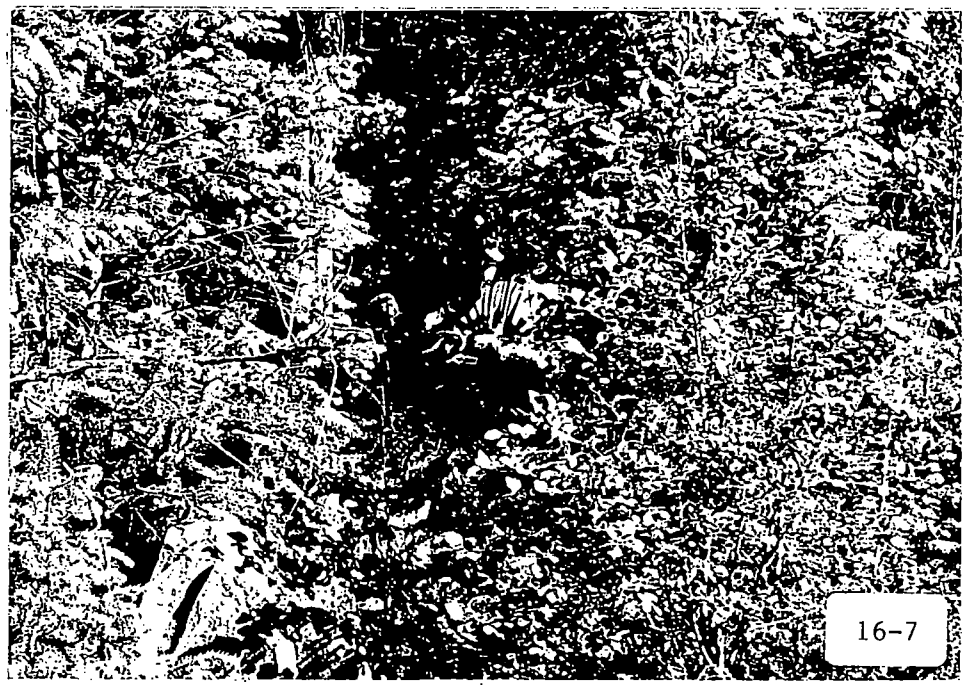

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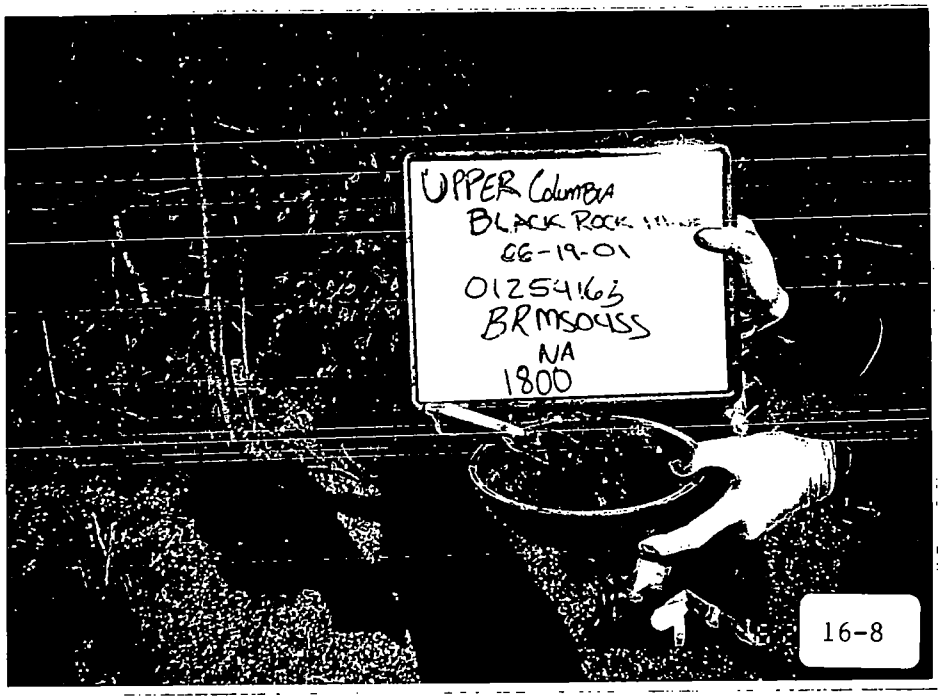

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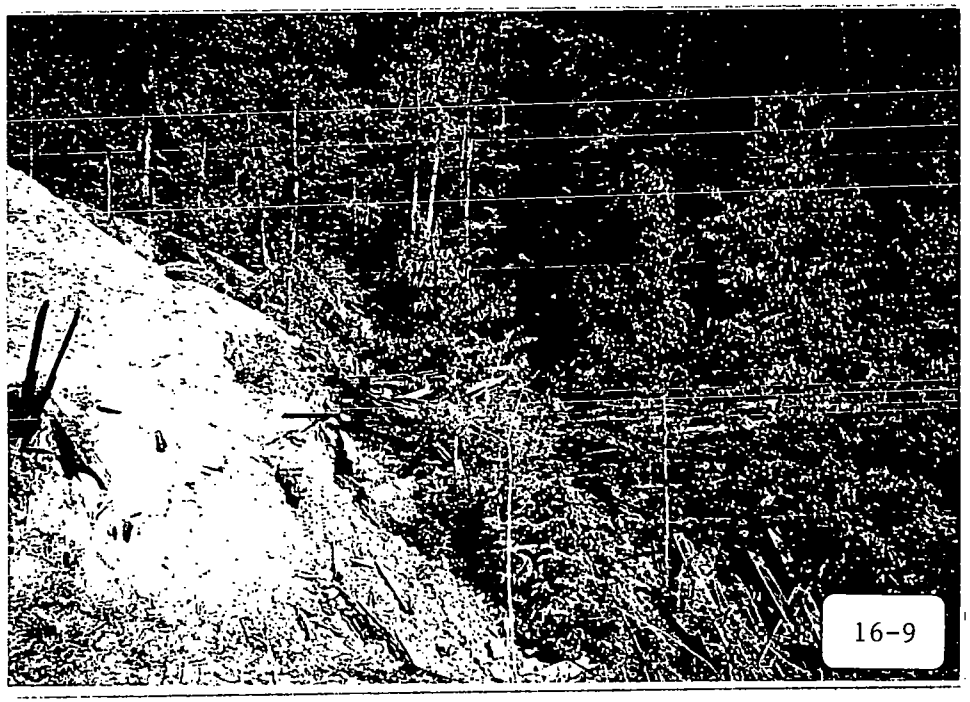

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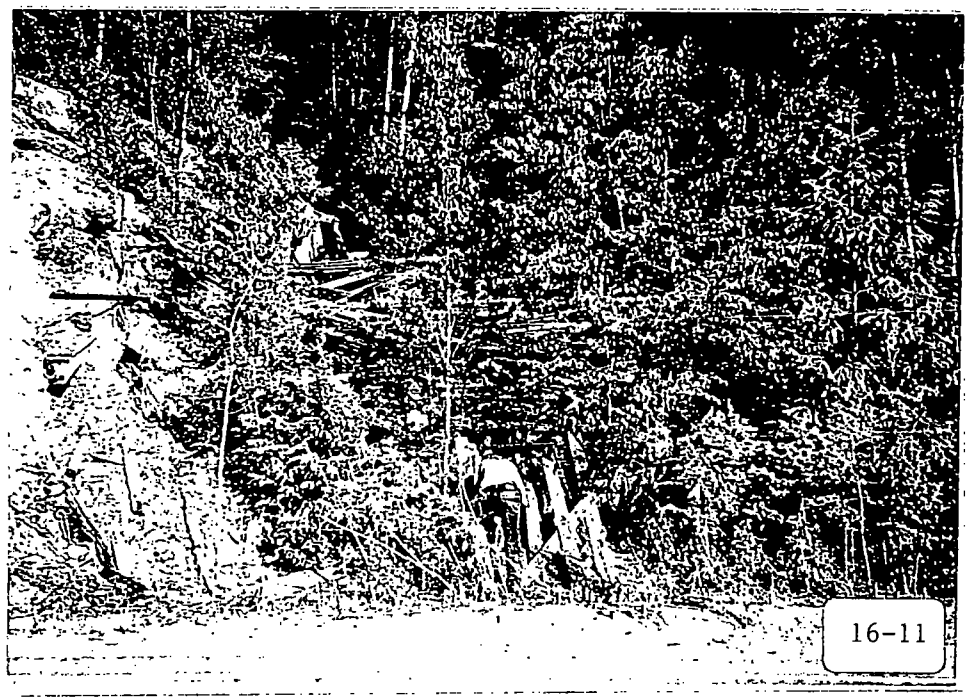

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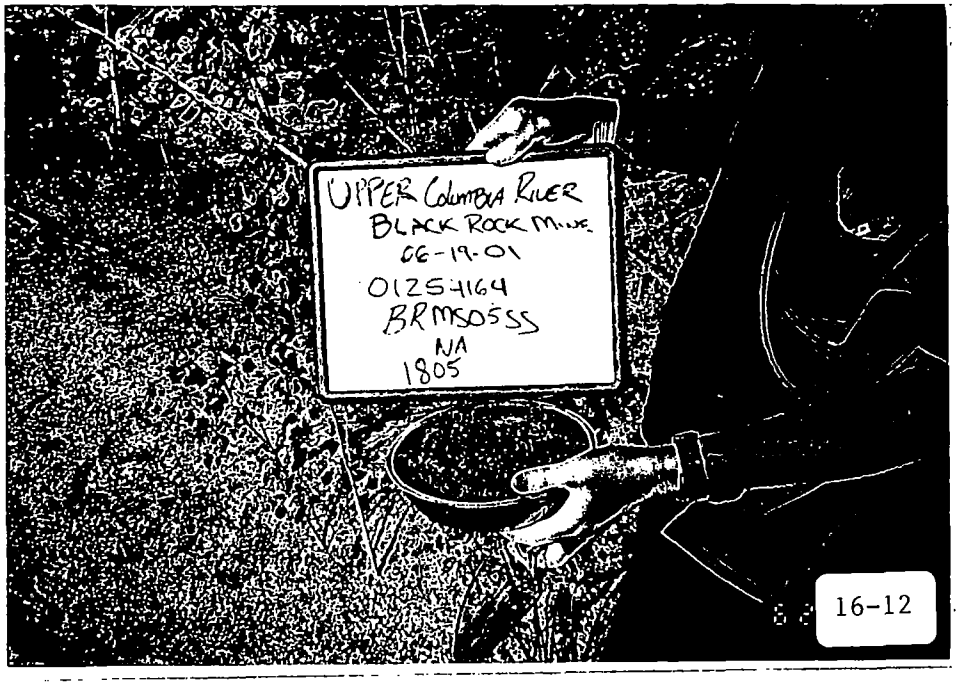

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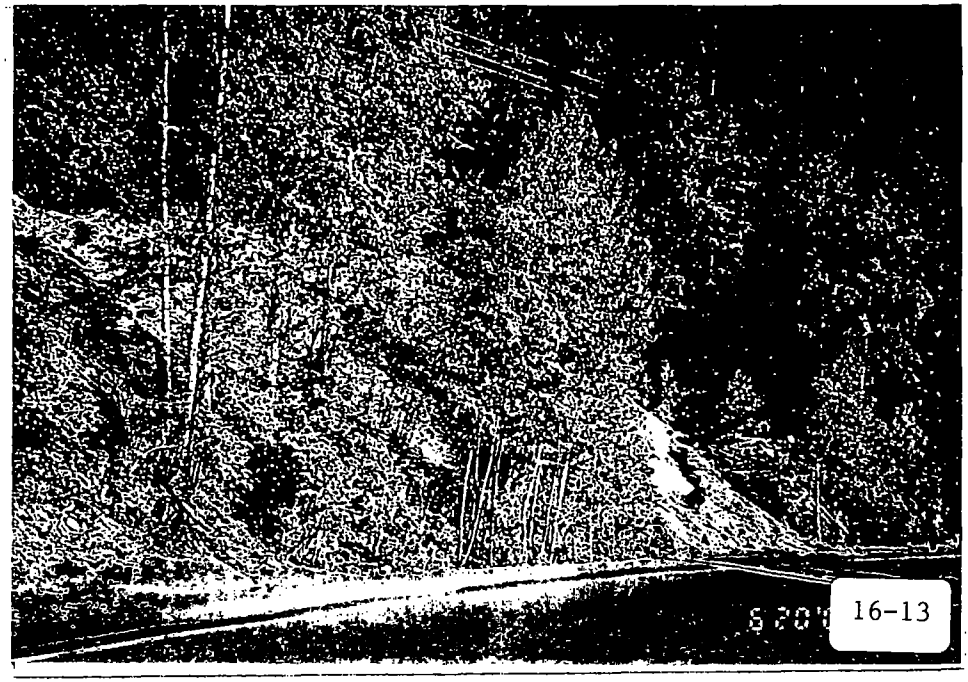

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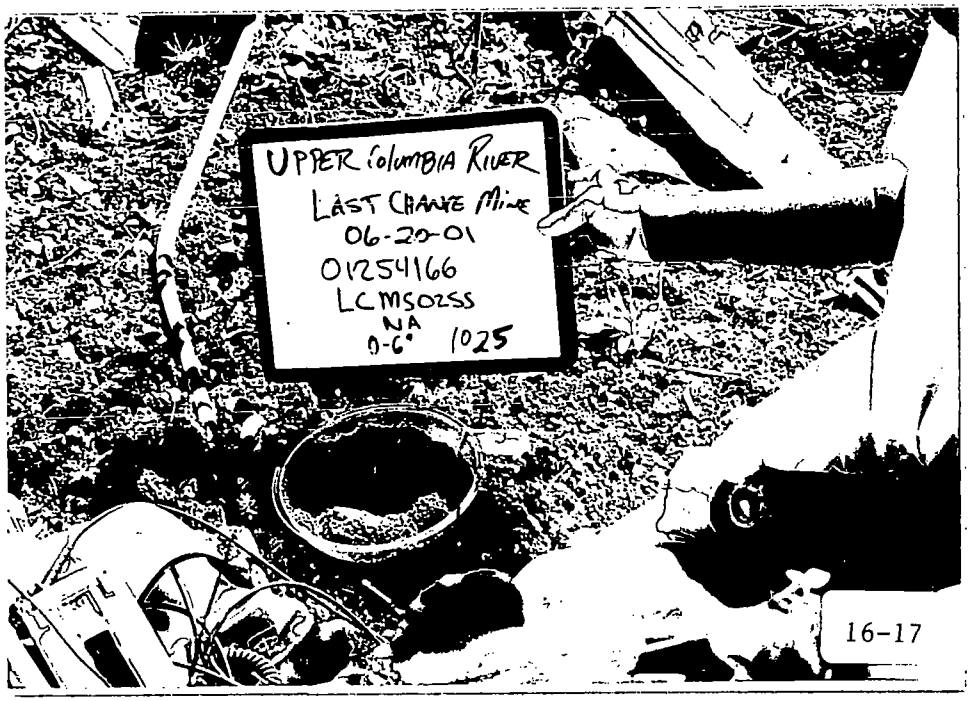

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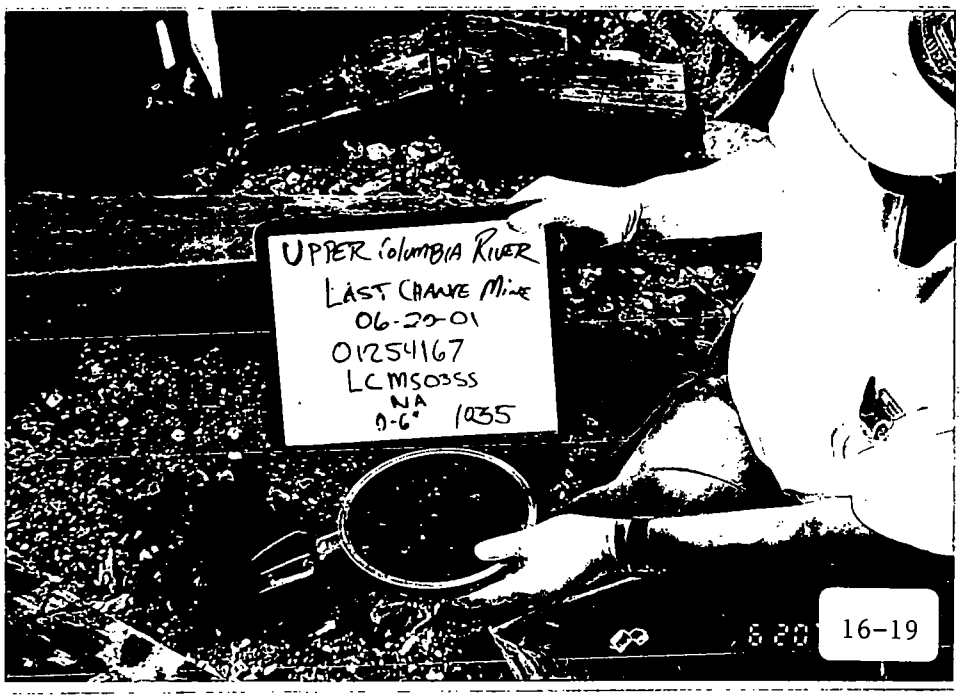

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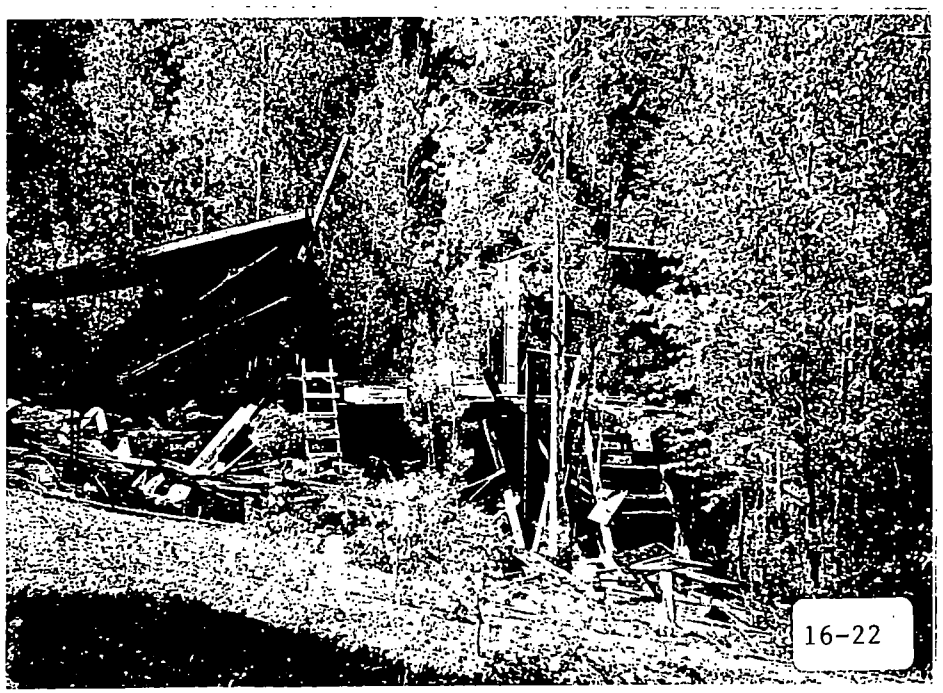

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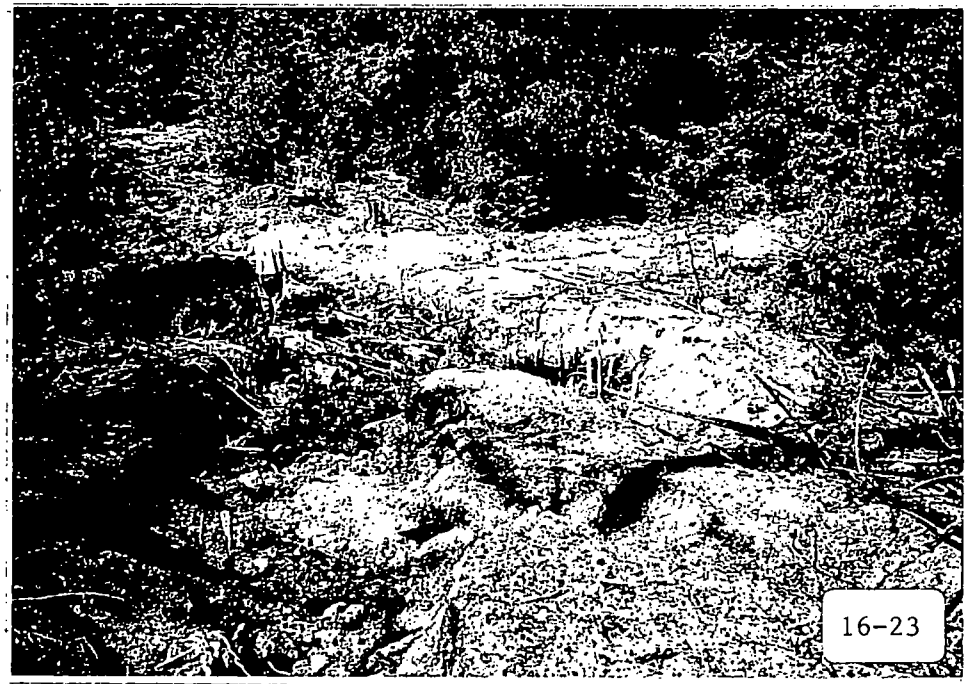

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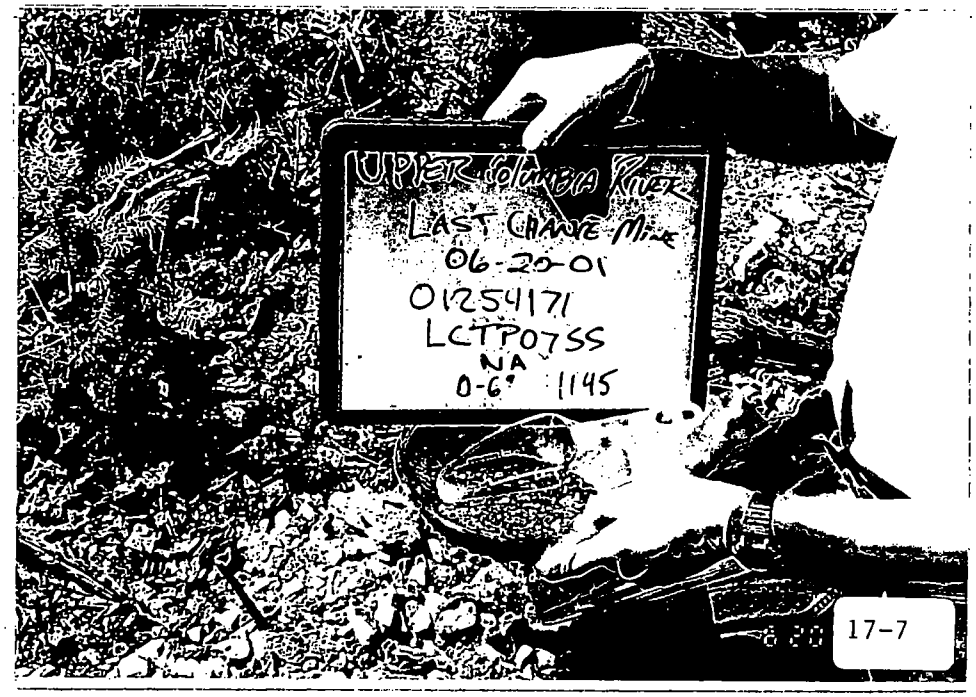

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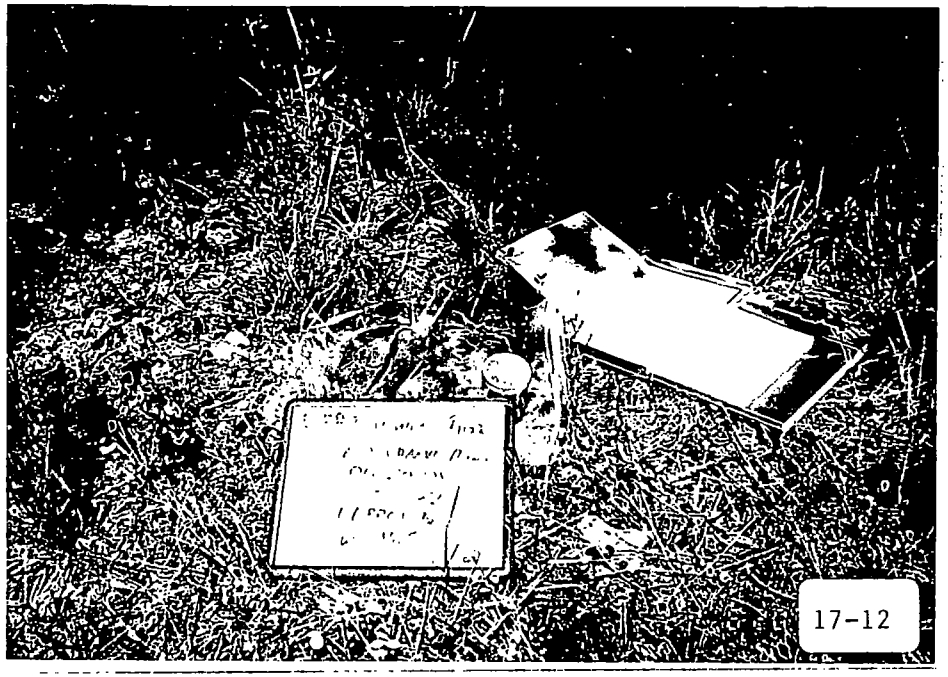

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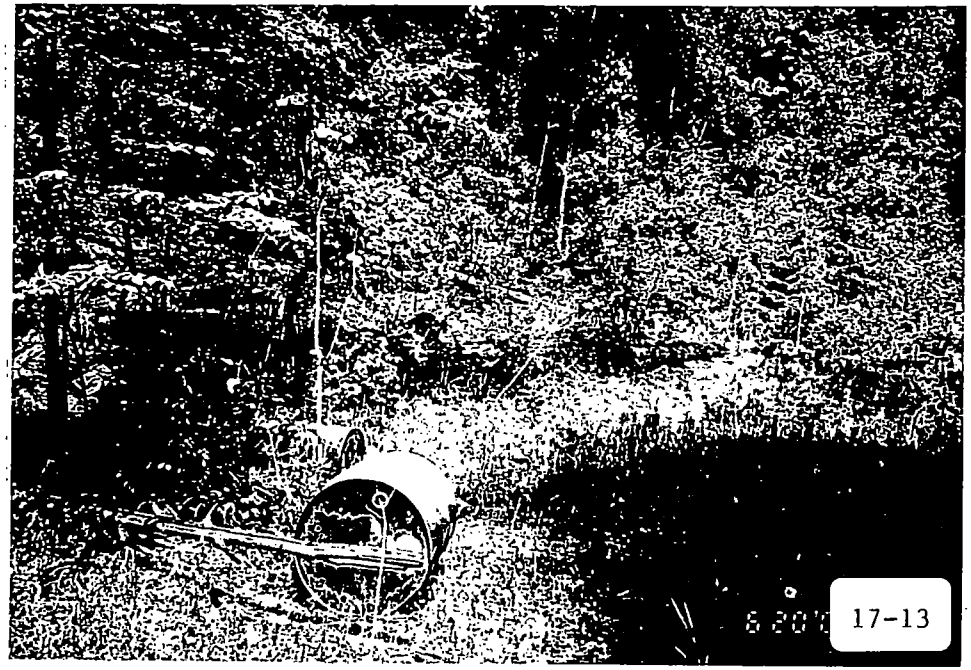

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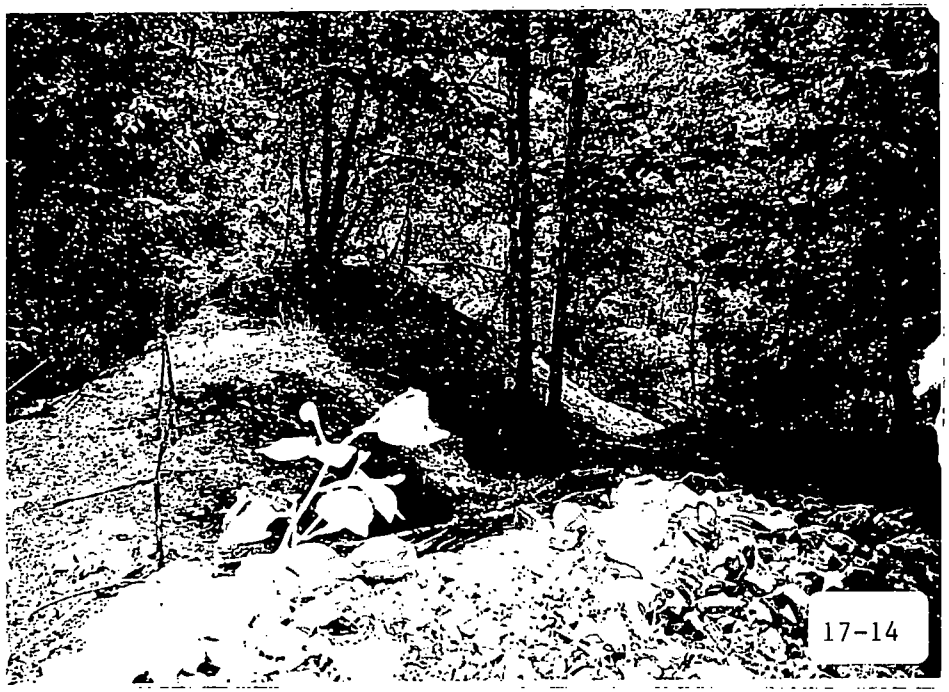

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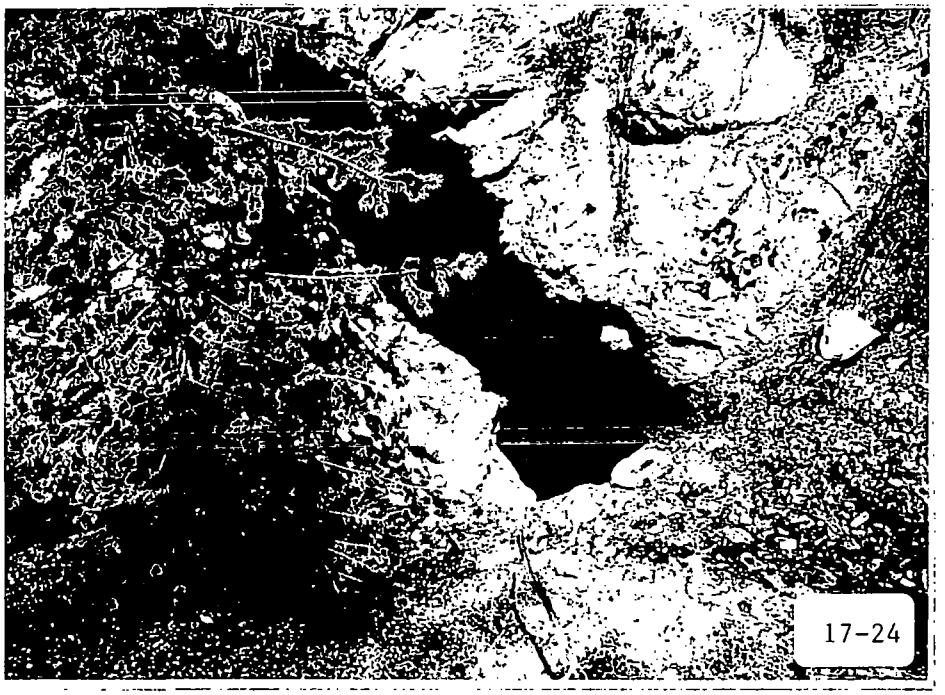
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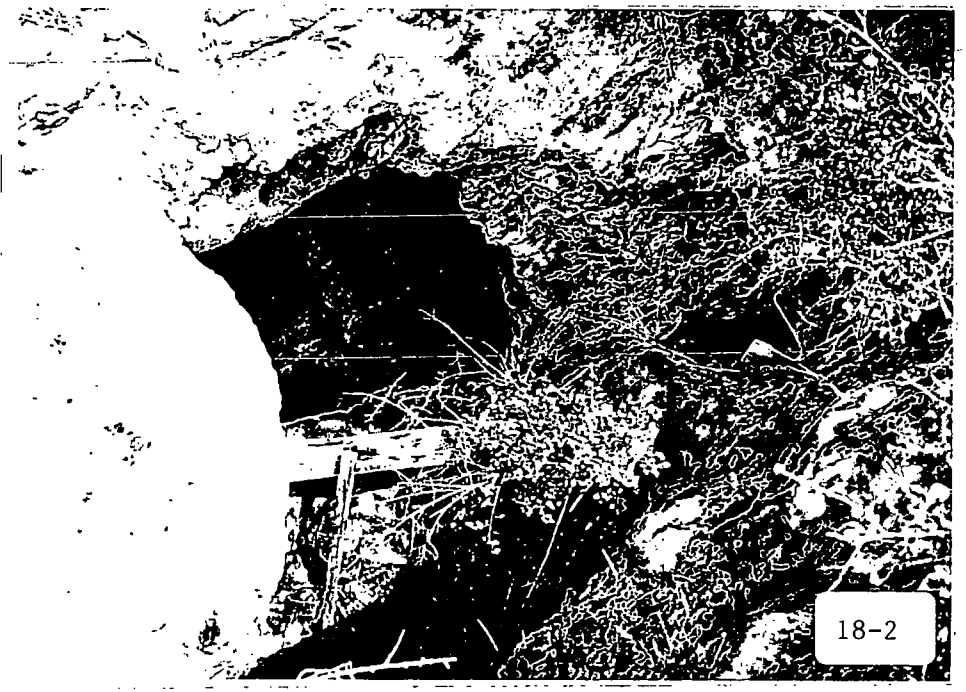
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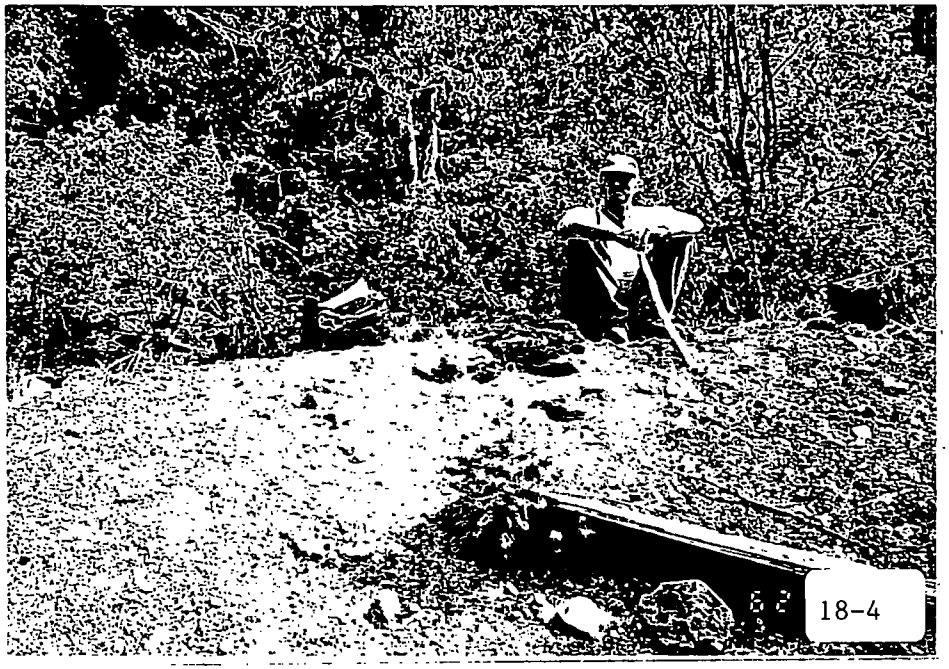

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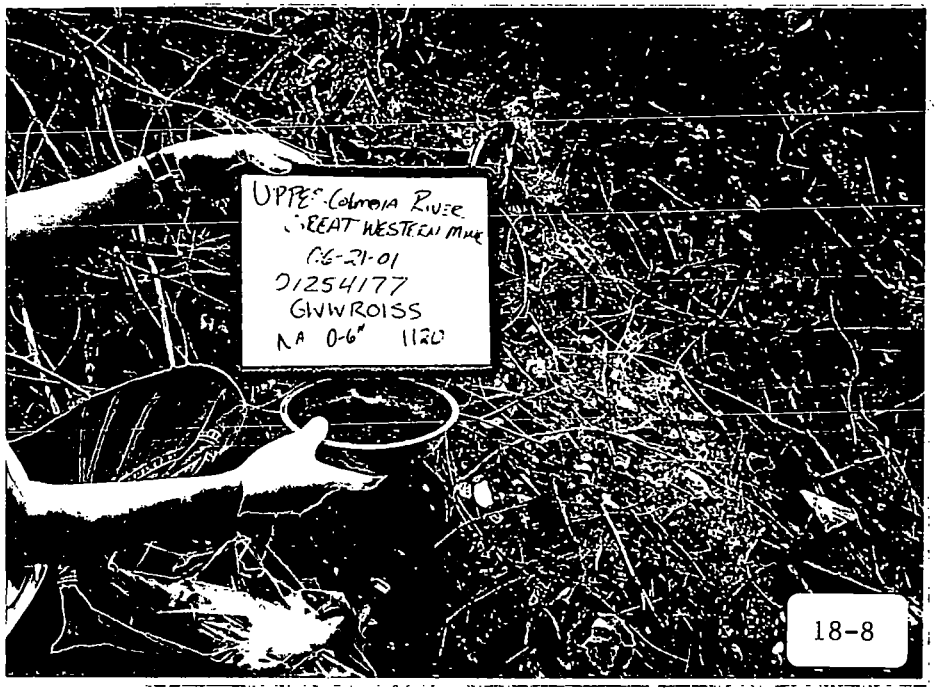

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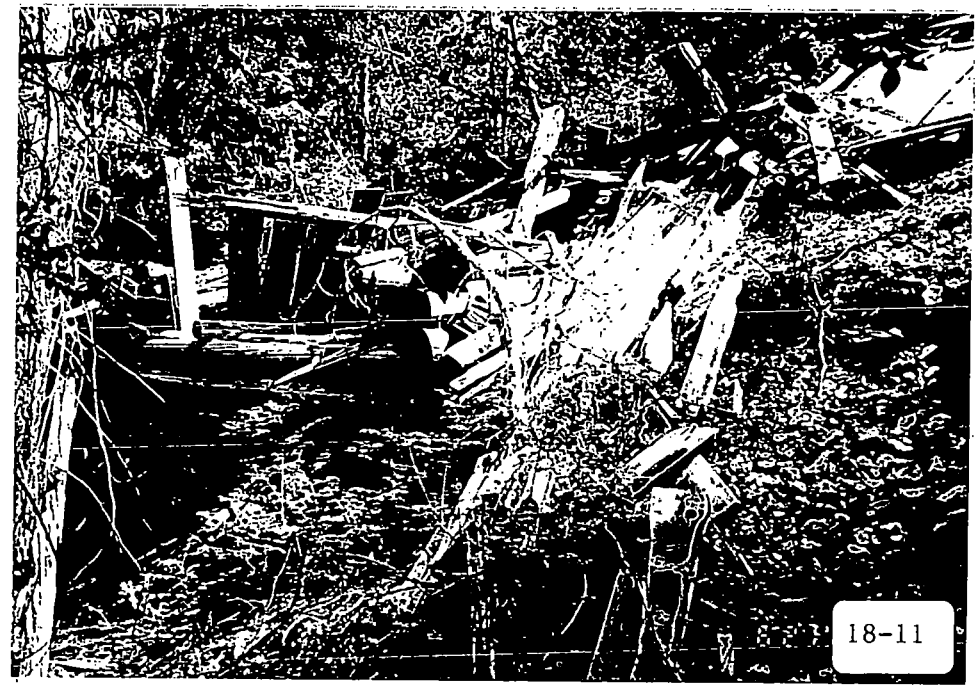

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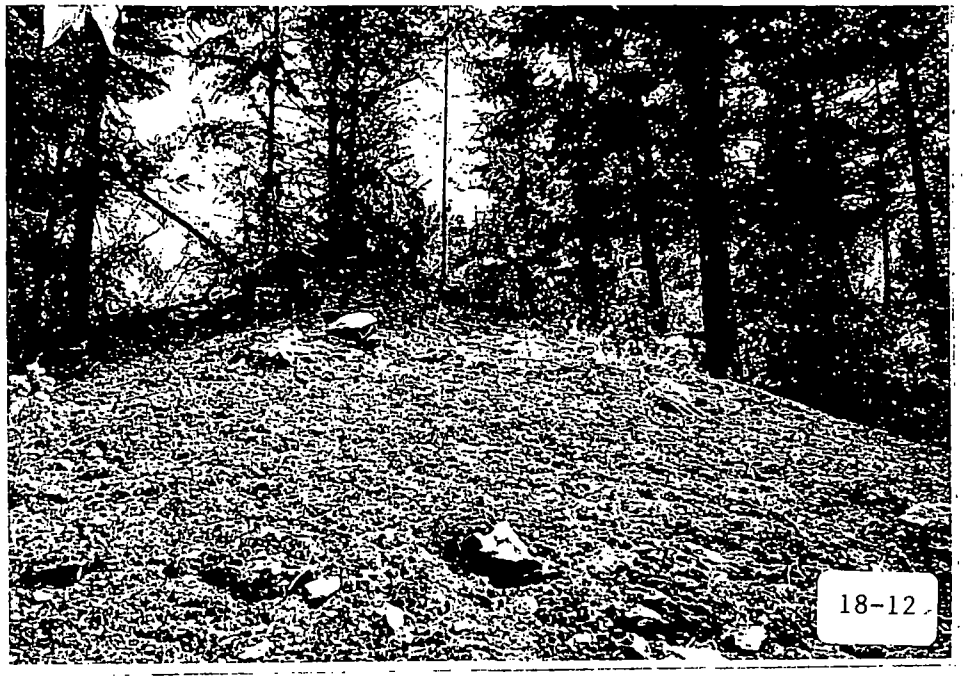

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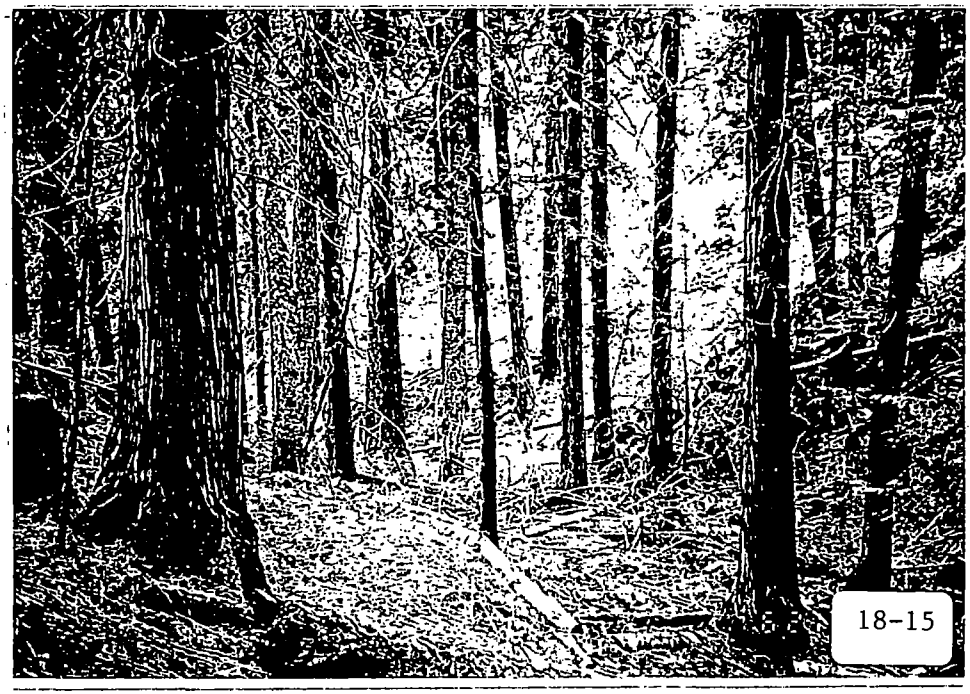

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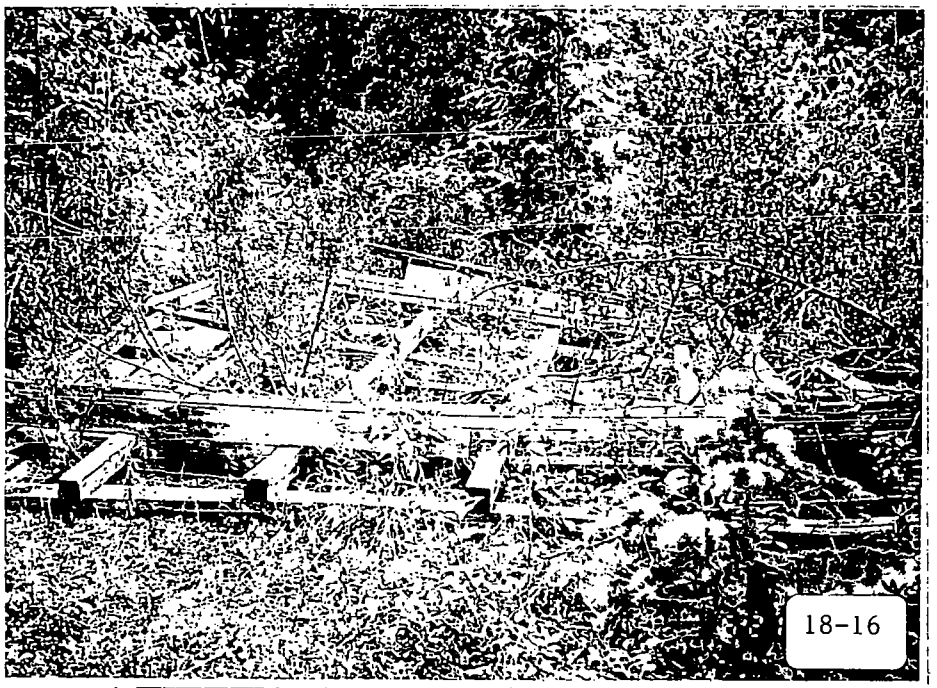

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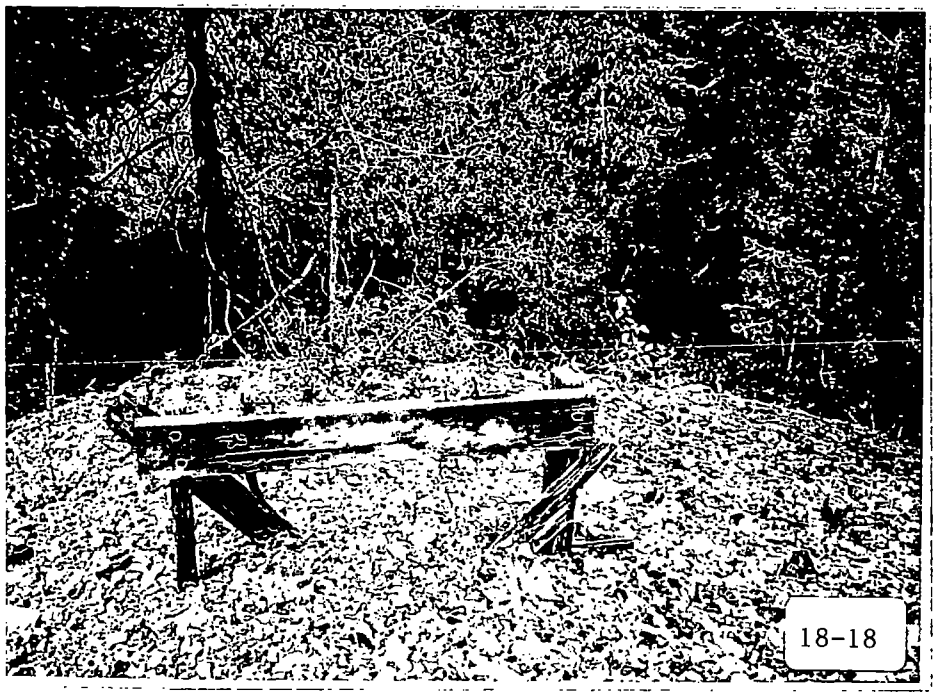

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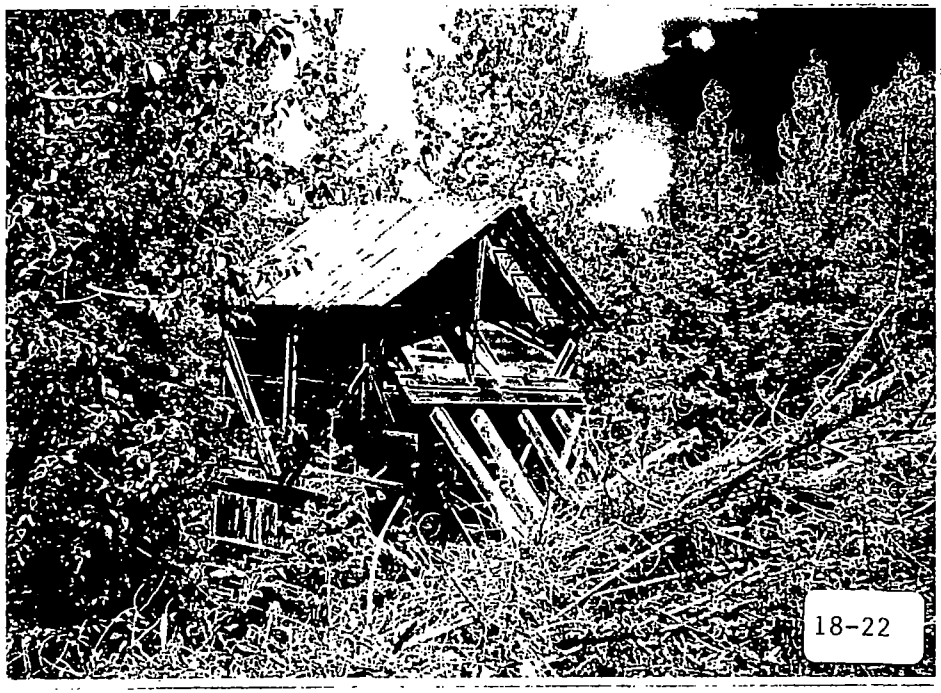

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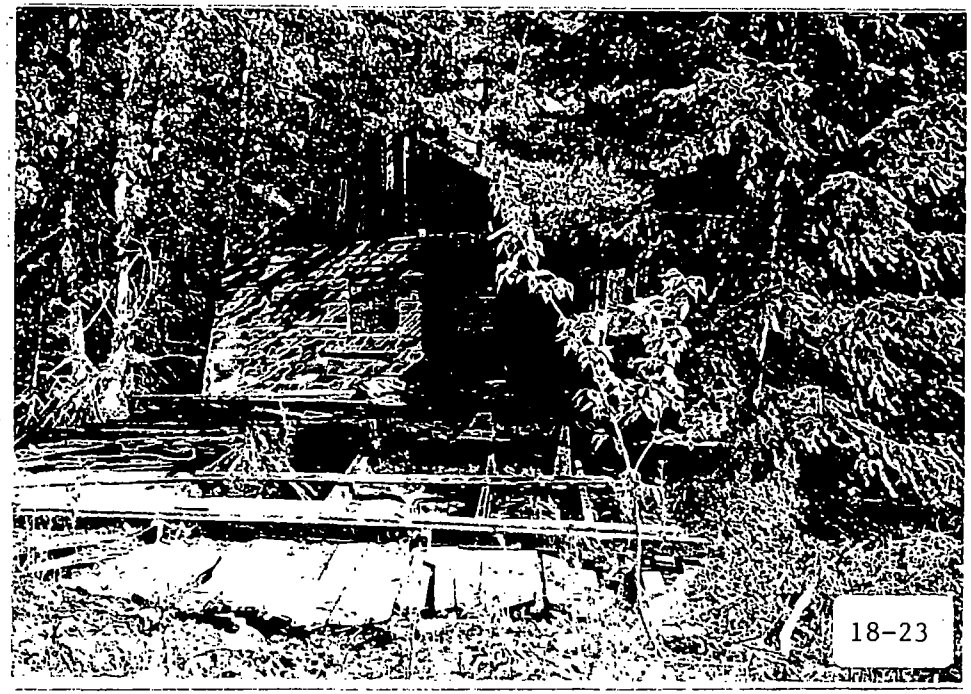

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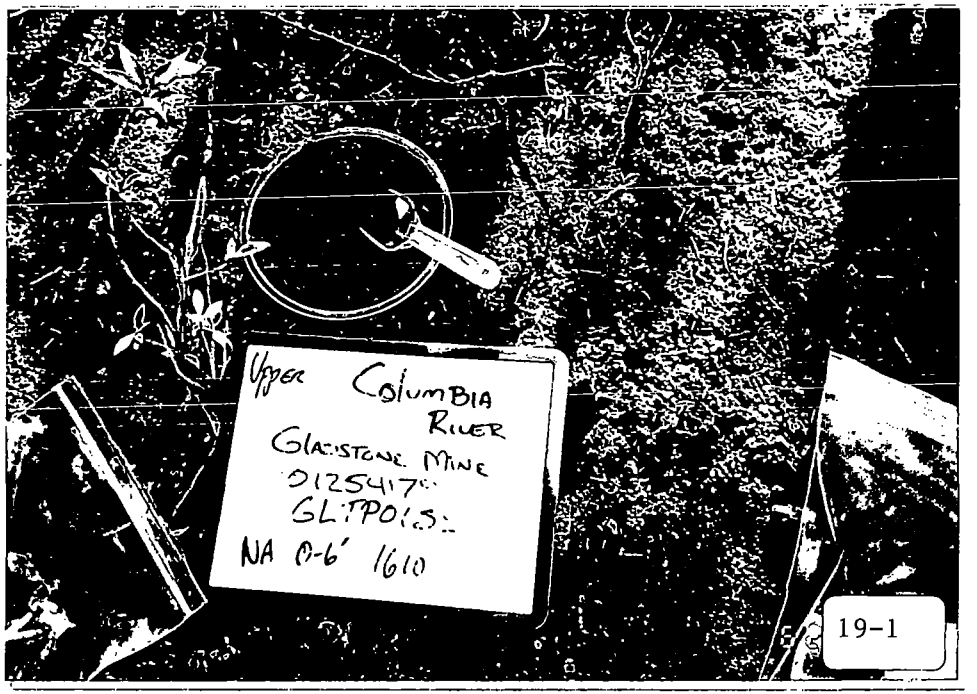

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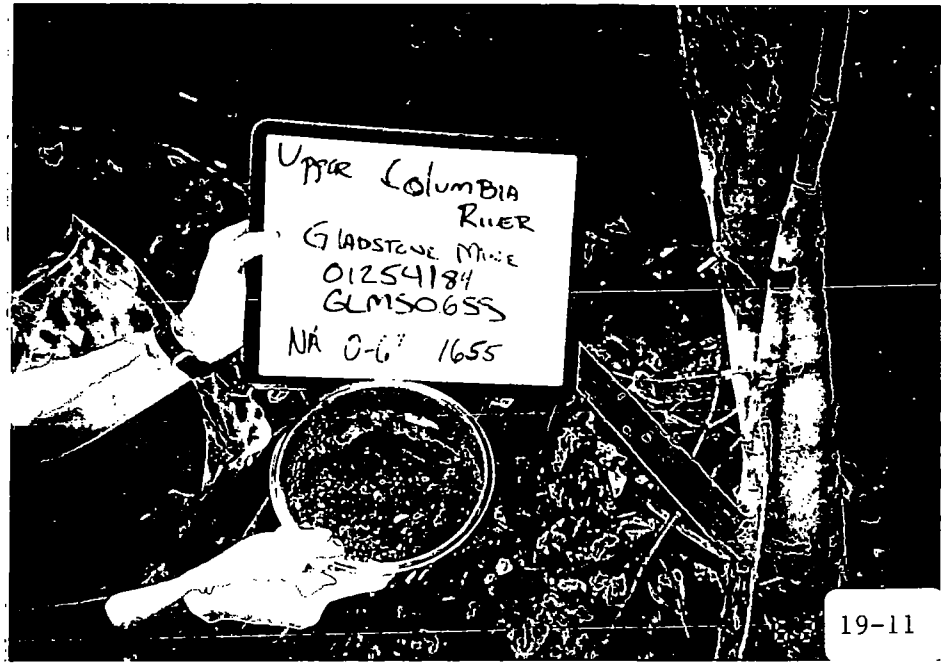

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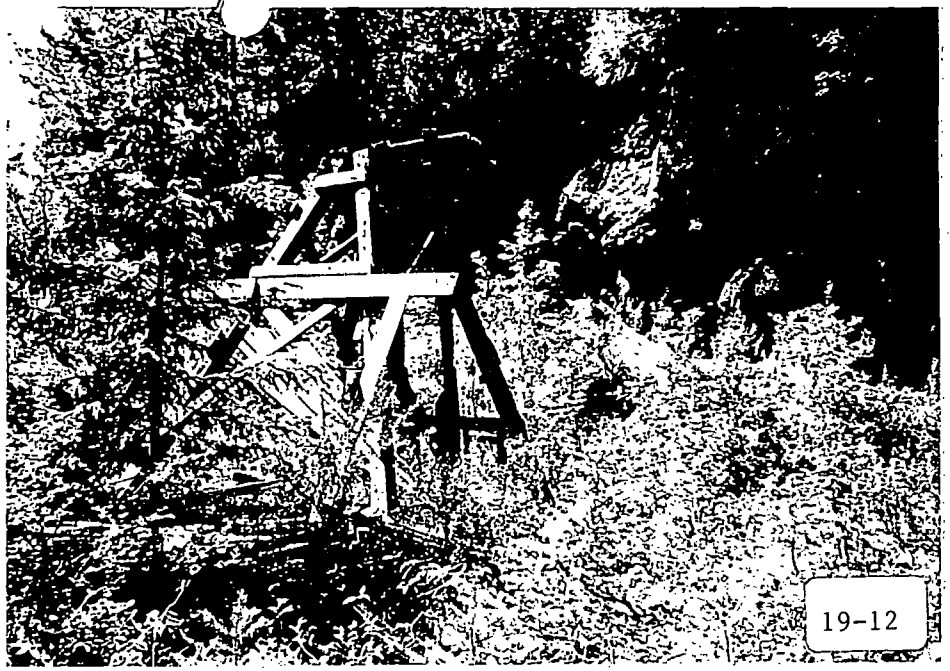

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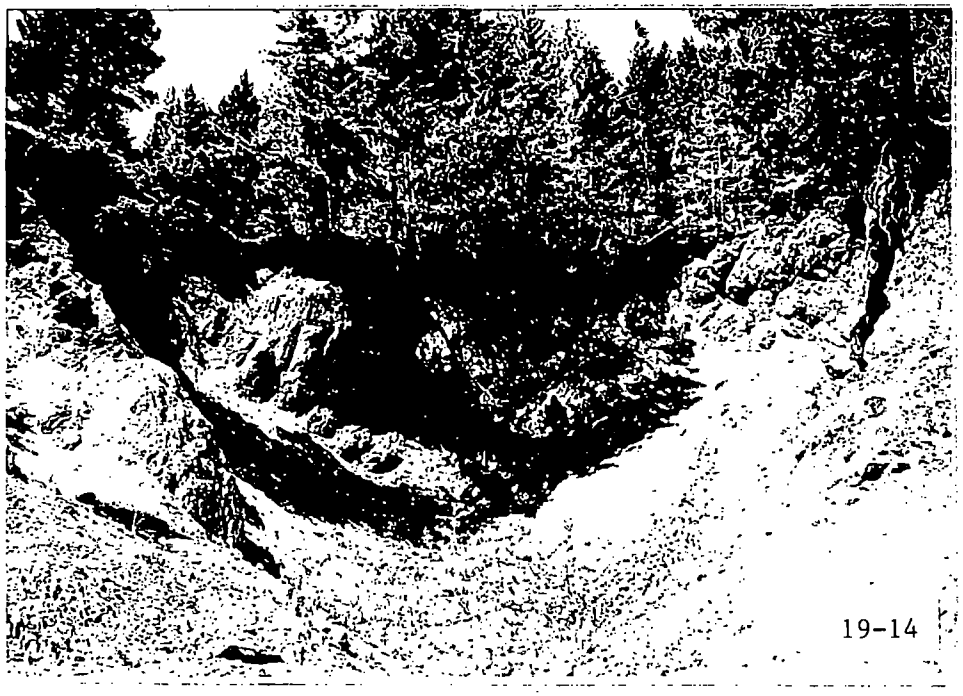

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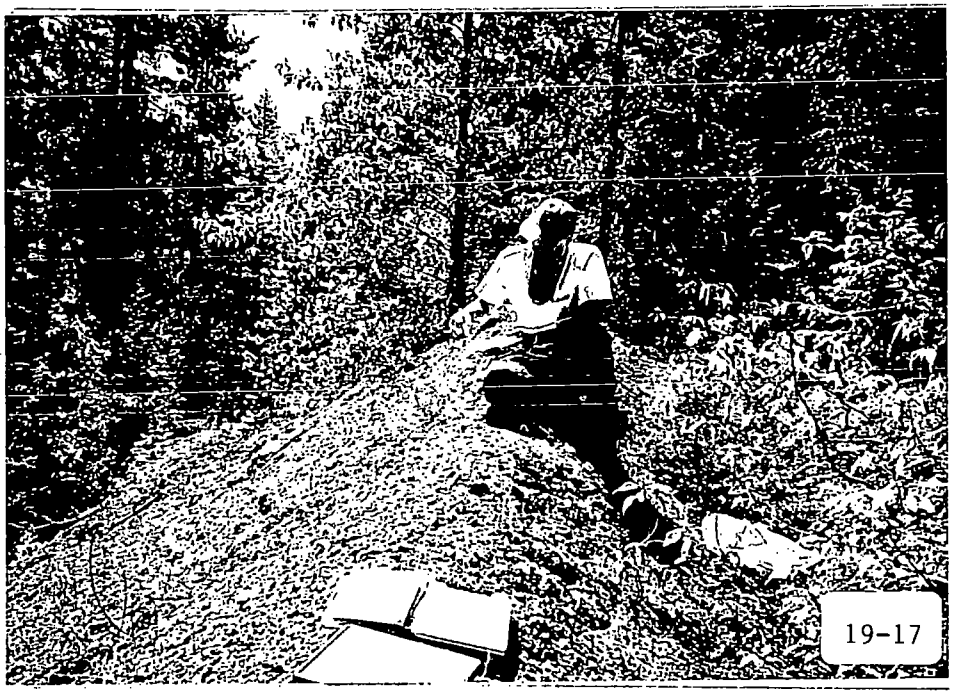

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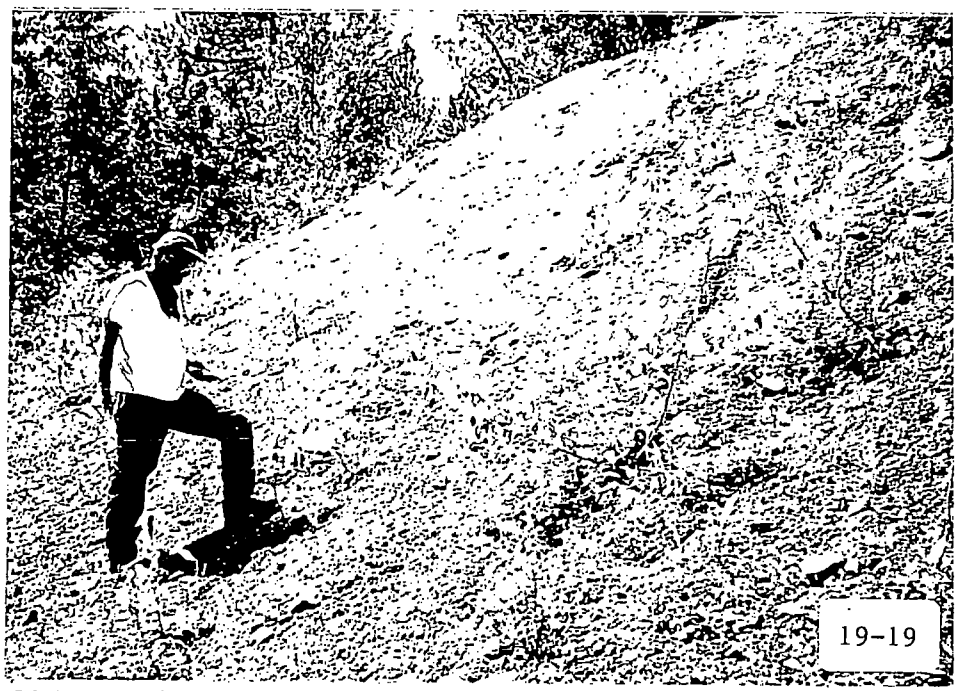

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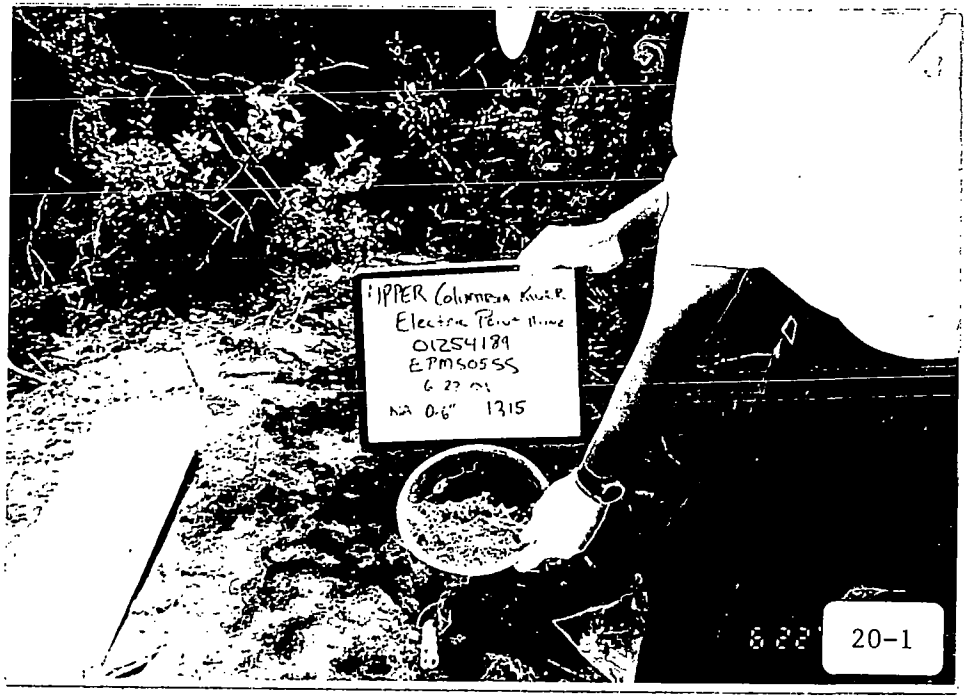
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Electric Point Home
01254189
EPMS05SS
6 22 01
NA 0.6" 1315
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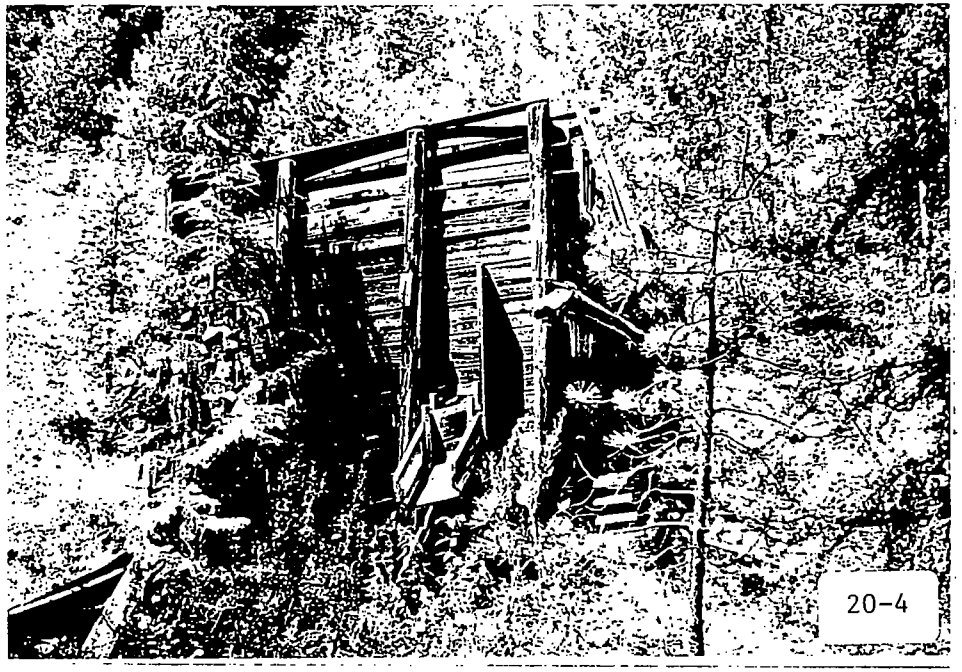

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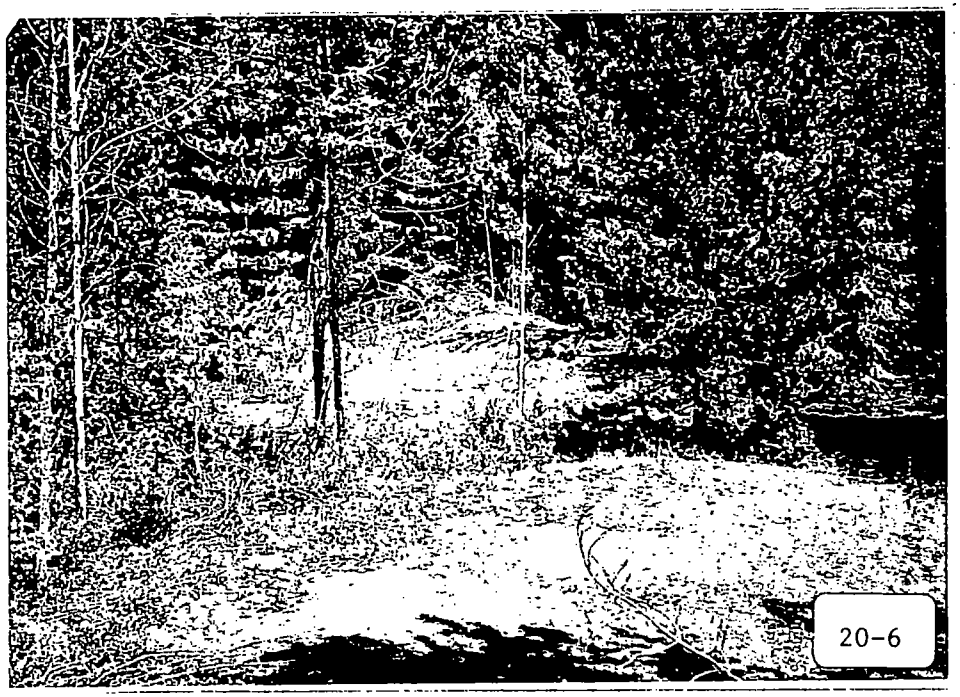

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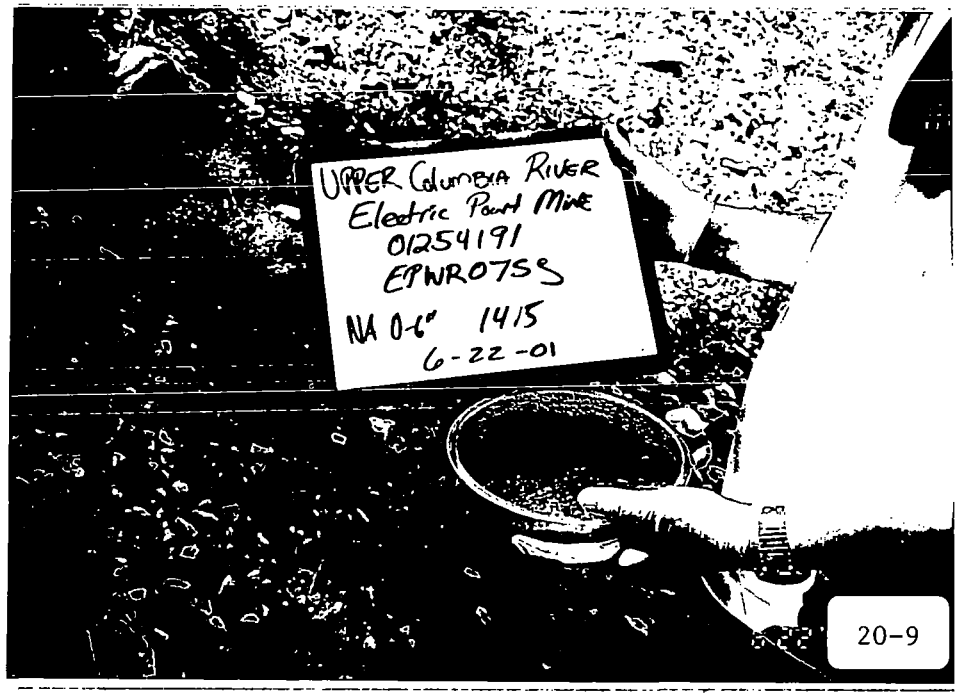
UPPER Columbia River
Electric Point Mine
01254191
EPWR07SS
NA 0-6" 1415
6-22-01
20-9

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UPPER Columbia River
Electric Point Mine
01254192
EPWR08SS
NA 0-6" 1425
6-22-01
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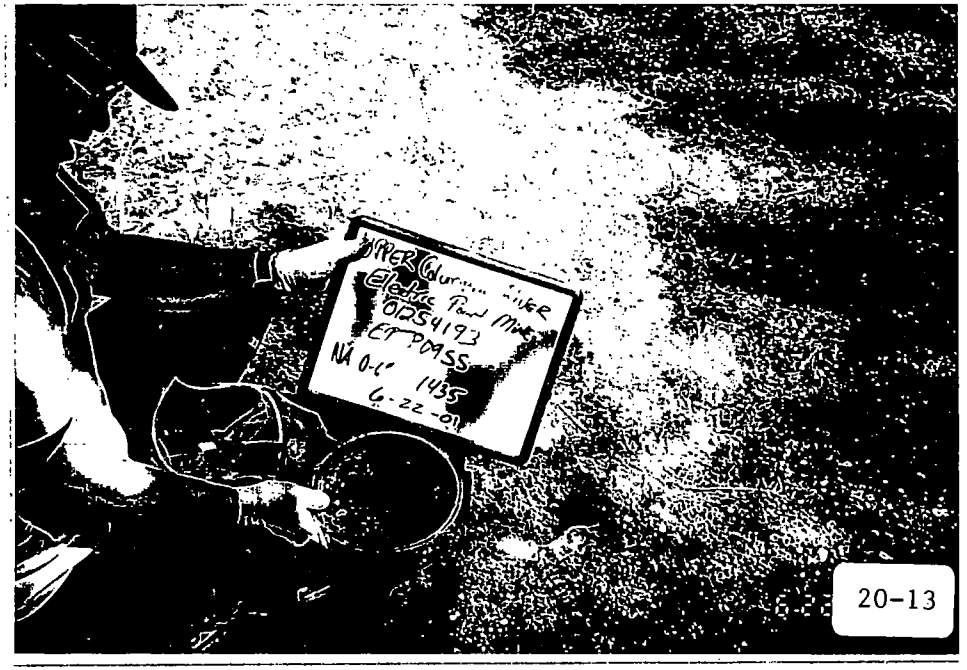

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UPPER Columbia RIVER
Electric Pond Mine
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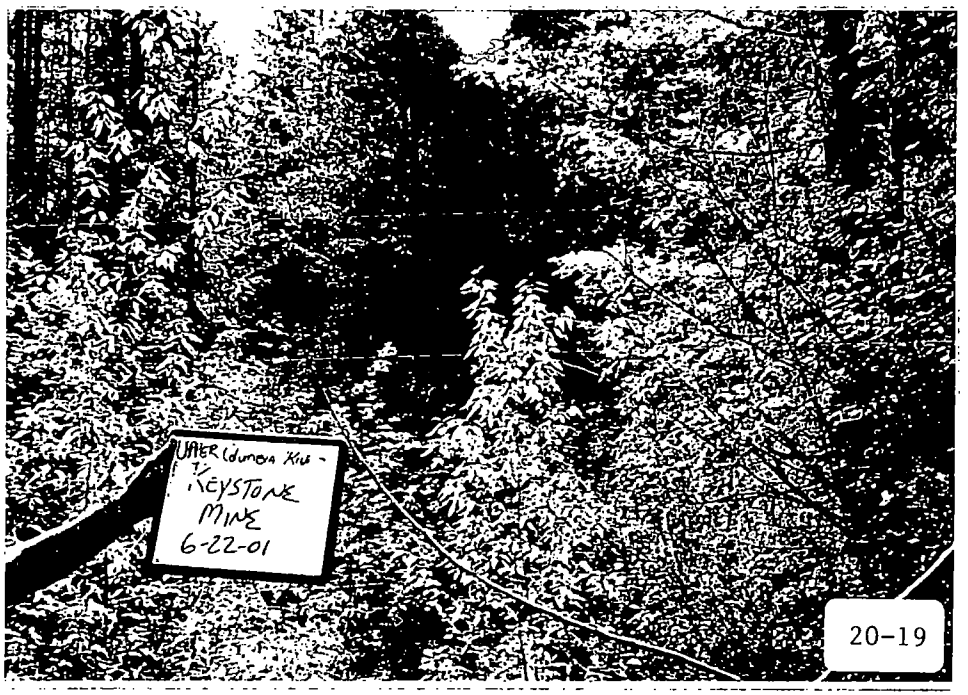
EPTP11 SS
1446
6-22-01
20-17

KEYSTONE
MINE
6-22-01
20-18


KEYSTONE
MINE
6-22-01
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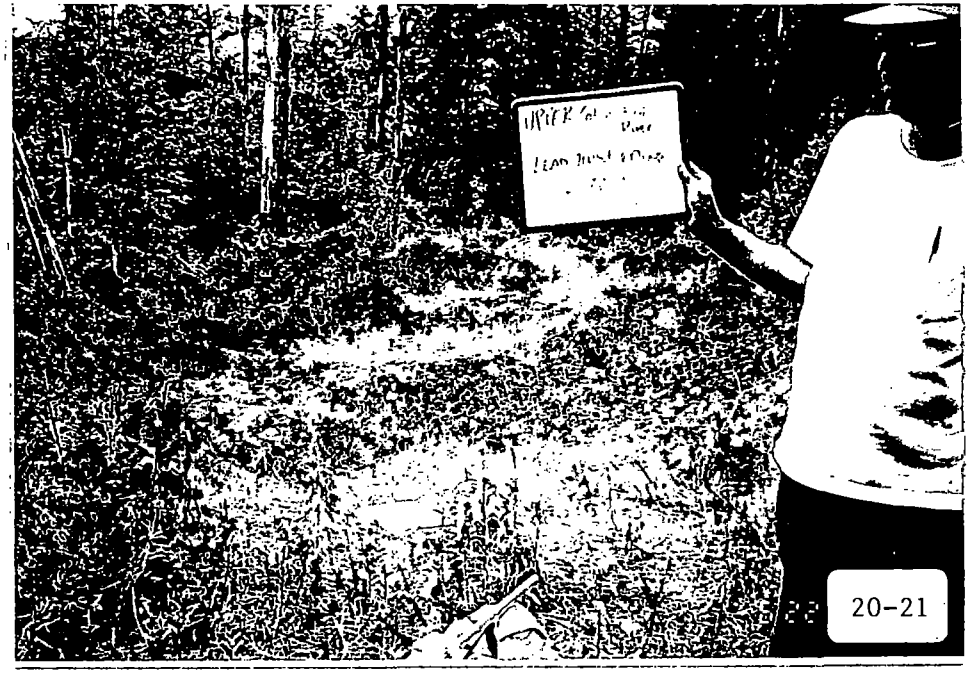

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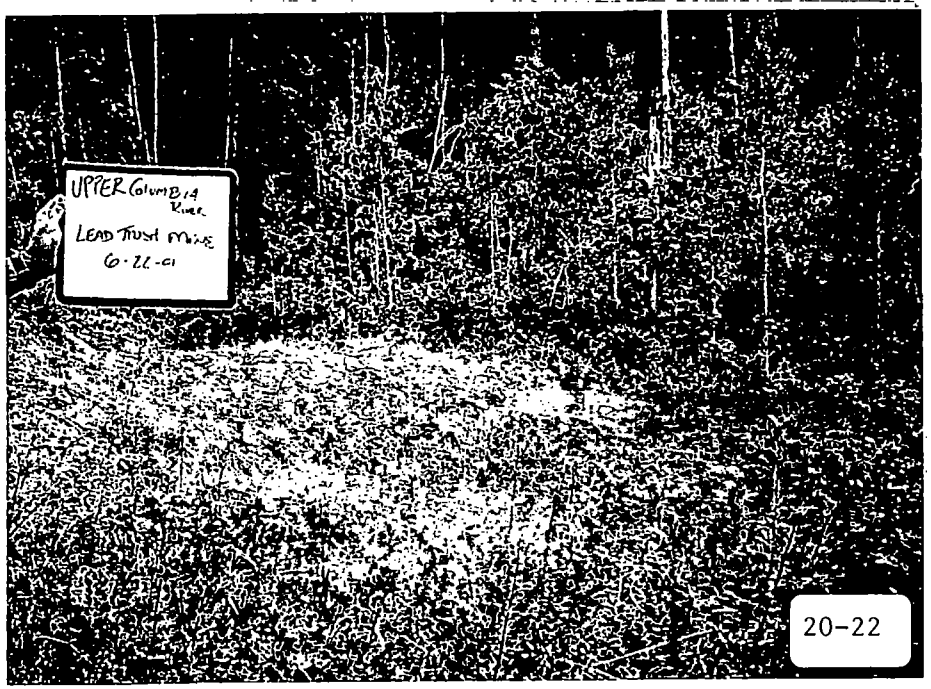

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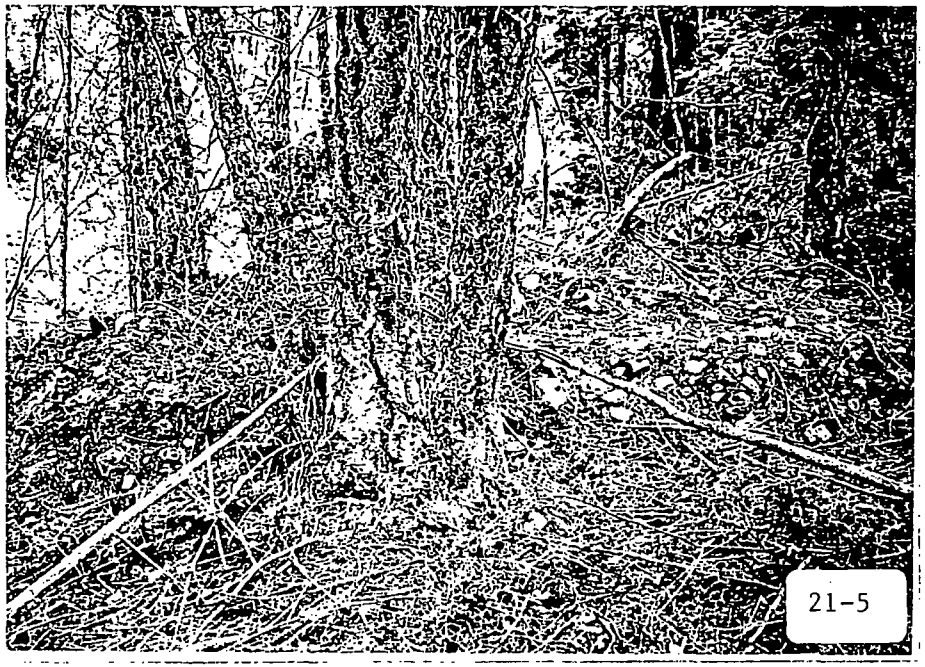

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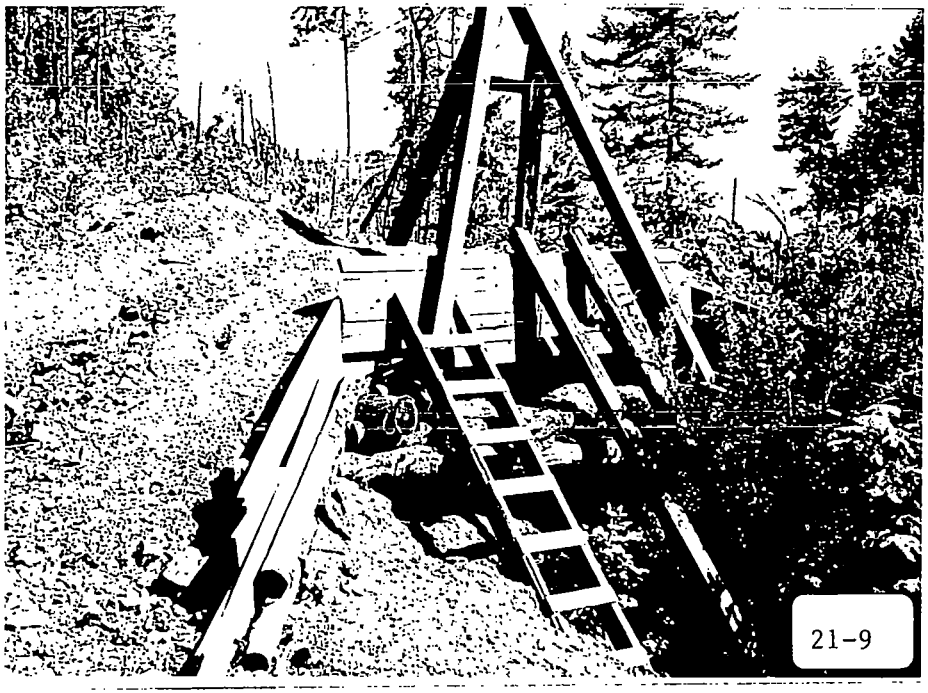

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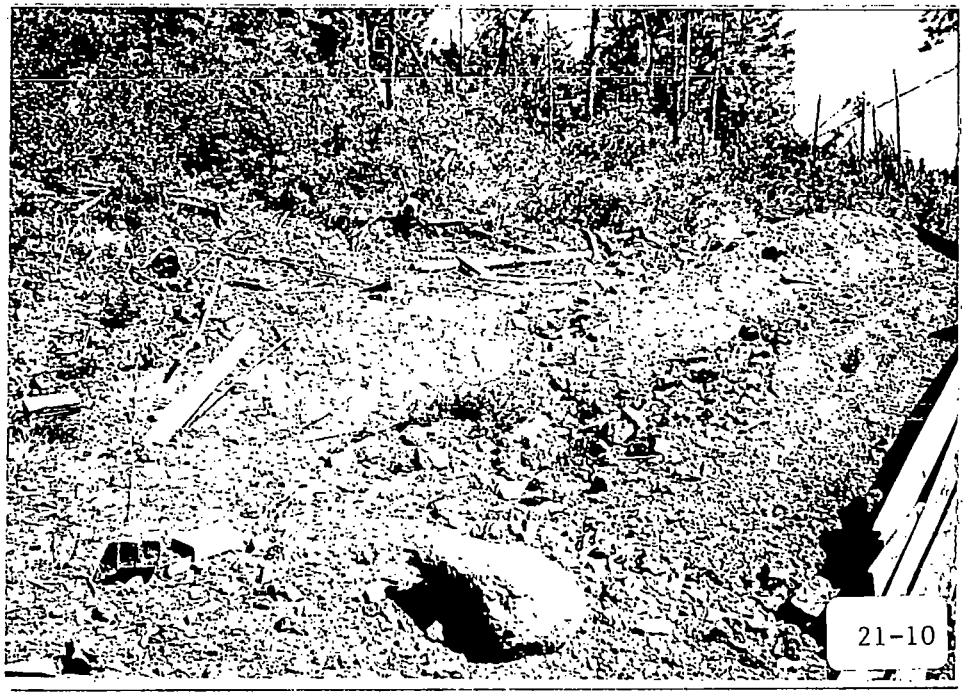

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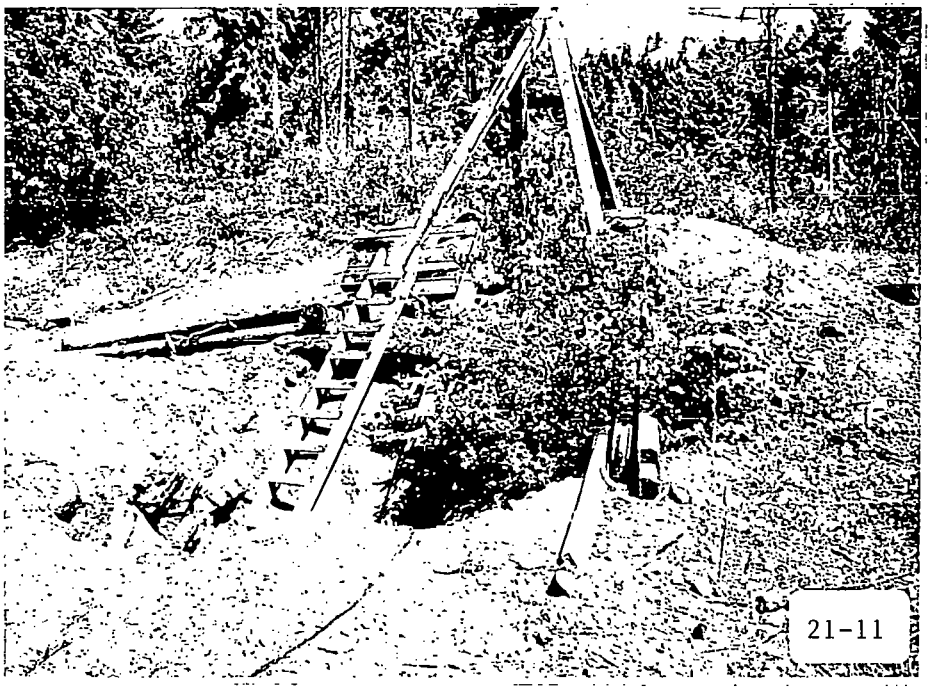

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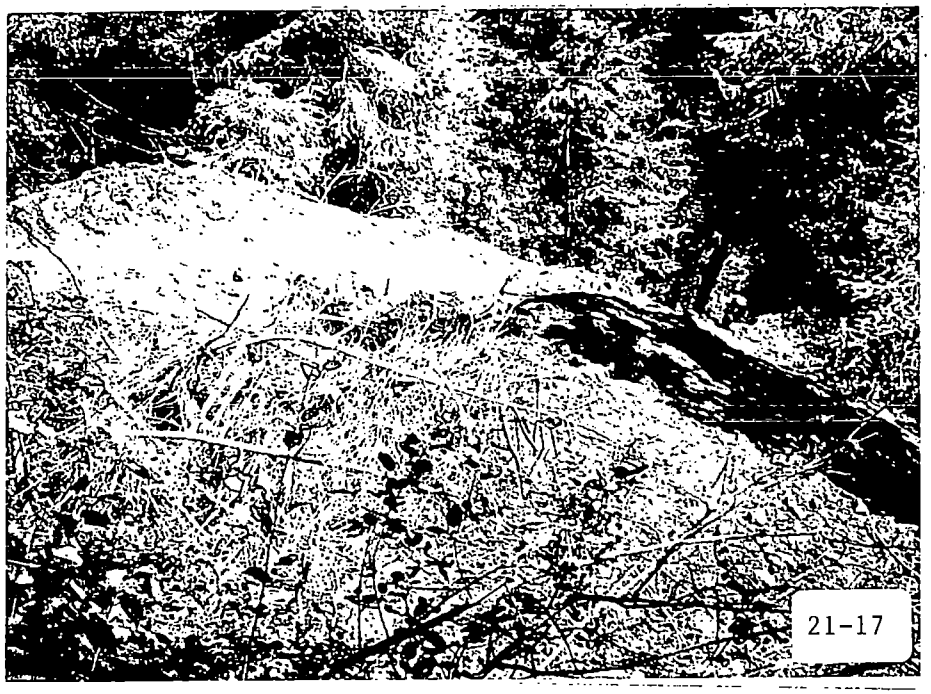

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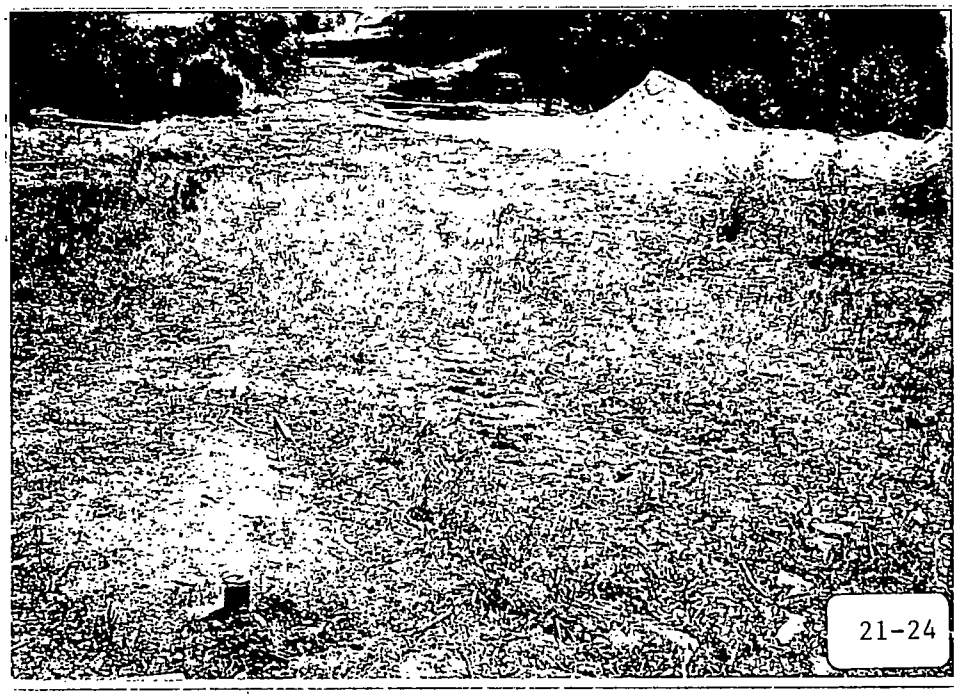

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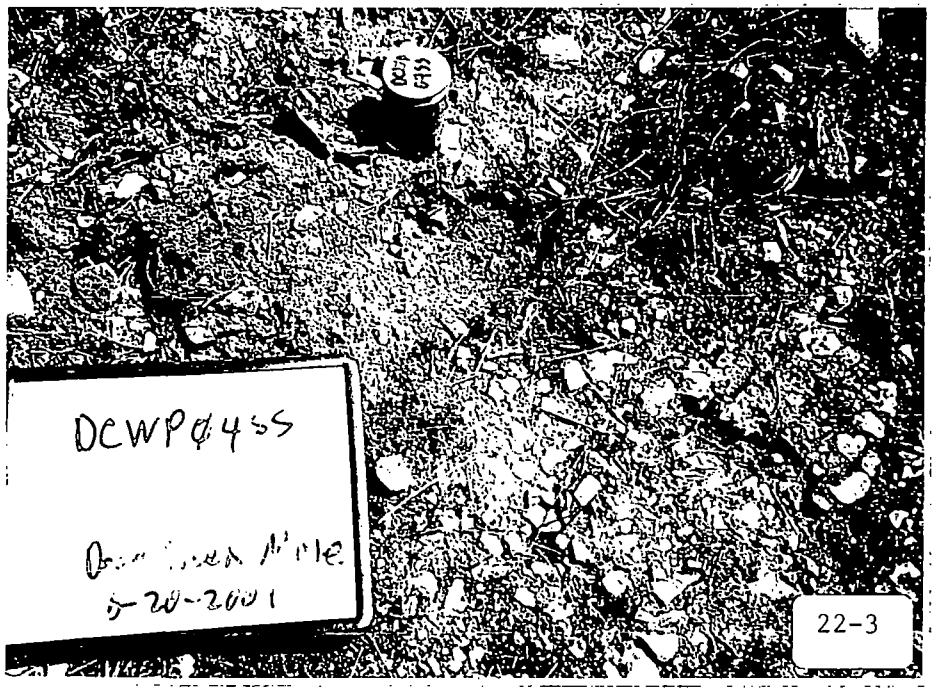

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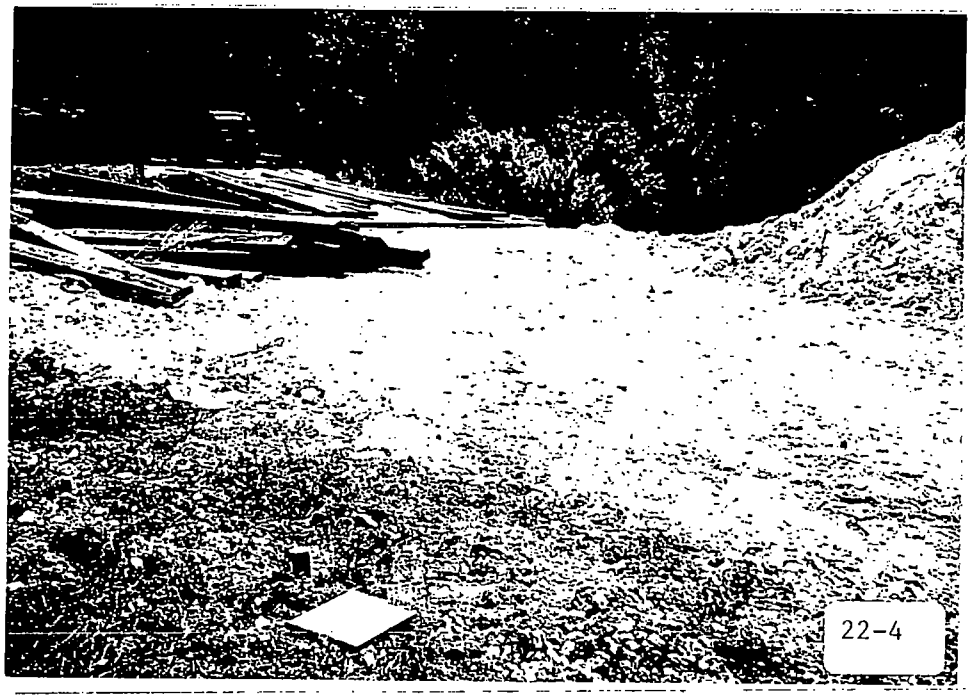

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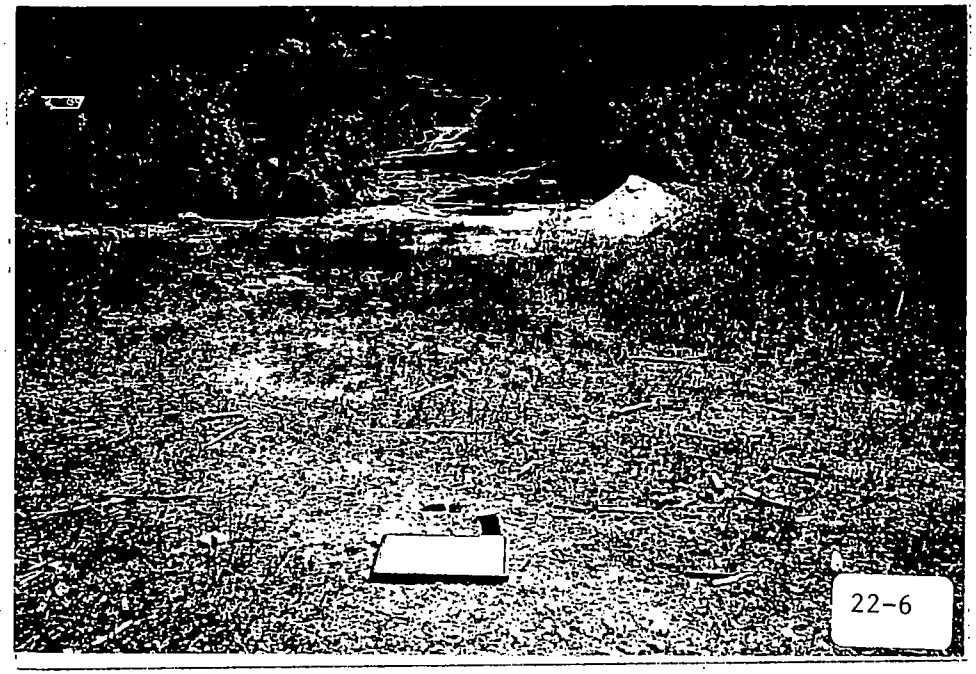

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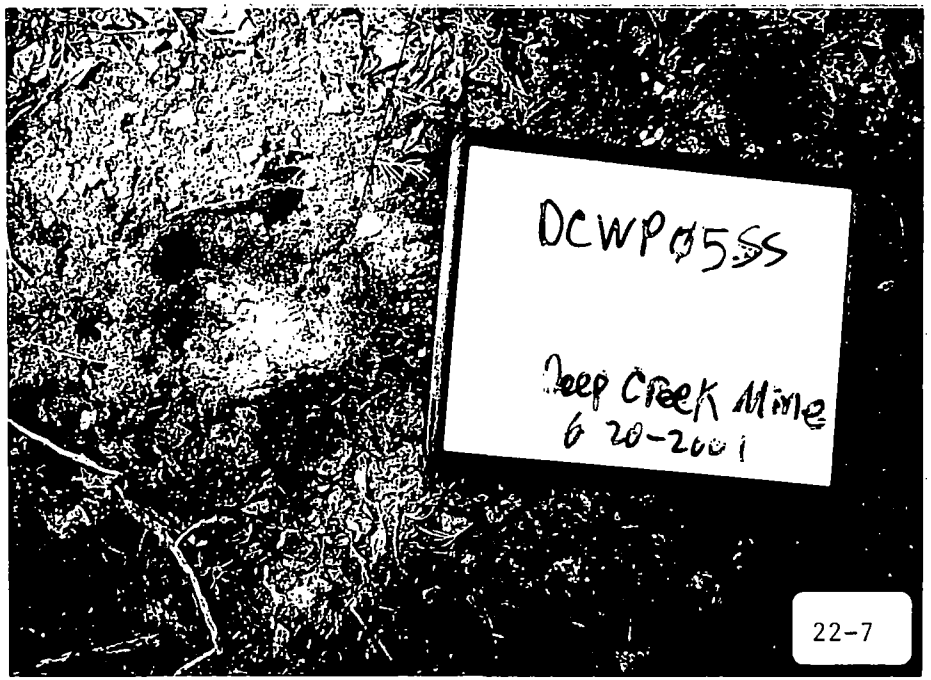

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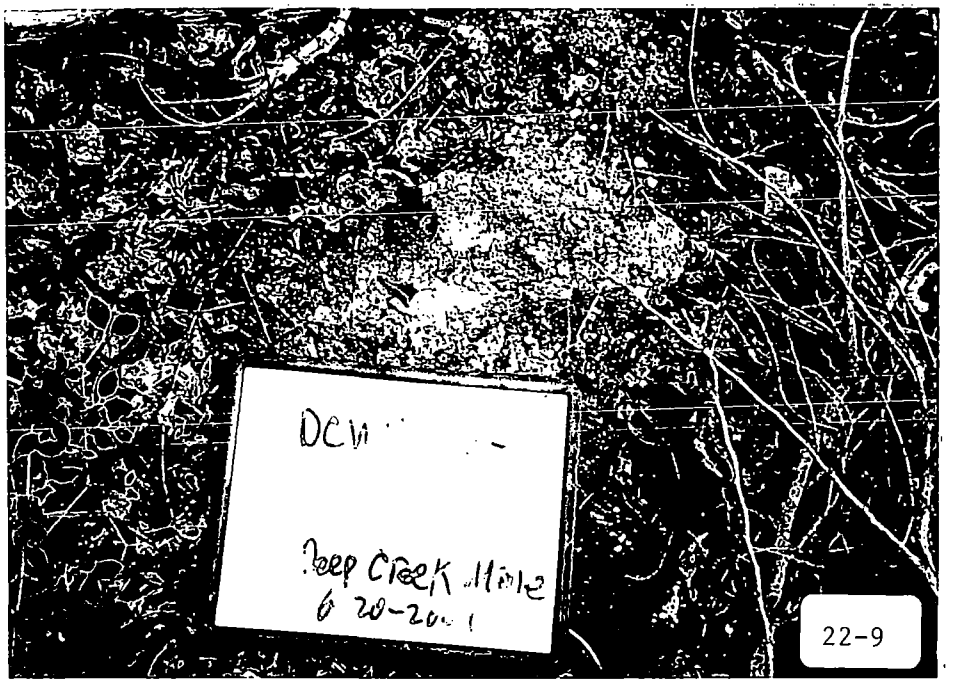

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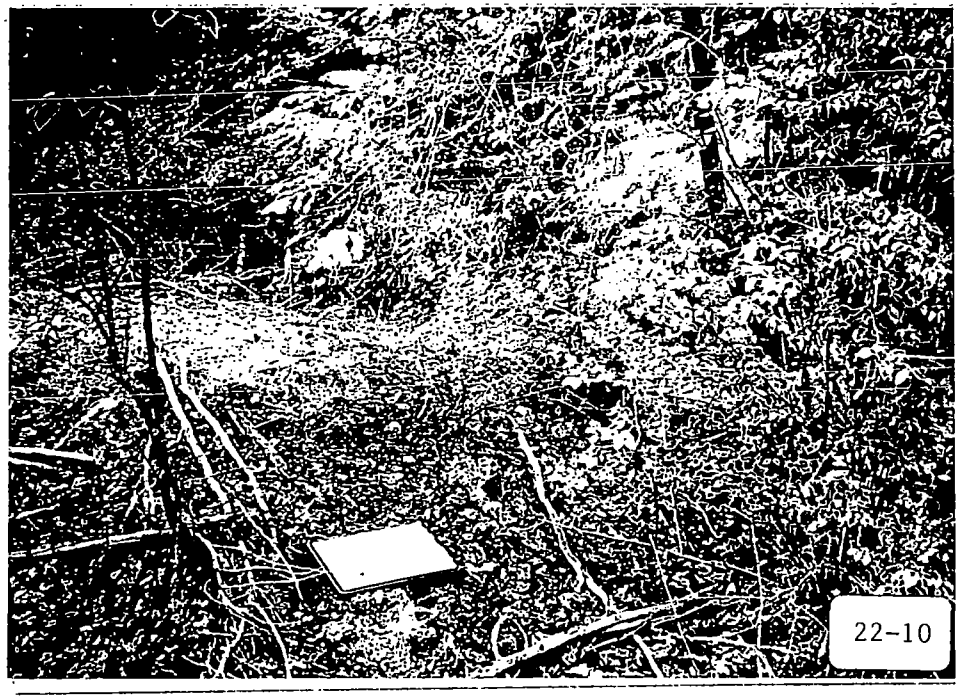

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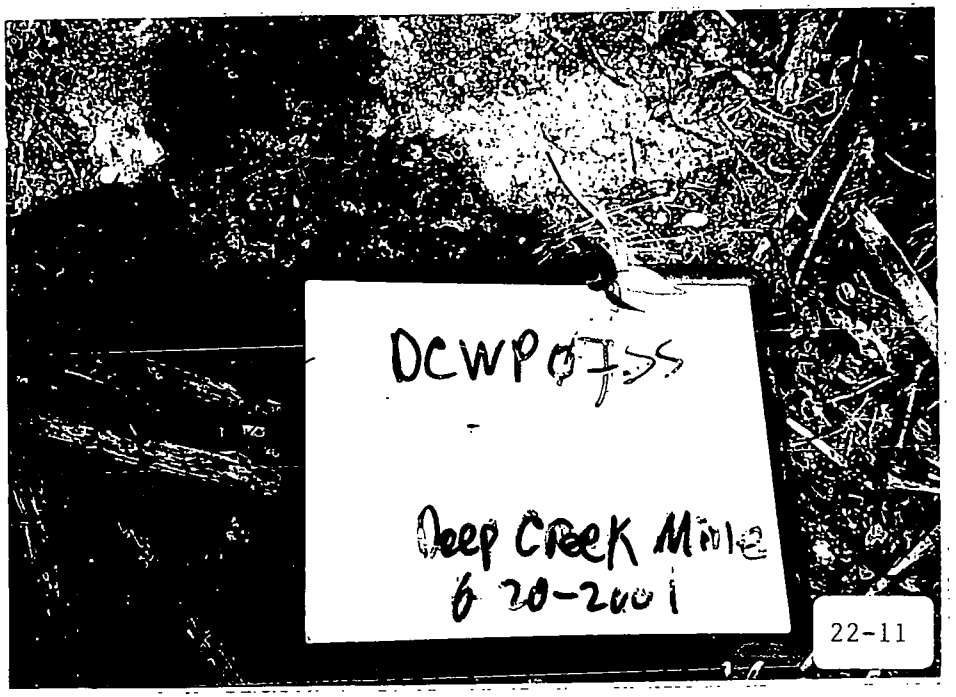

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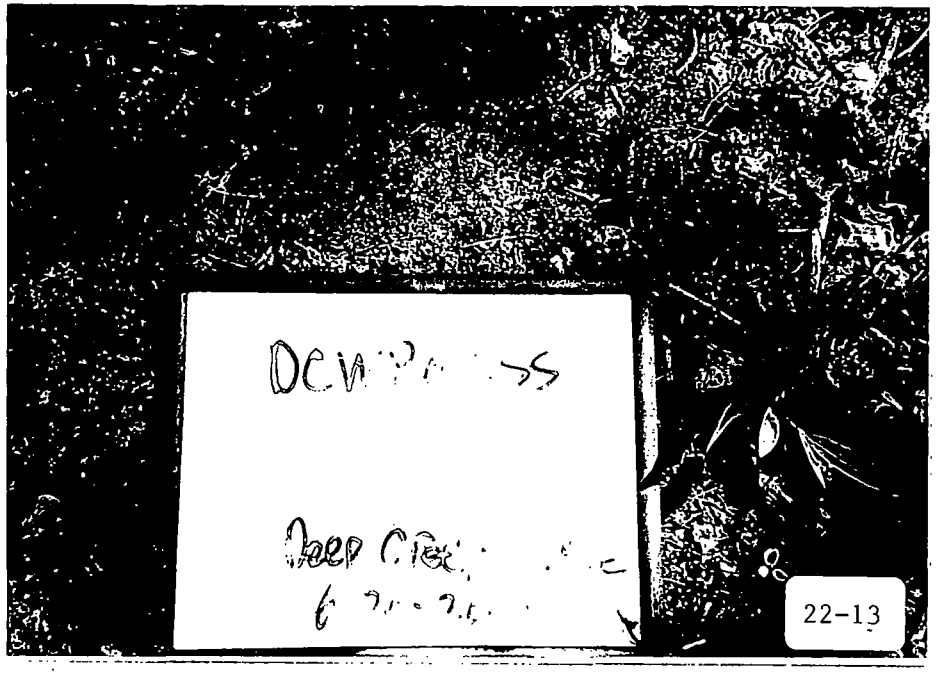
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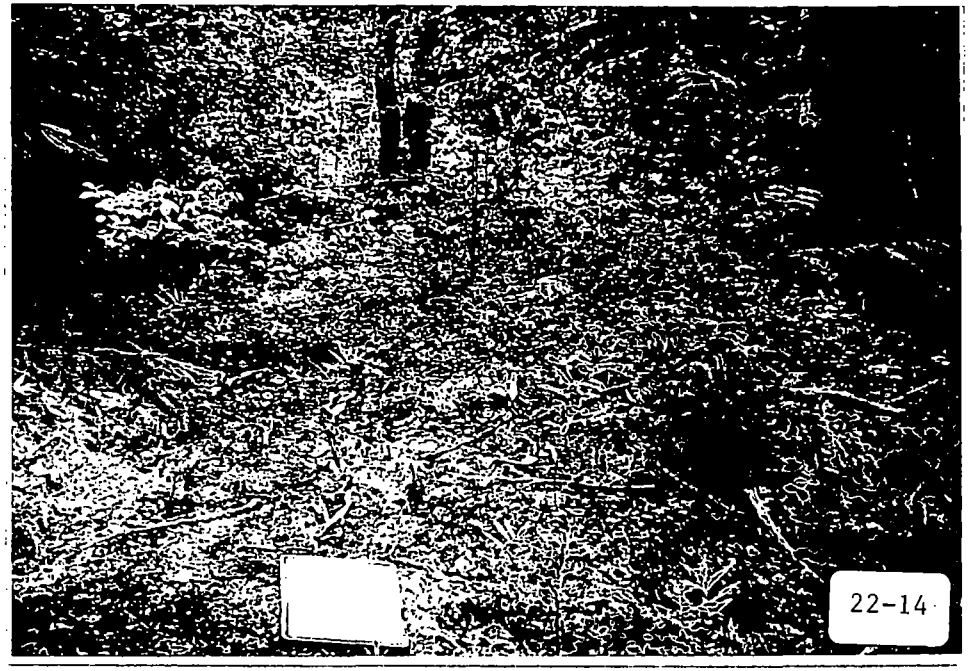
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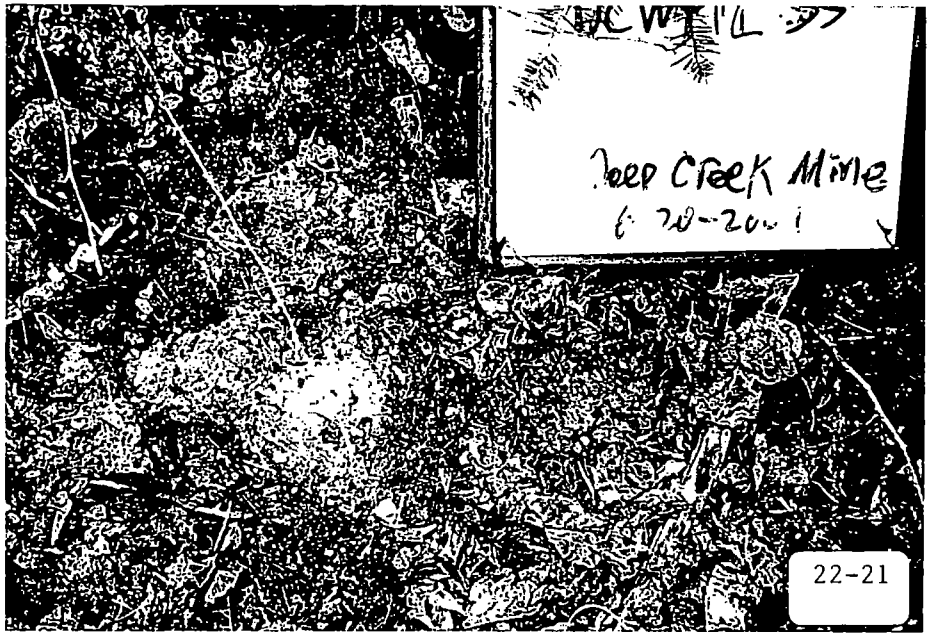

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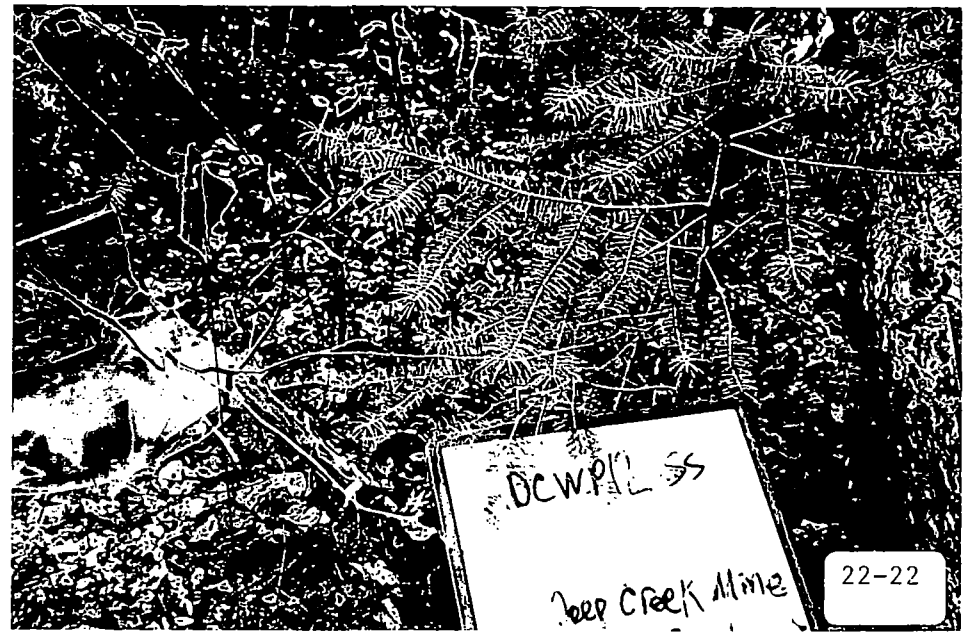

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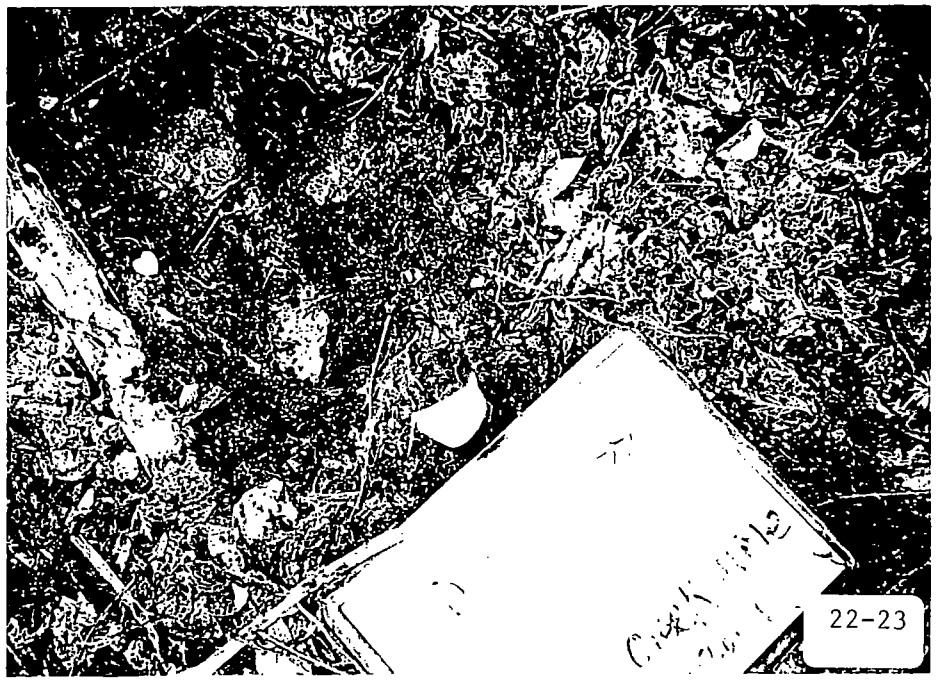

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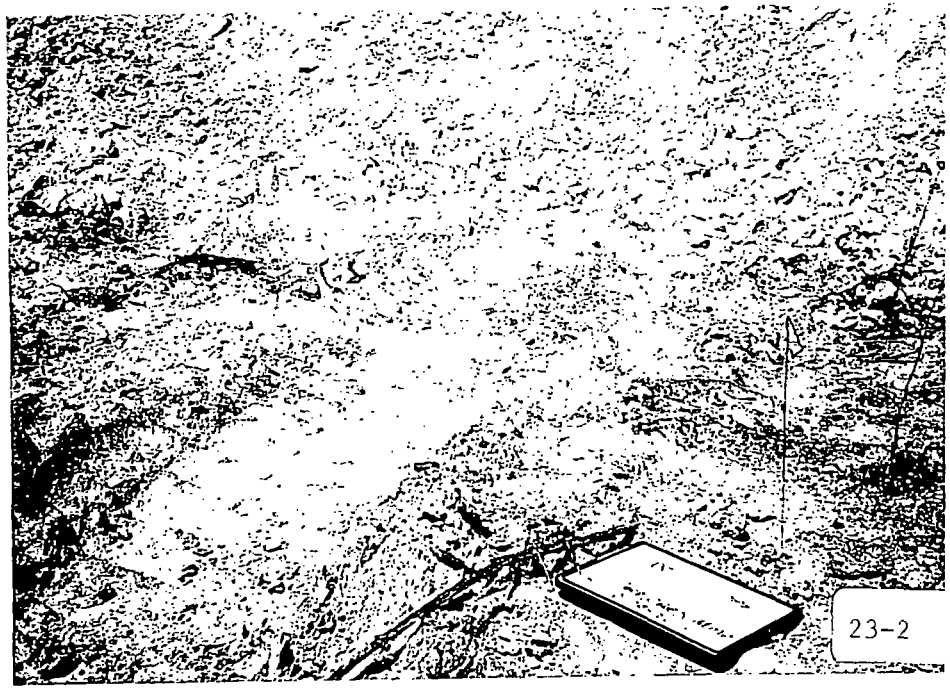

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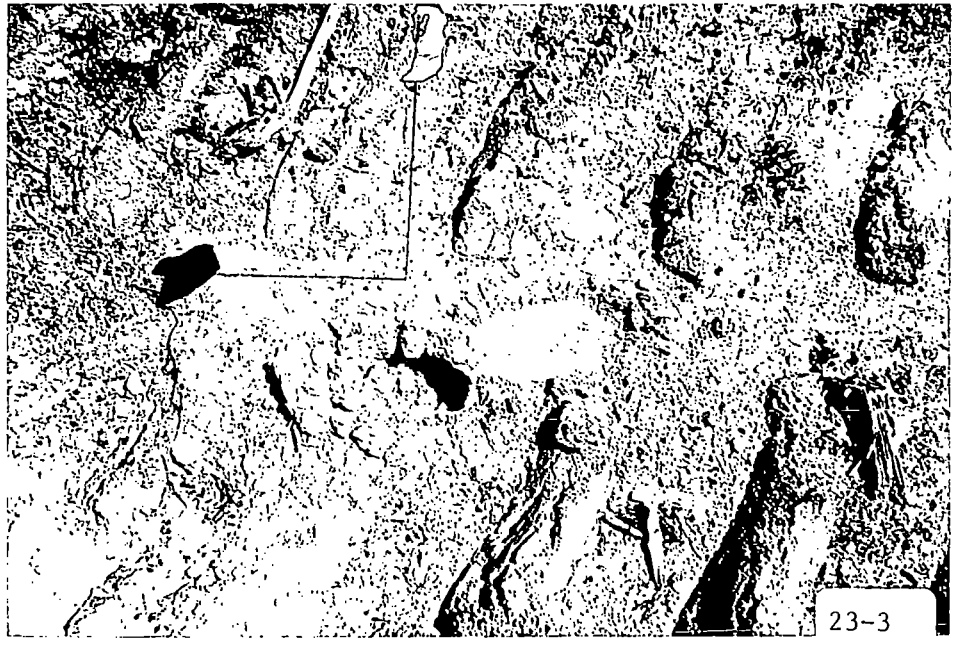

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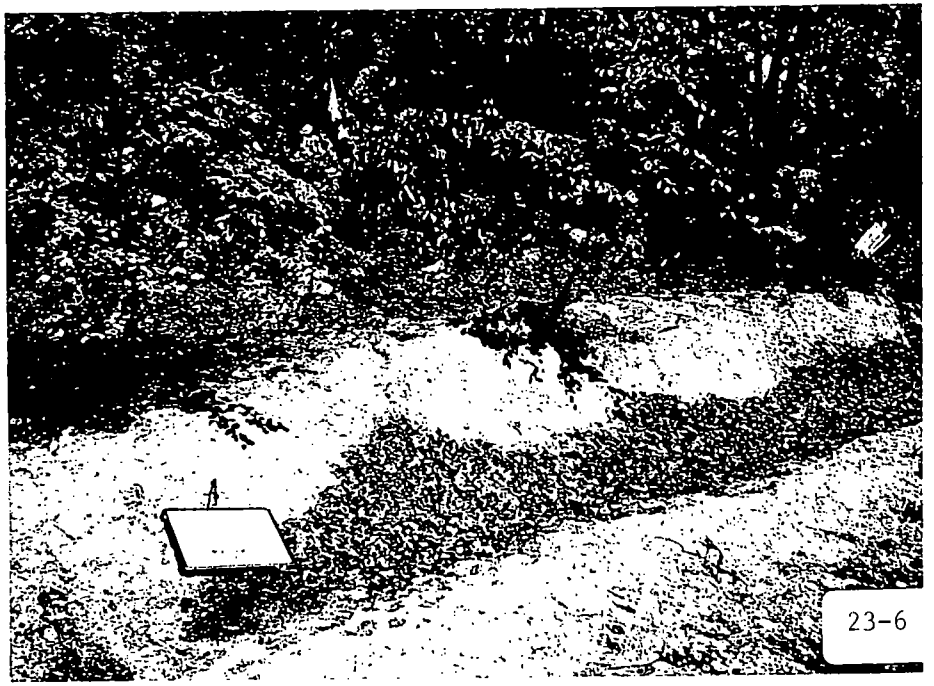

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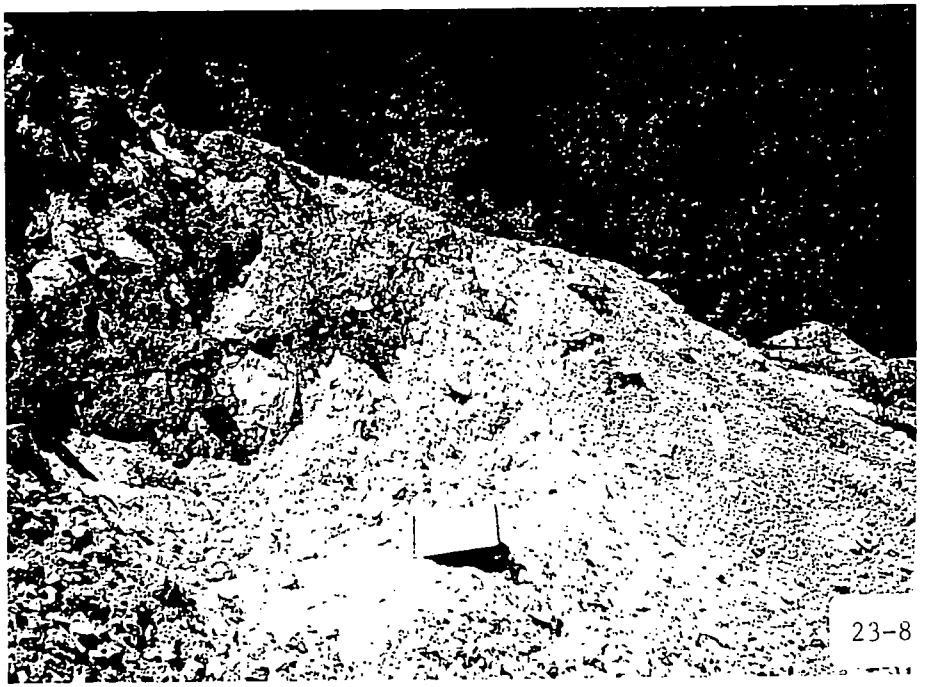

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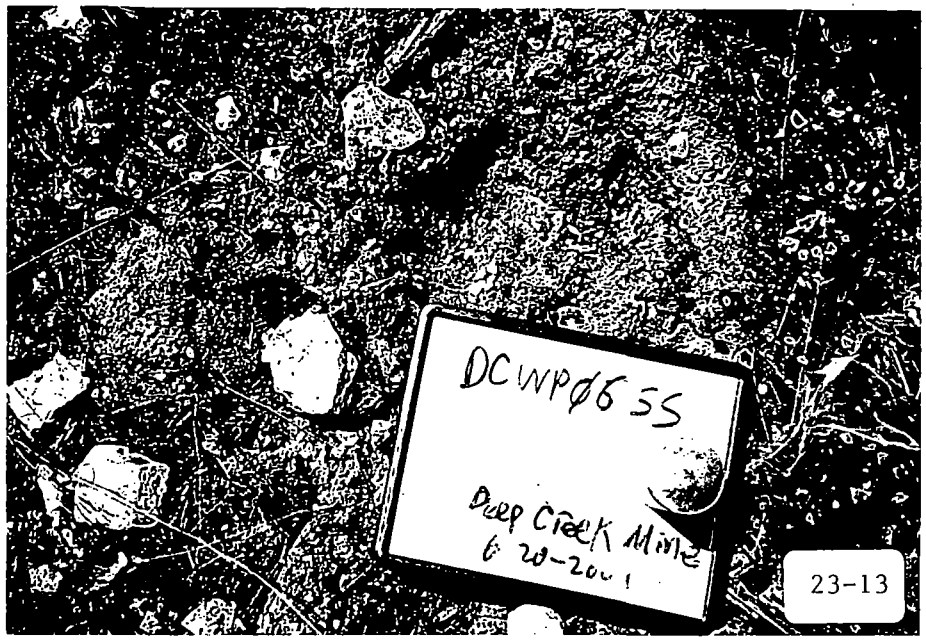

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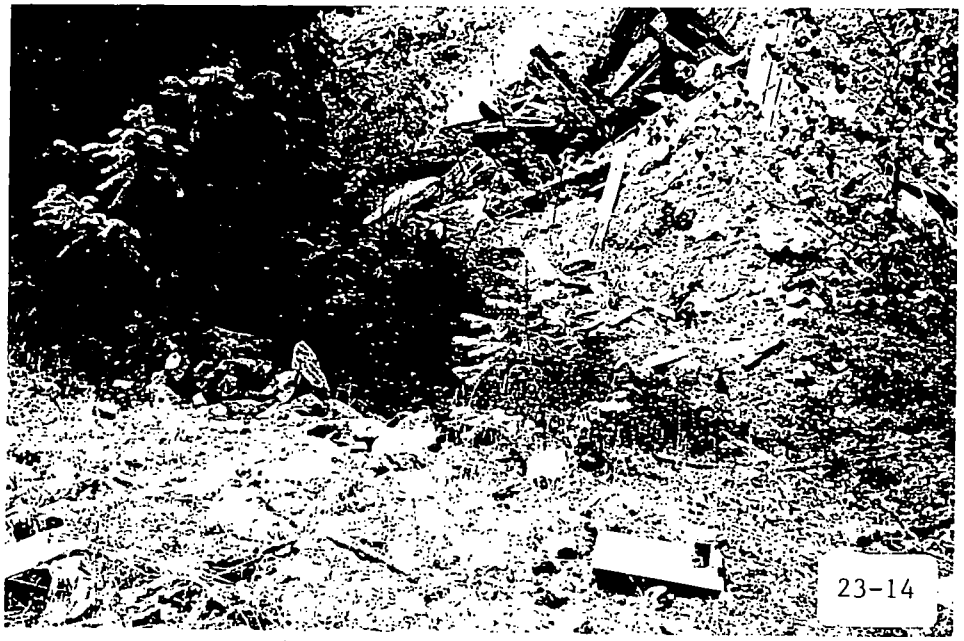

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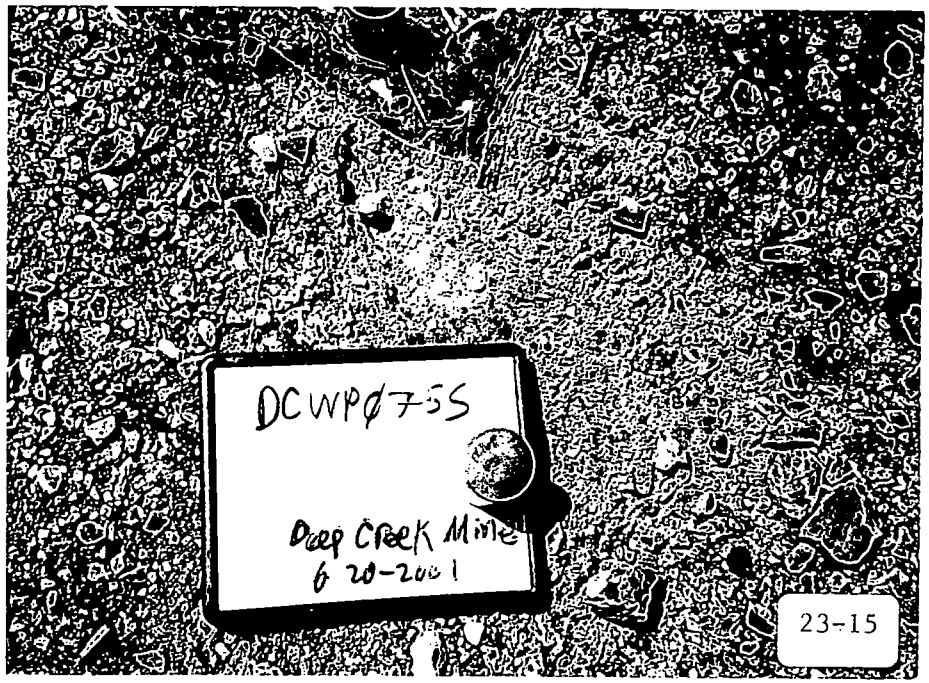

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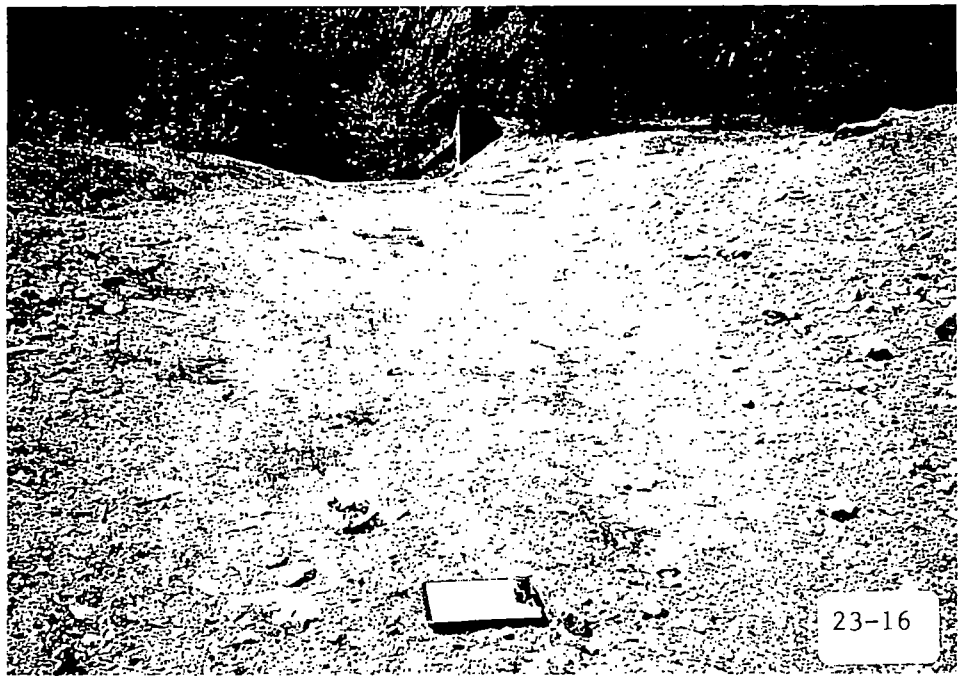

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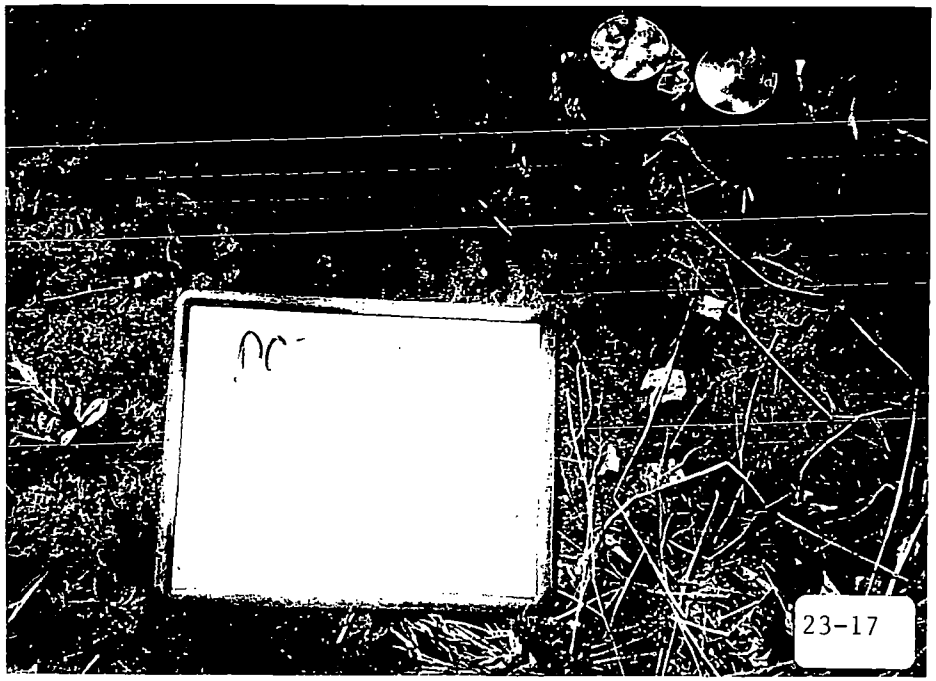

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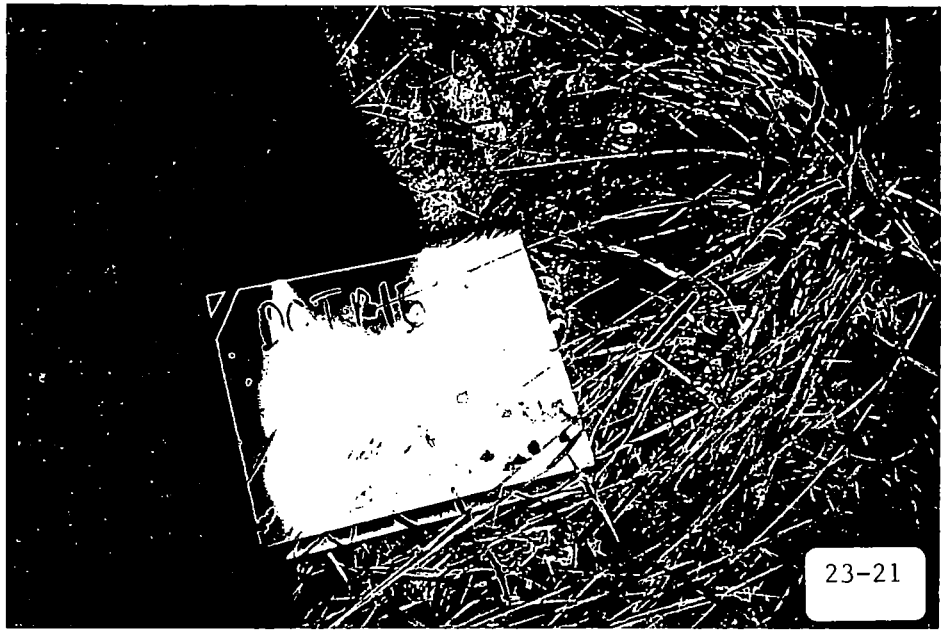

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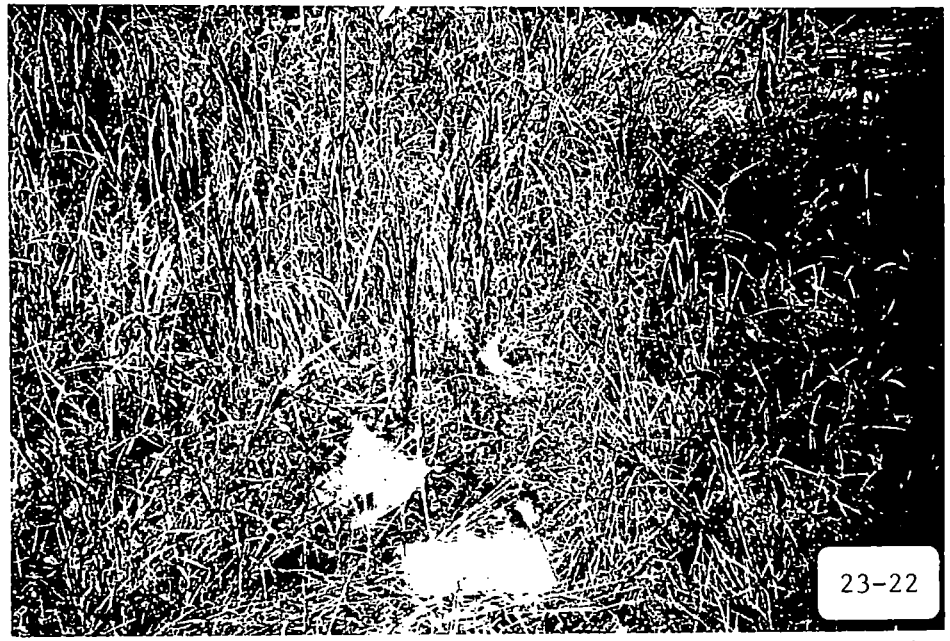

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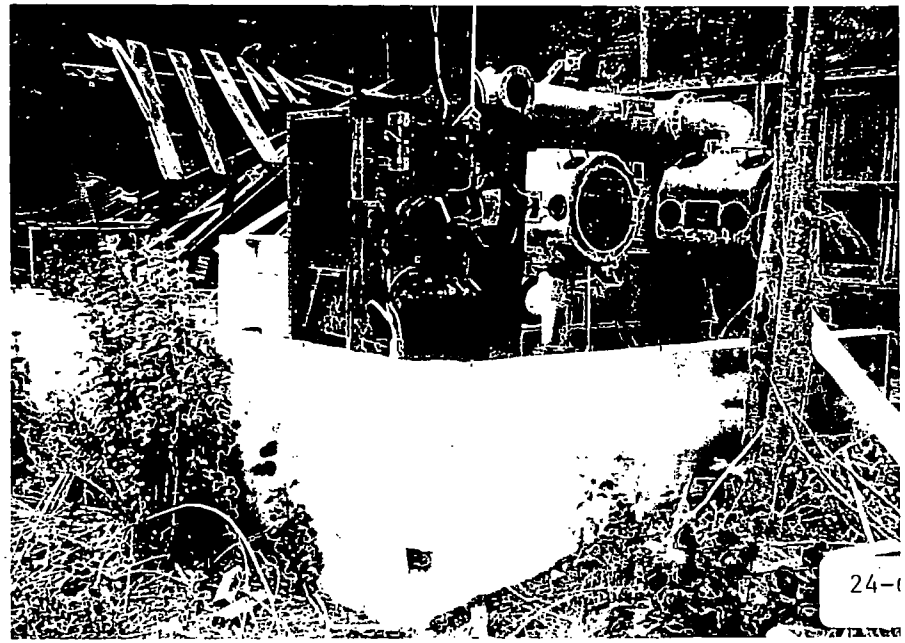

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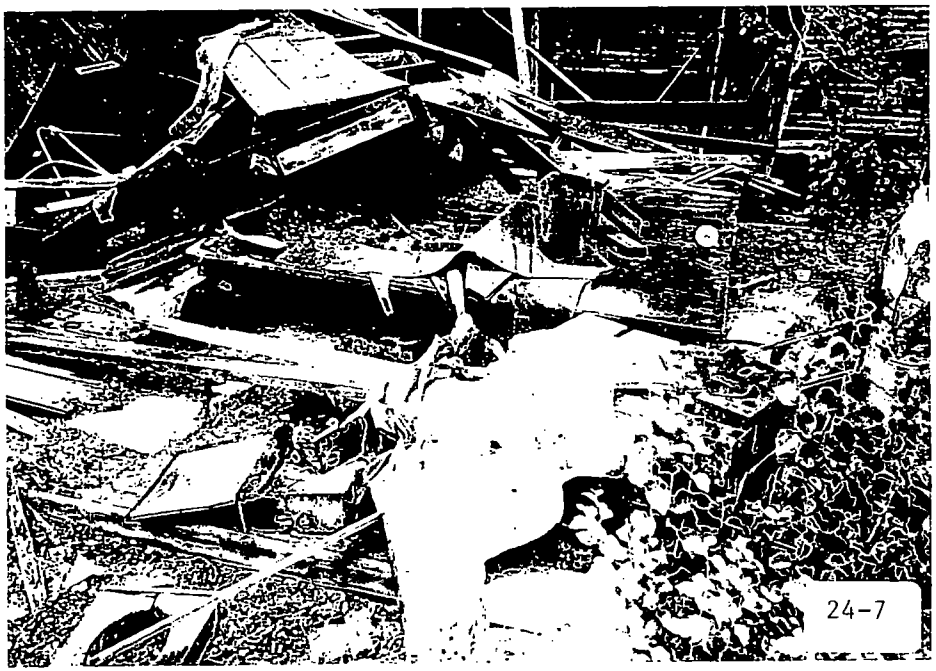

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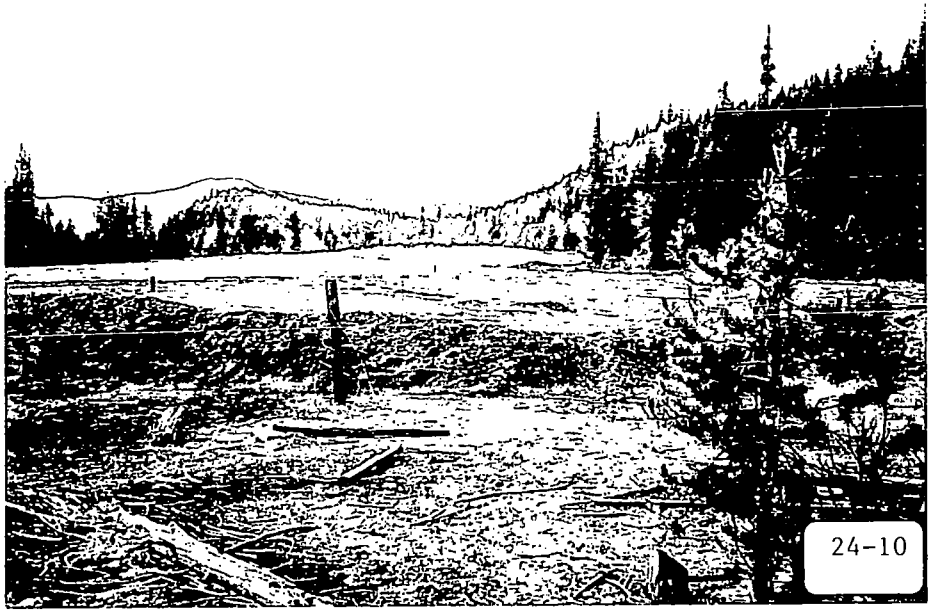

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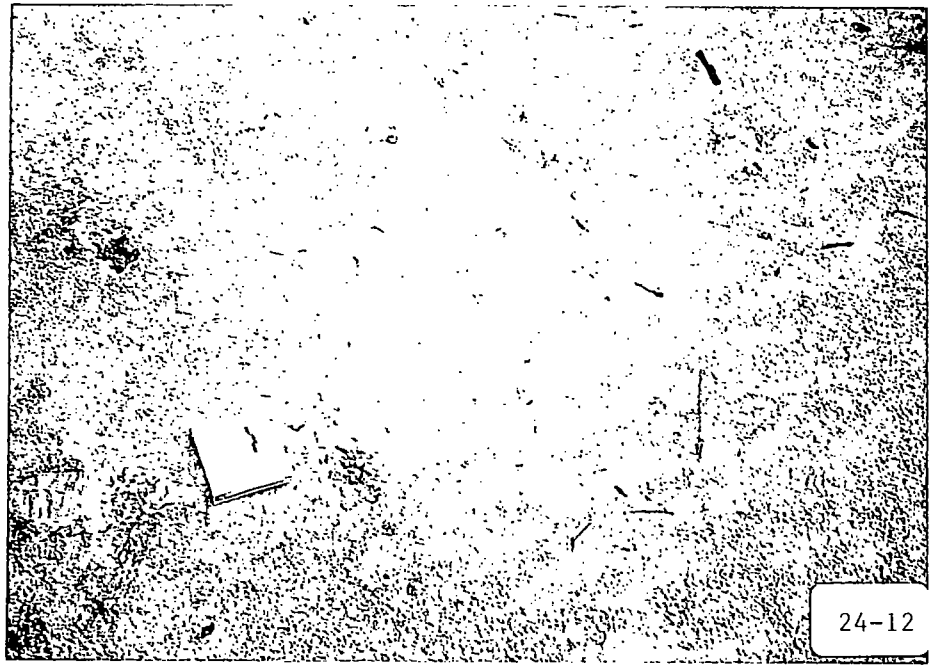

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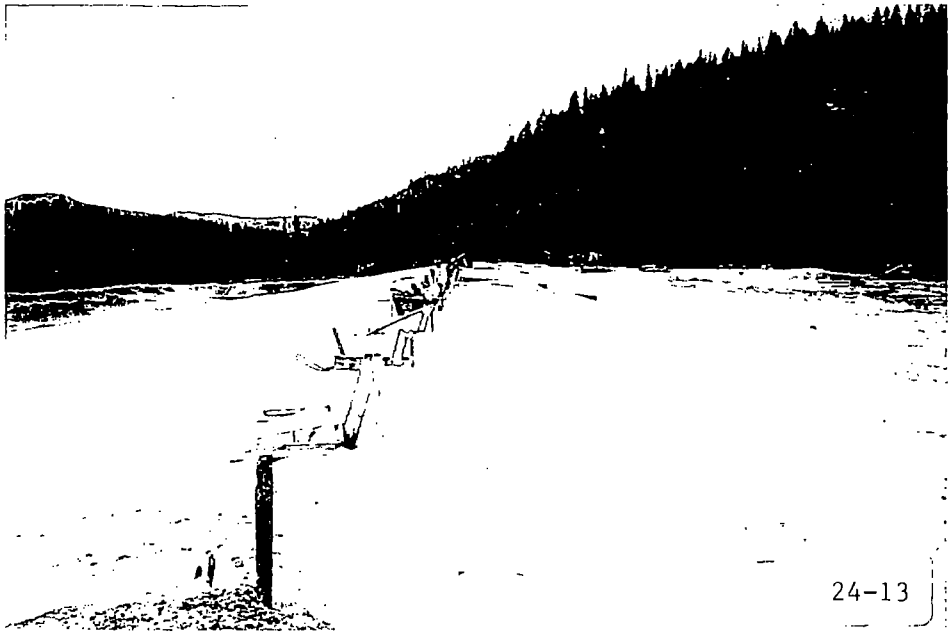

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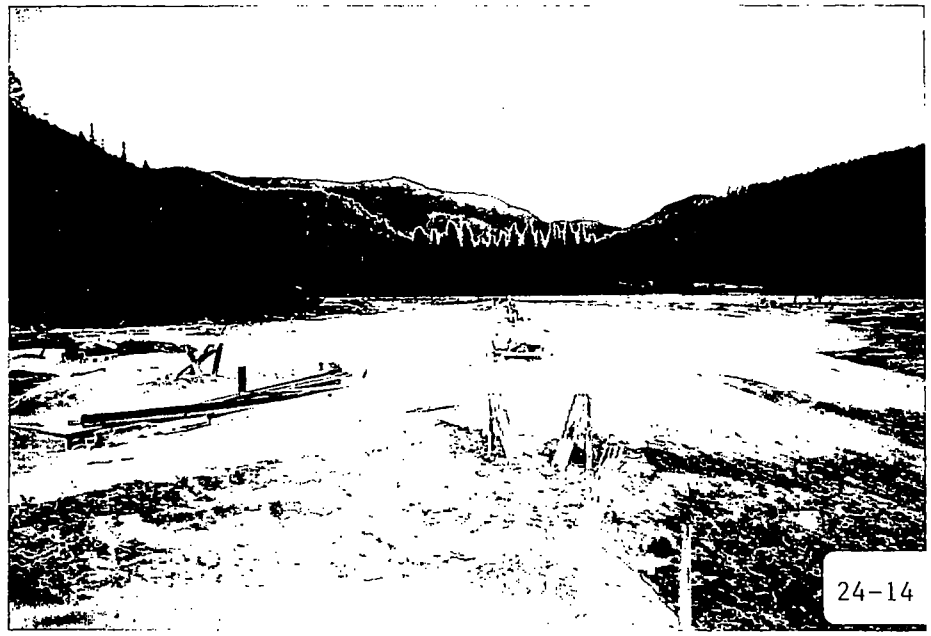

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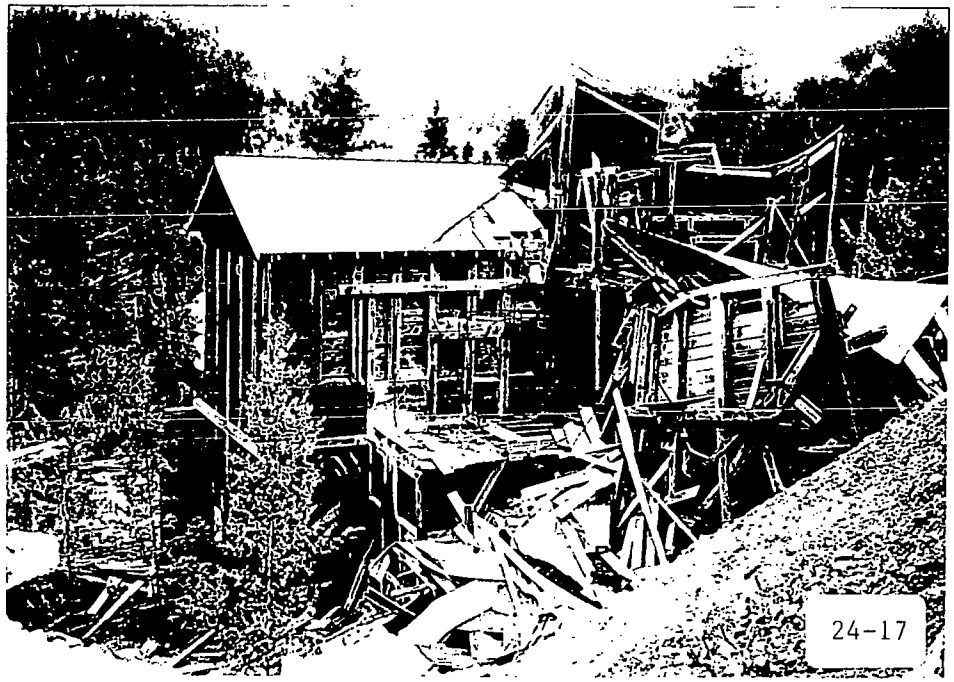

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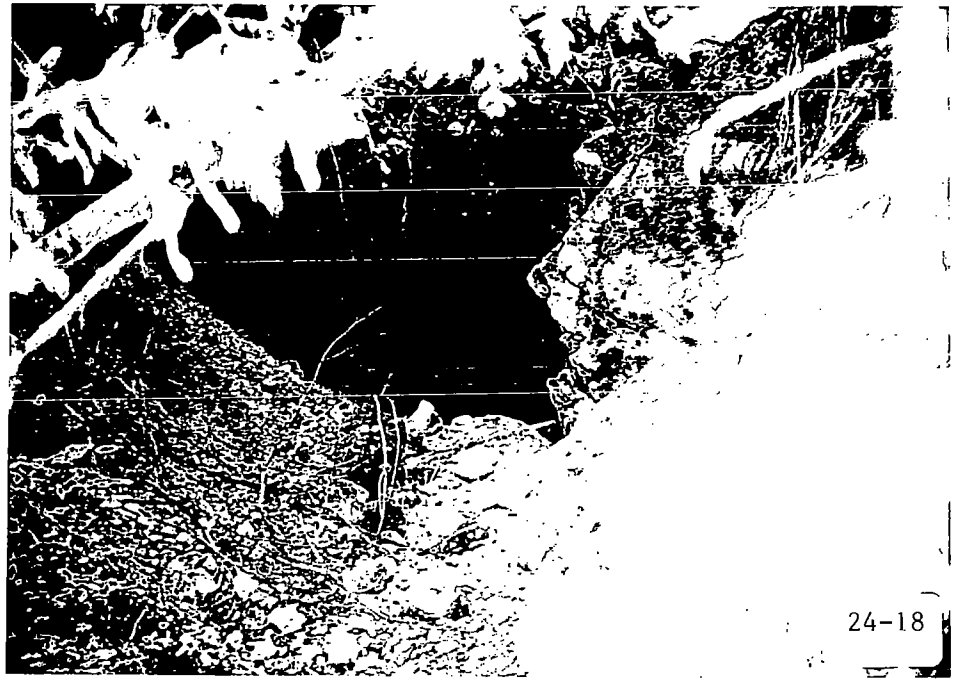

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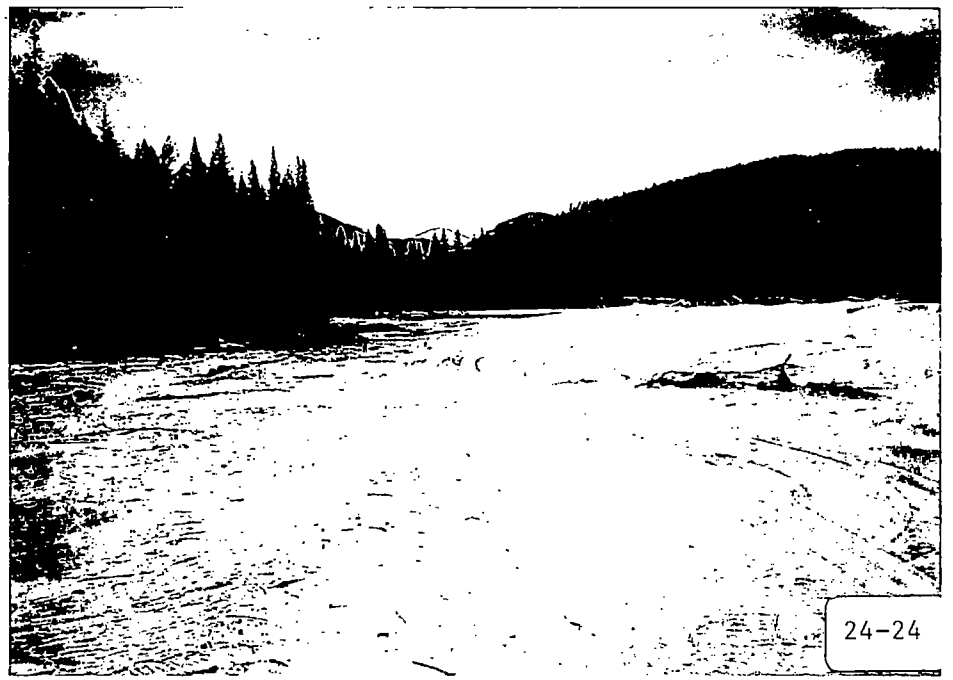

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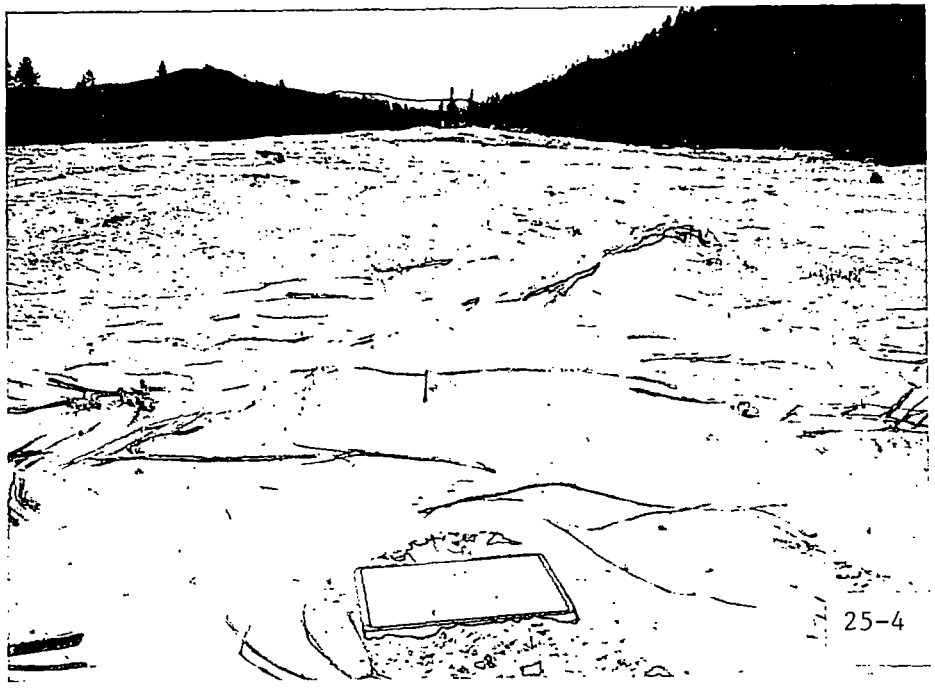
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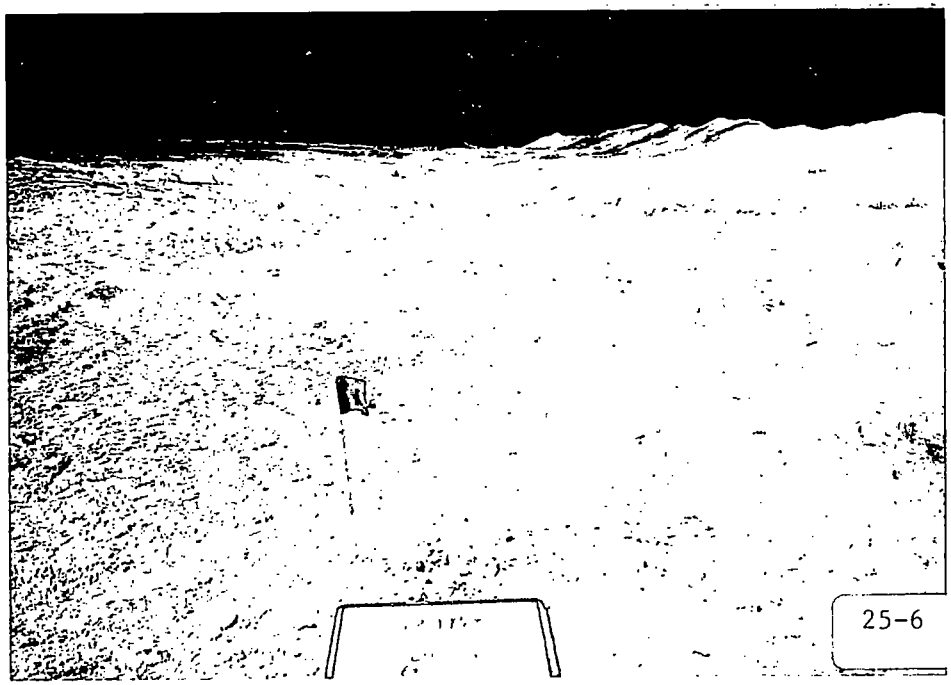

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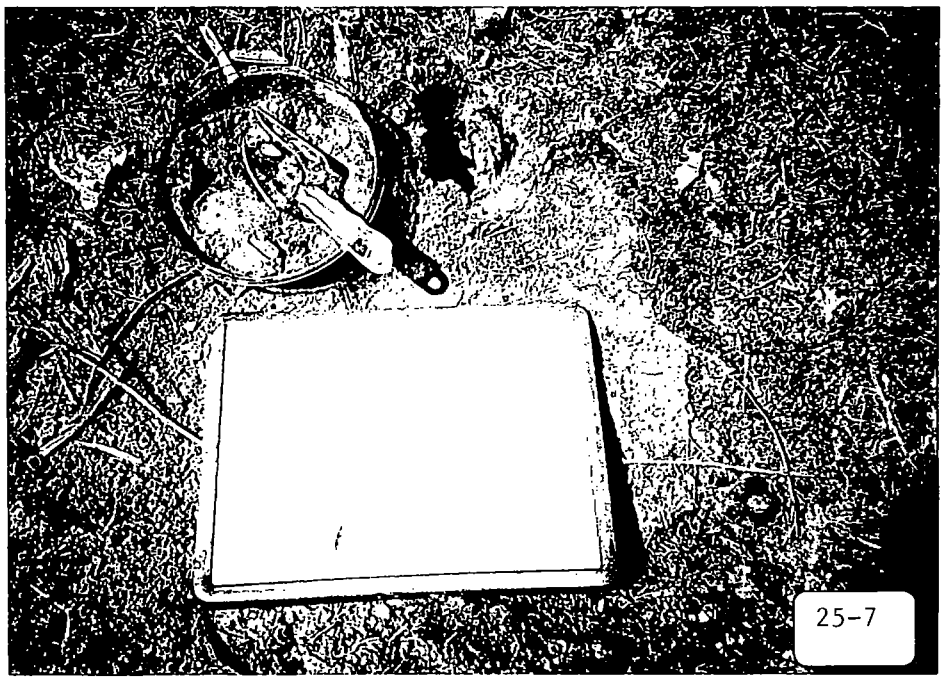

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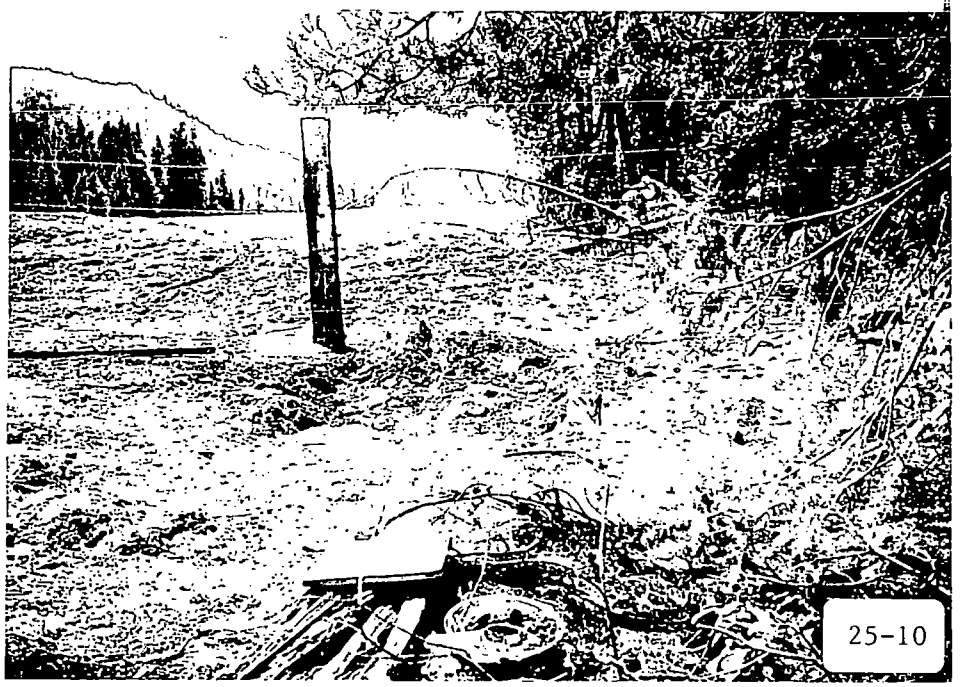

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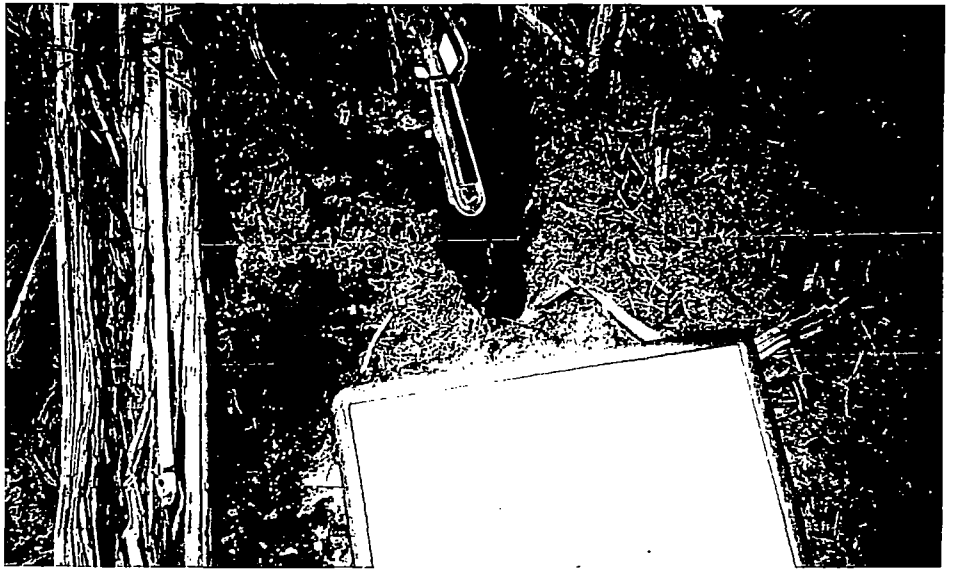

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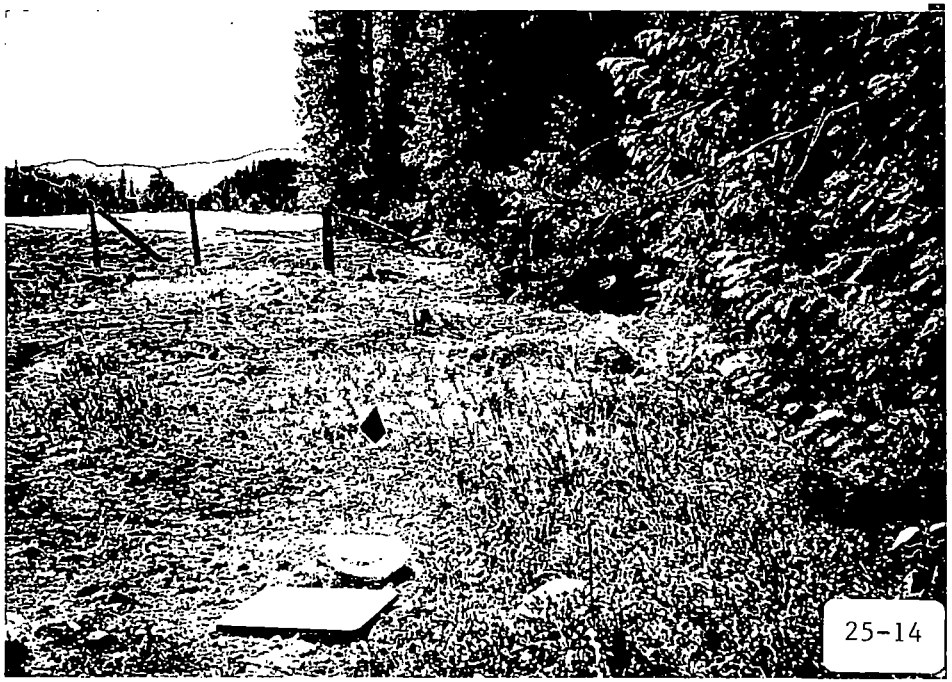
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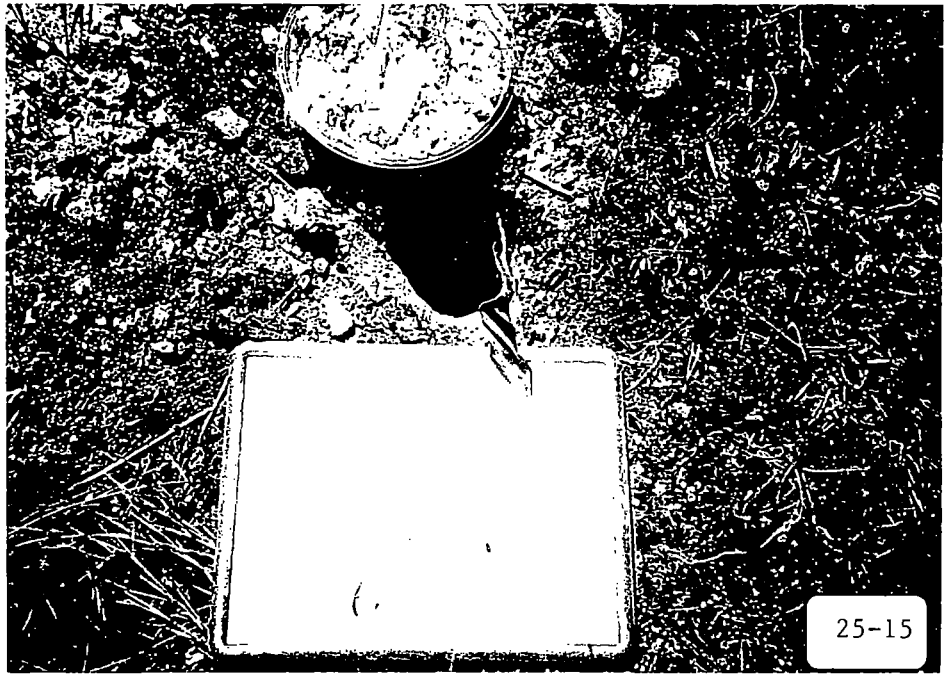
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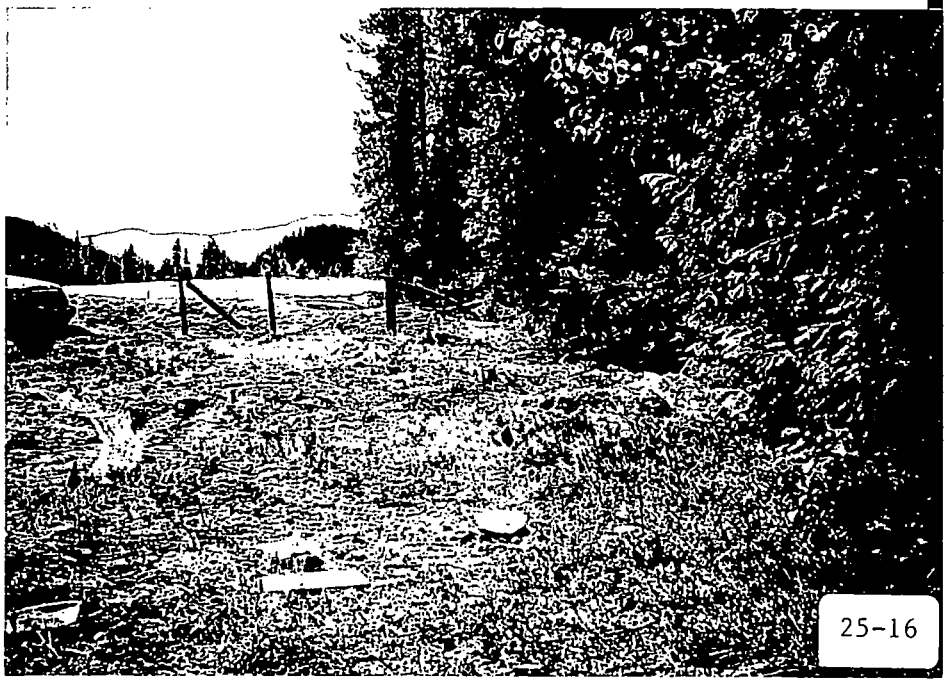
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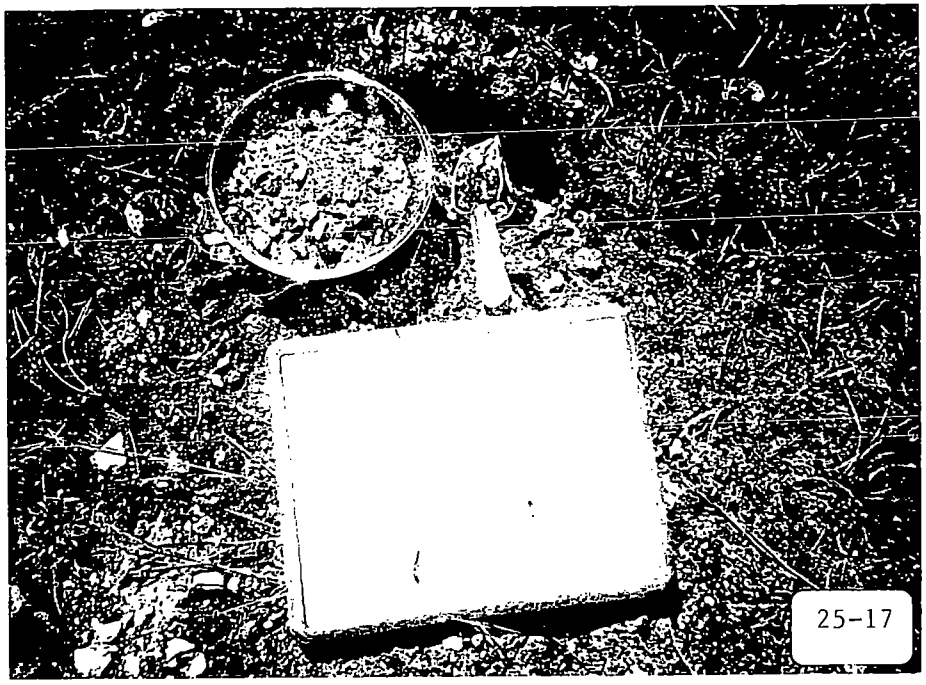
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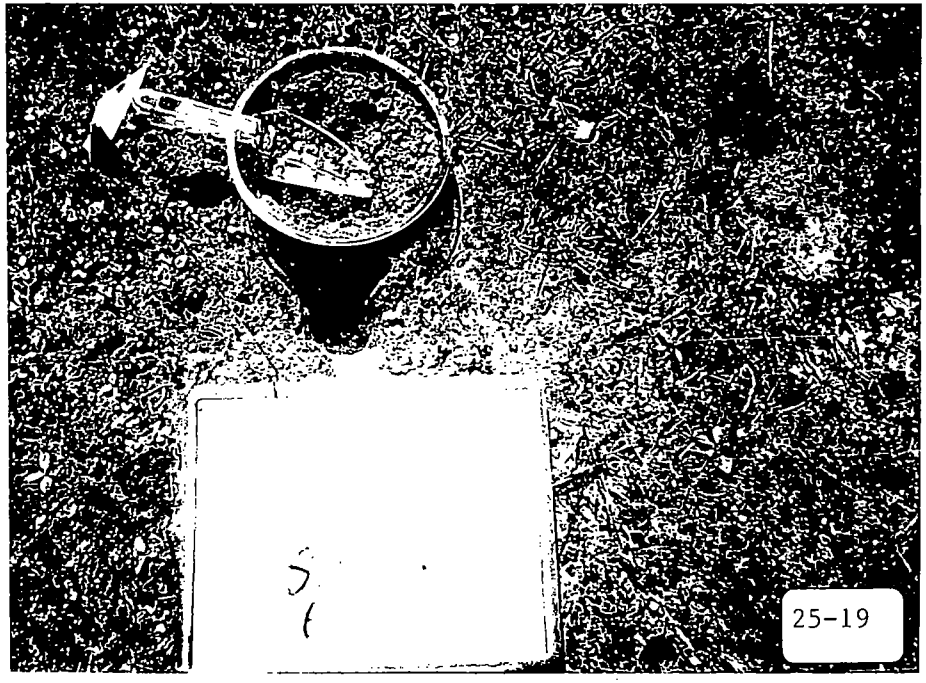
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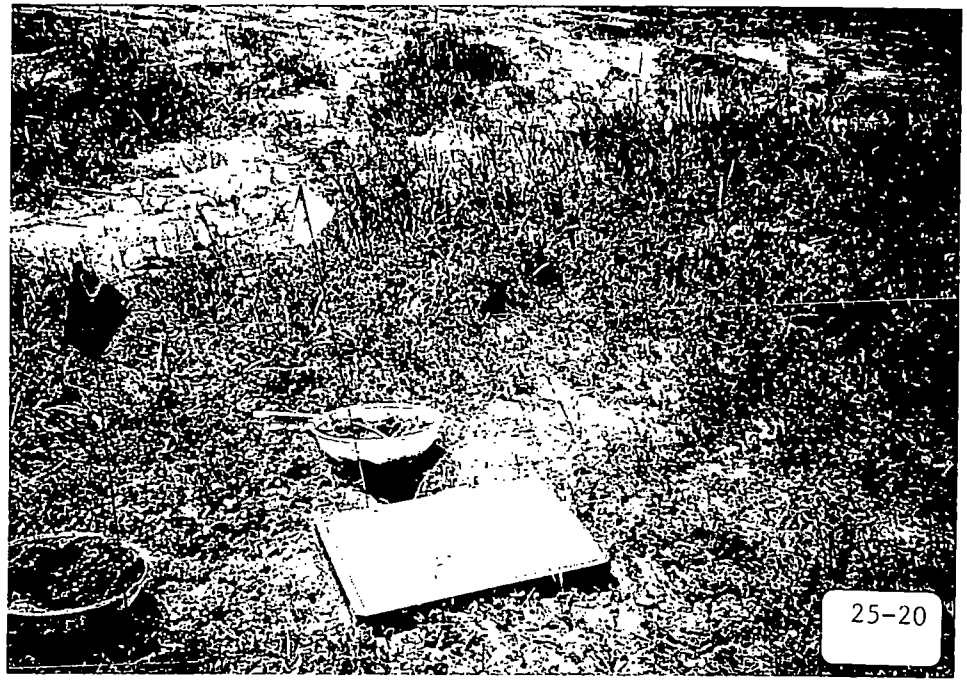
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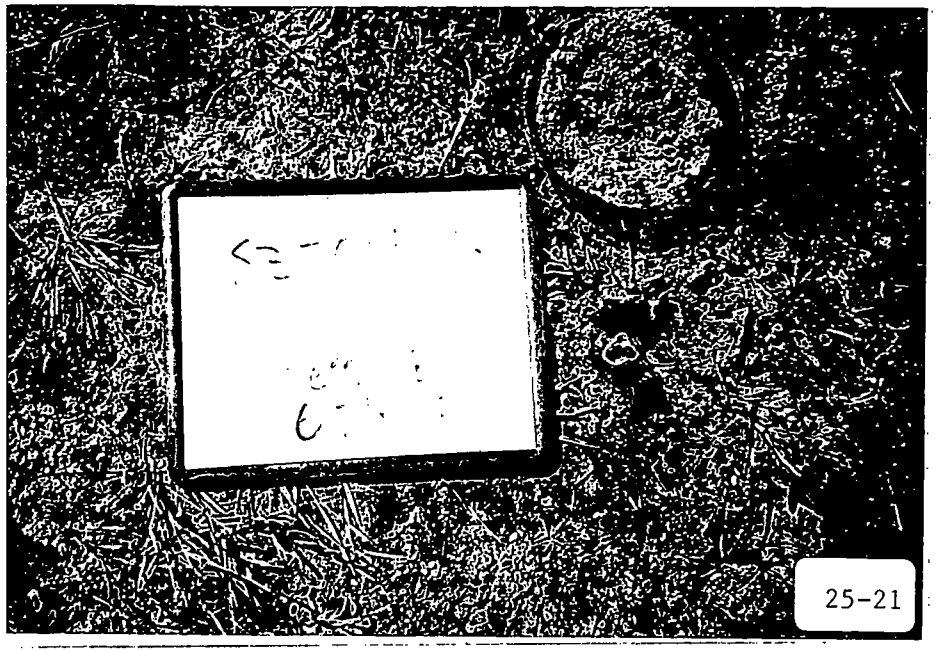
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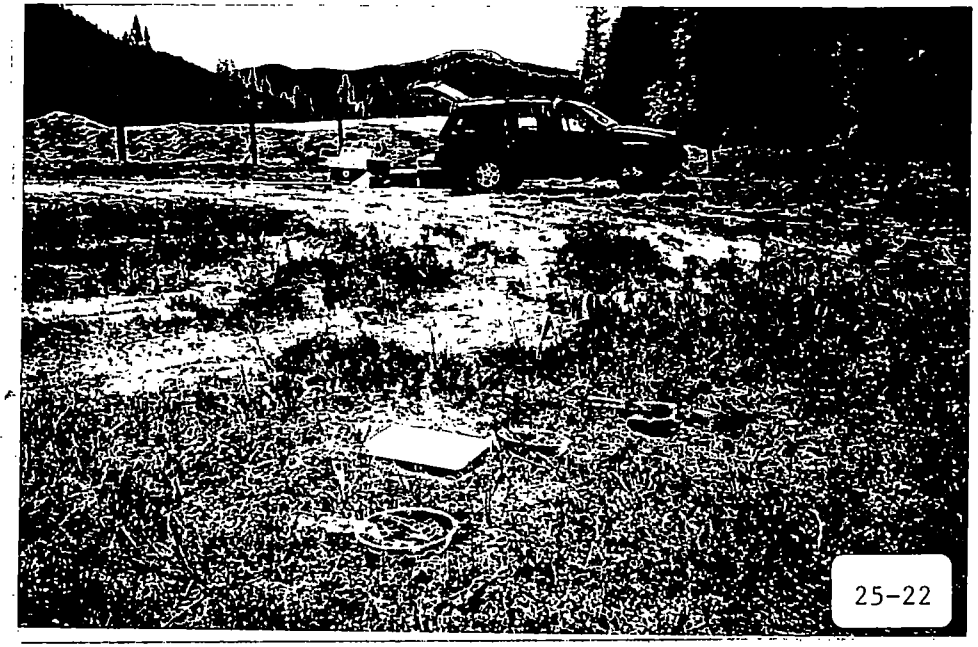
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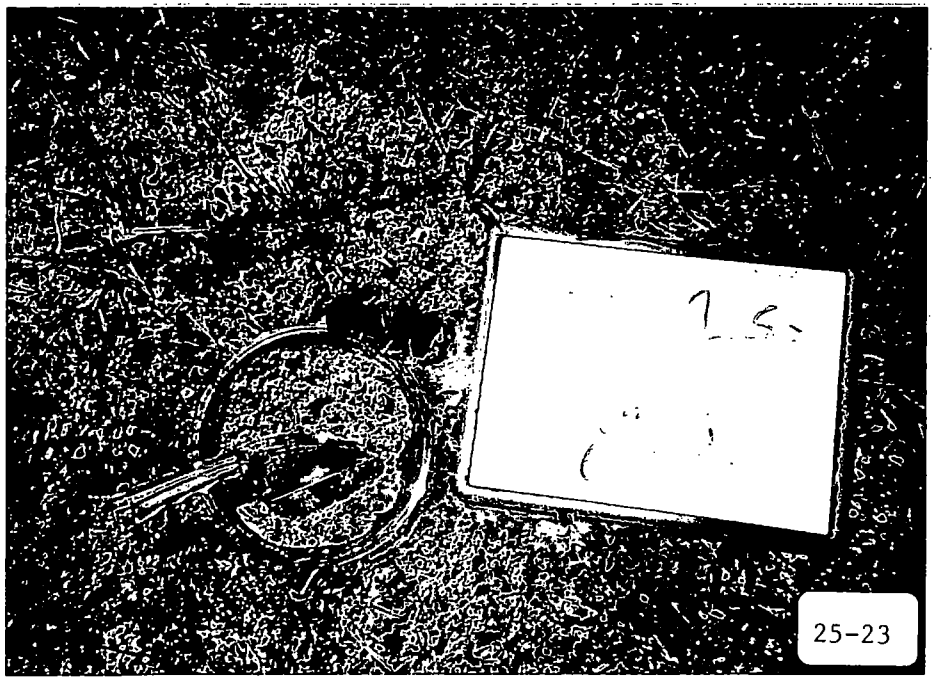
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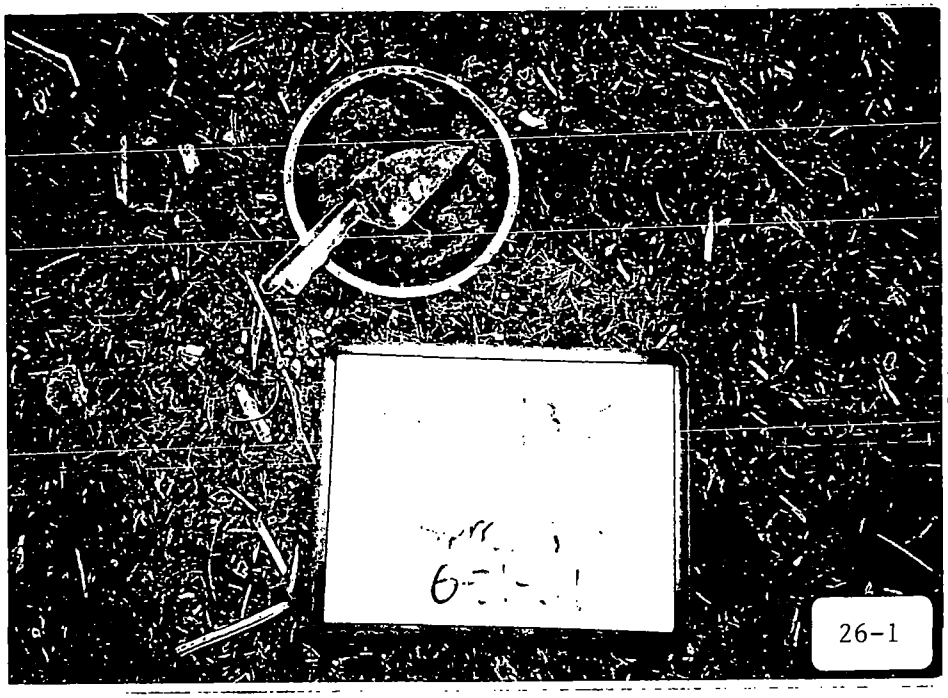
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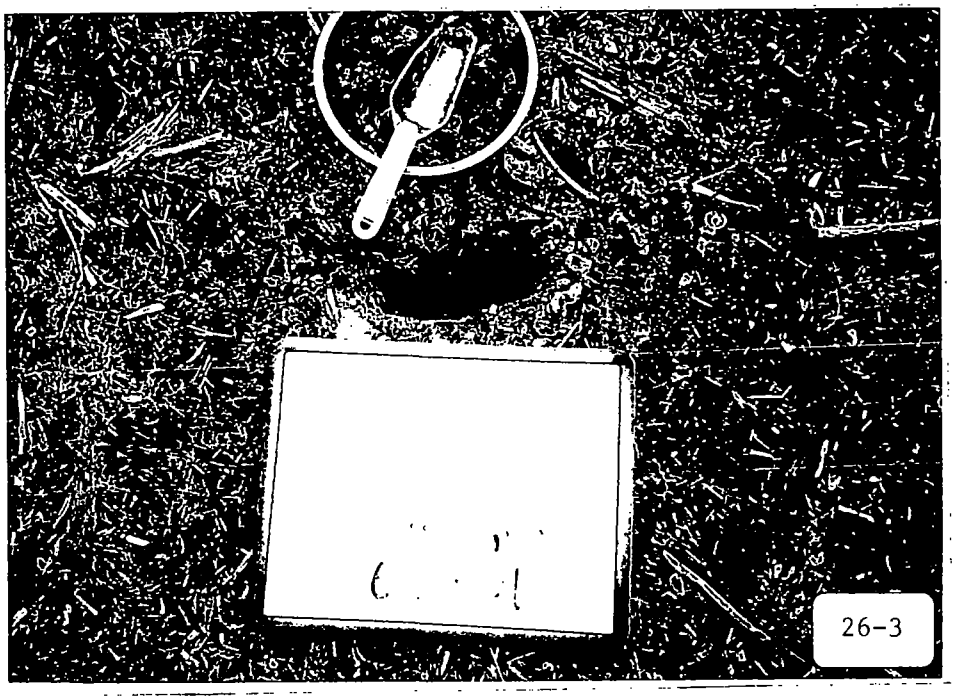
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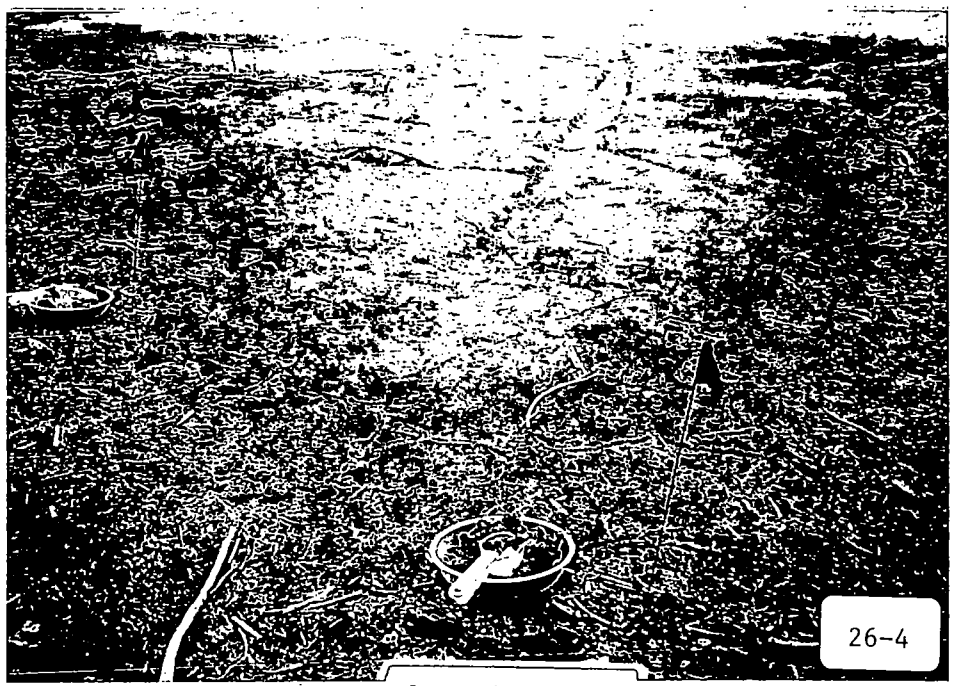
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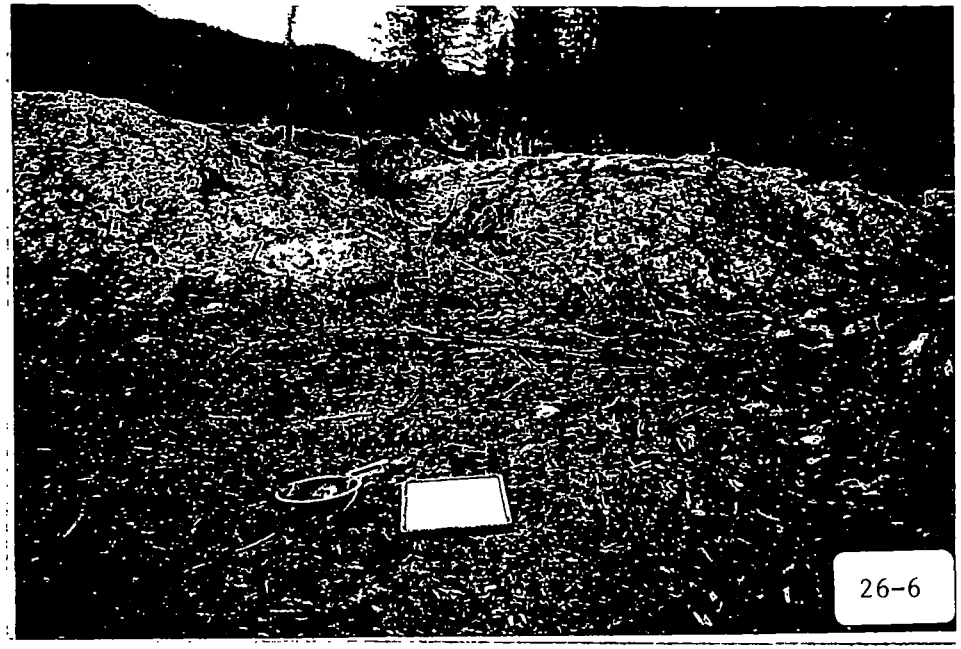

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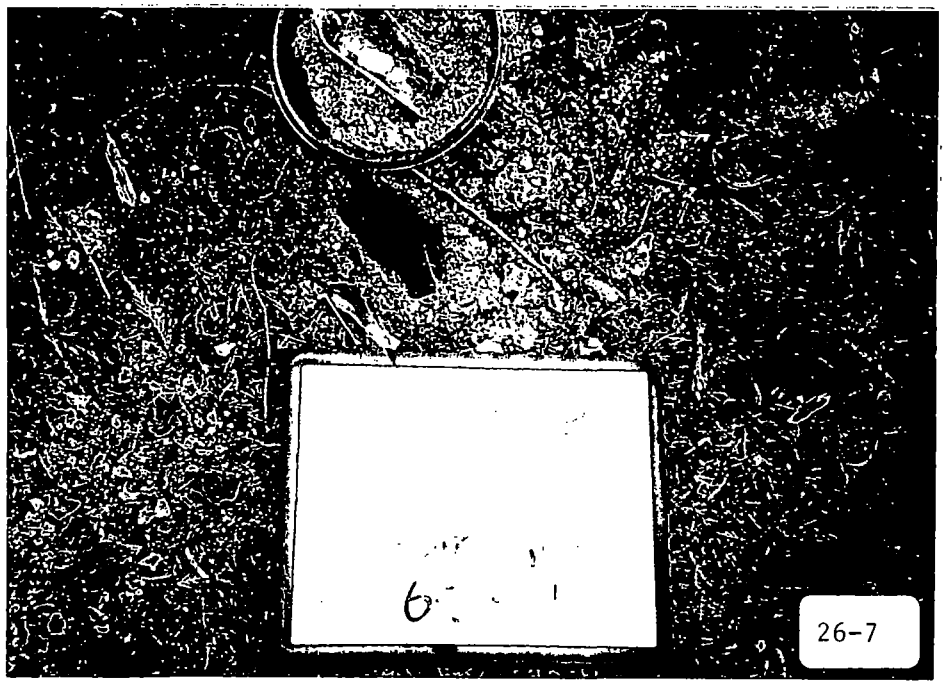

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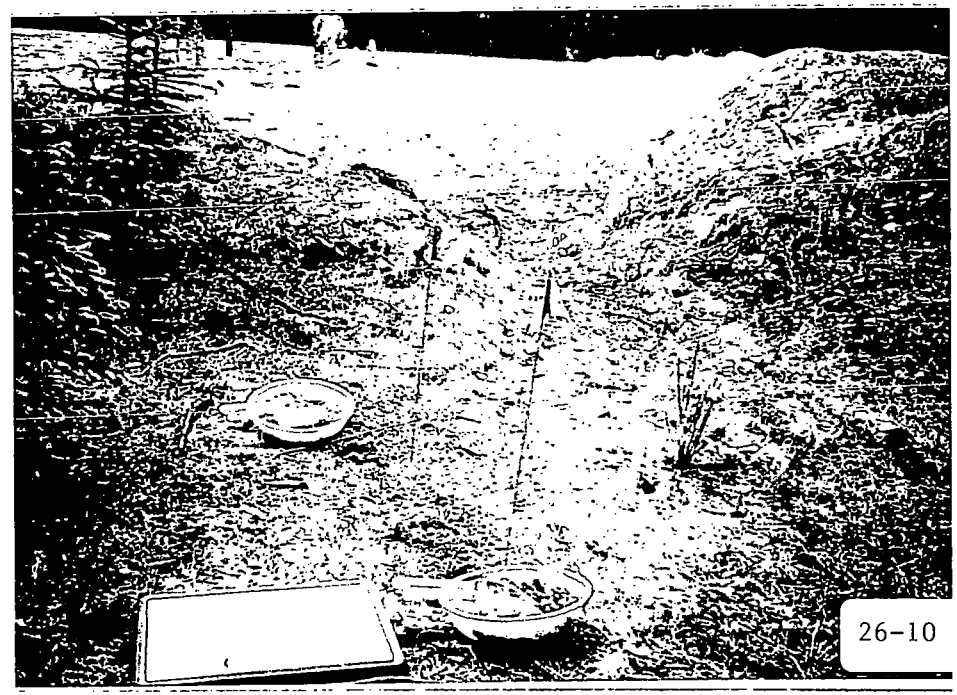

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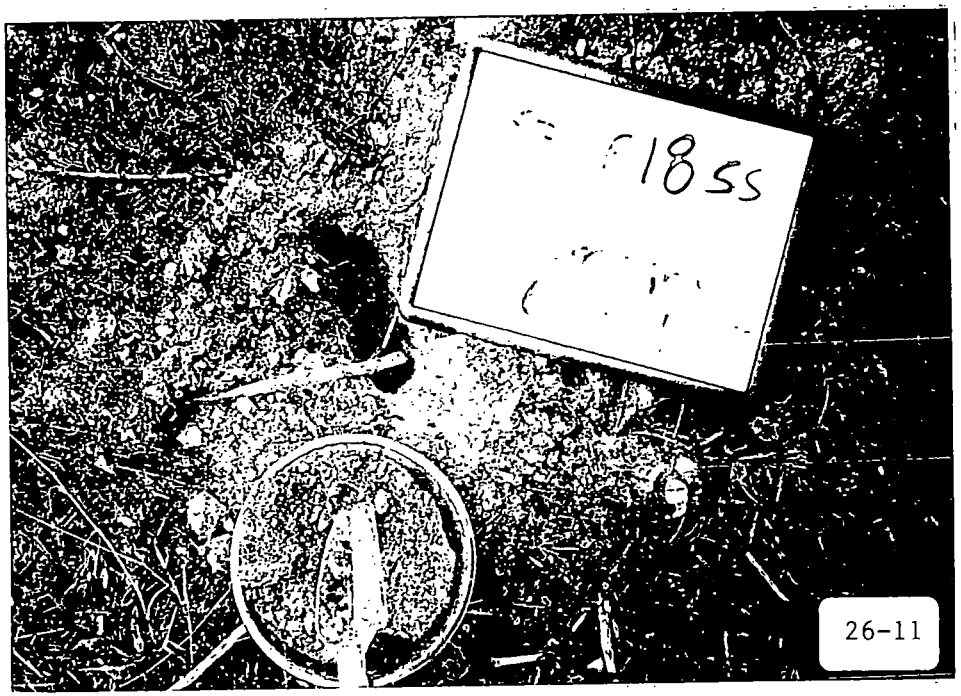

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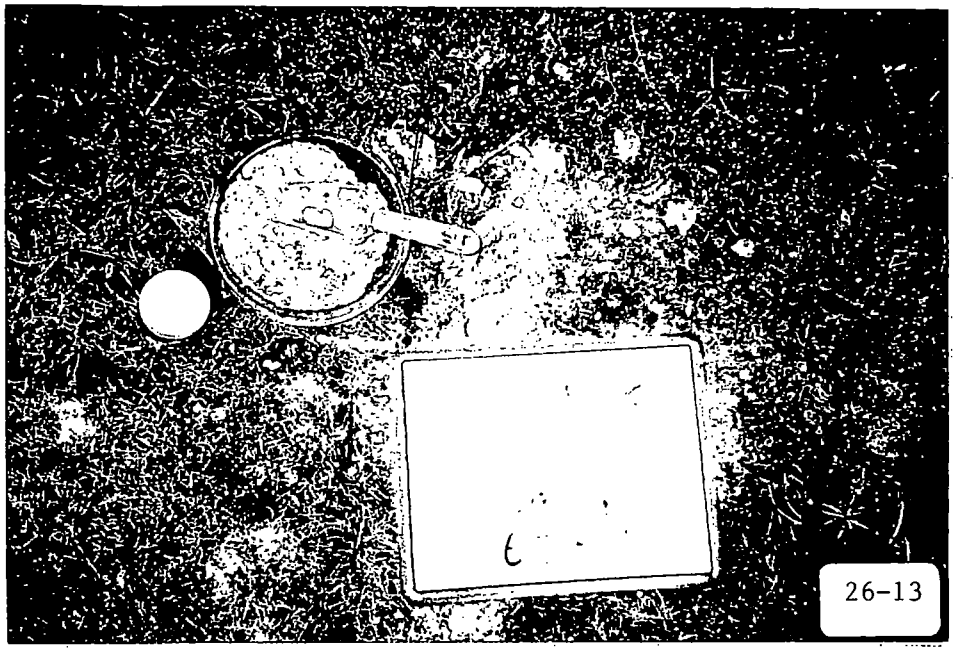
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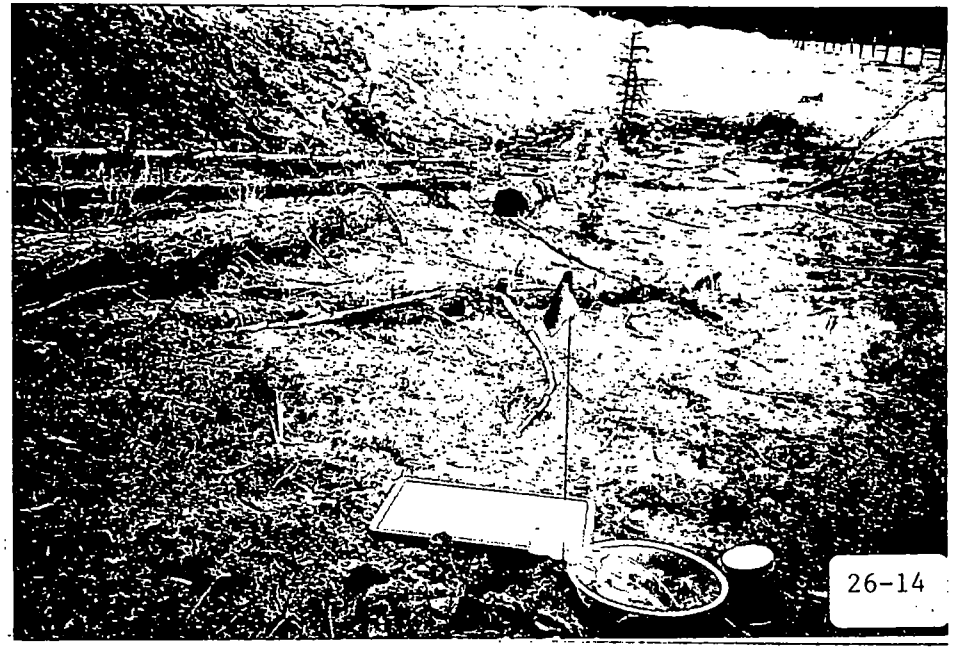
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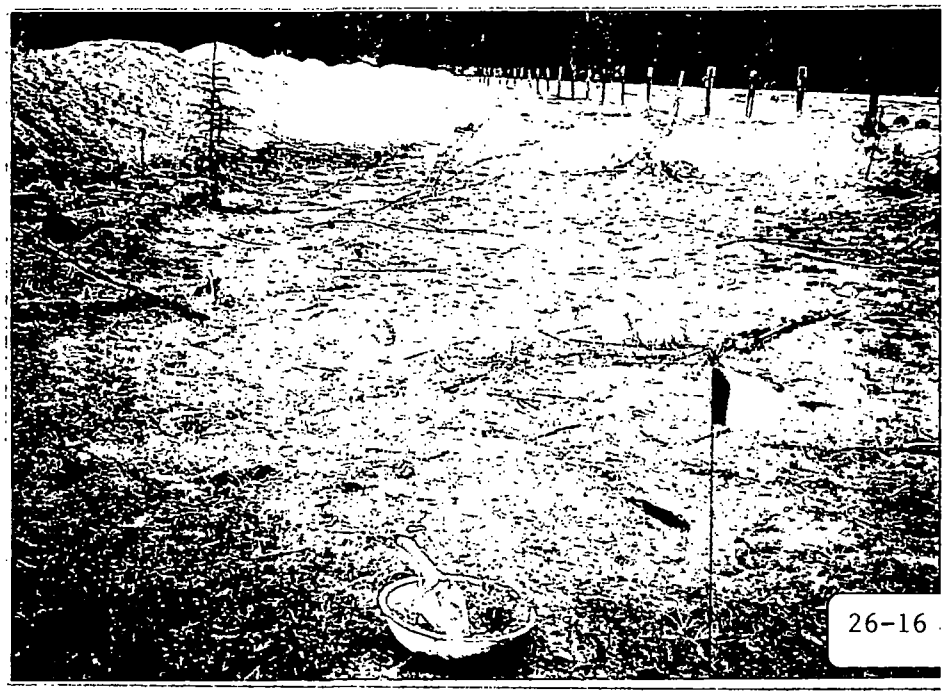
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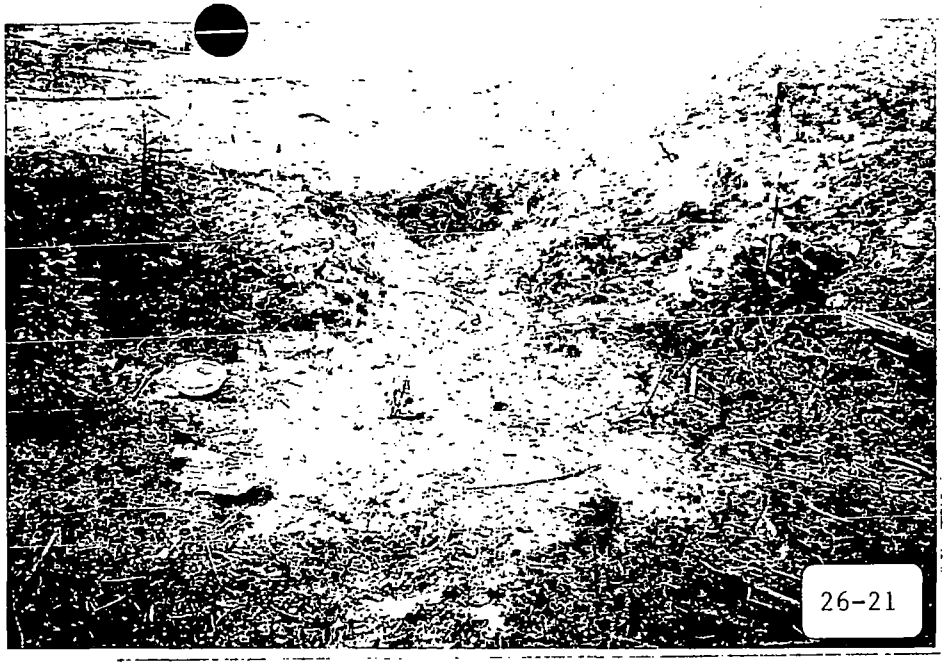

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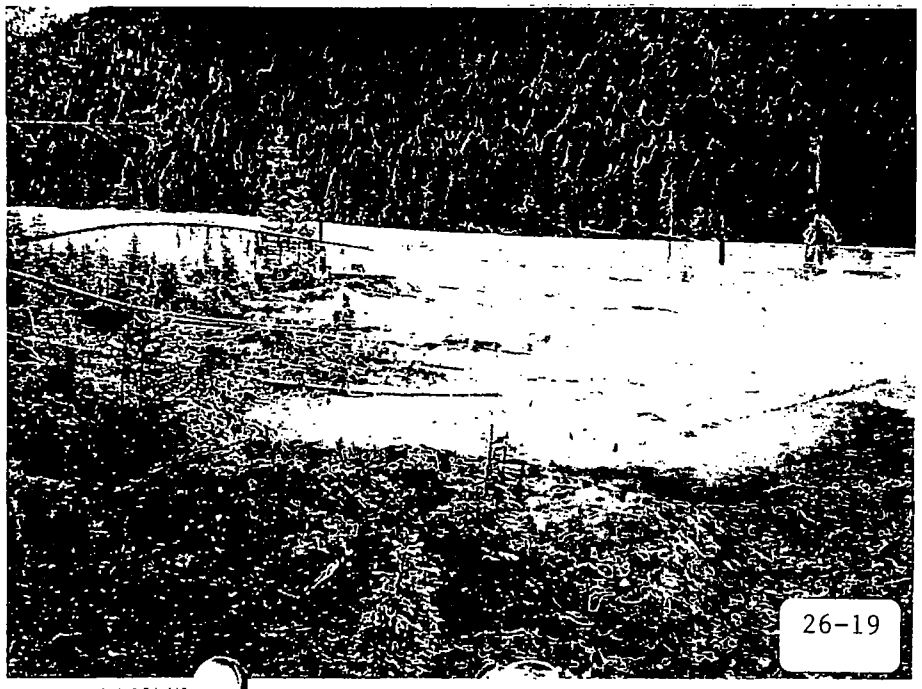

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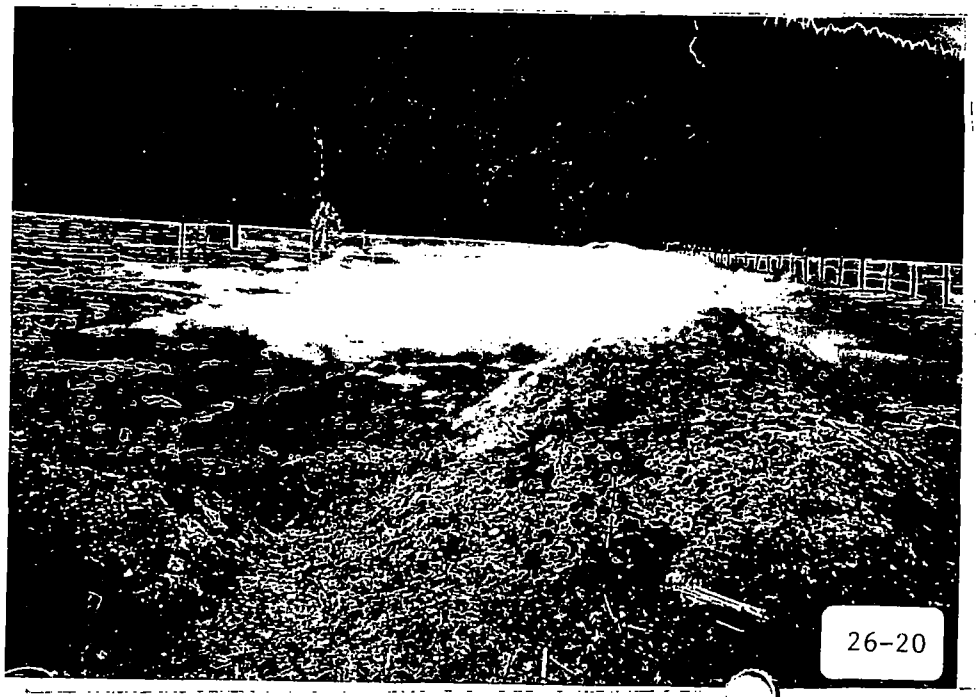

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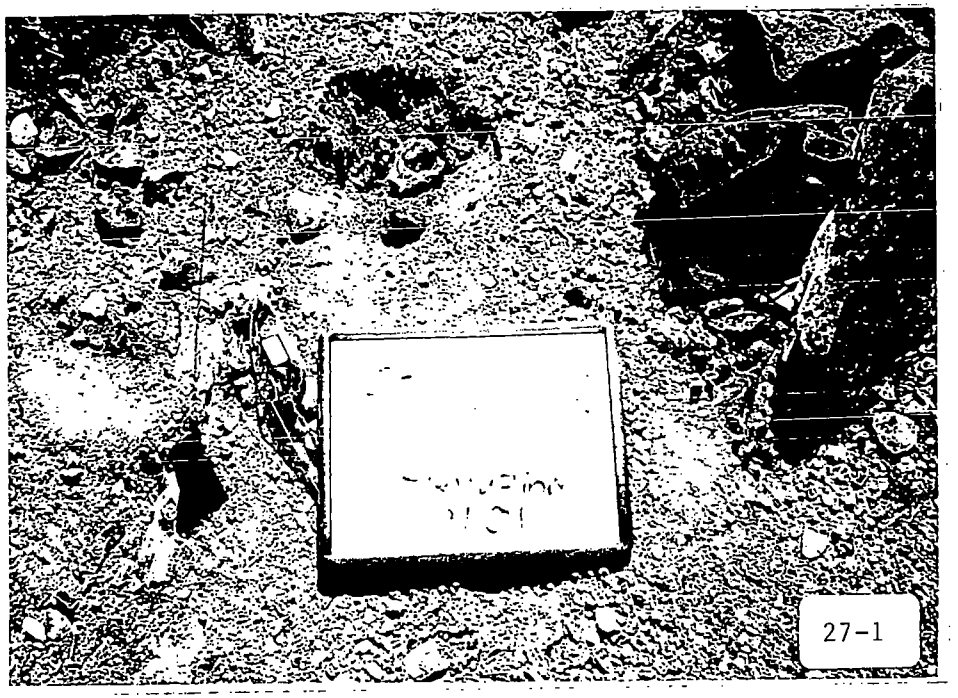

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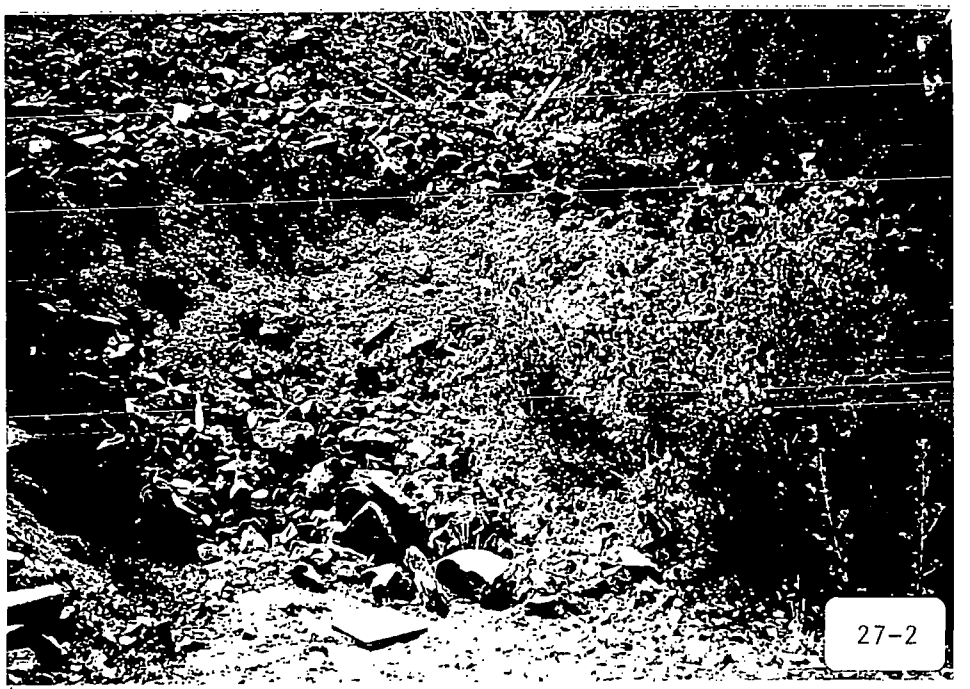

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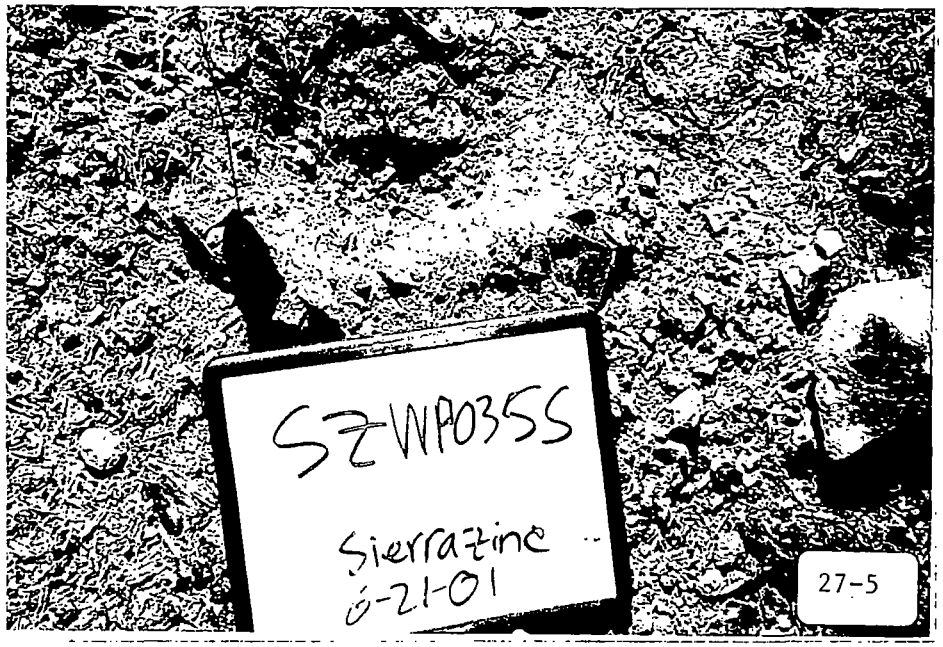

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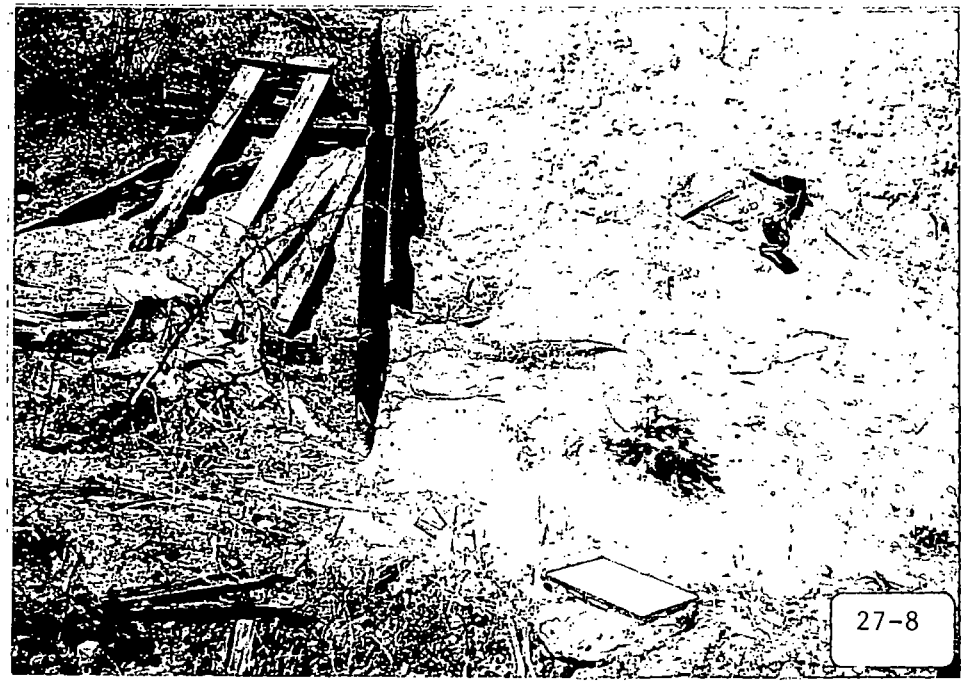

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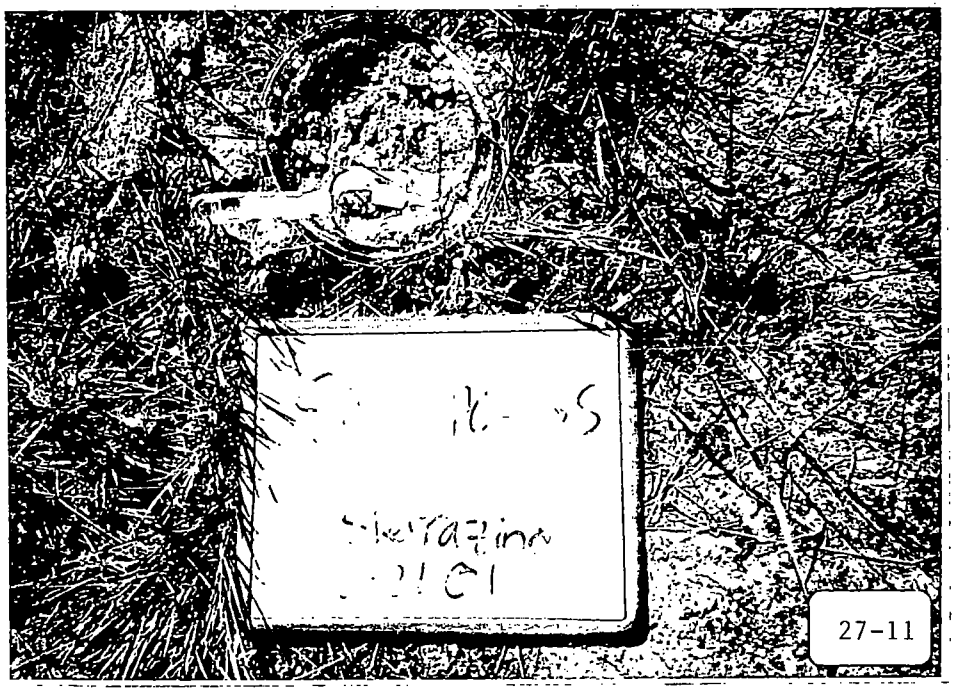

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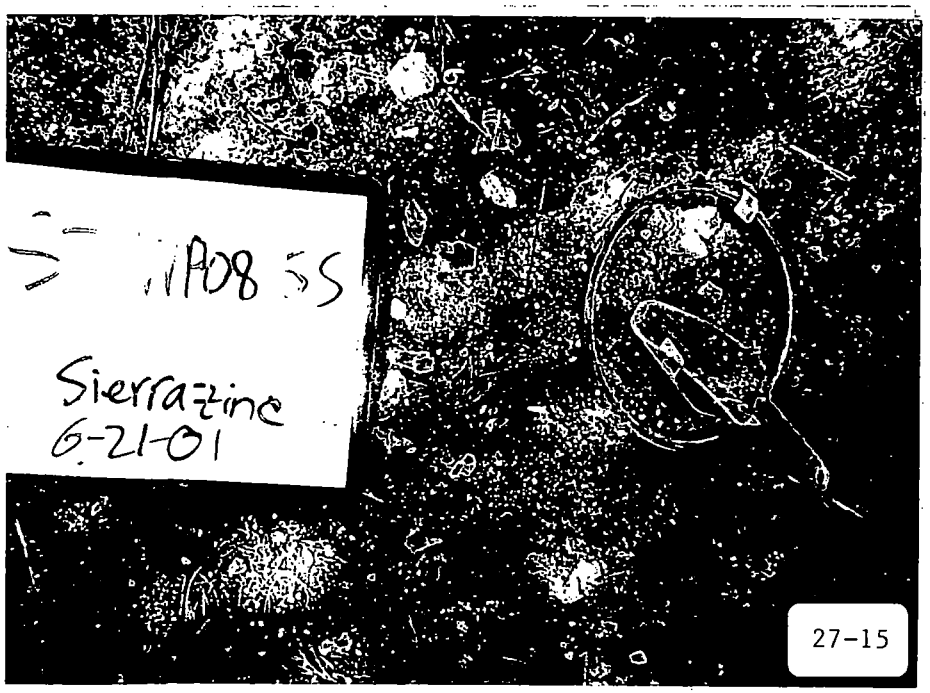
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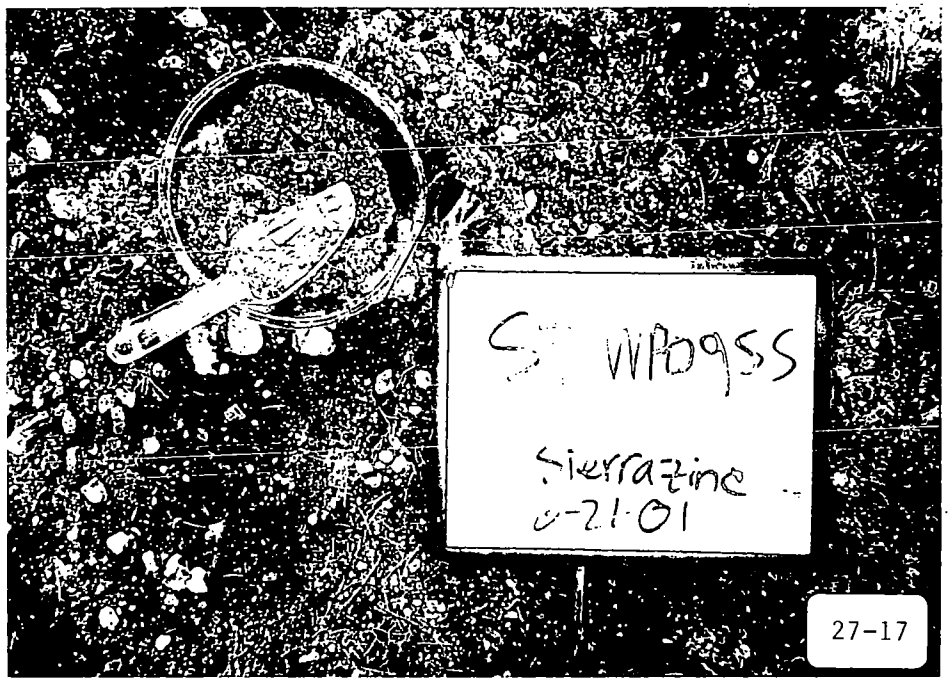

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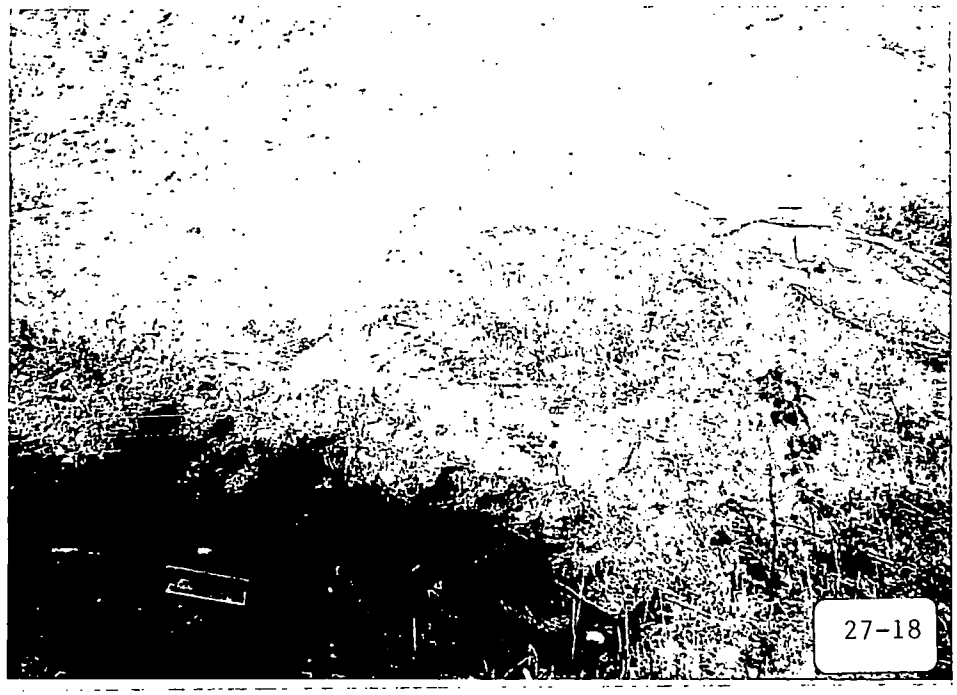

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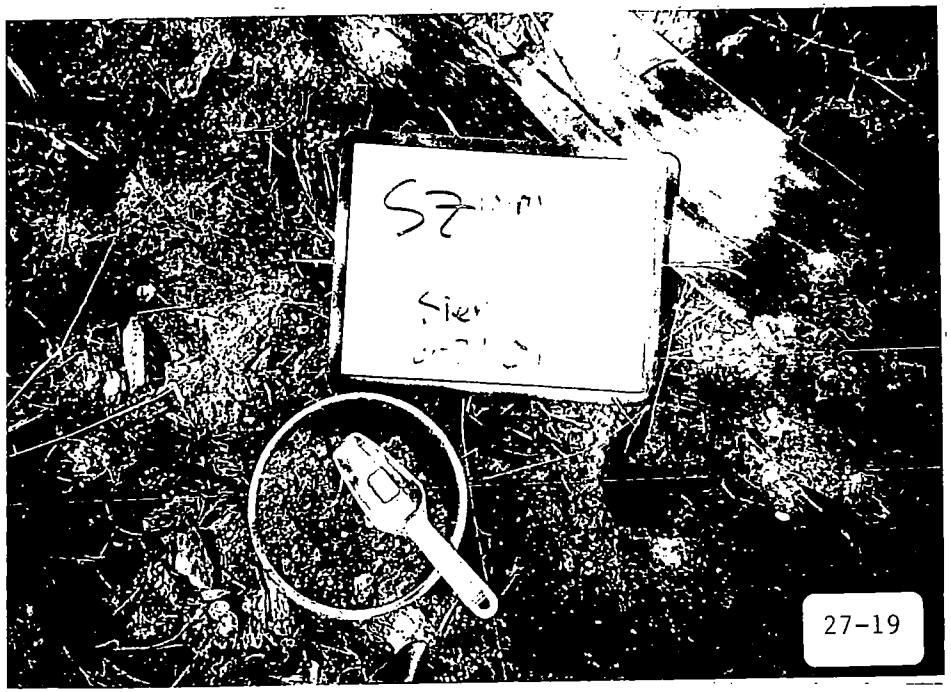

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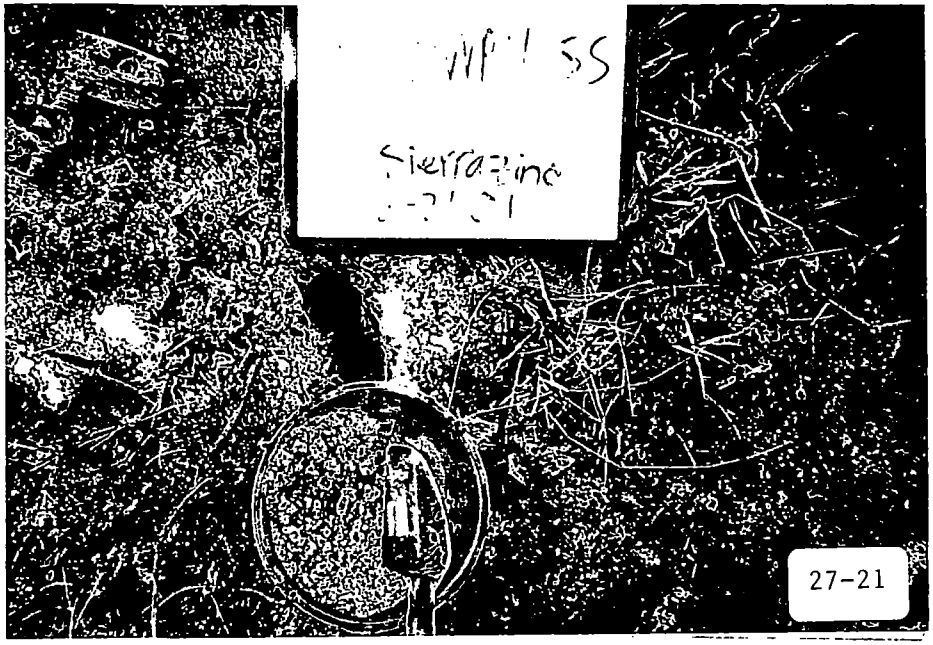

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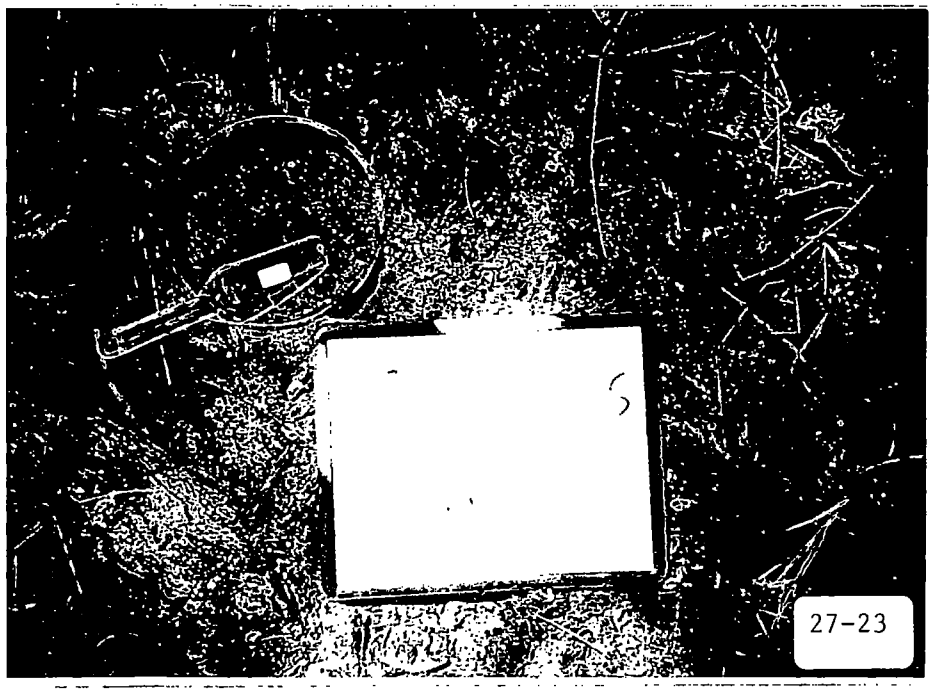

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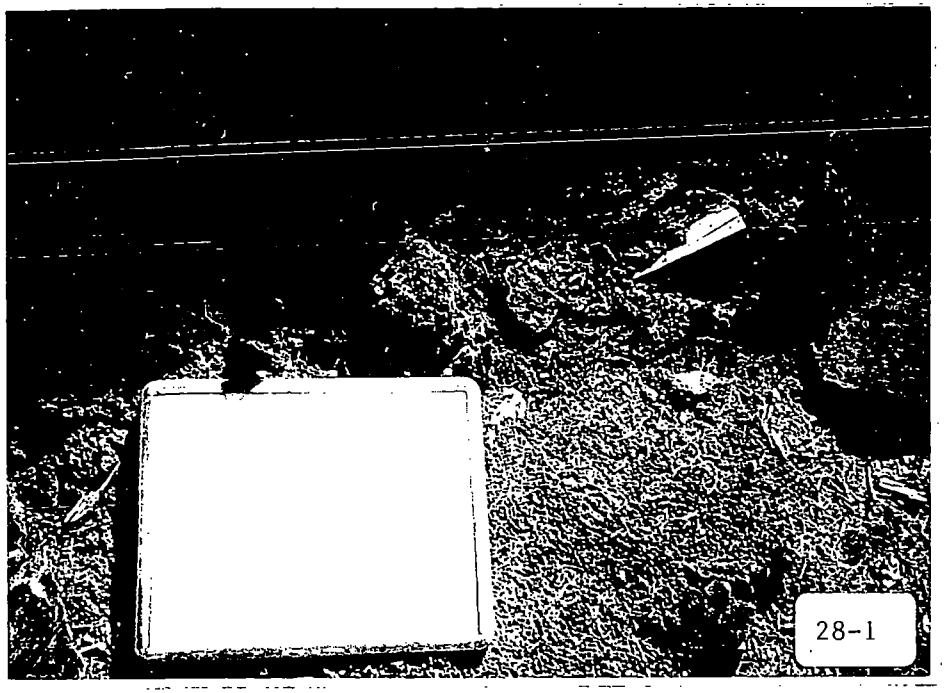

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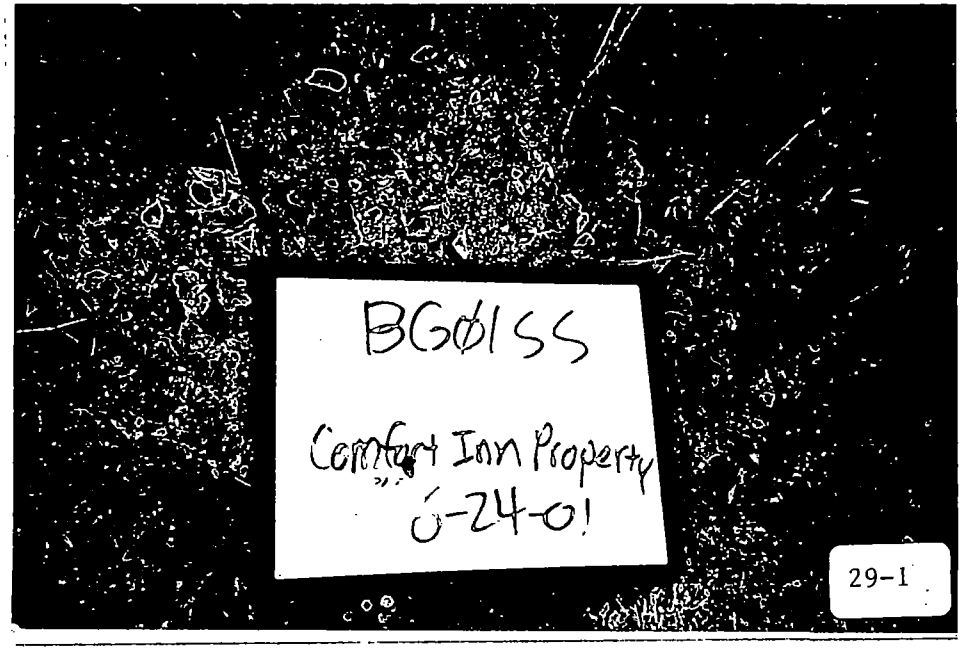

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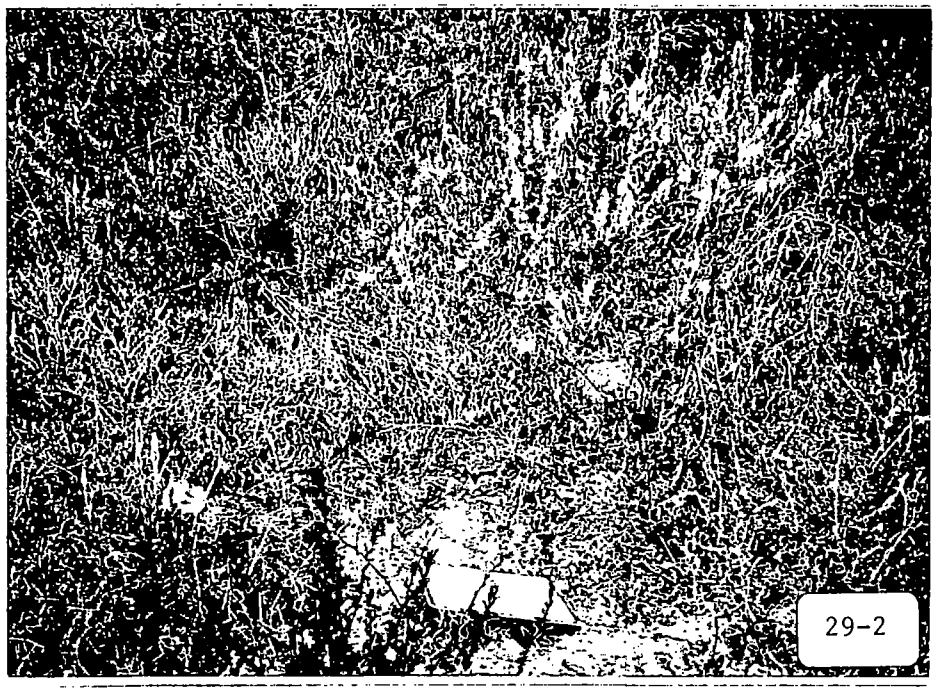

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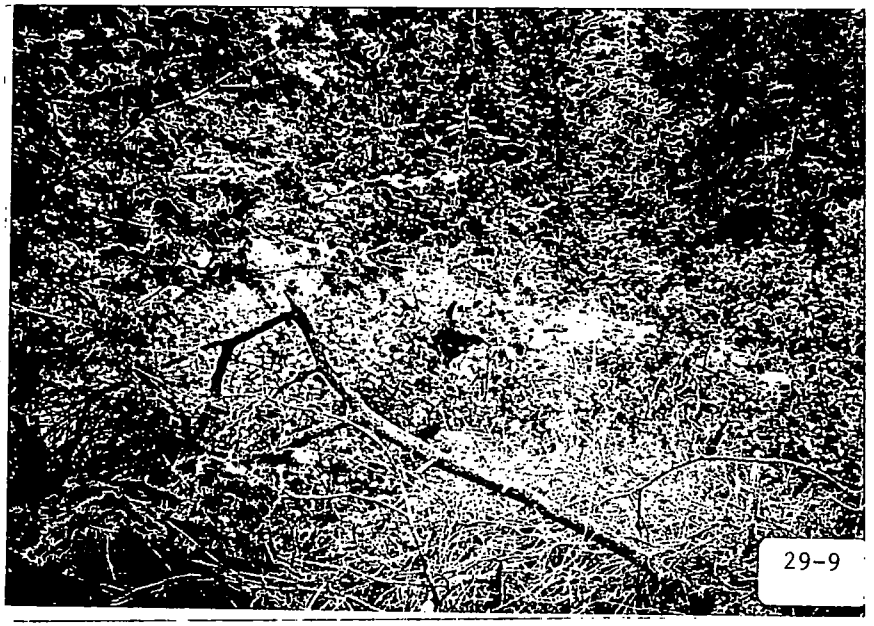

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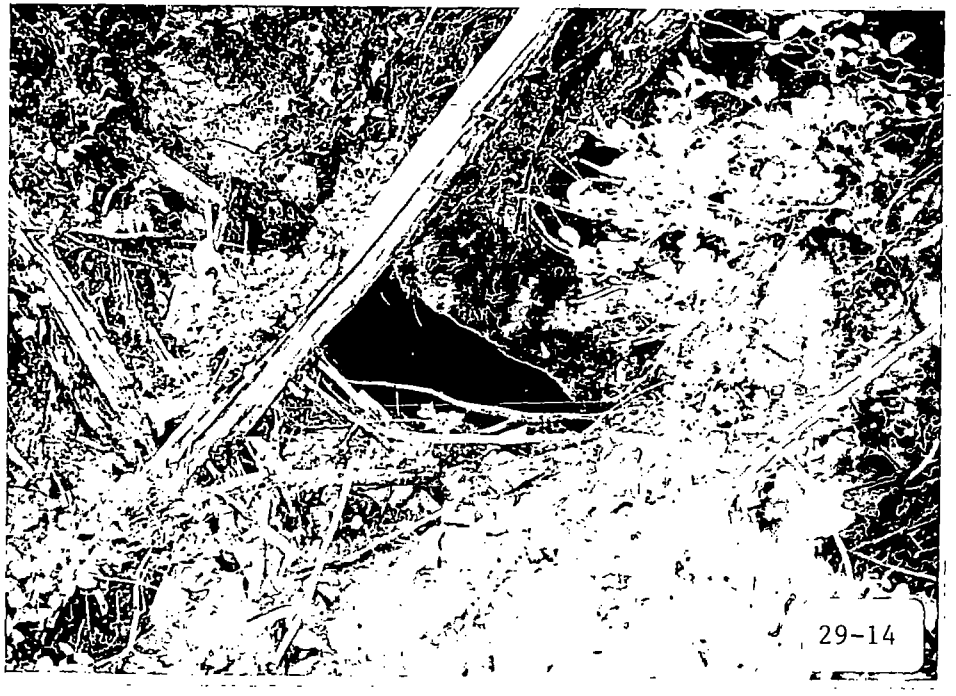
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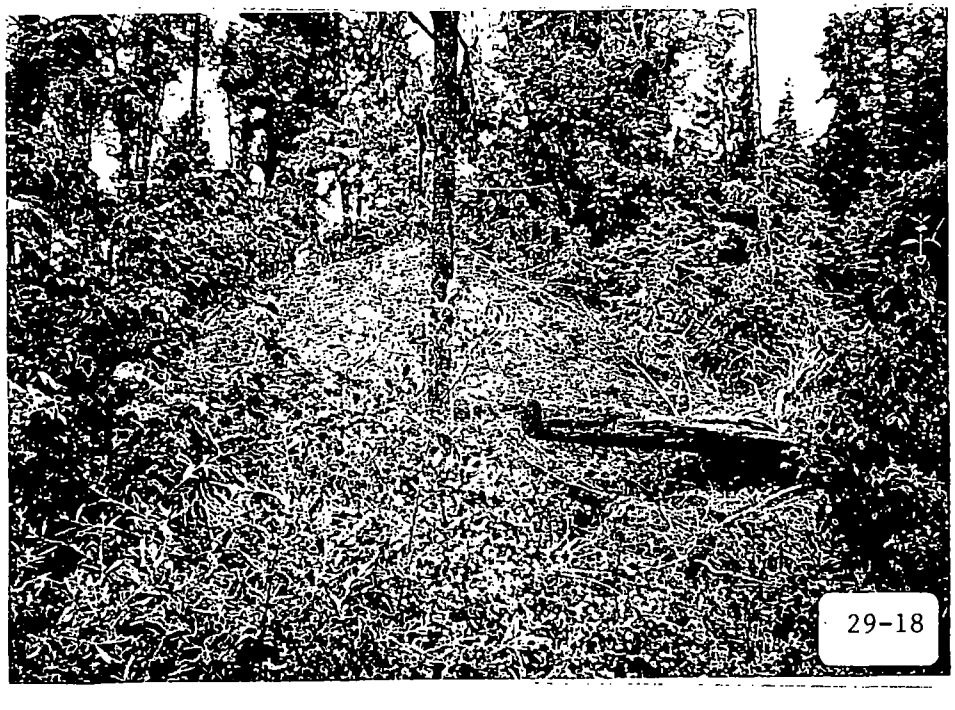

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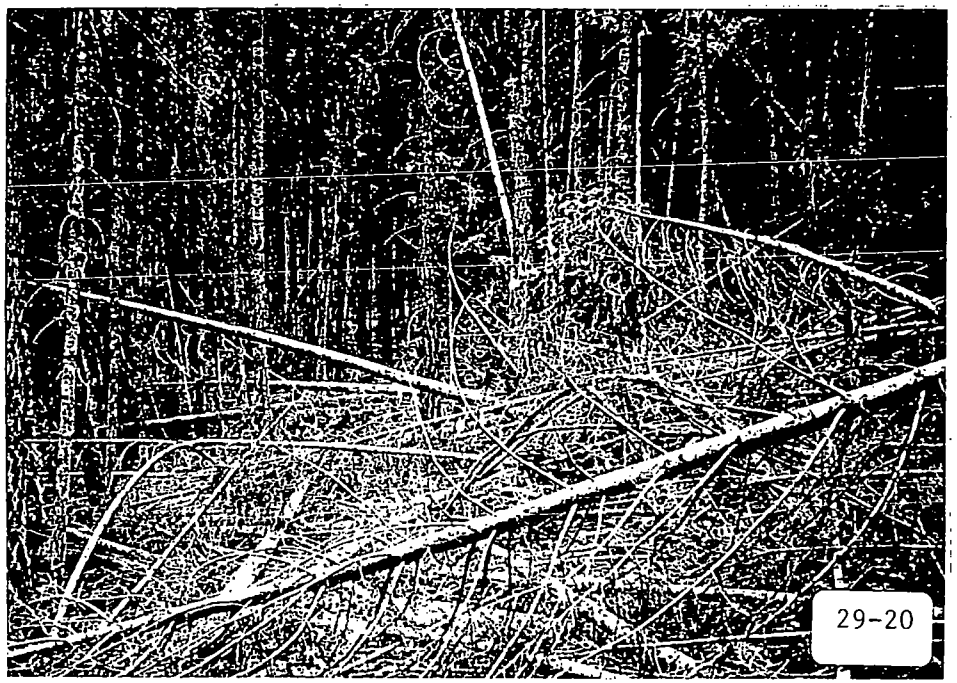

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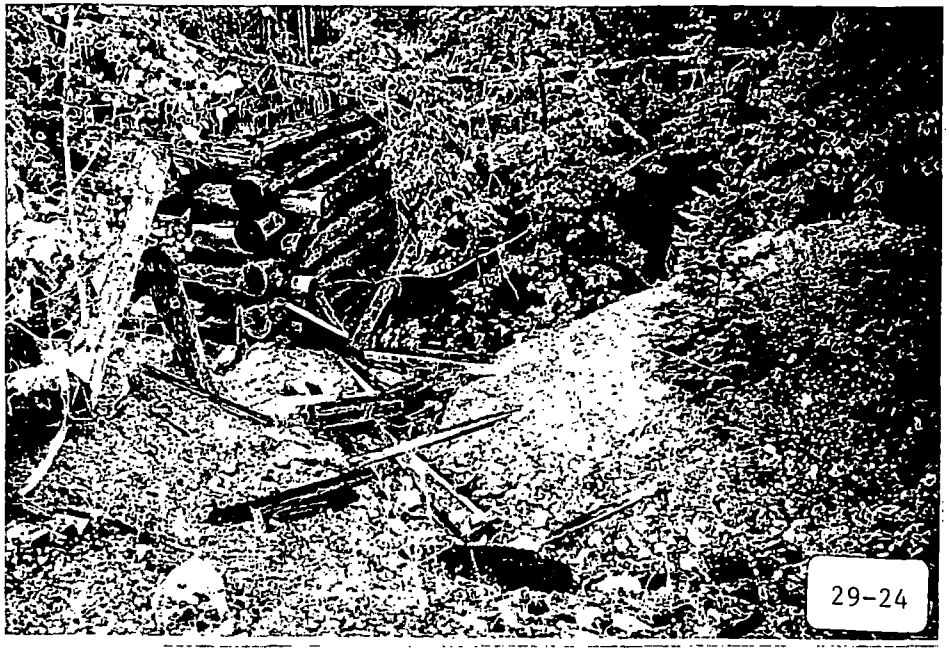

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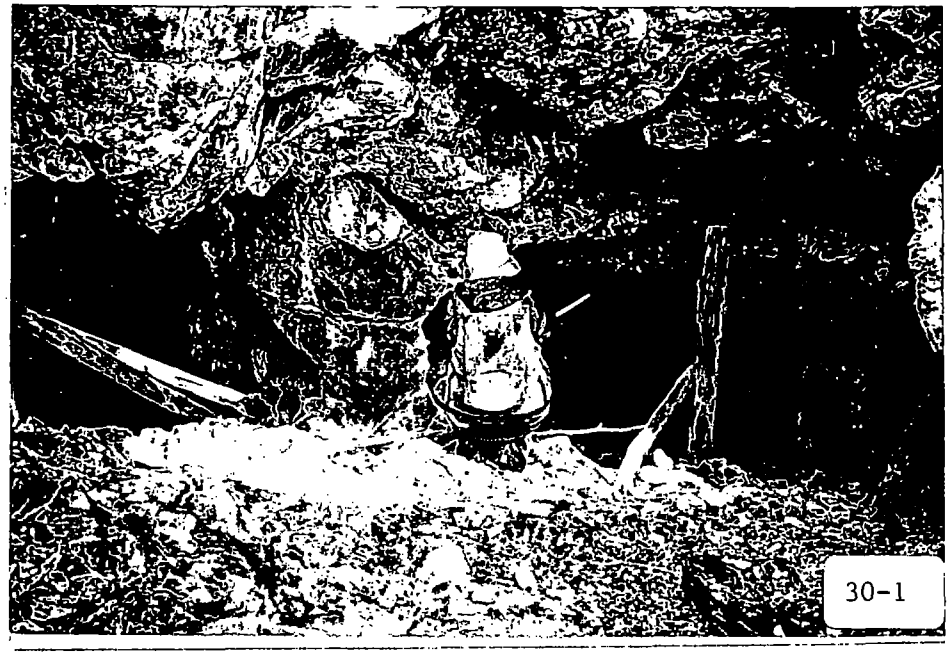

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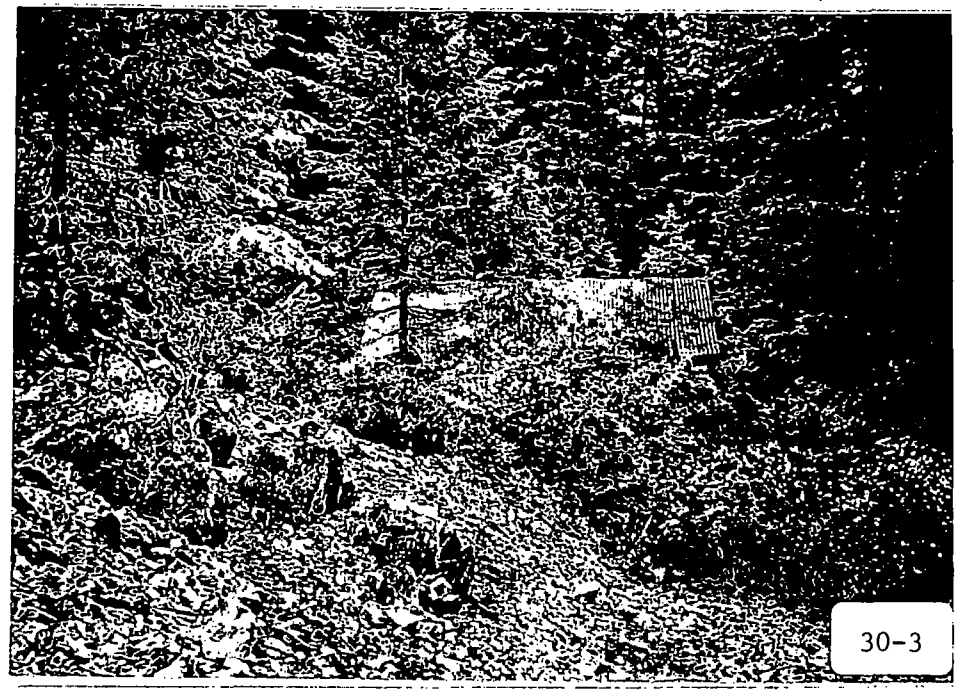

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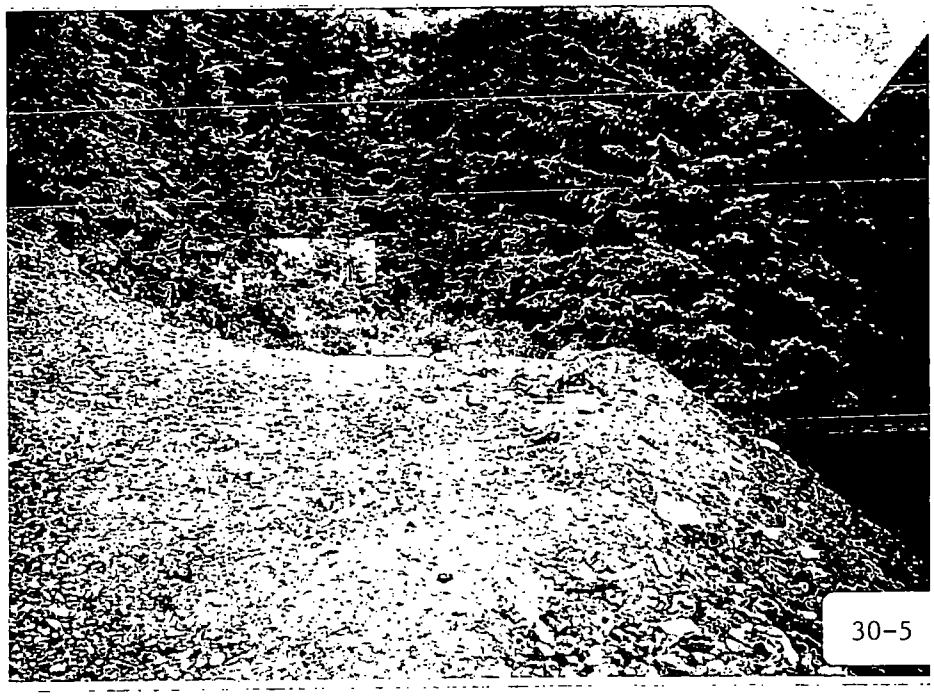

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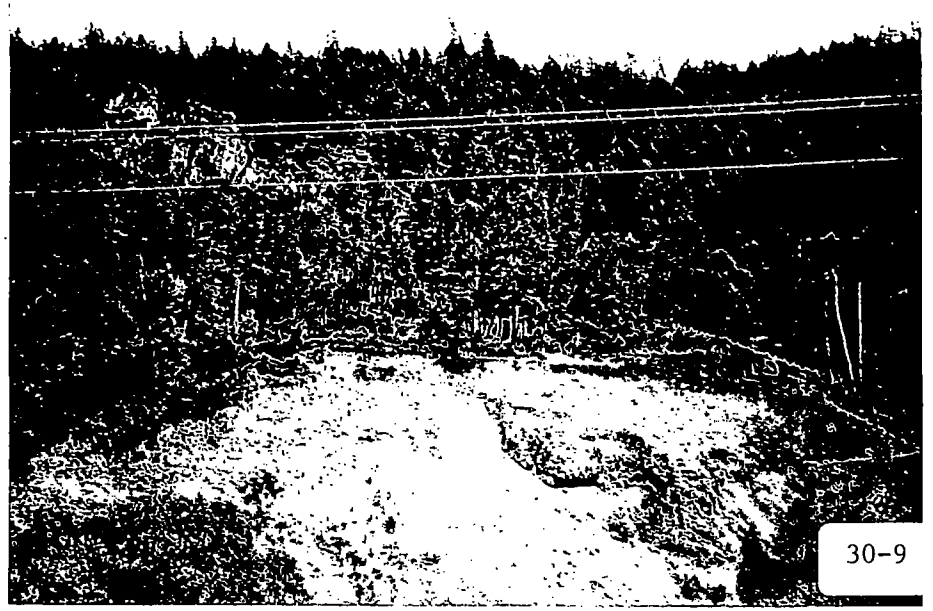

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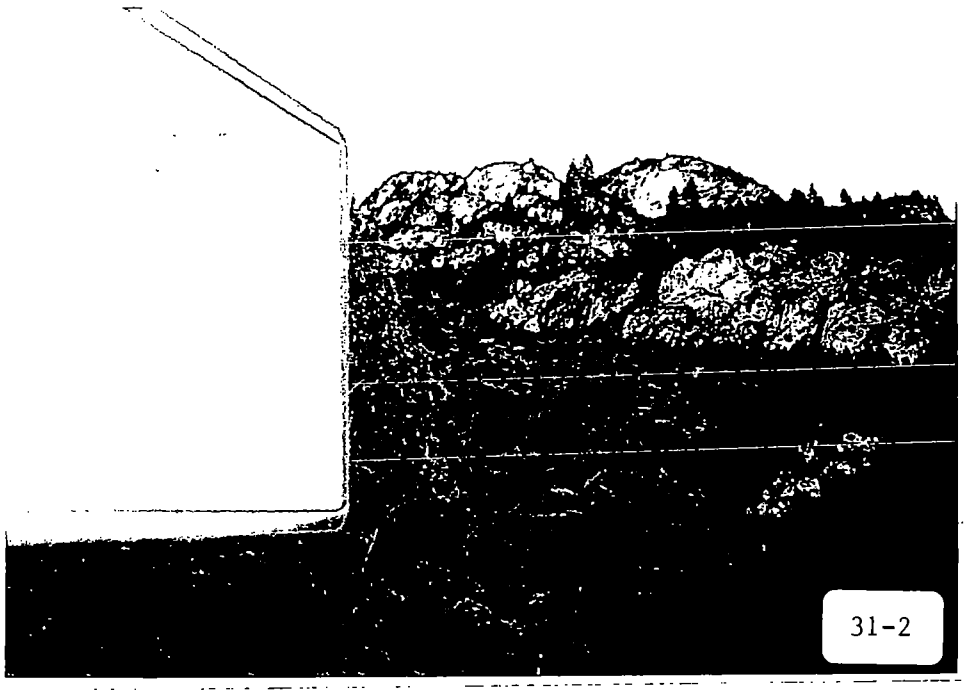

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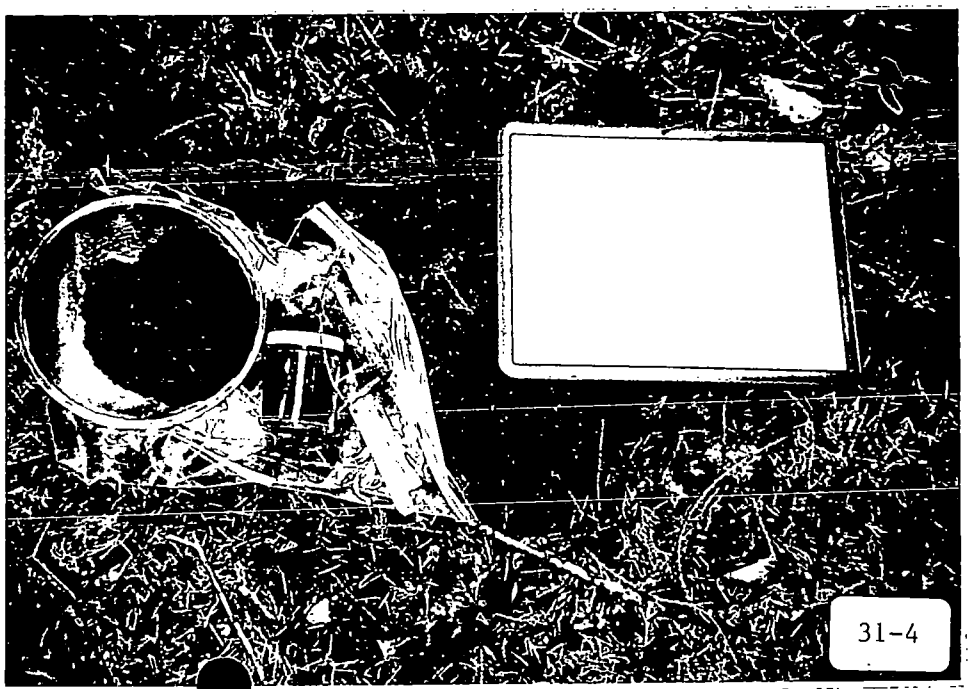

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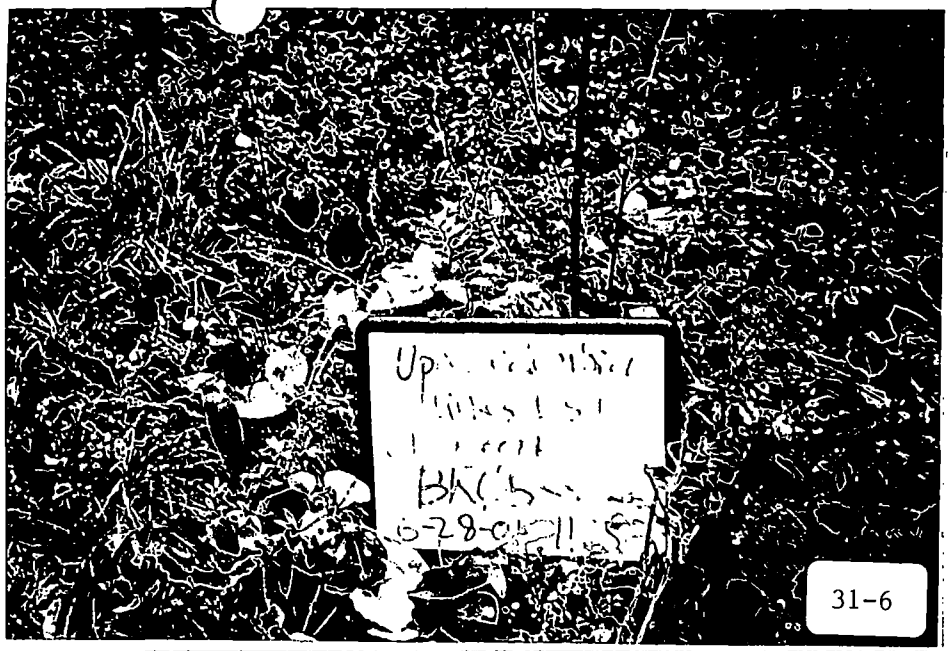

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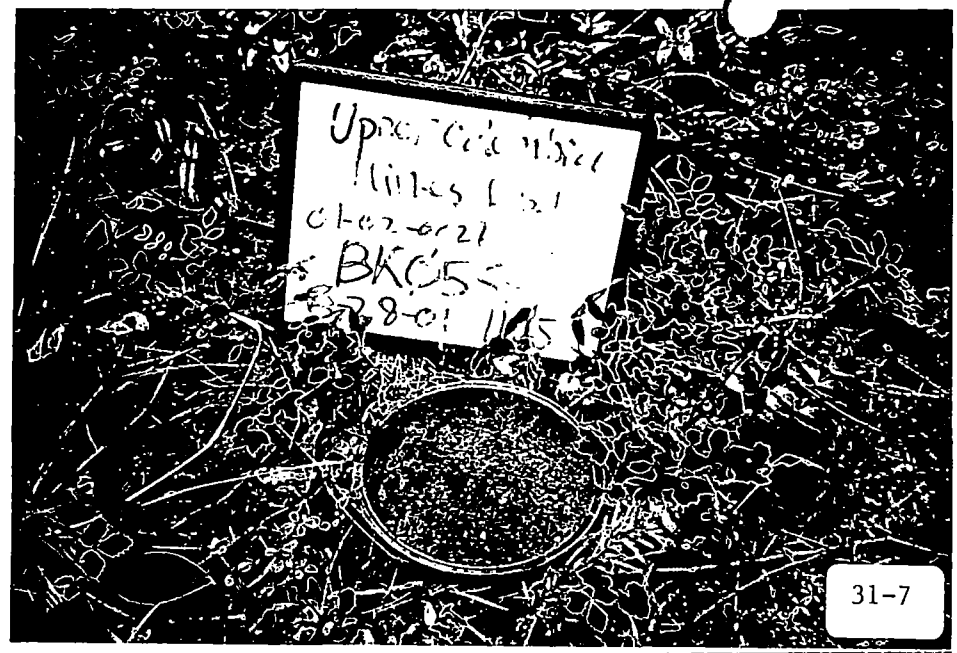

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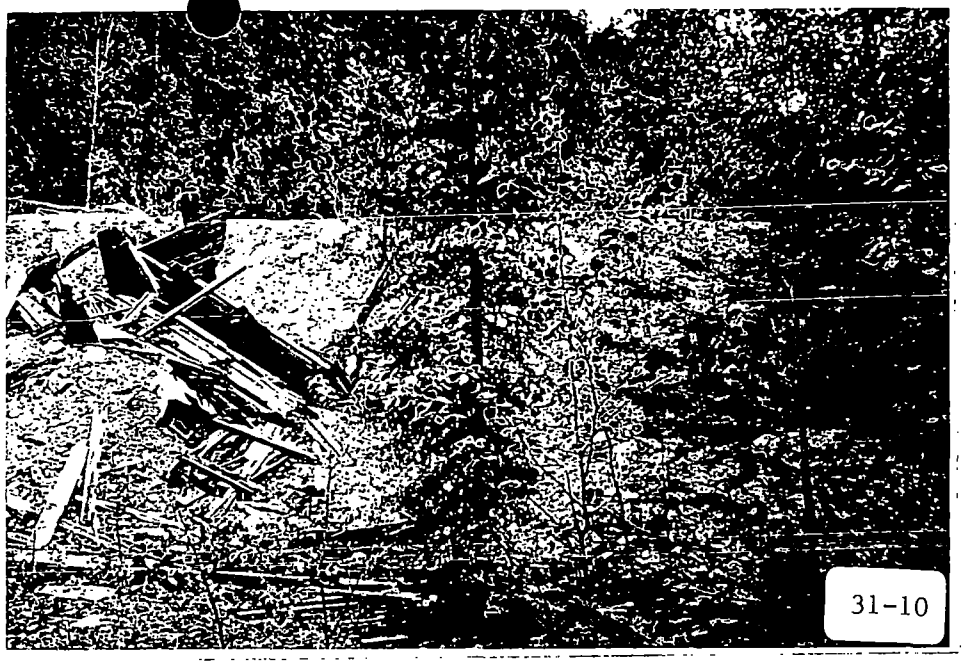

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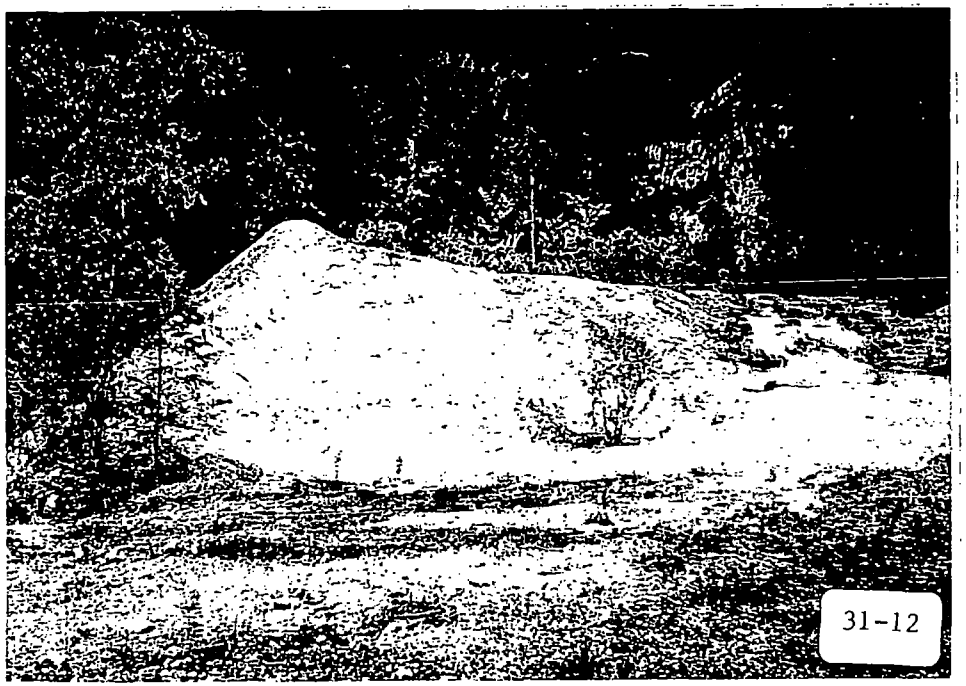

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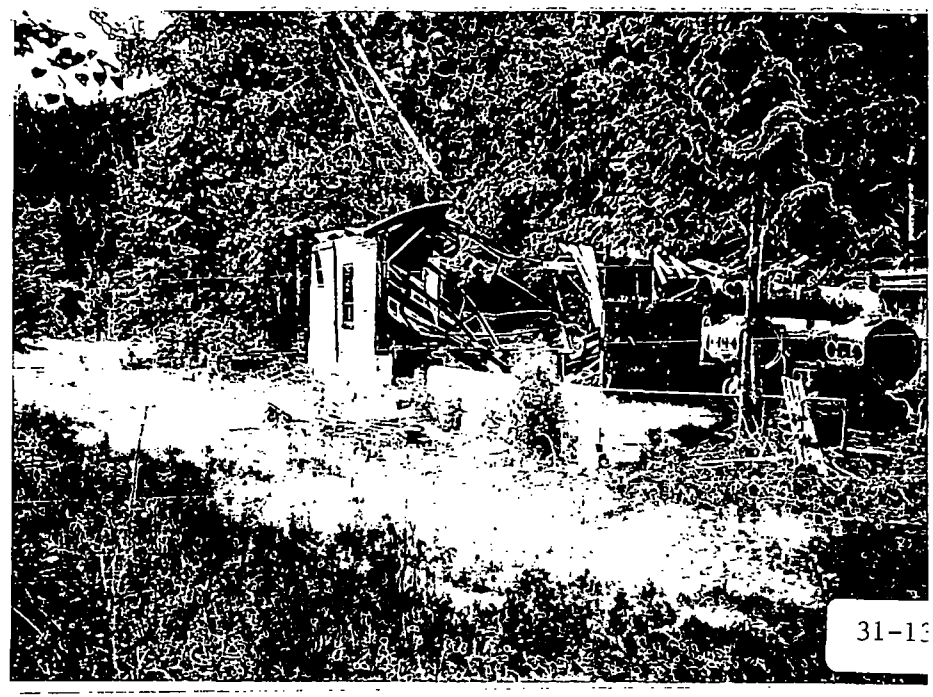

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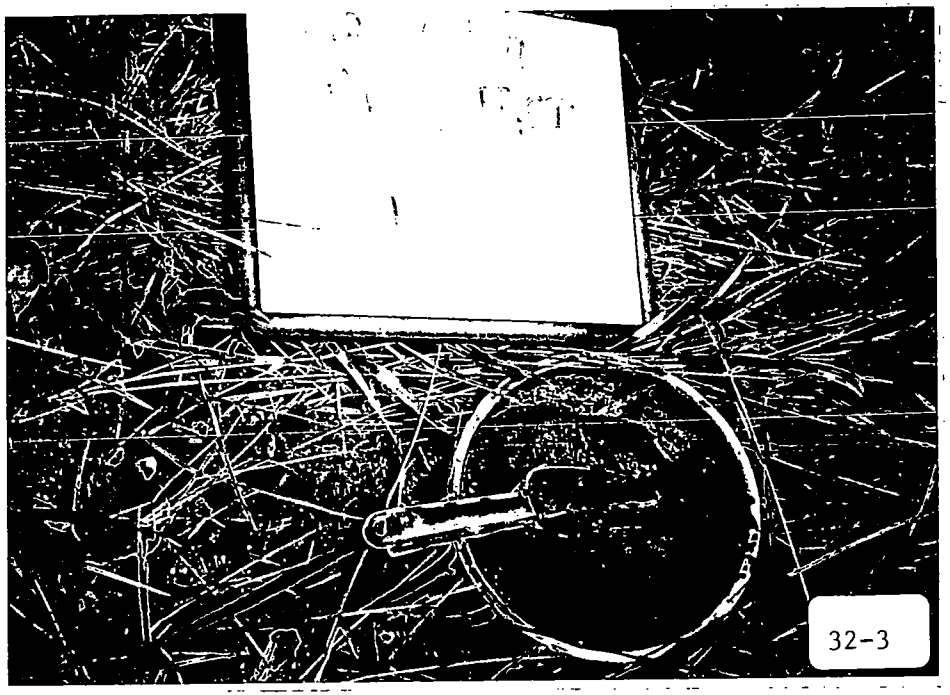

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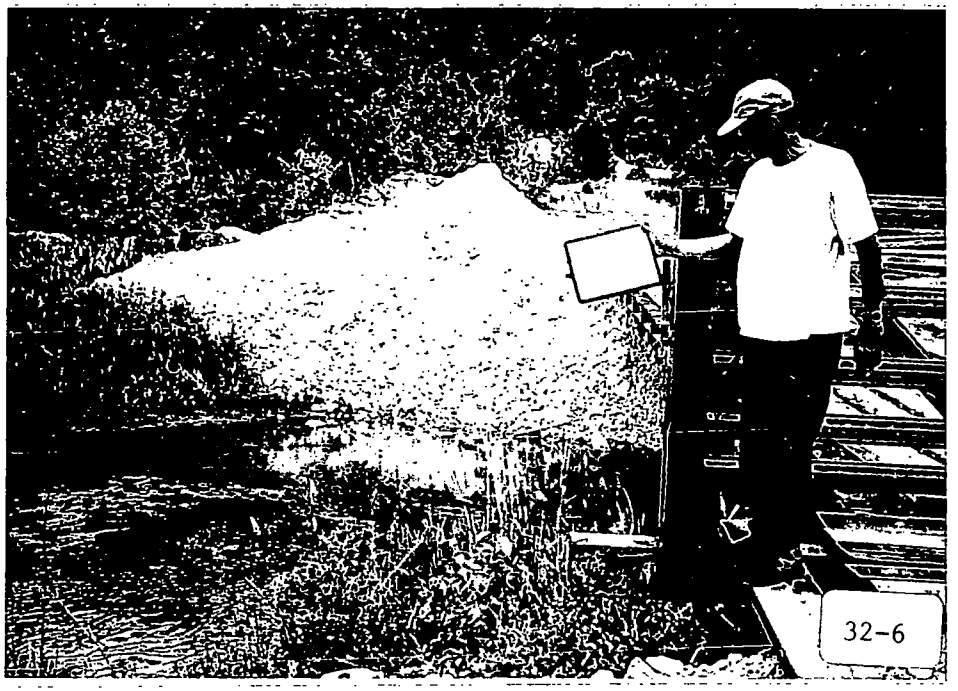

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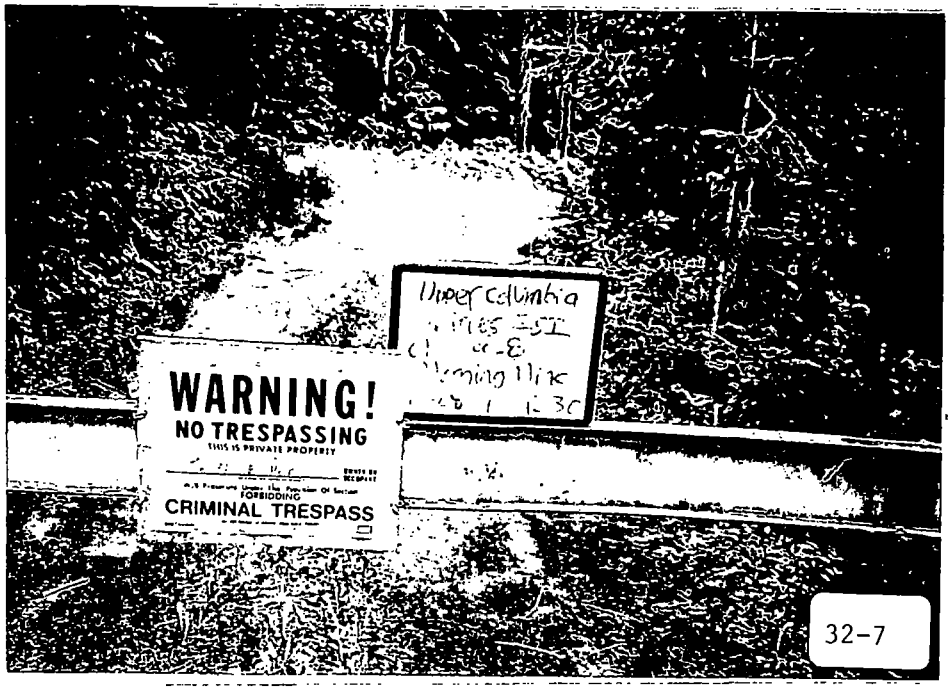

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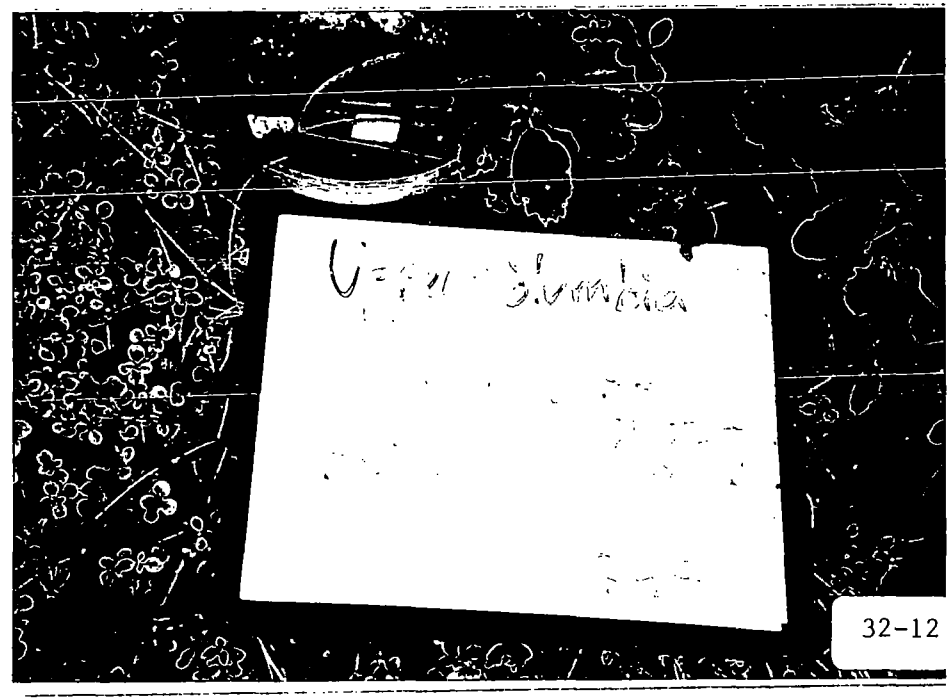

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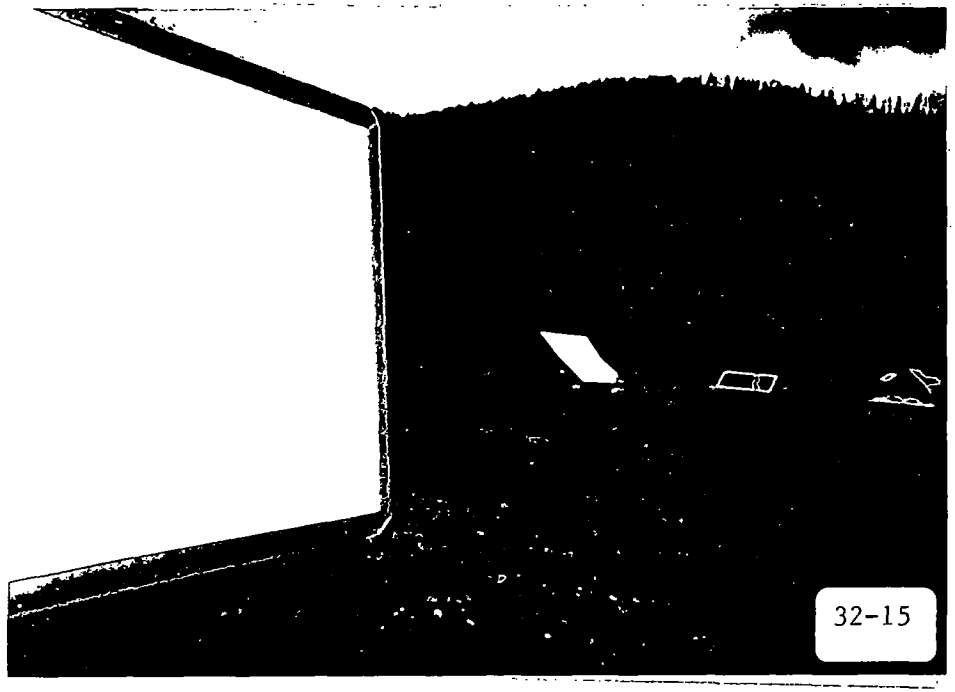

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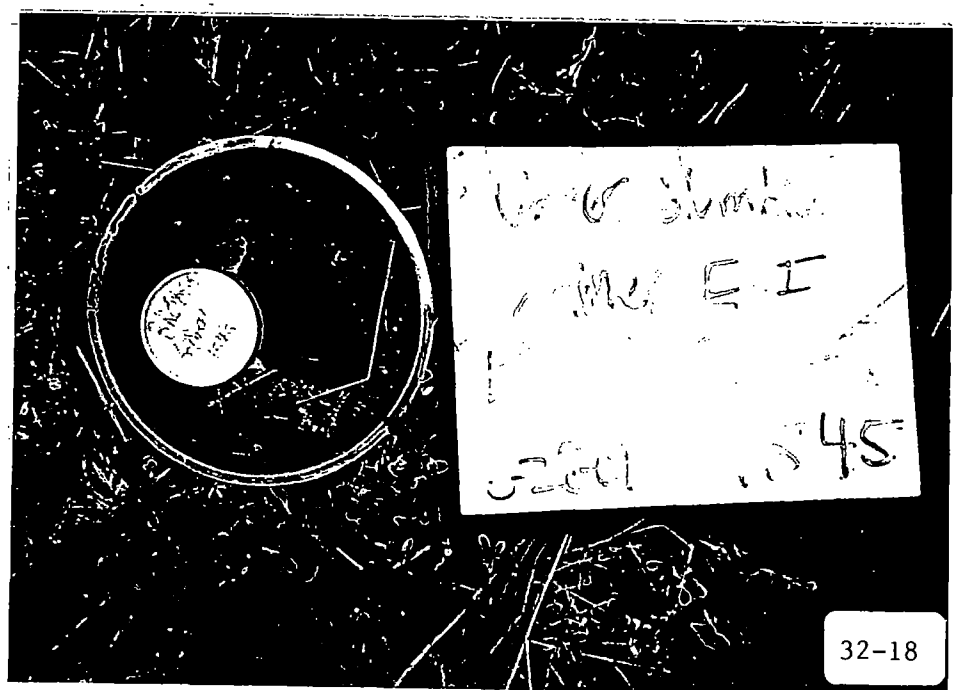

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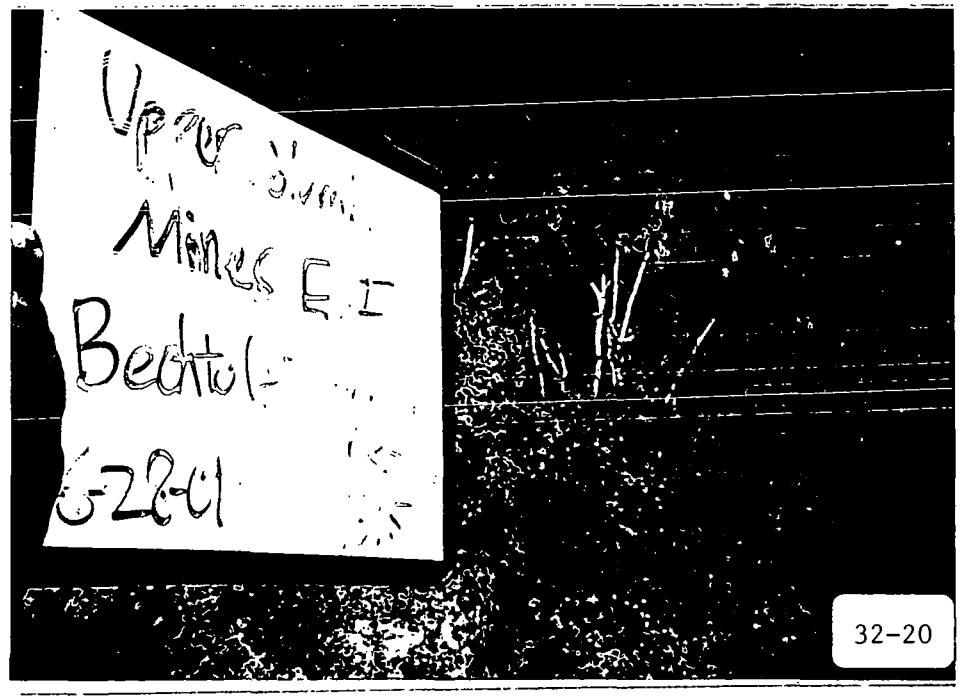

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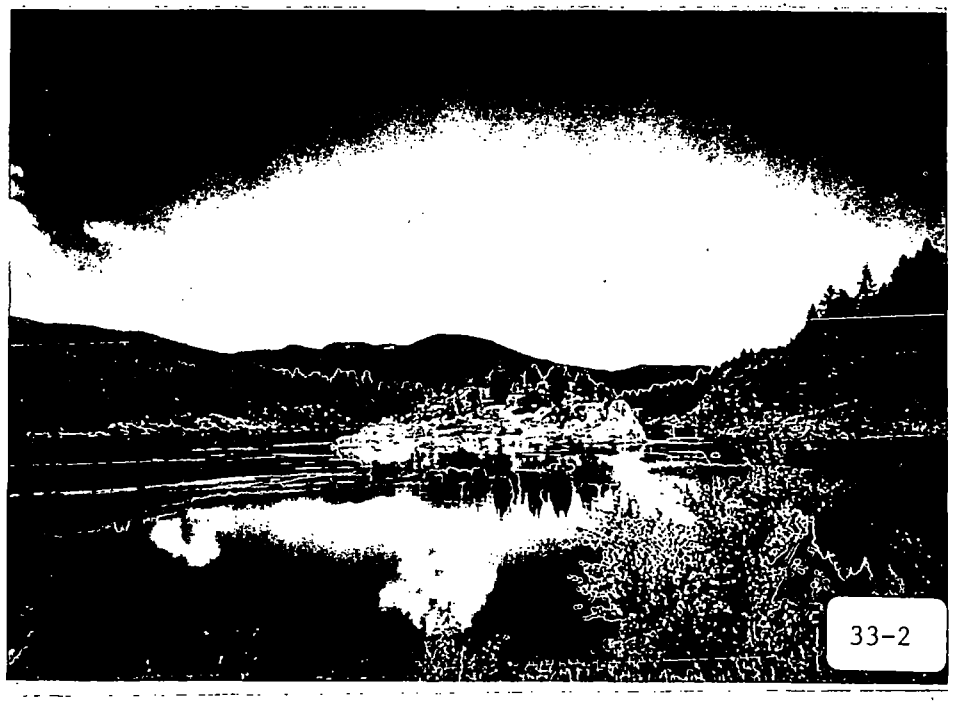

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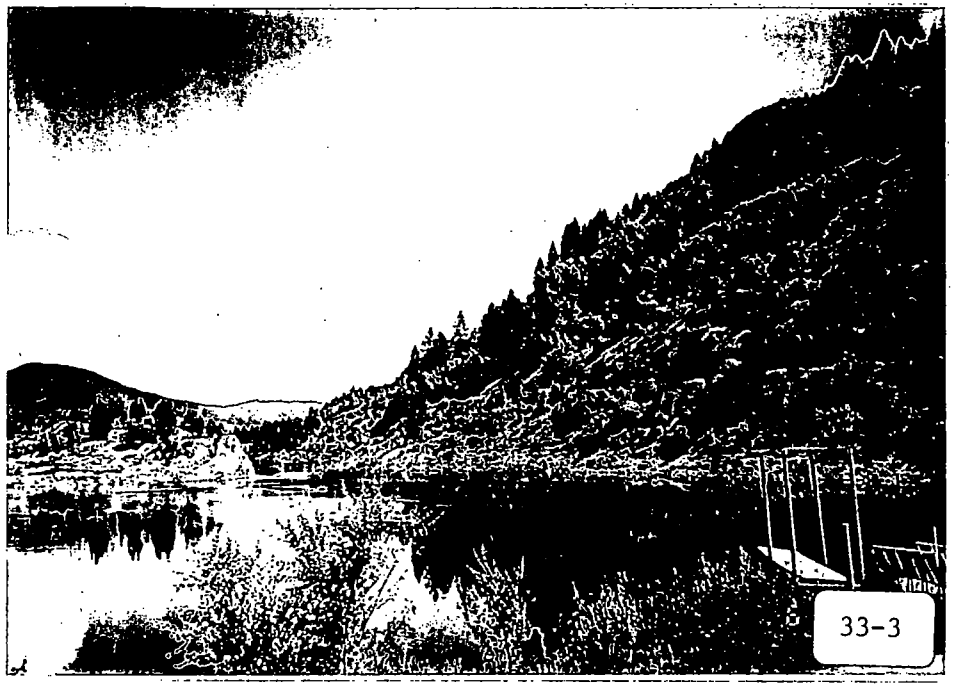

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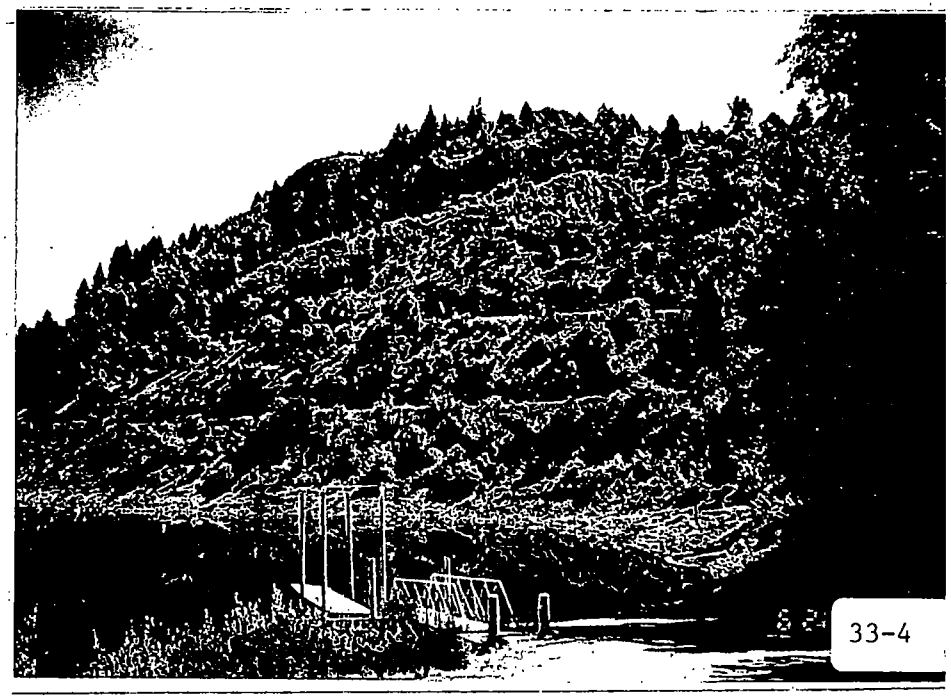

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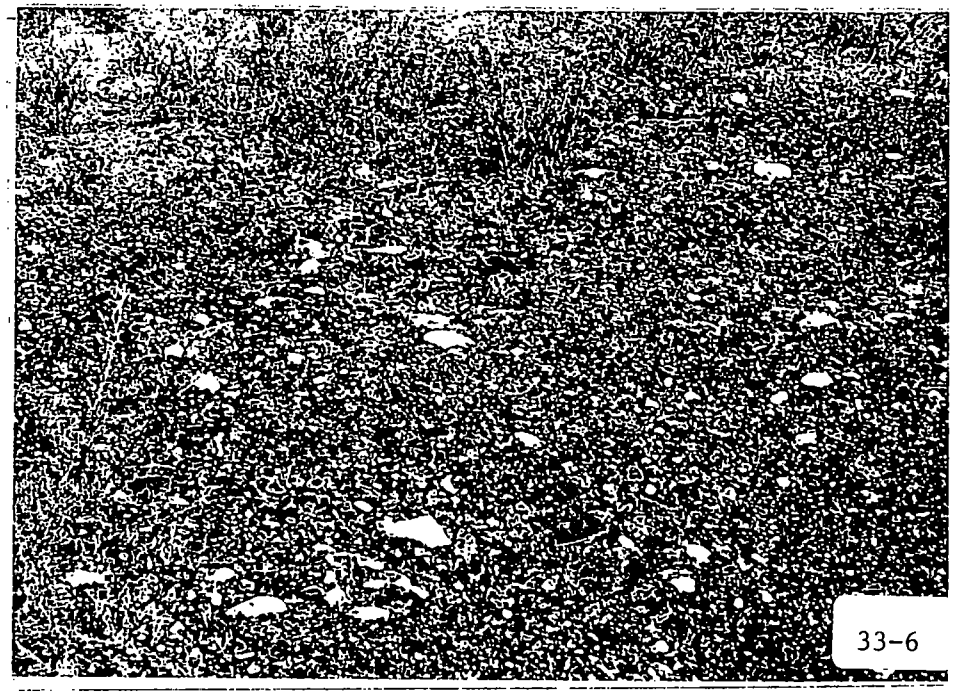

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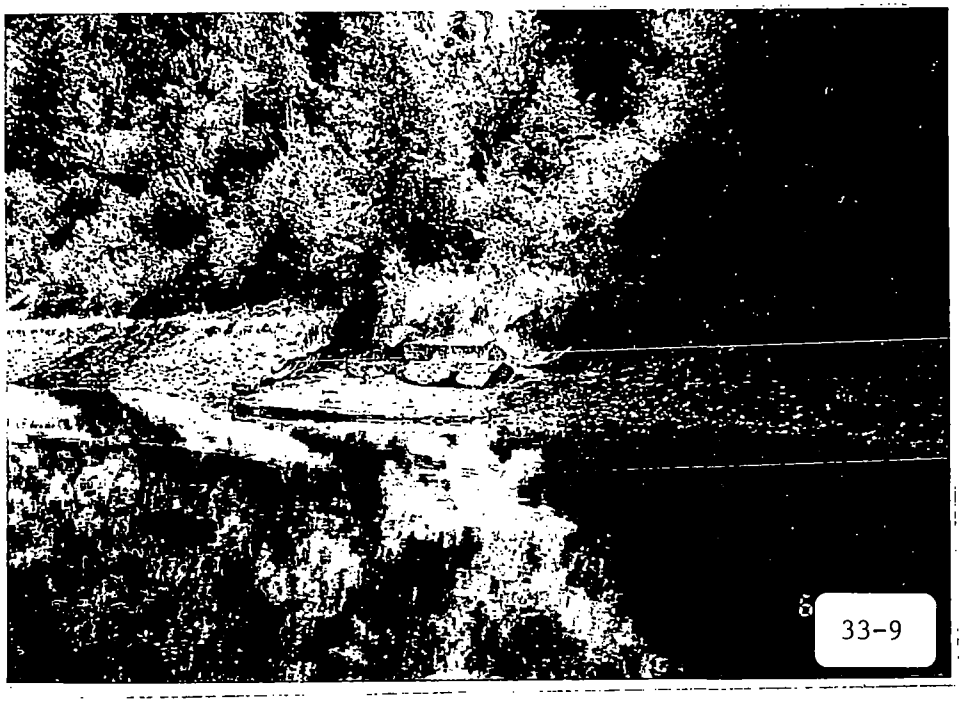

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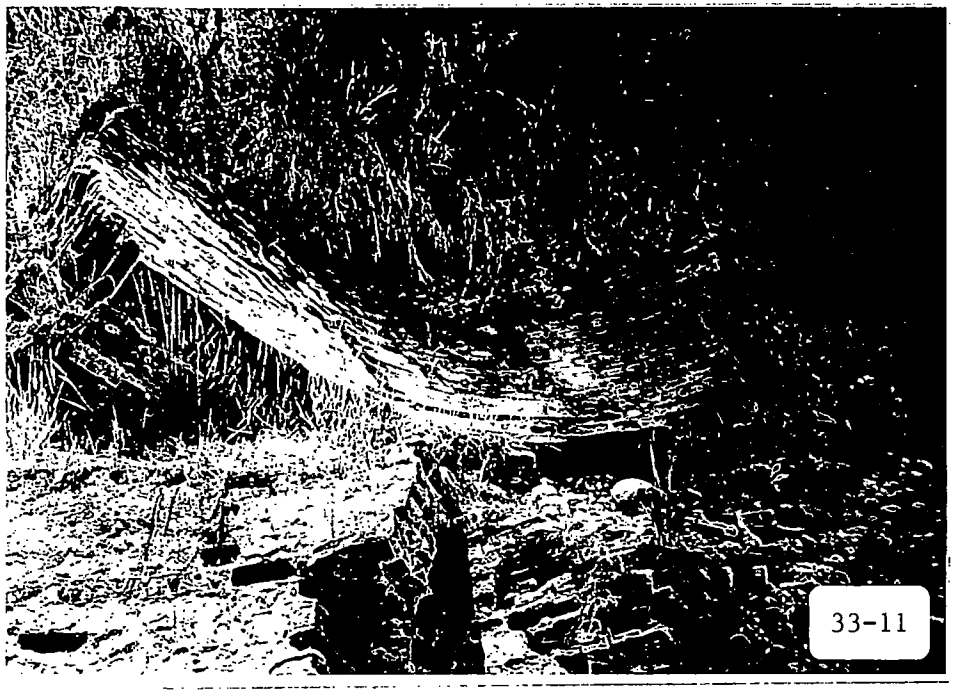

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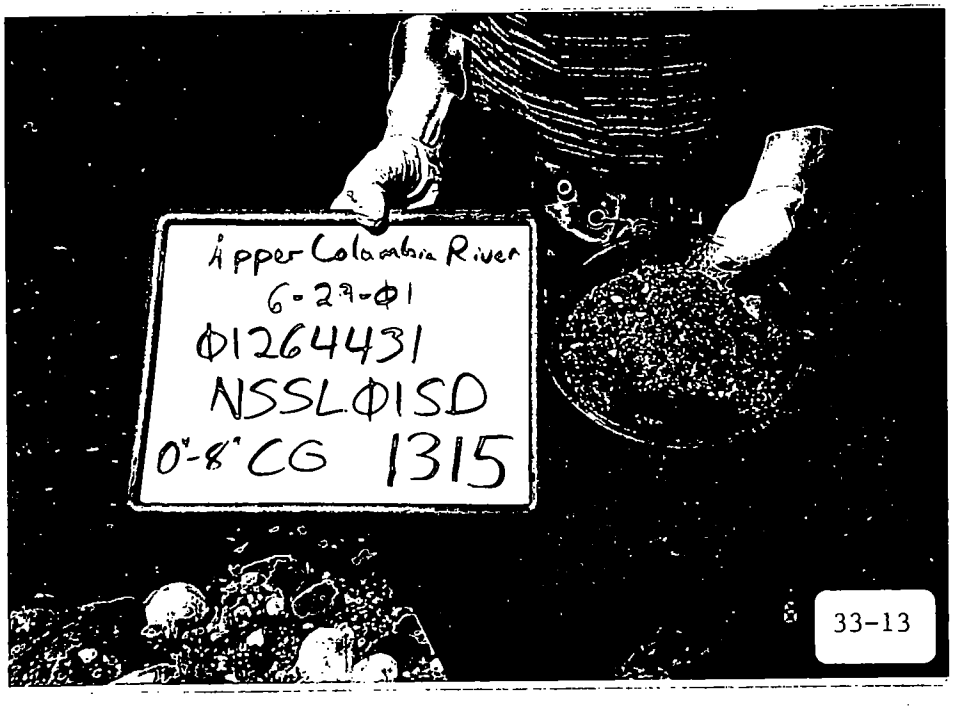

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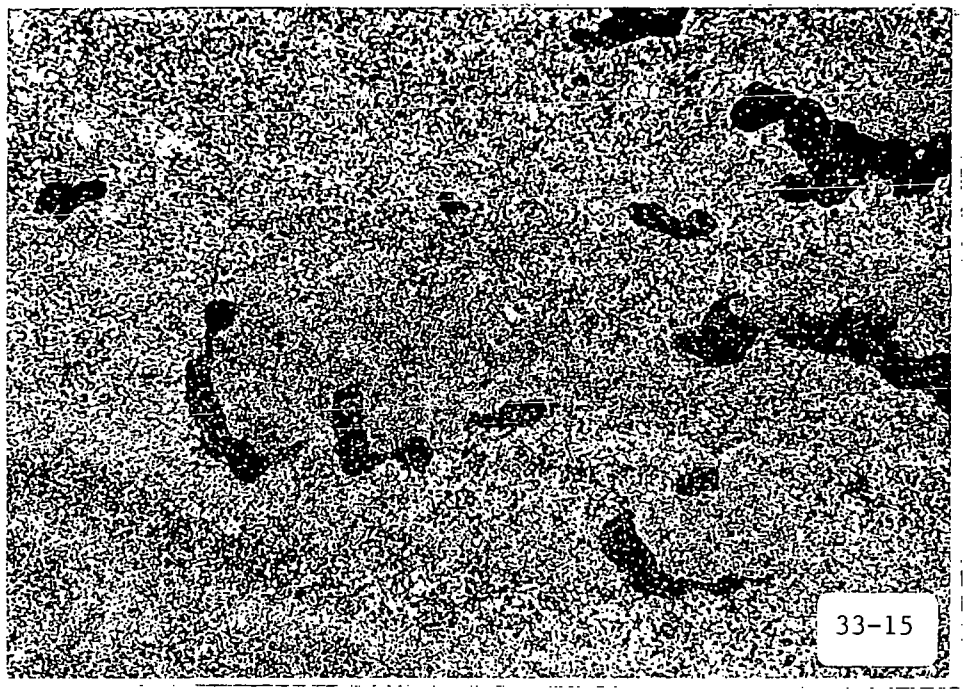

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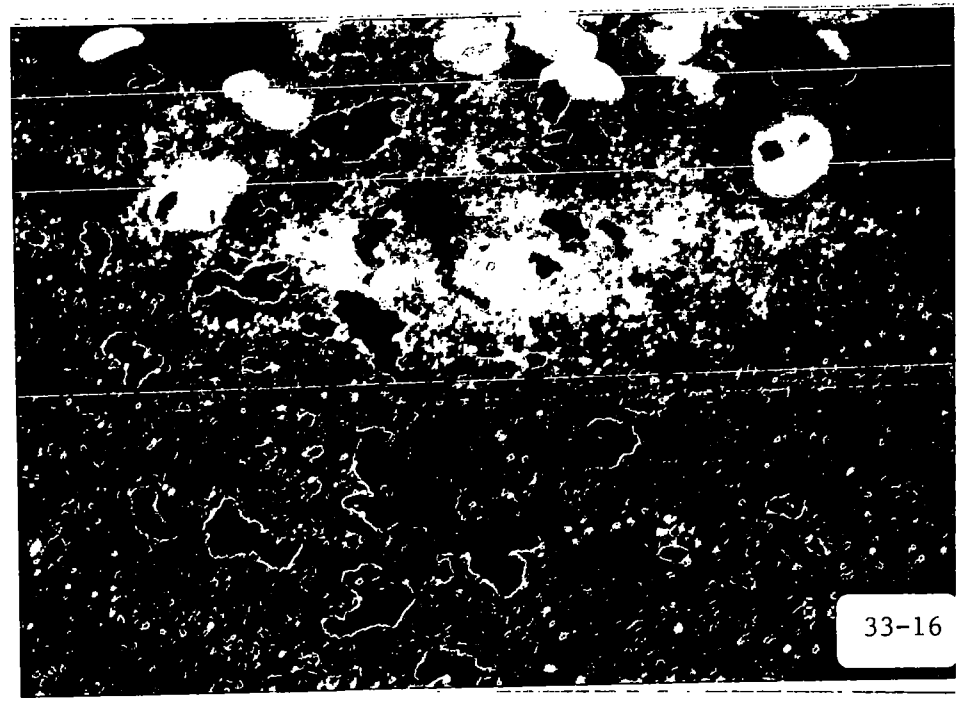

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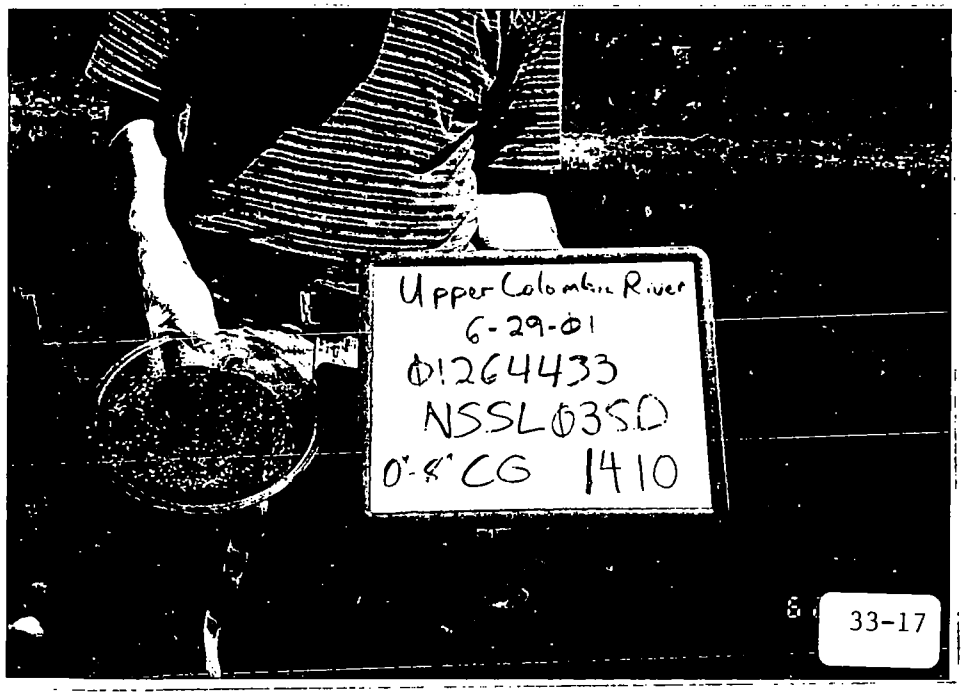

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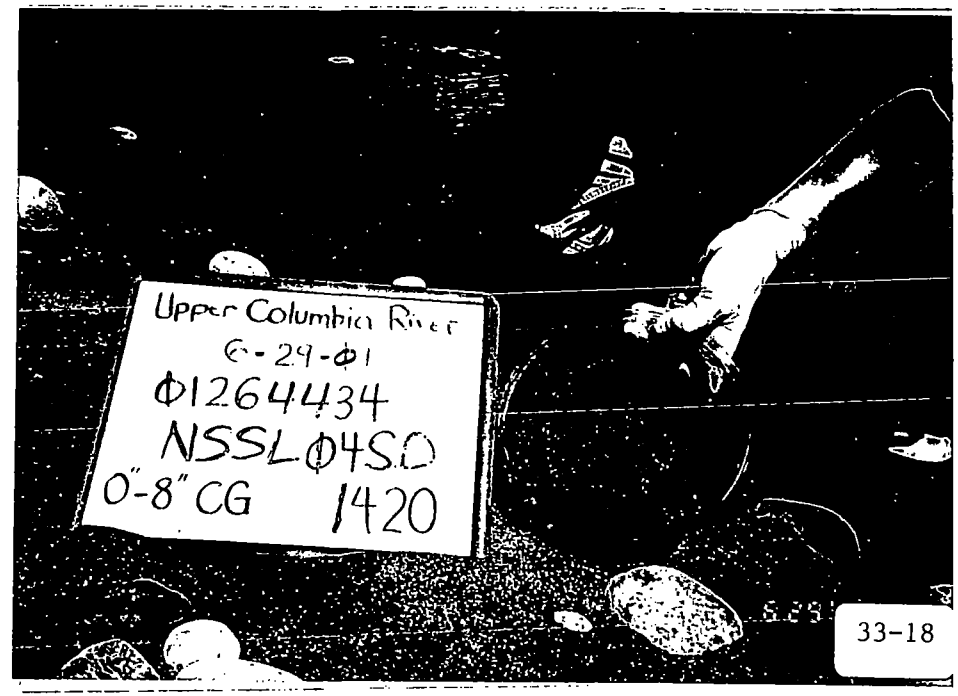

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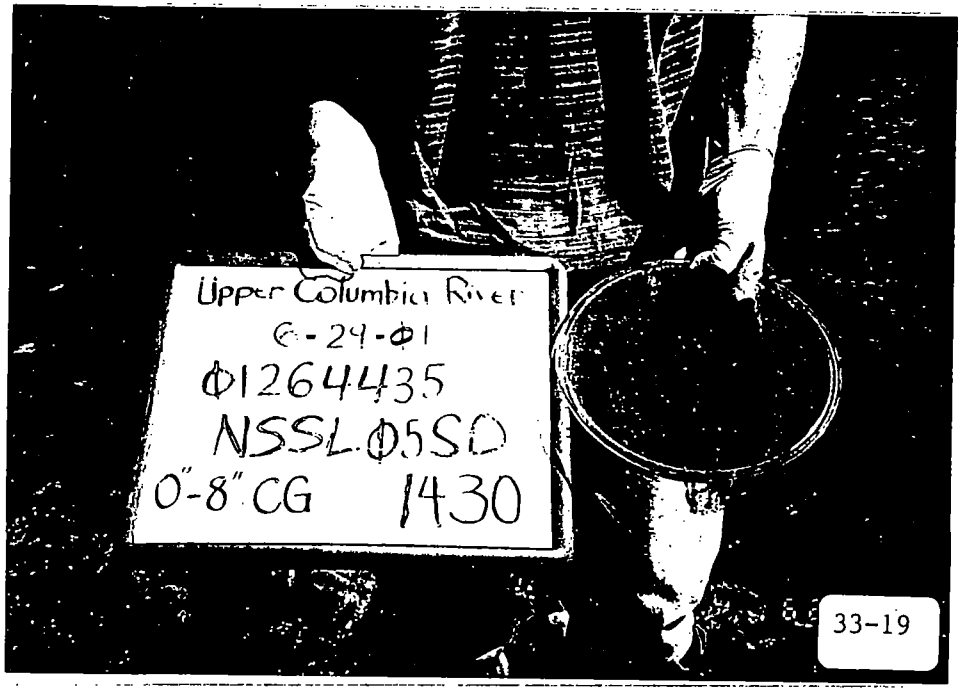

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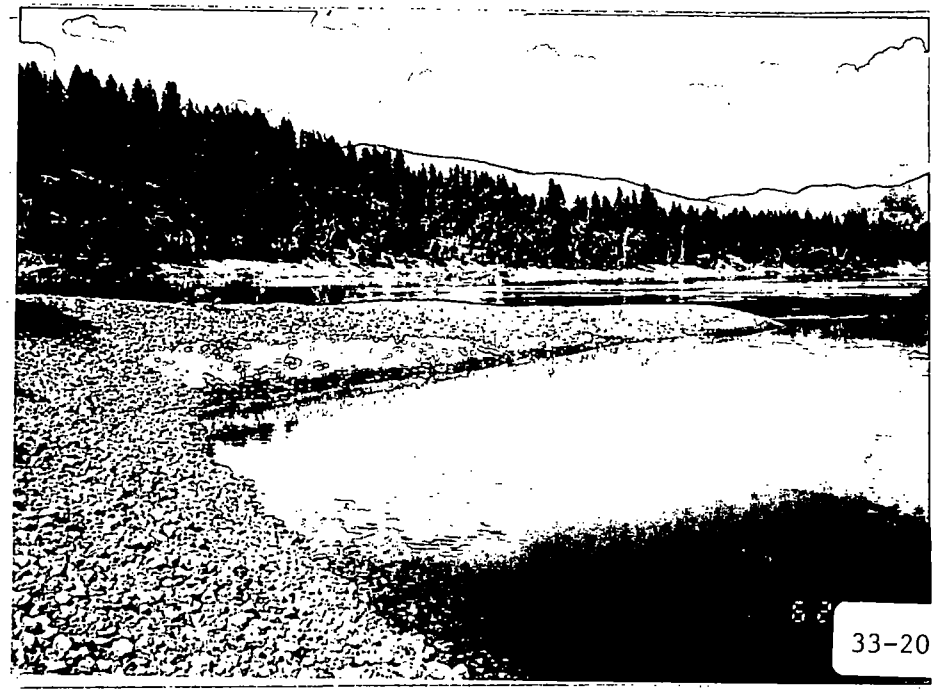
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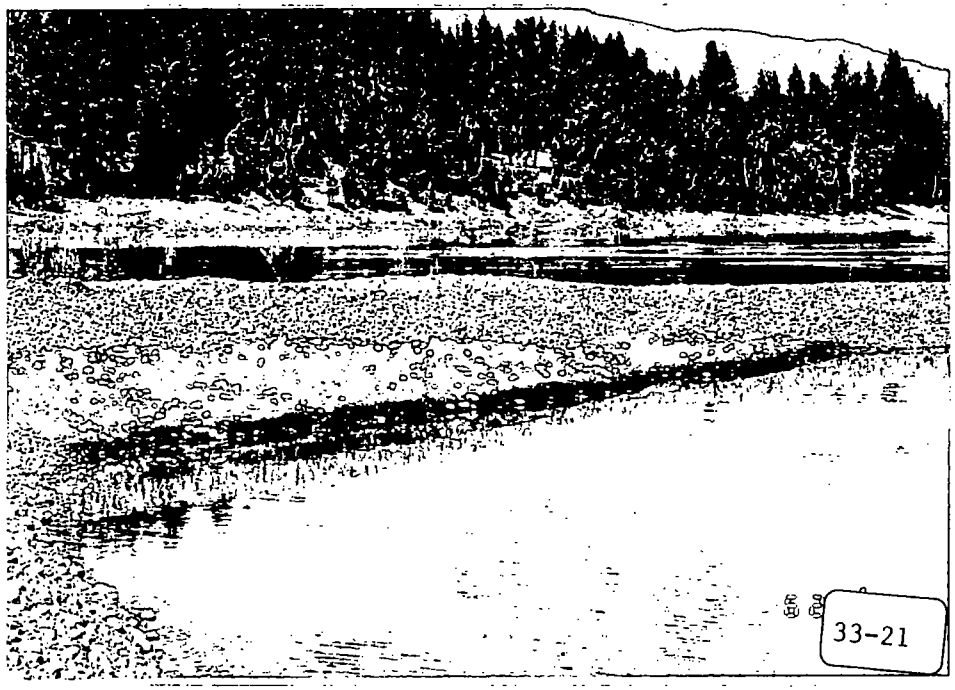
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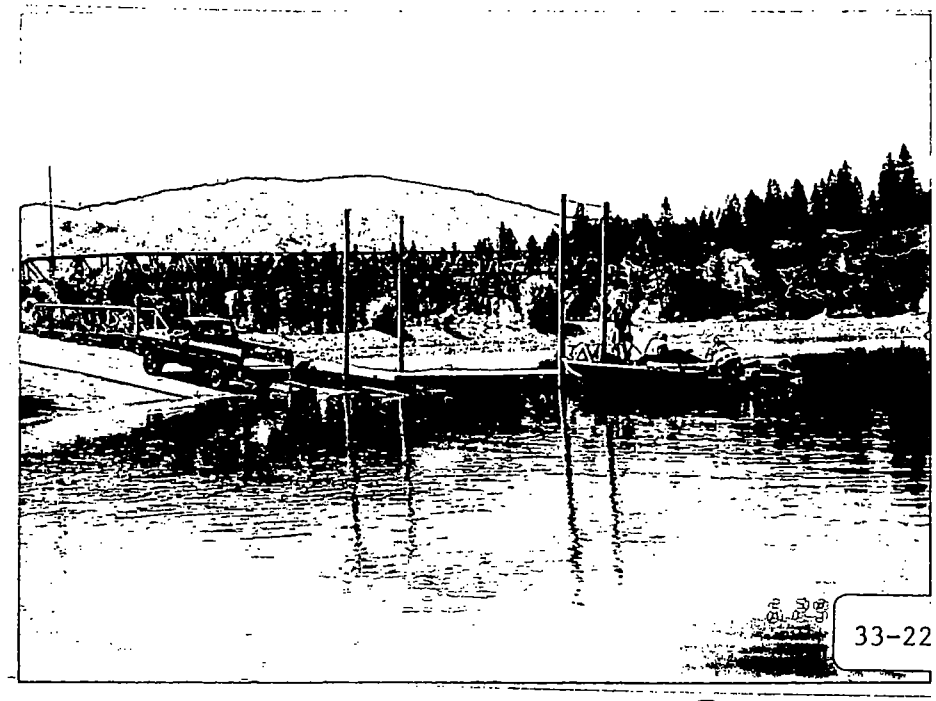
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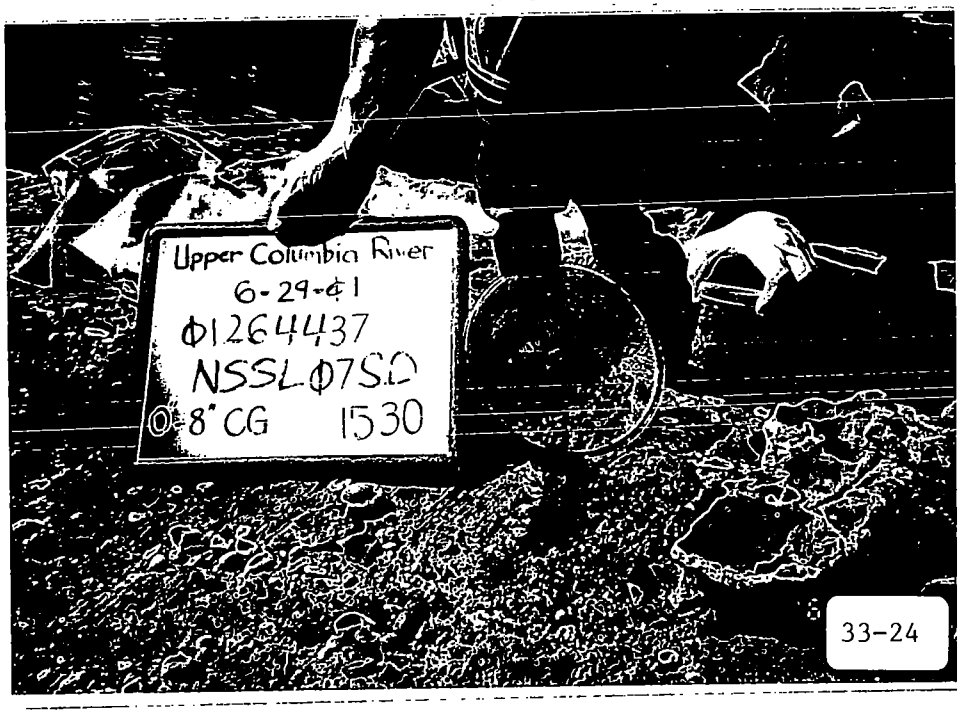

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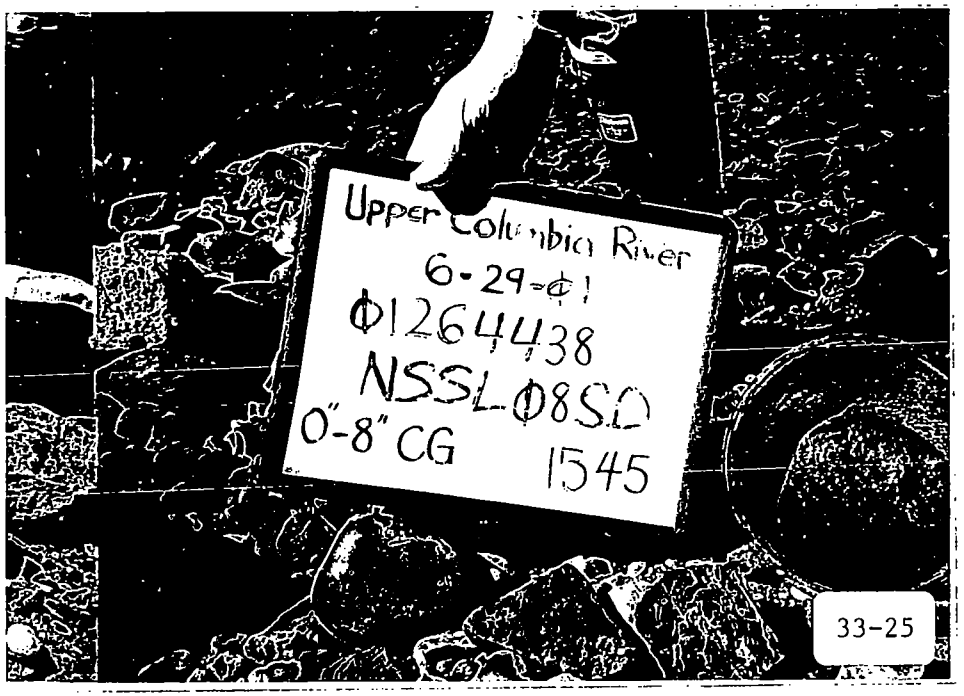

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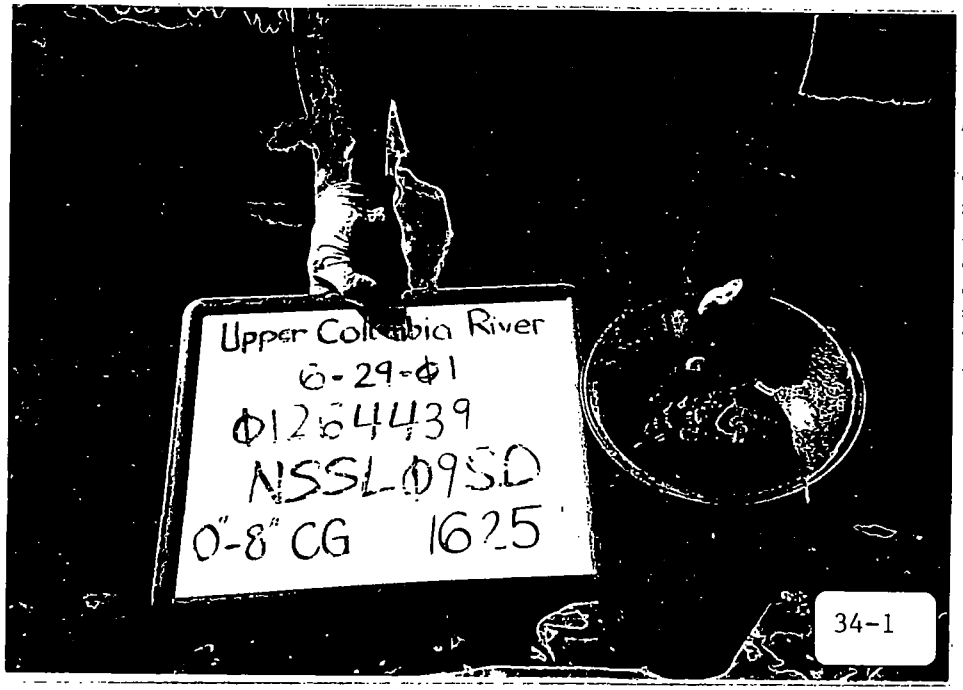

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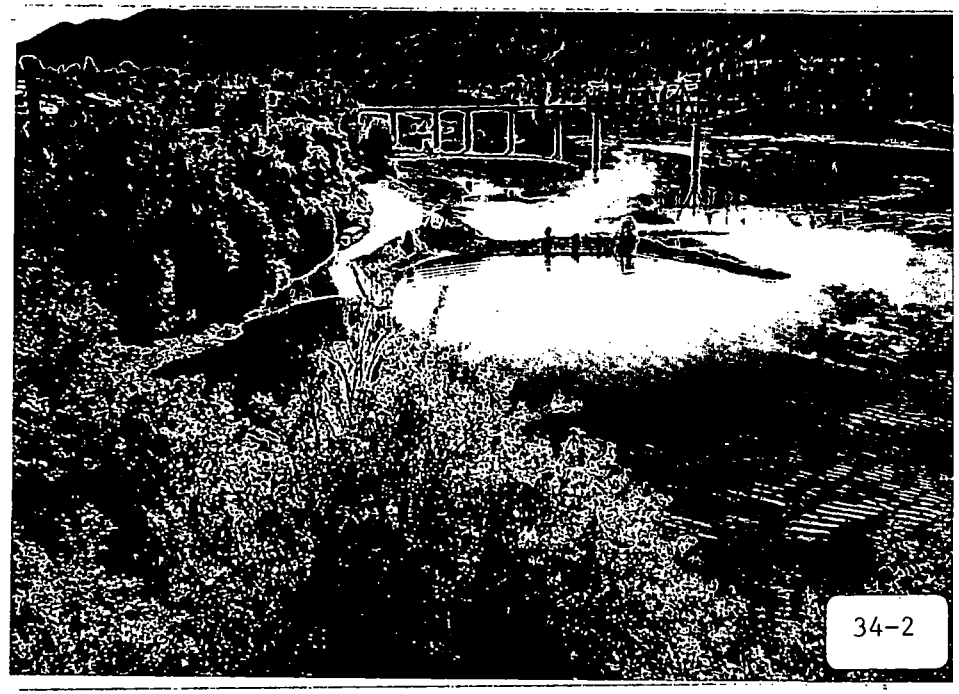

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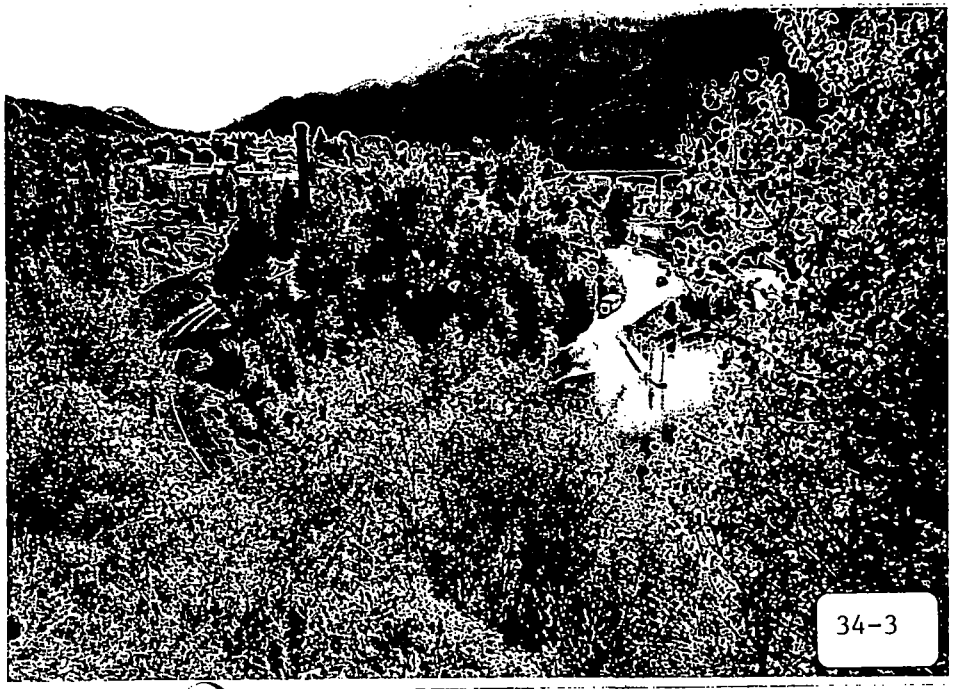

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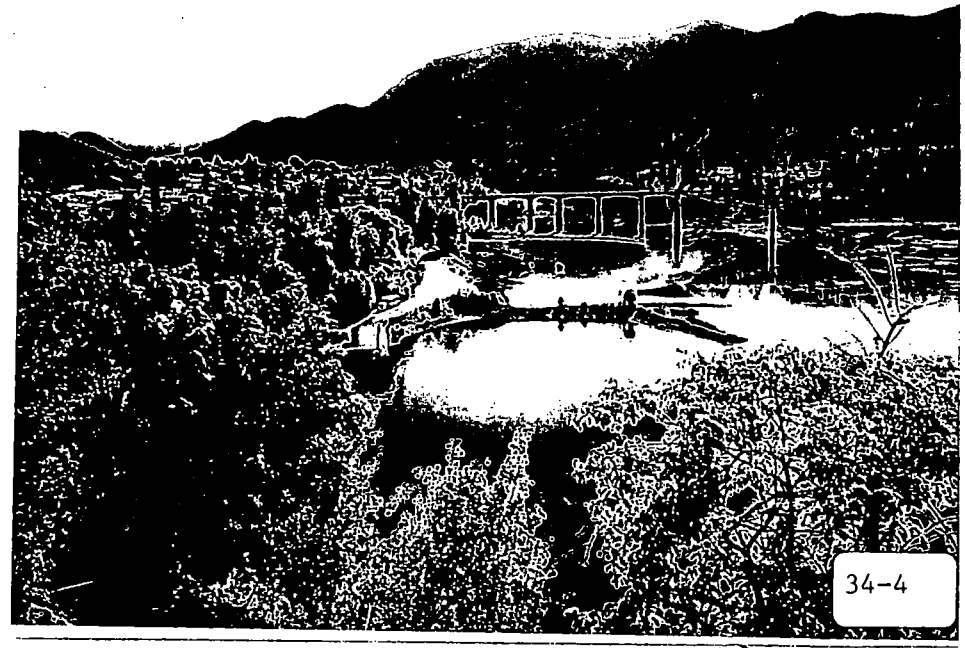

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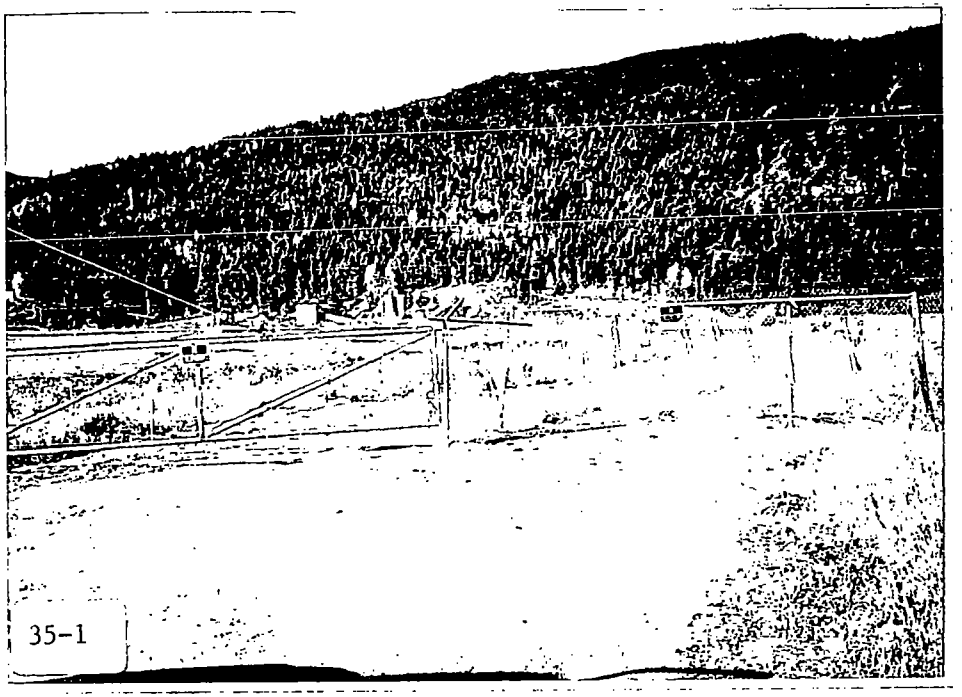

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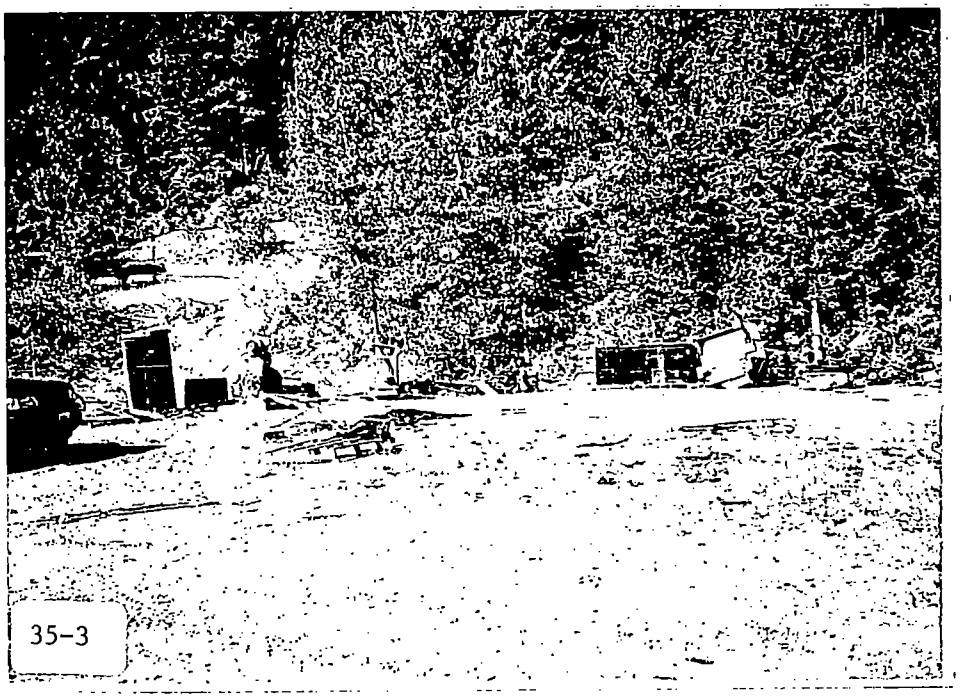

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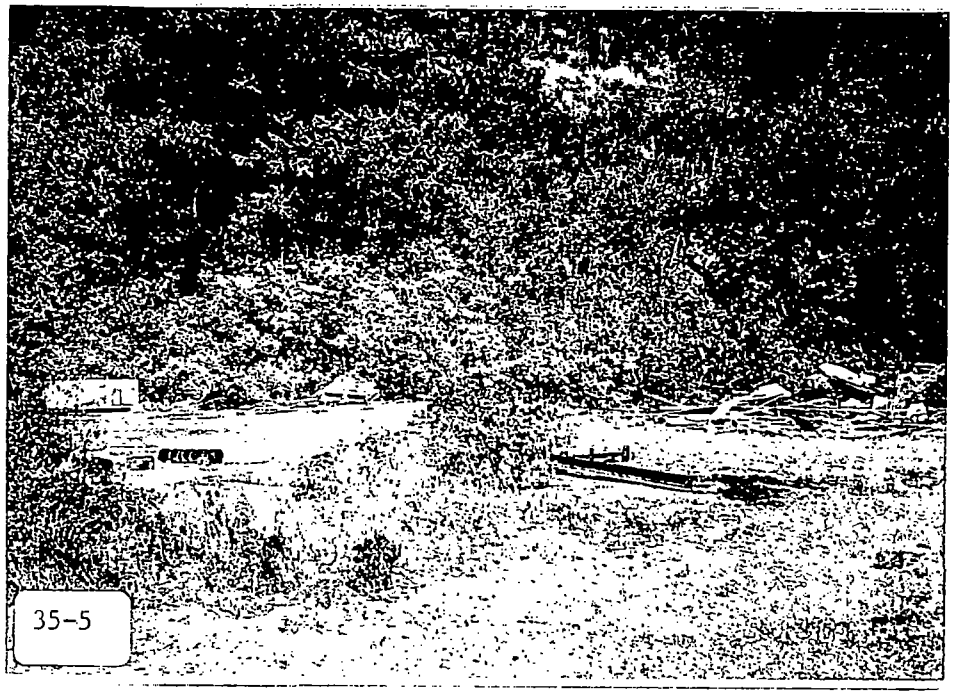

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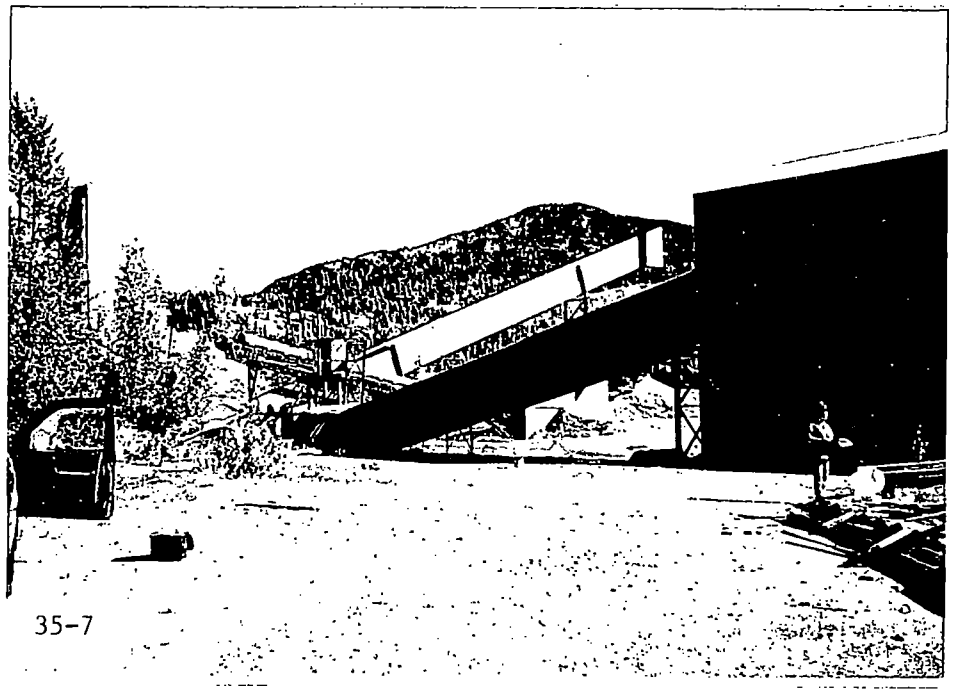

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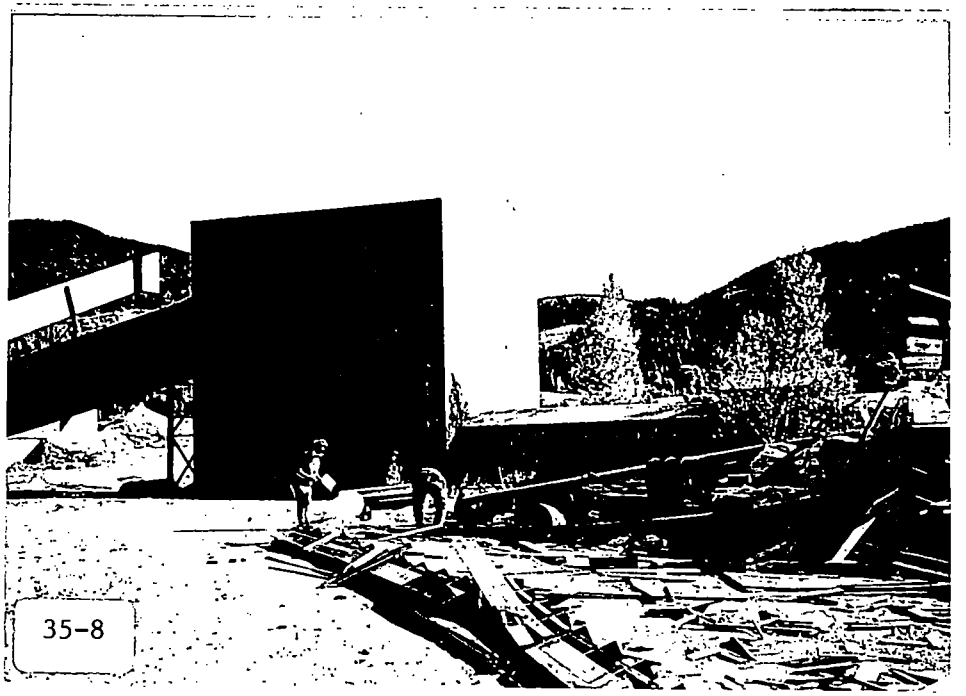

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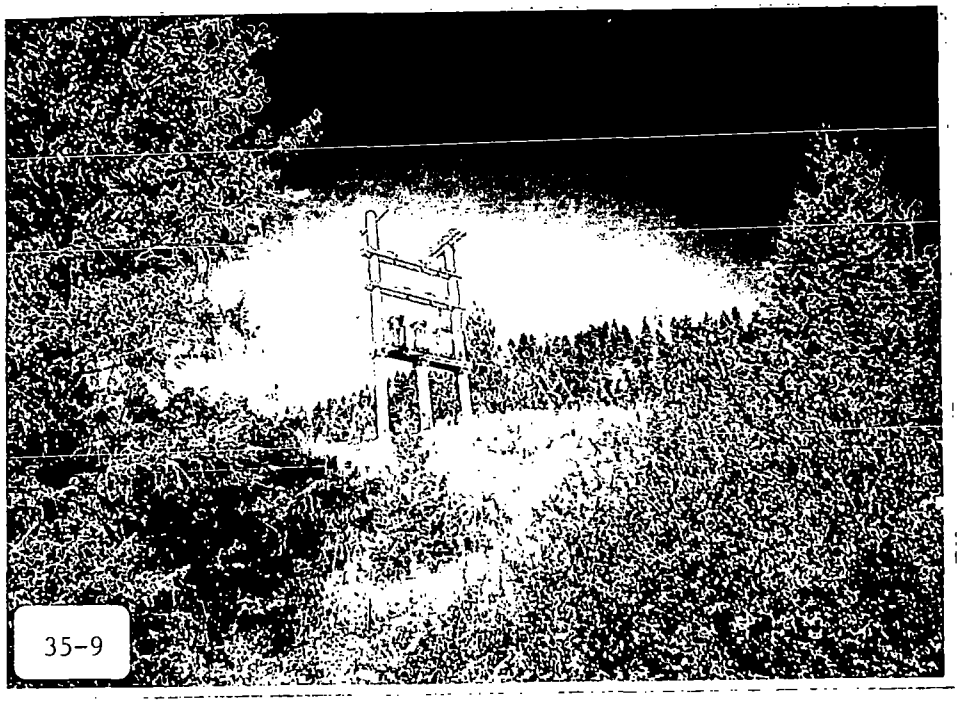

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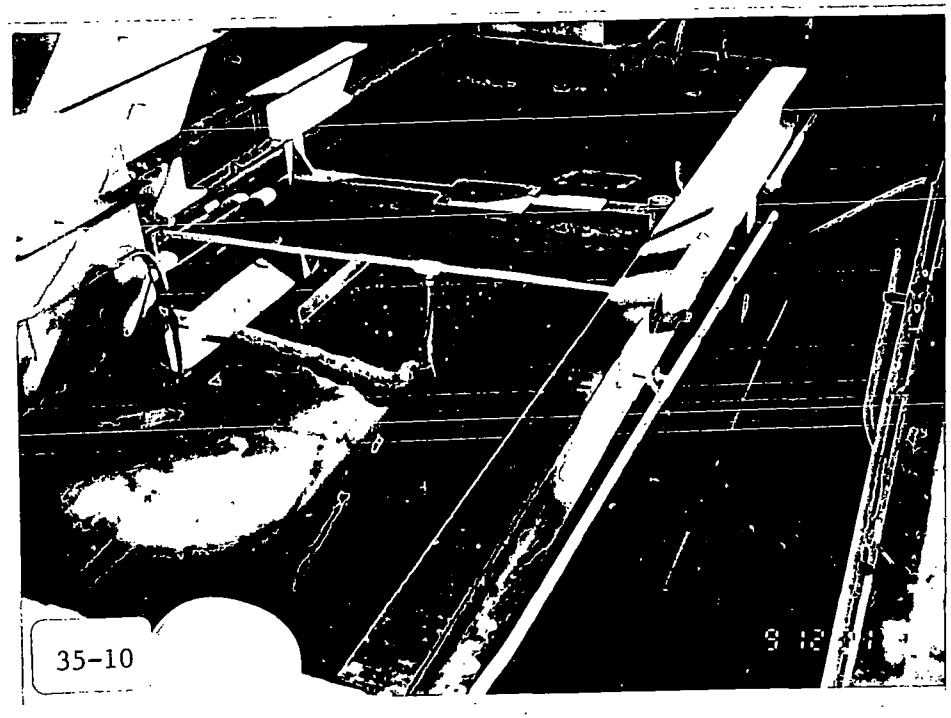

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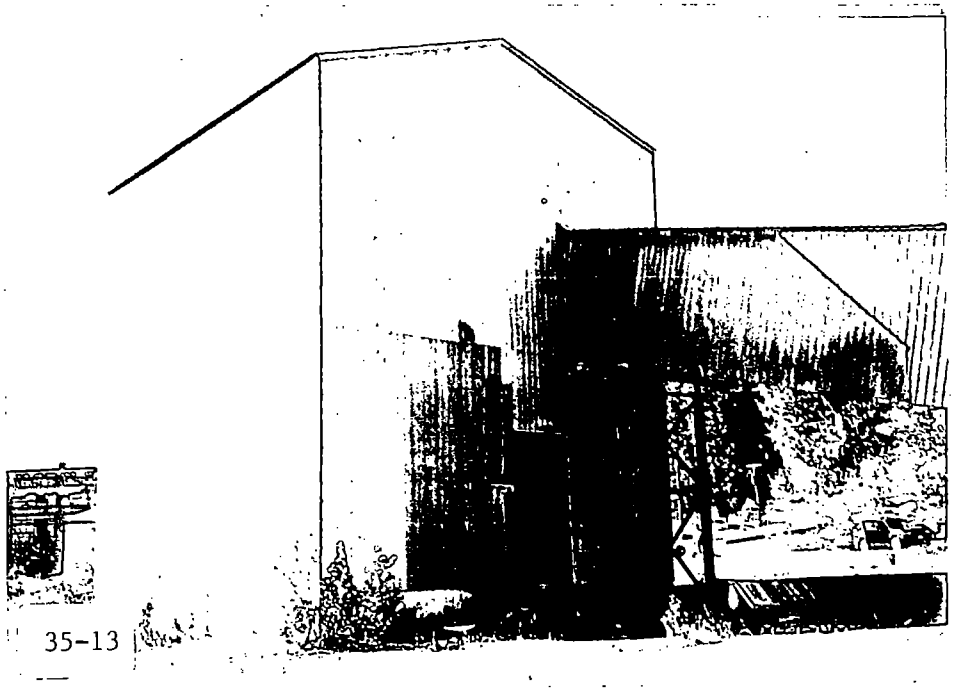

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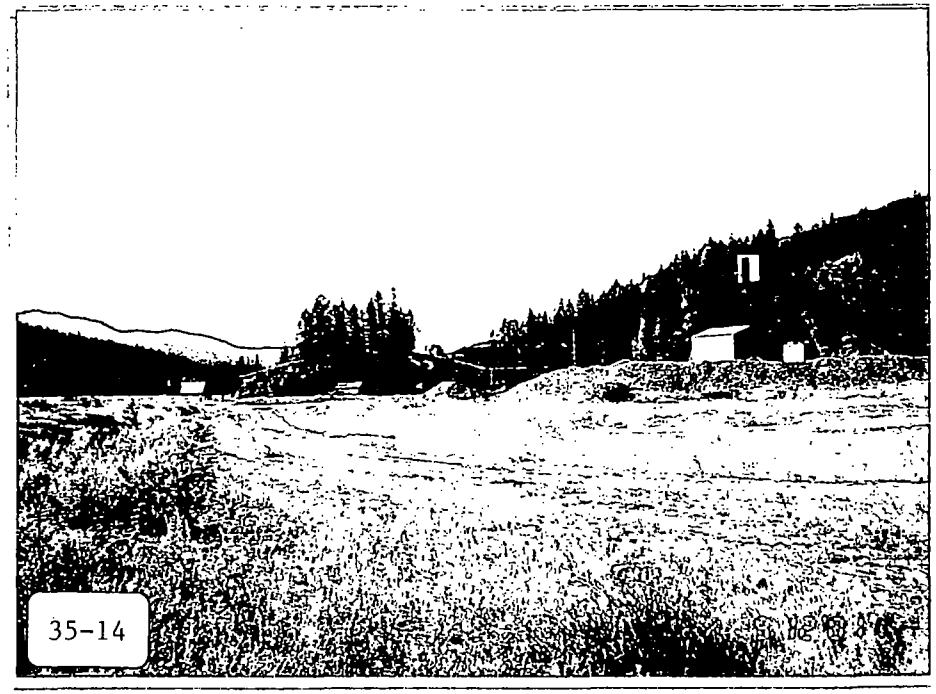

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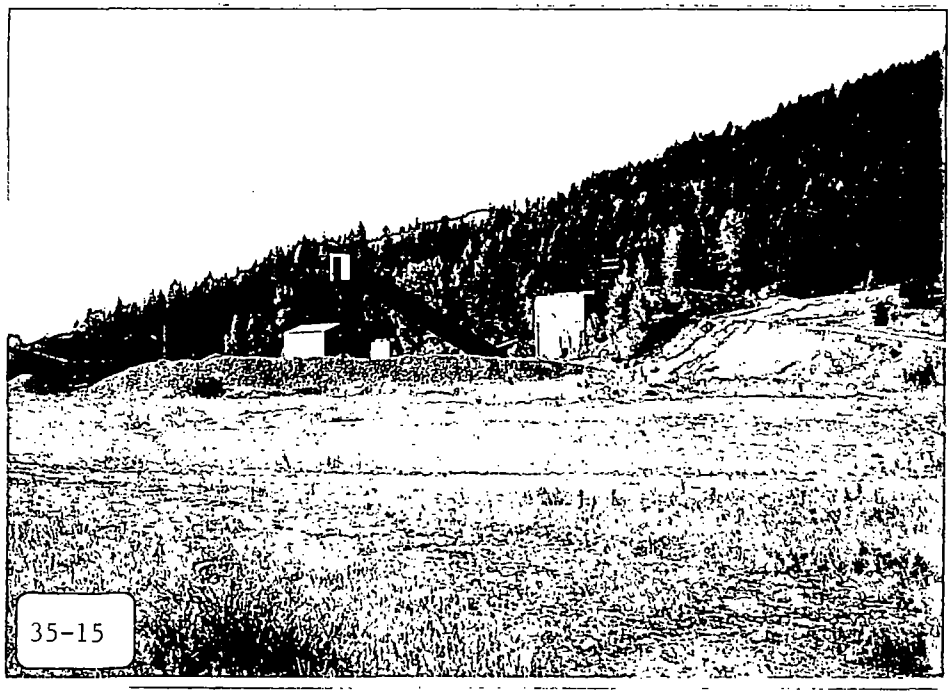

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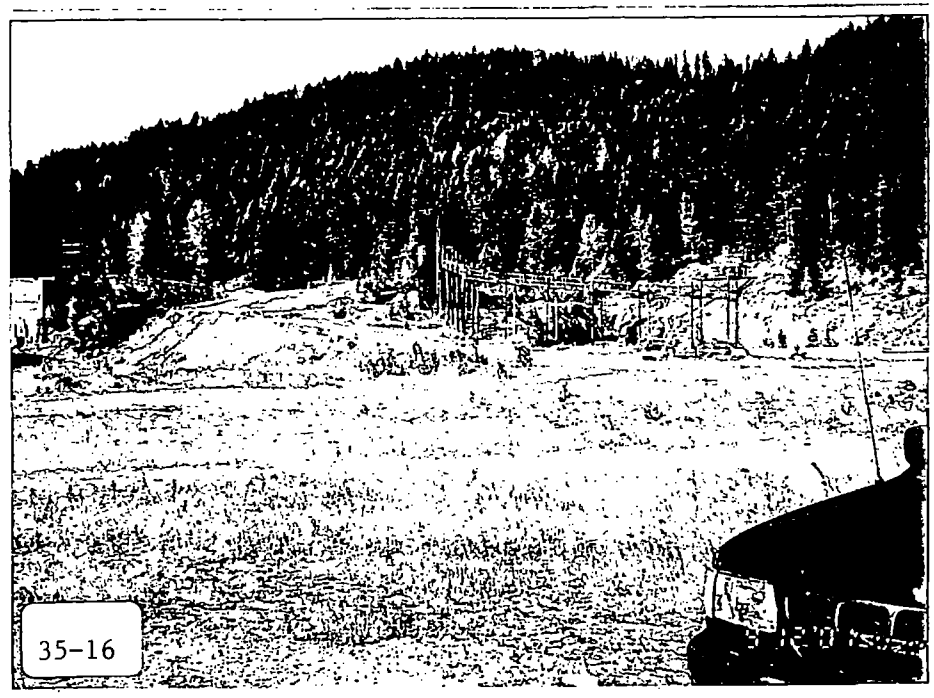

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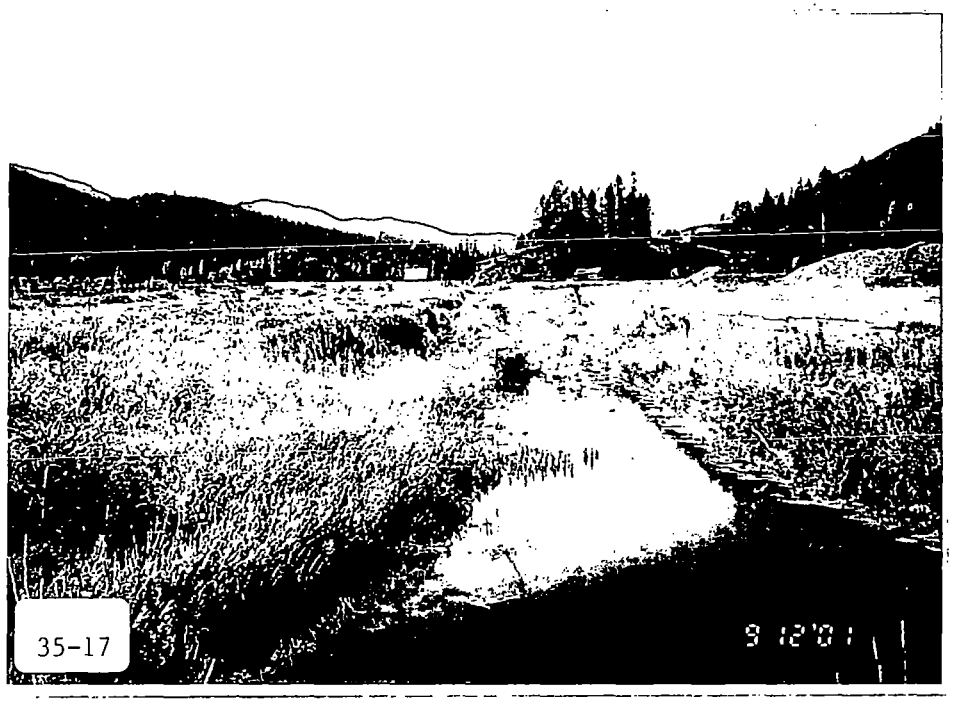
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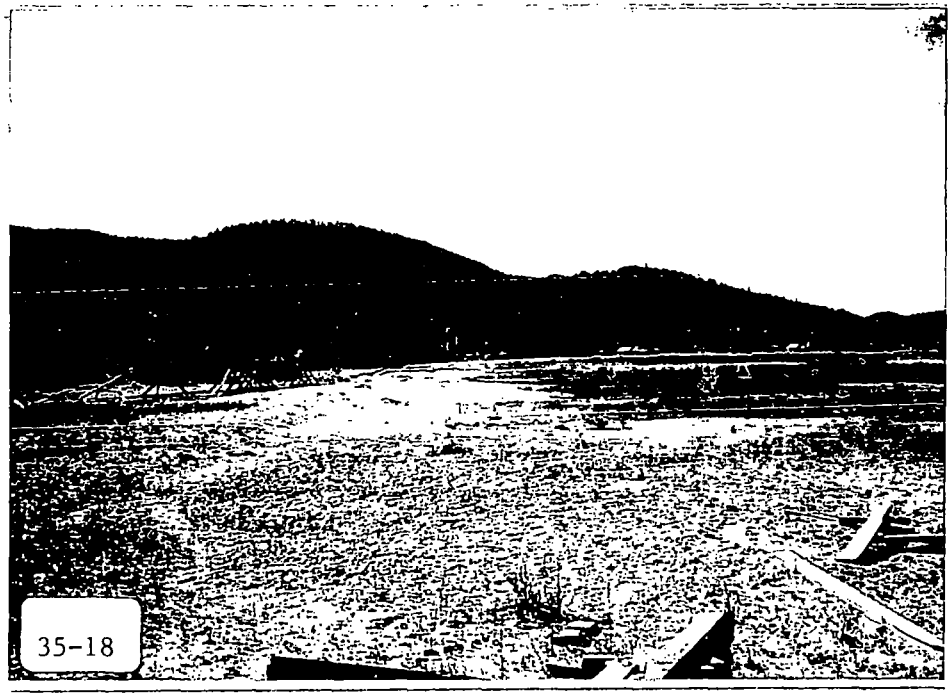
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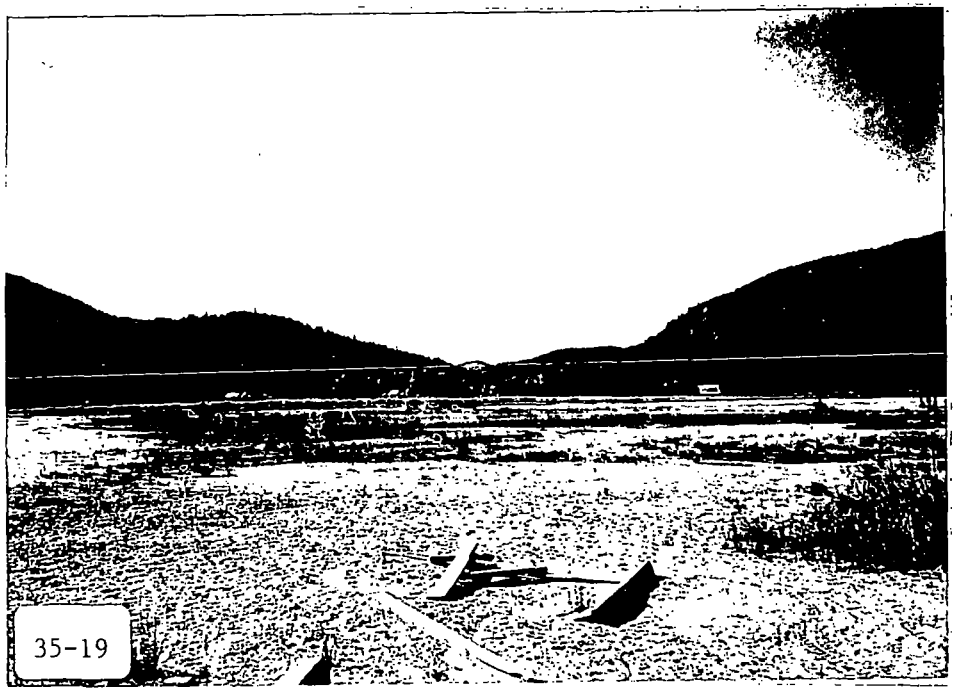
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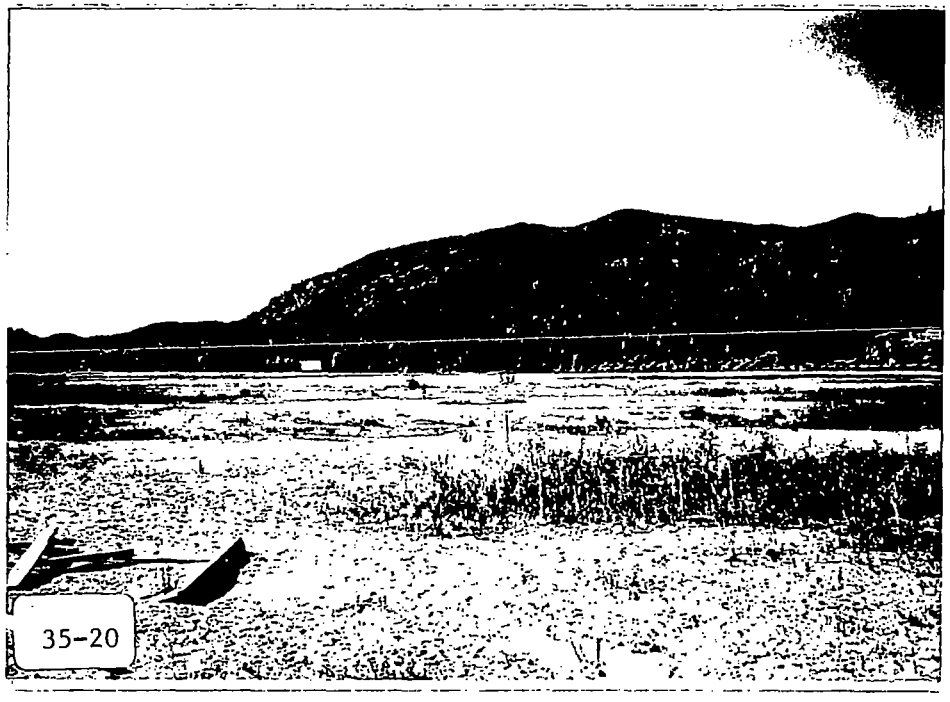
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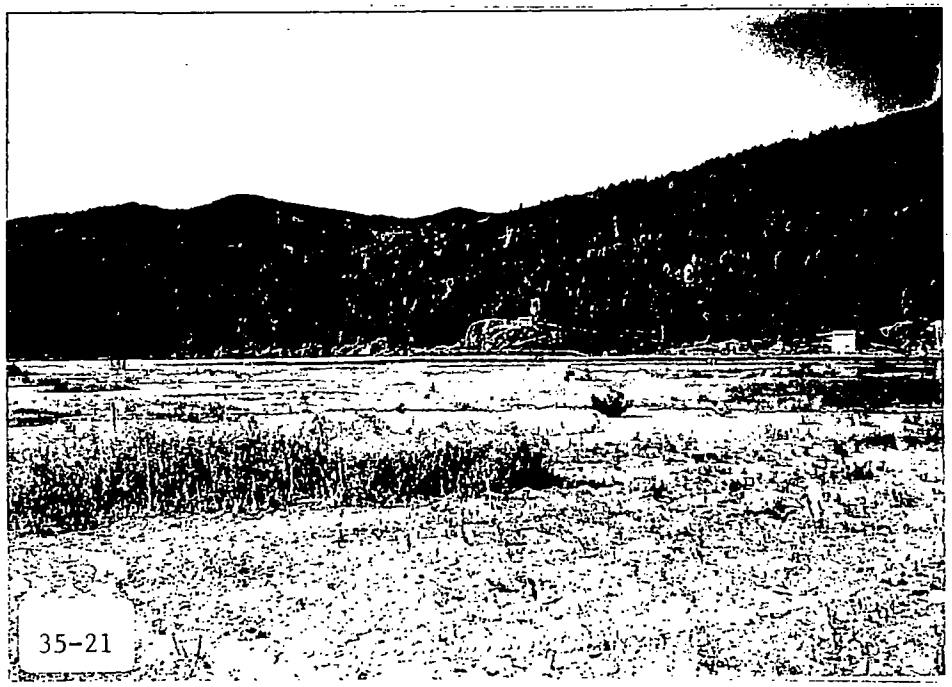

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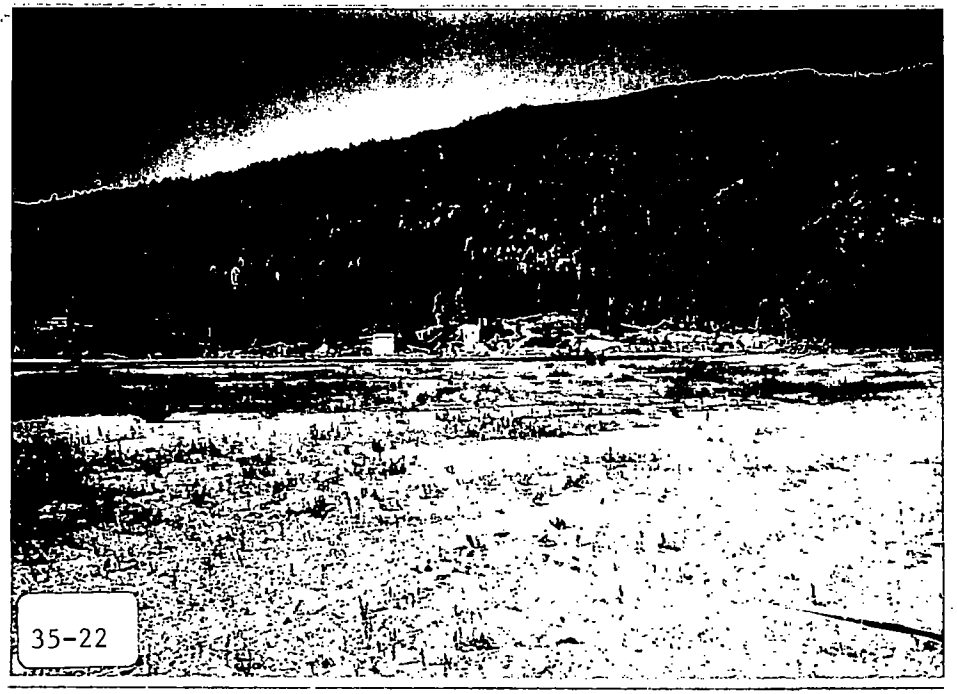

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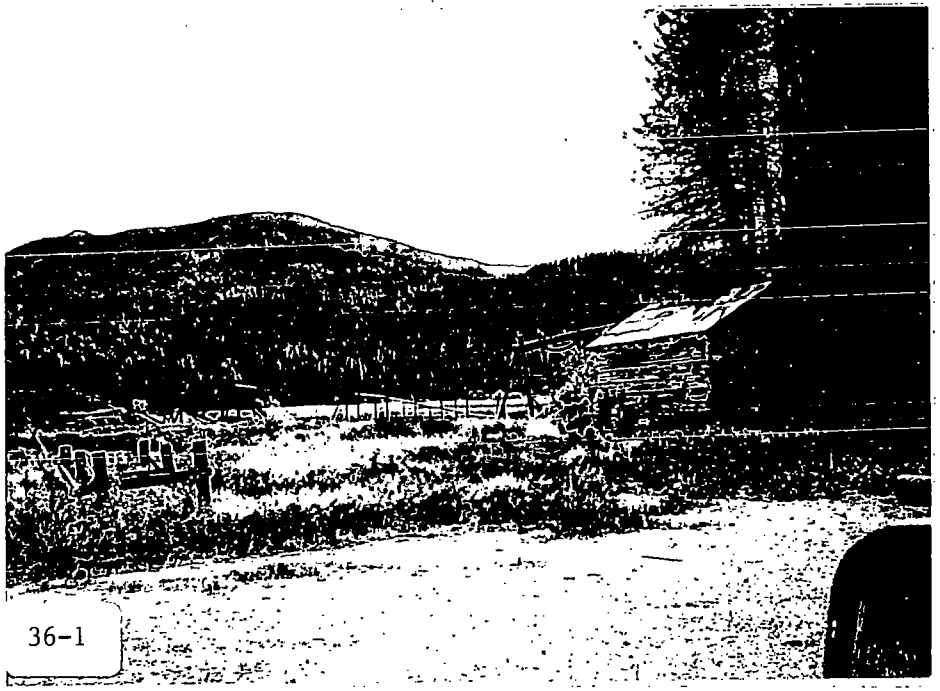

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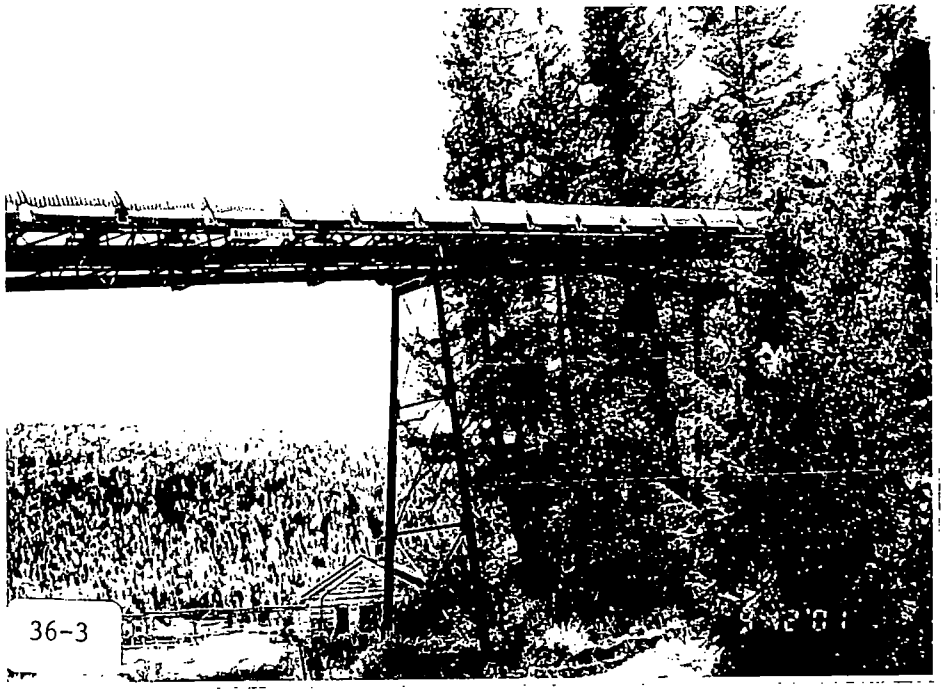

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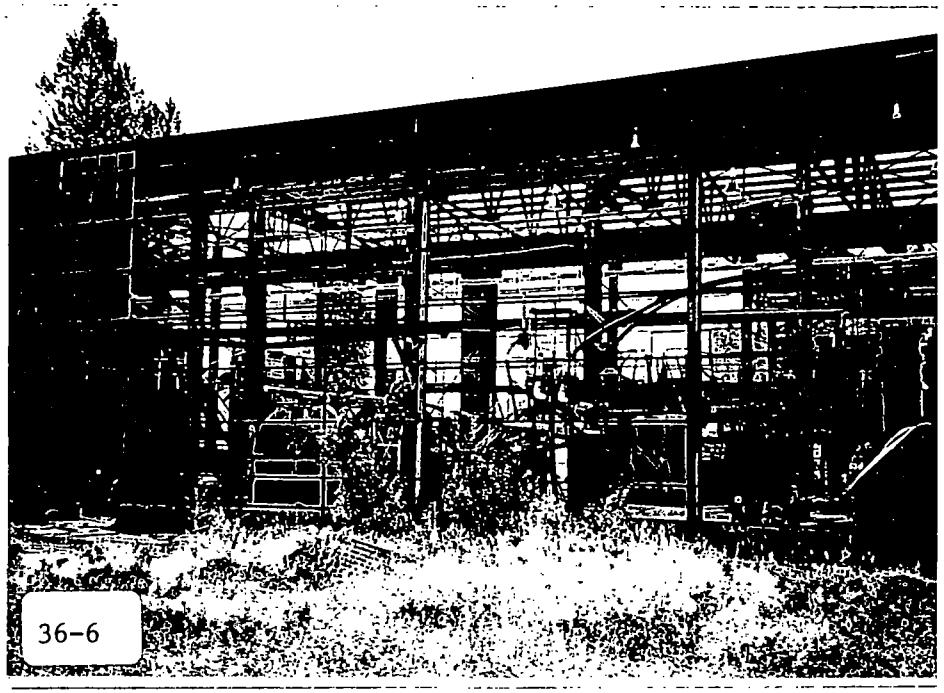

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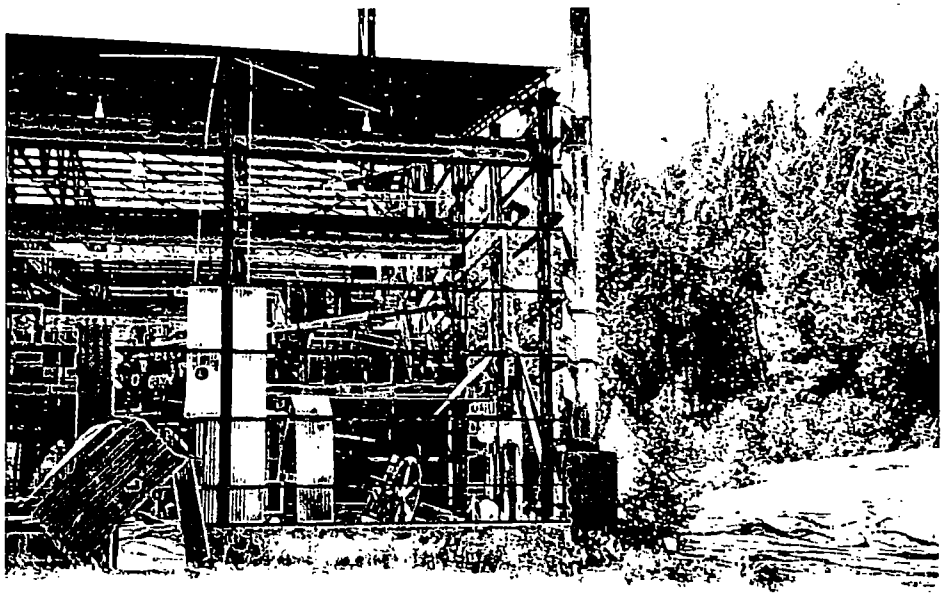

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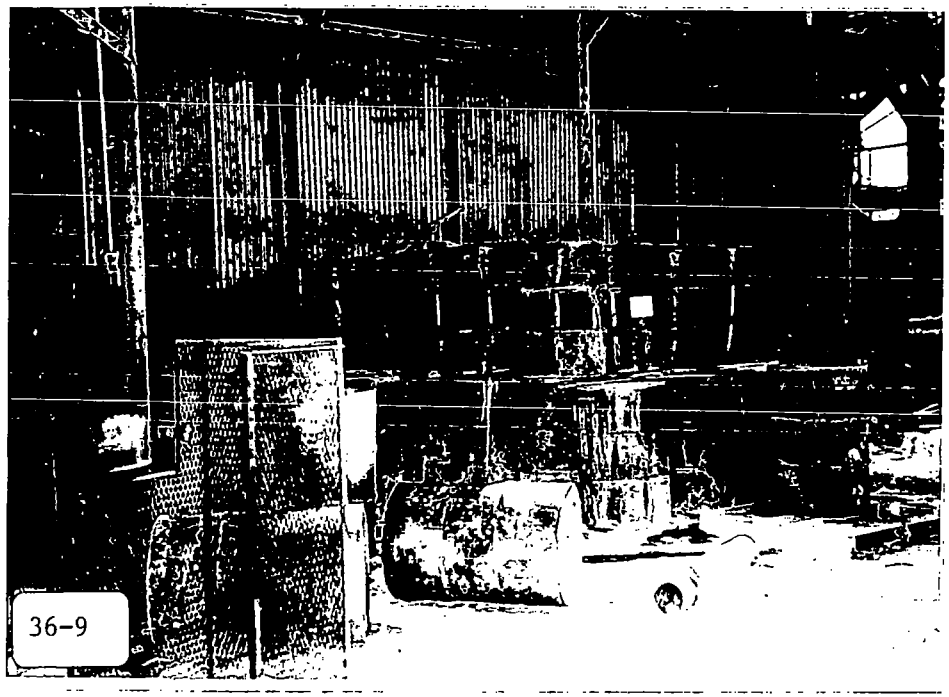

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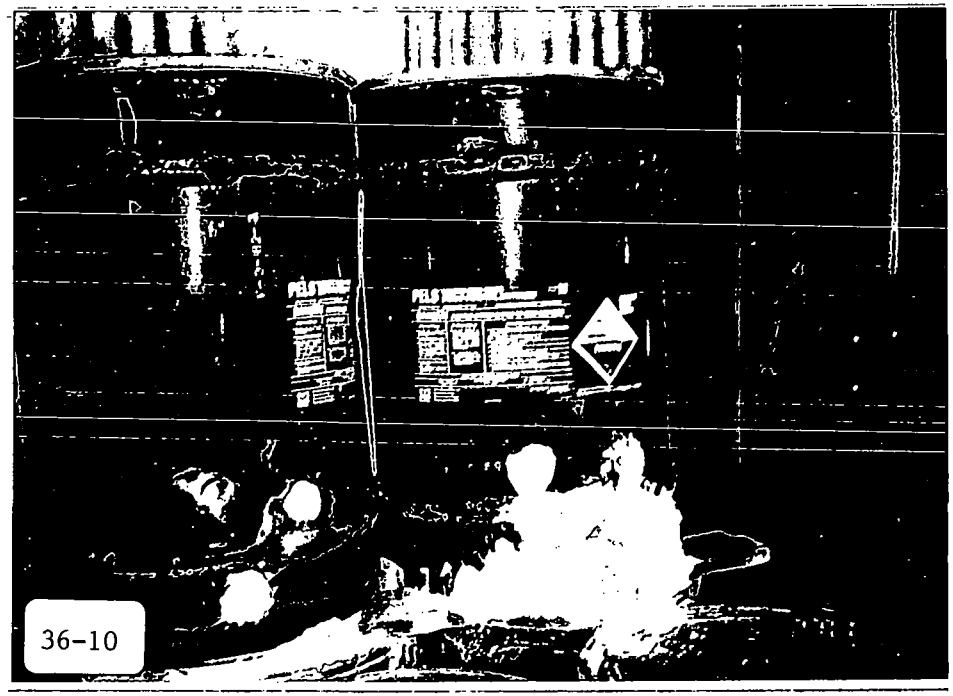

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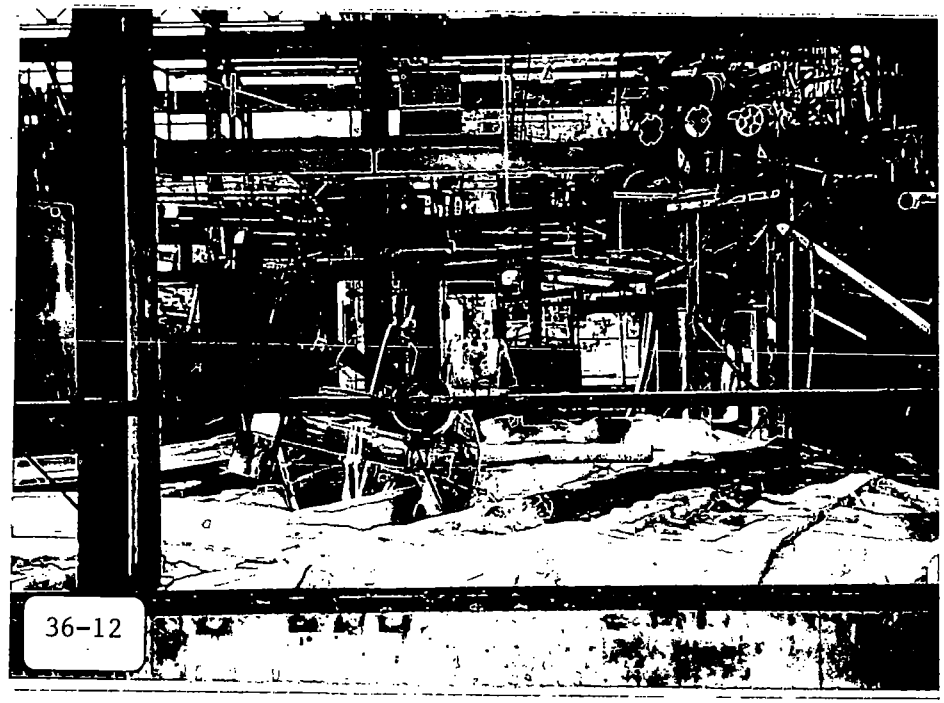

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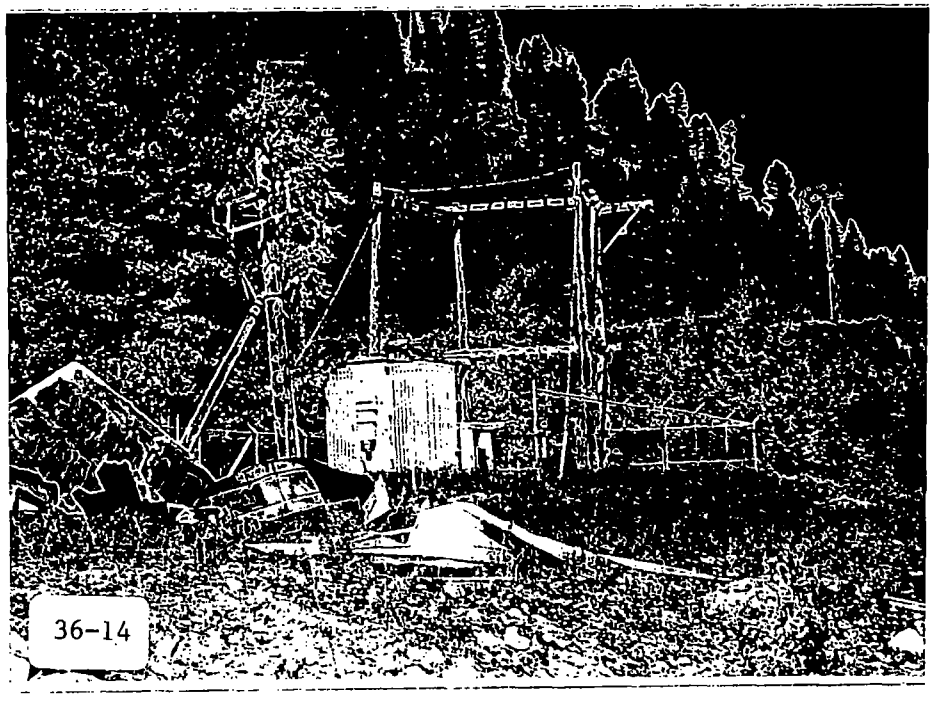

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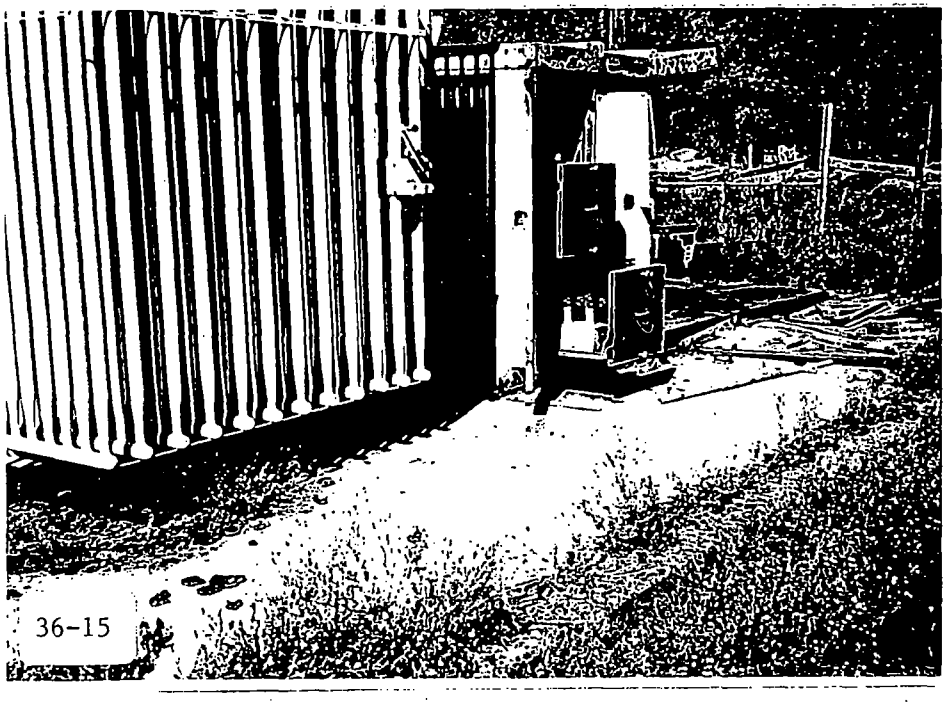

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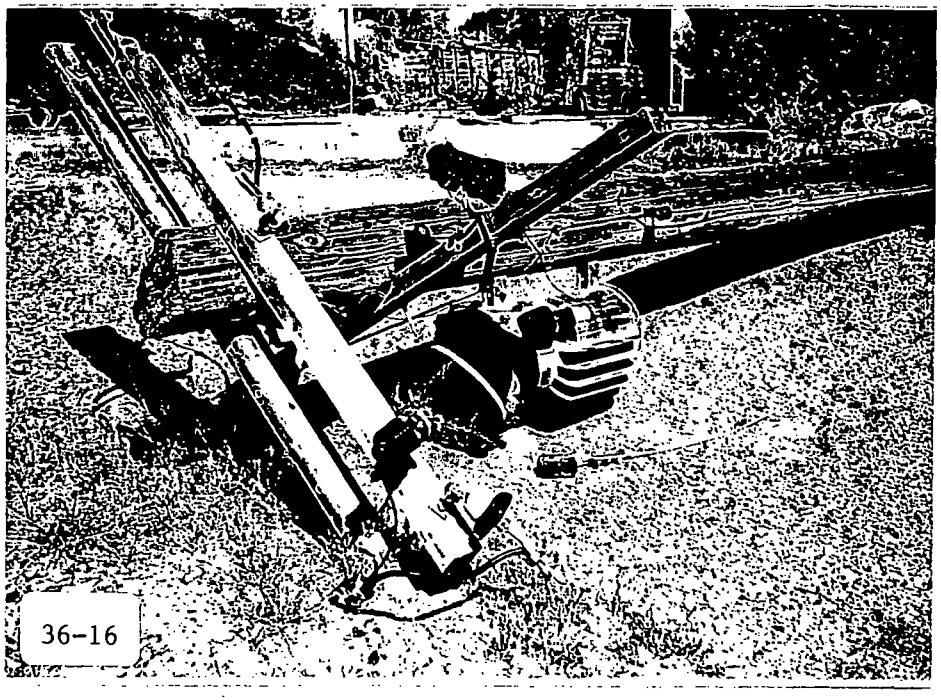

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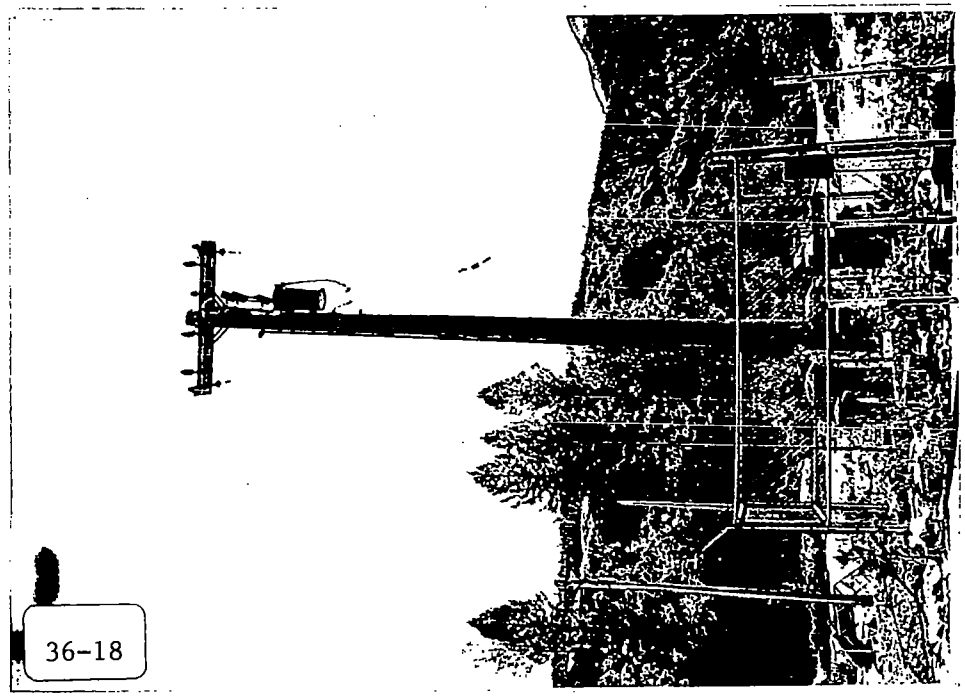

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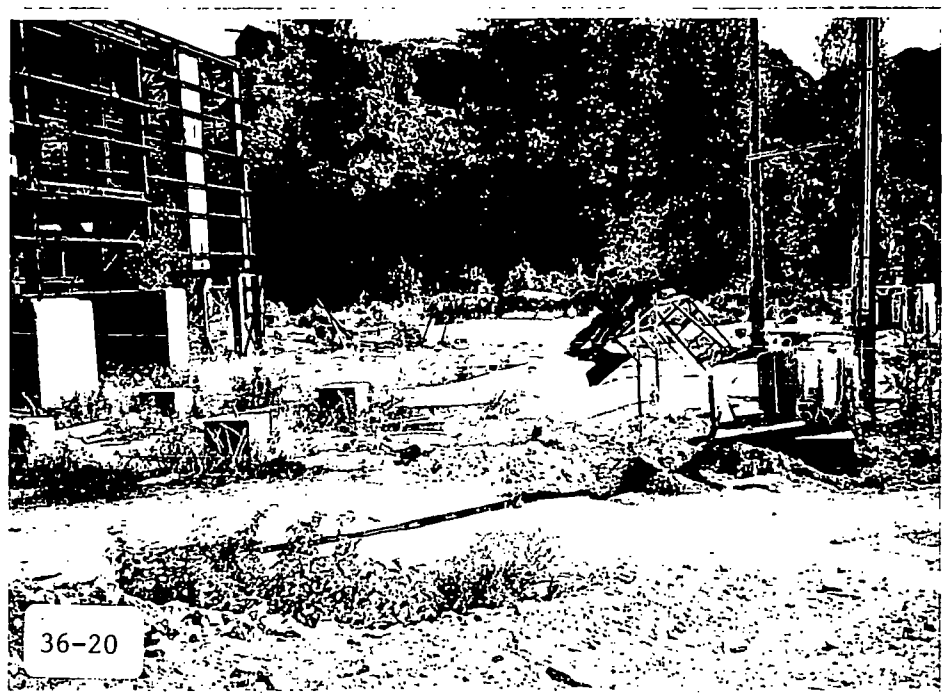

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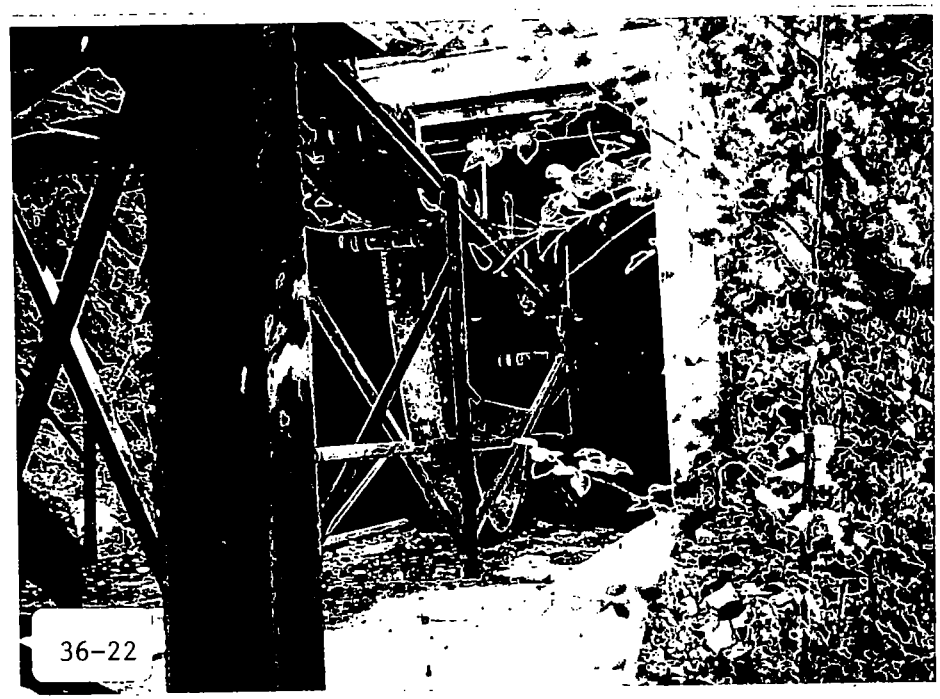

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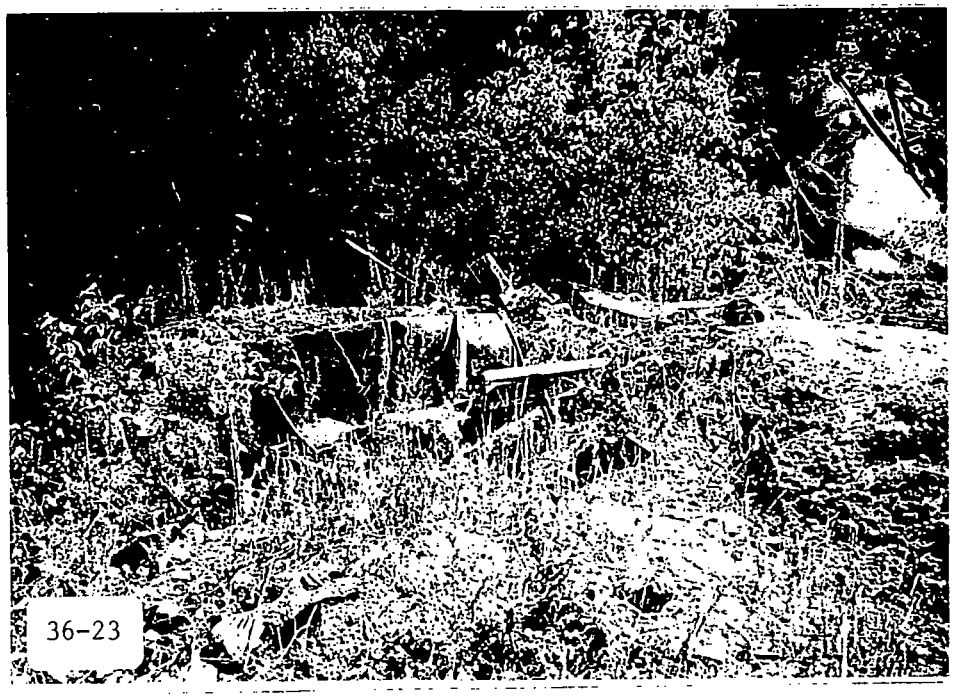

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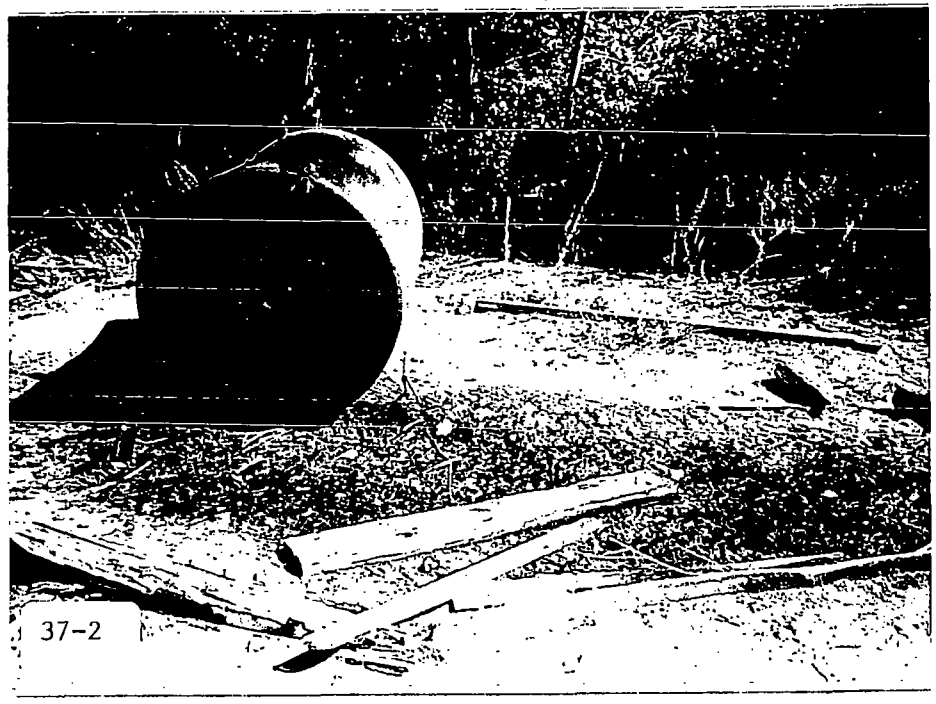

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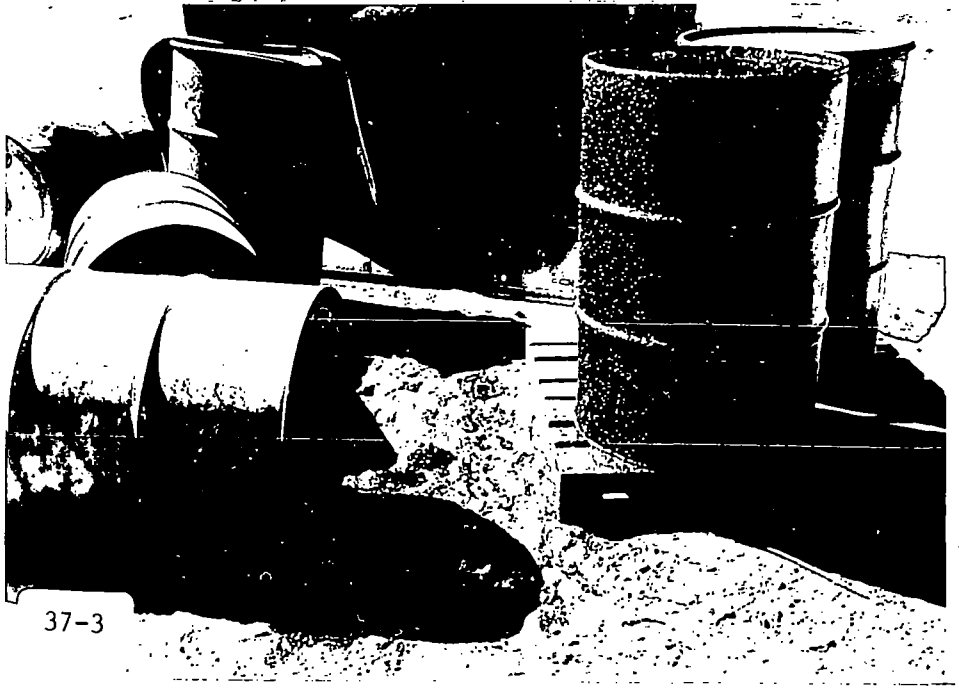

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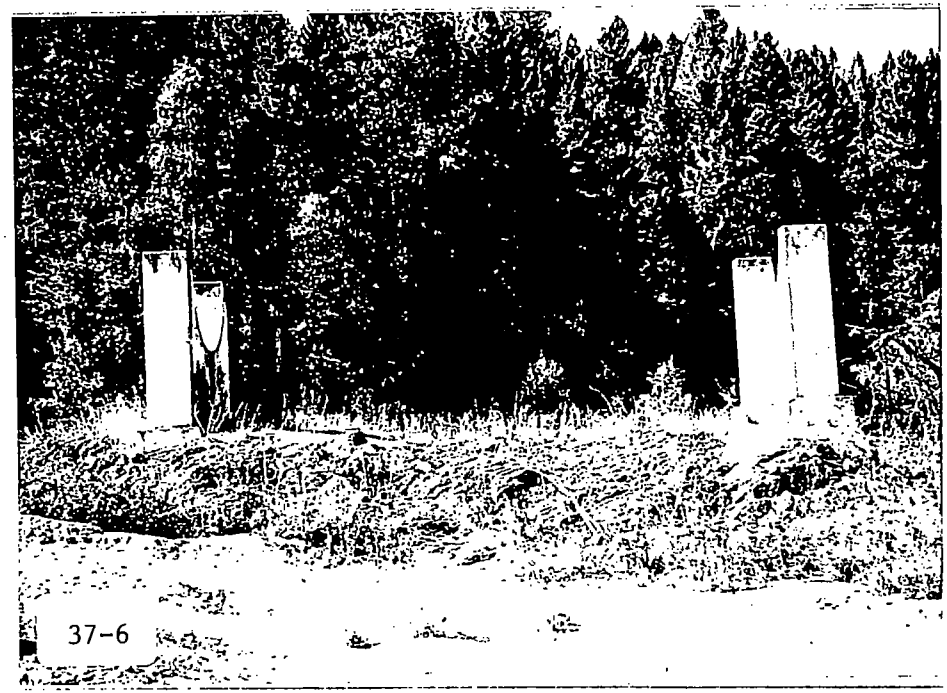

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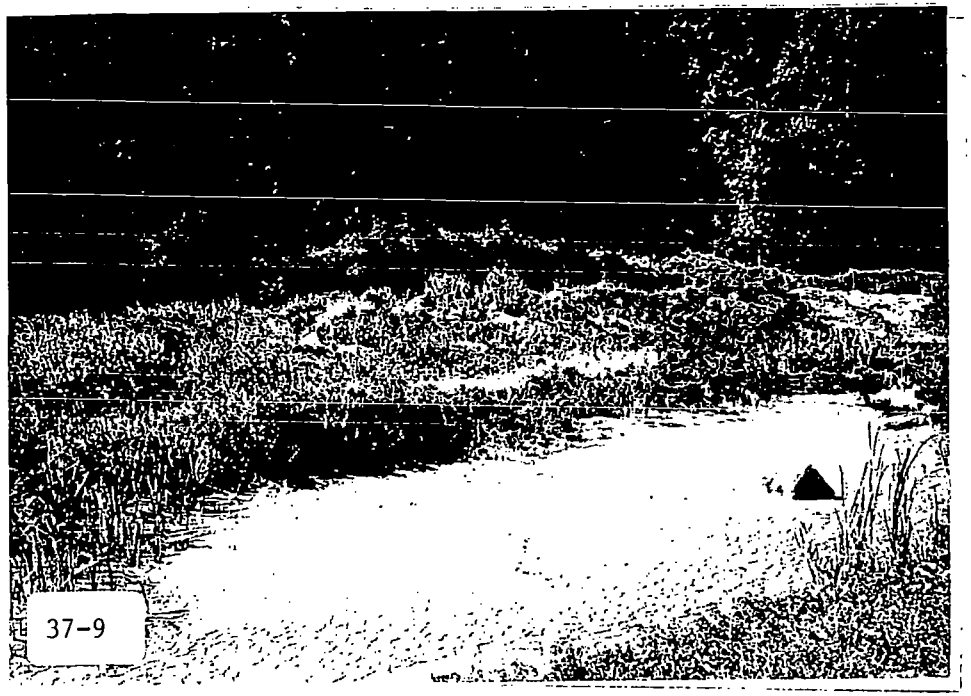

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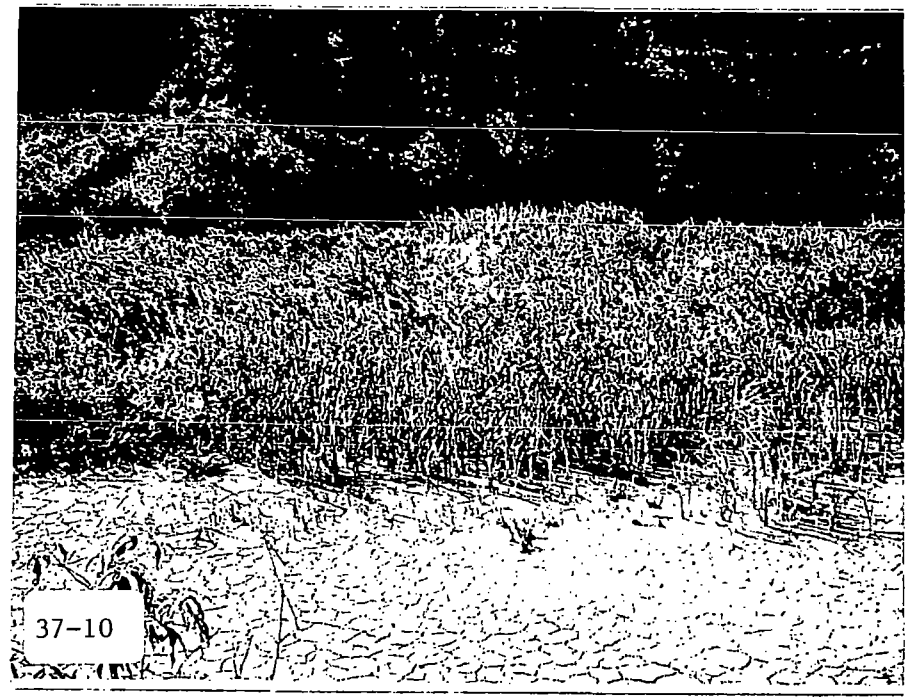

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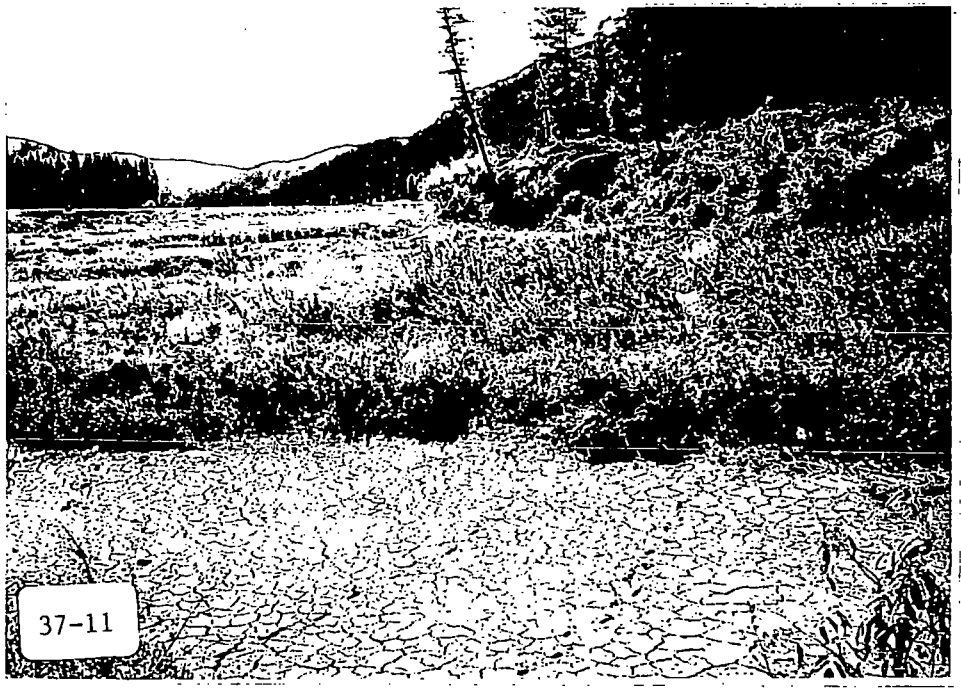

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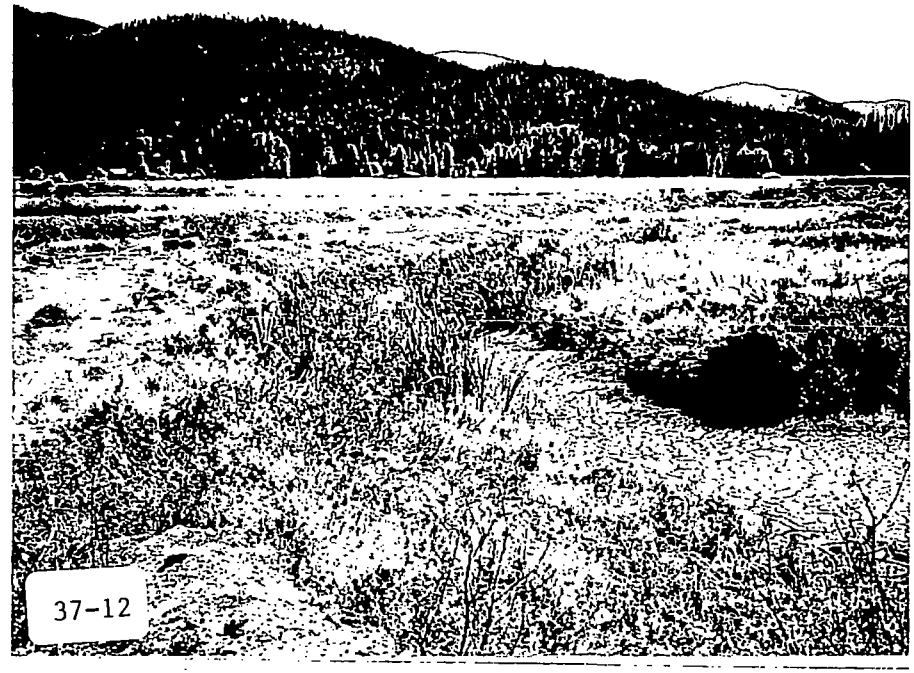

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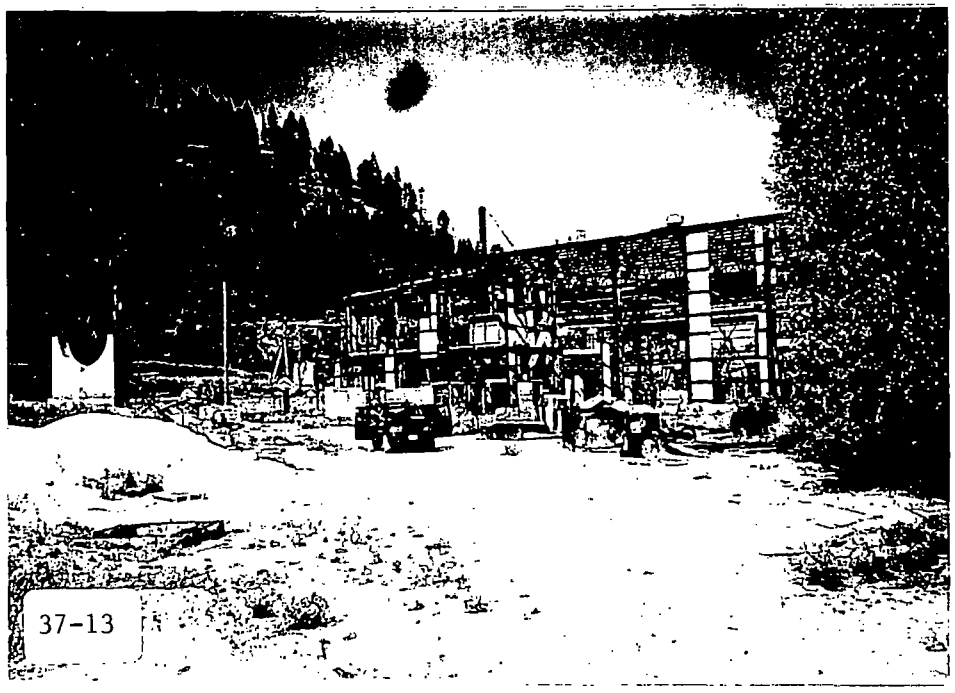

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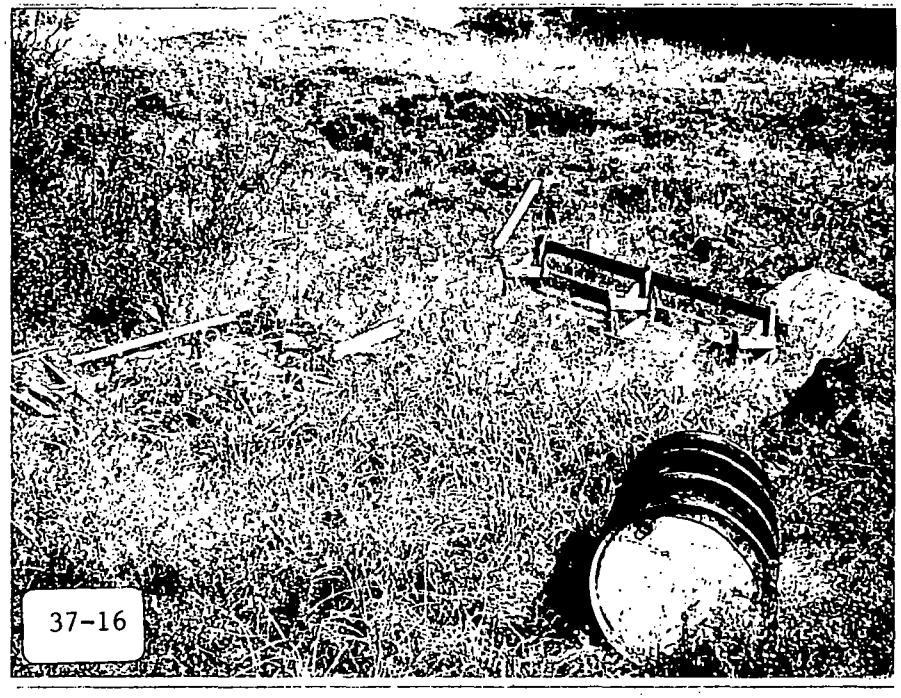

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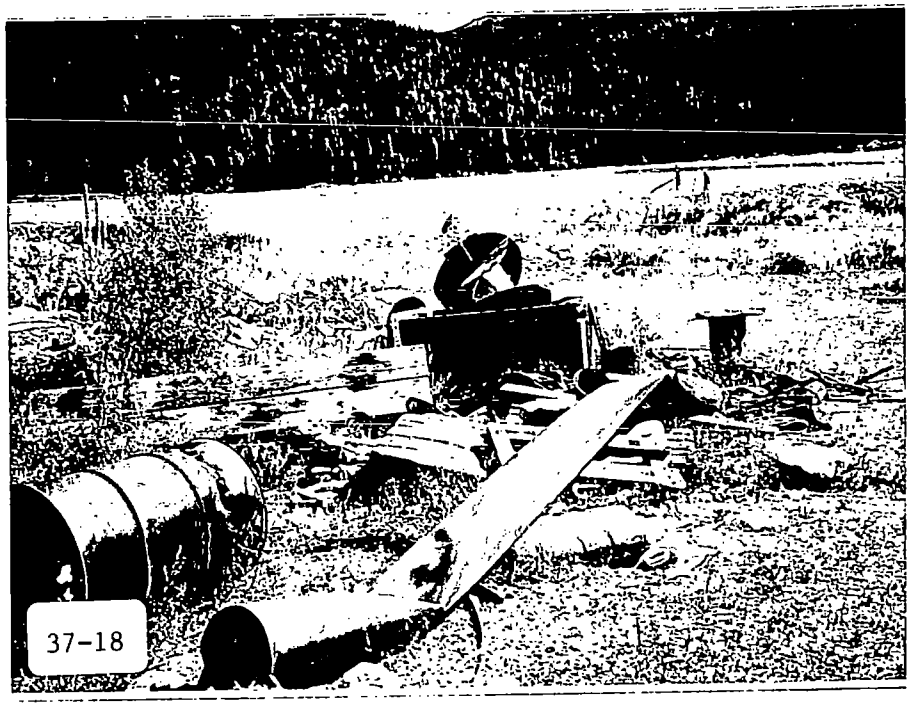

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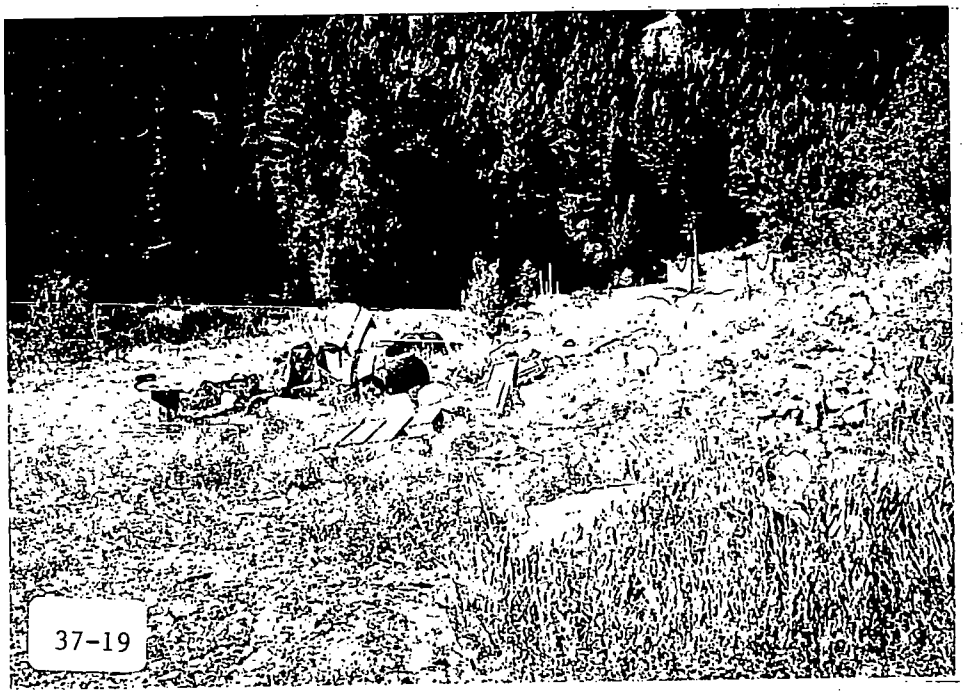

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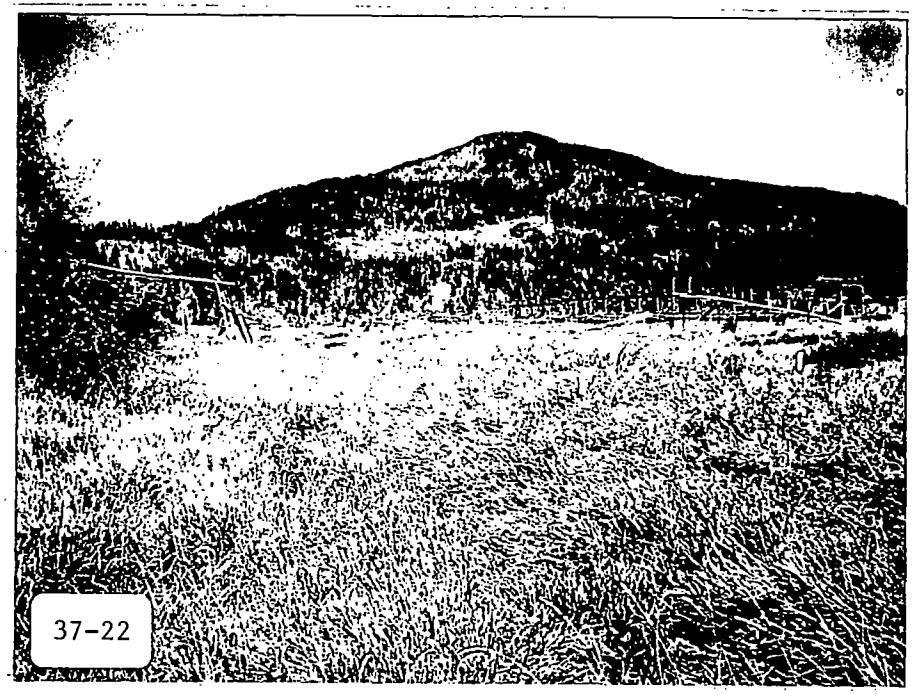

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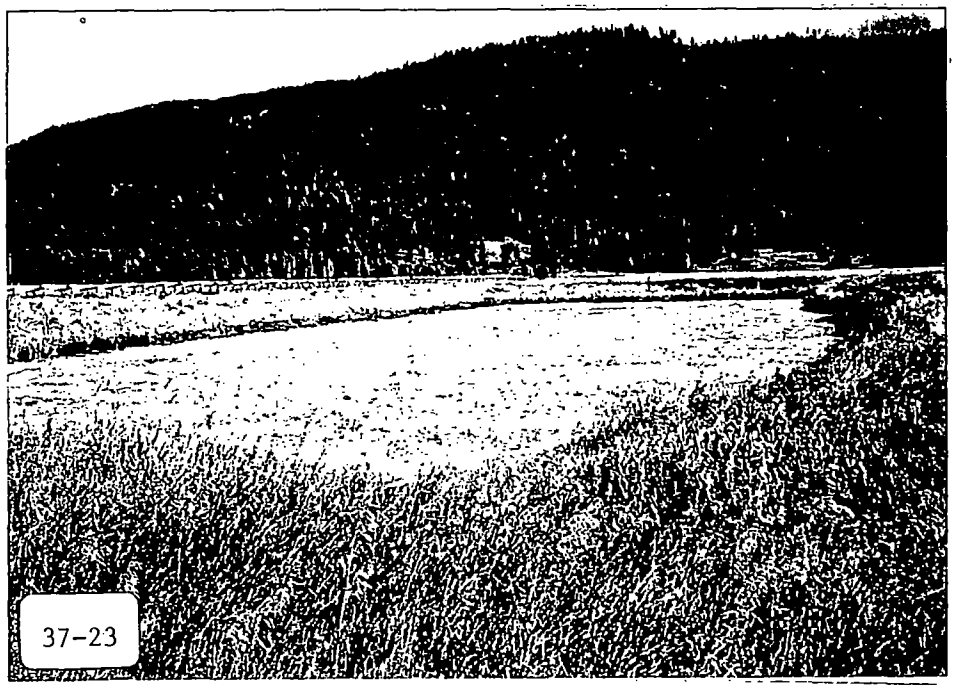

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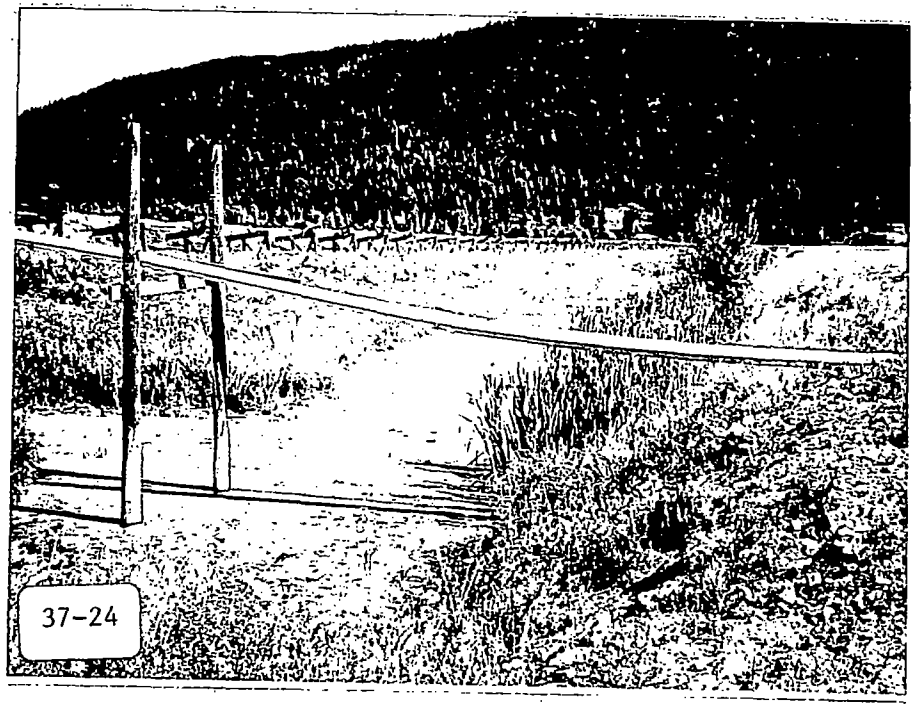

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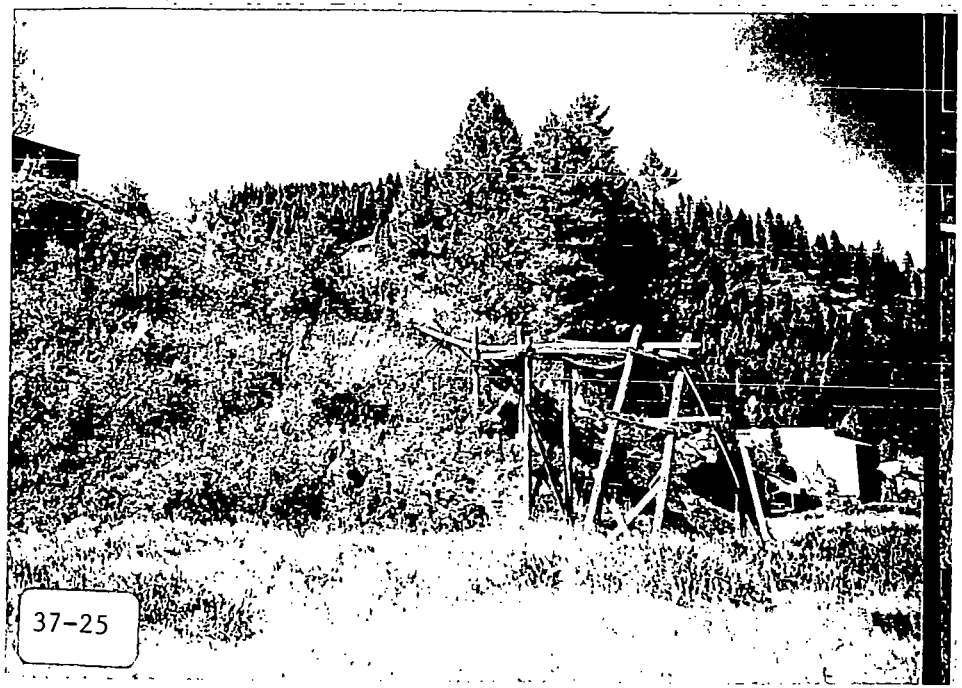

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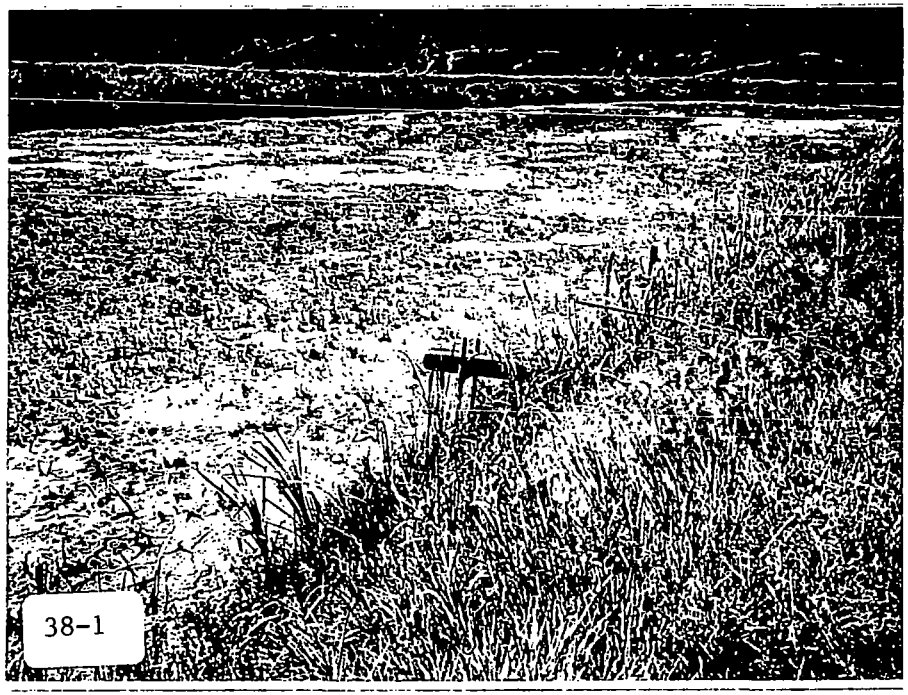

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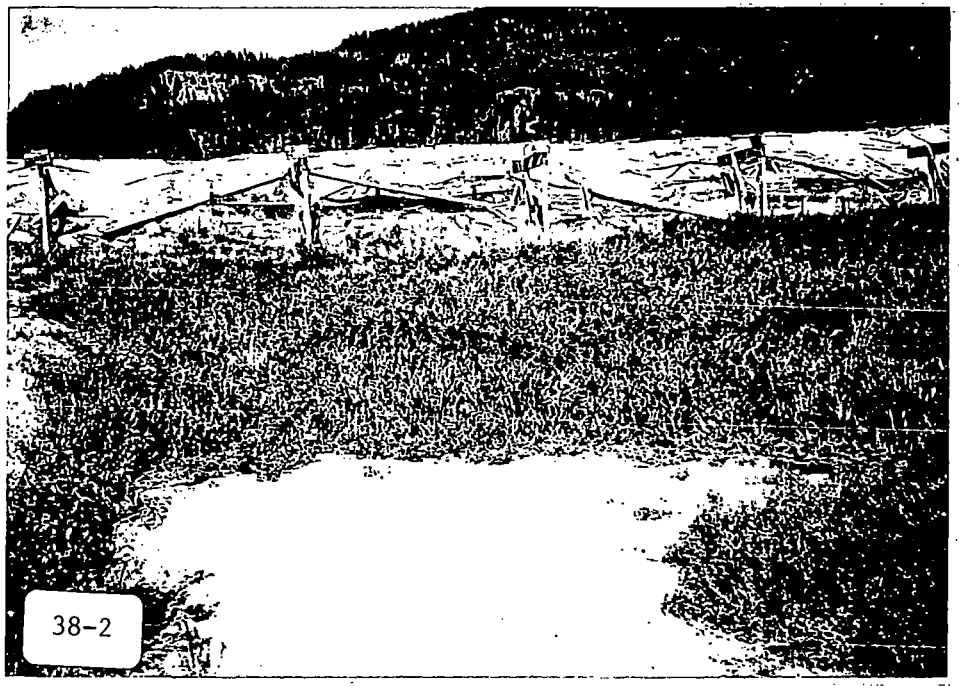

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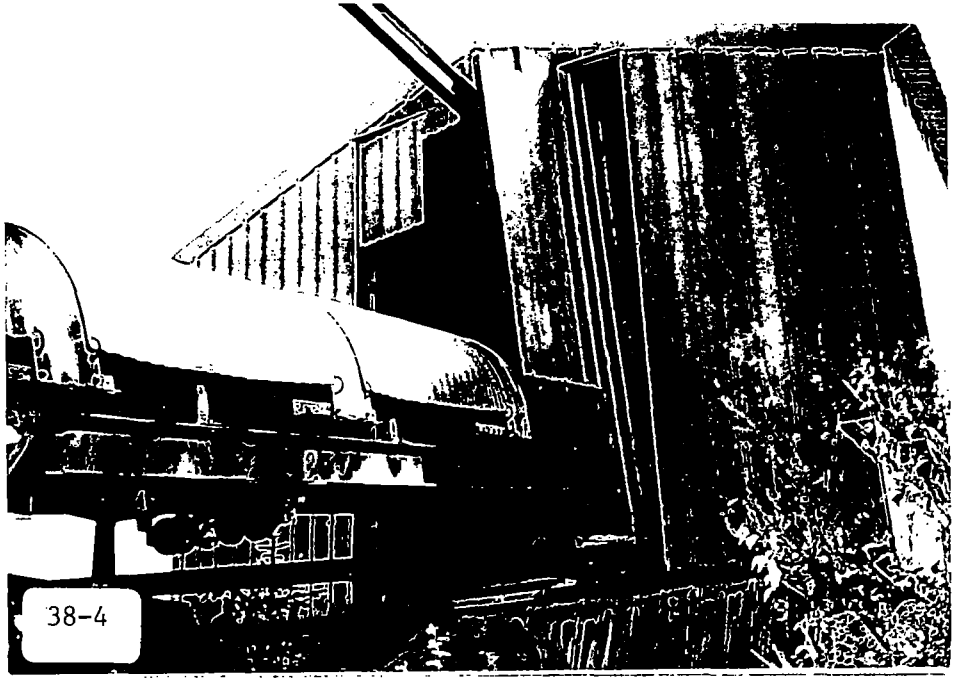

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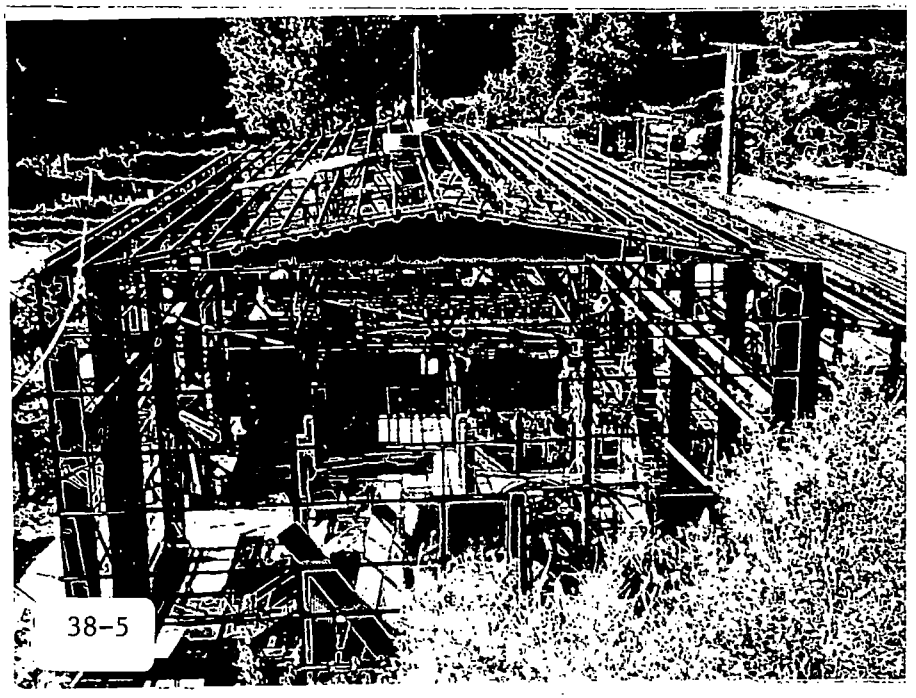

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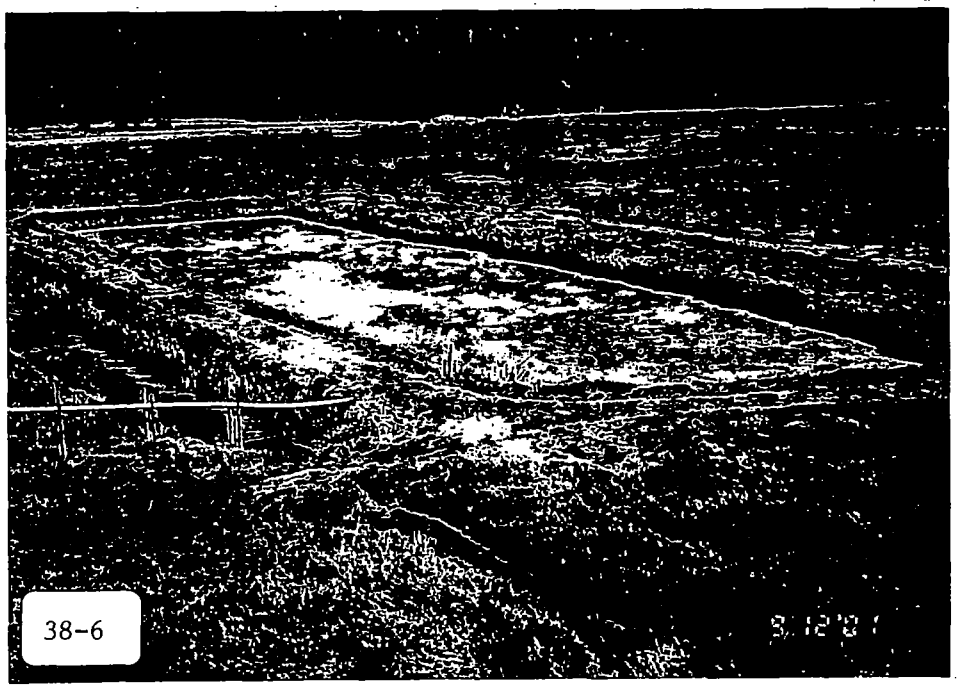

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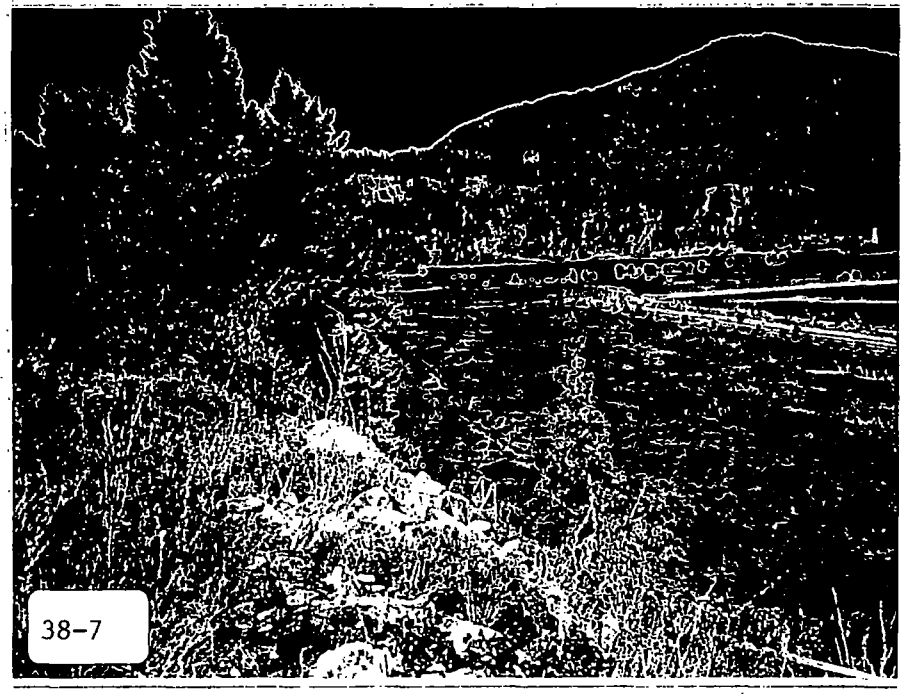

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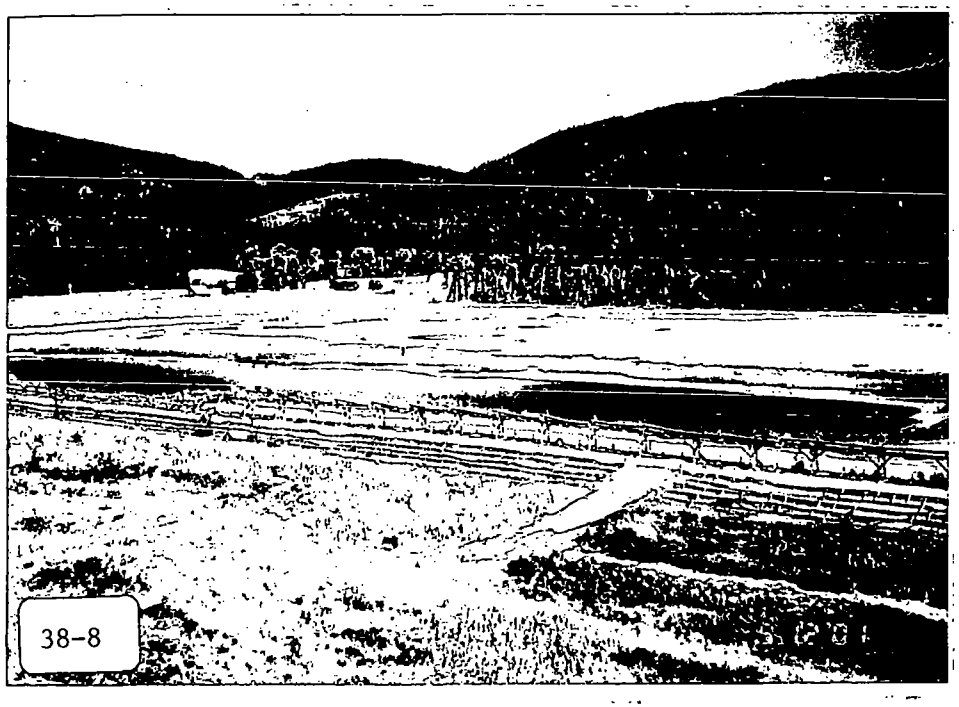

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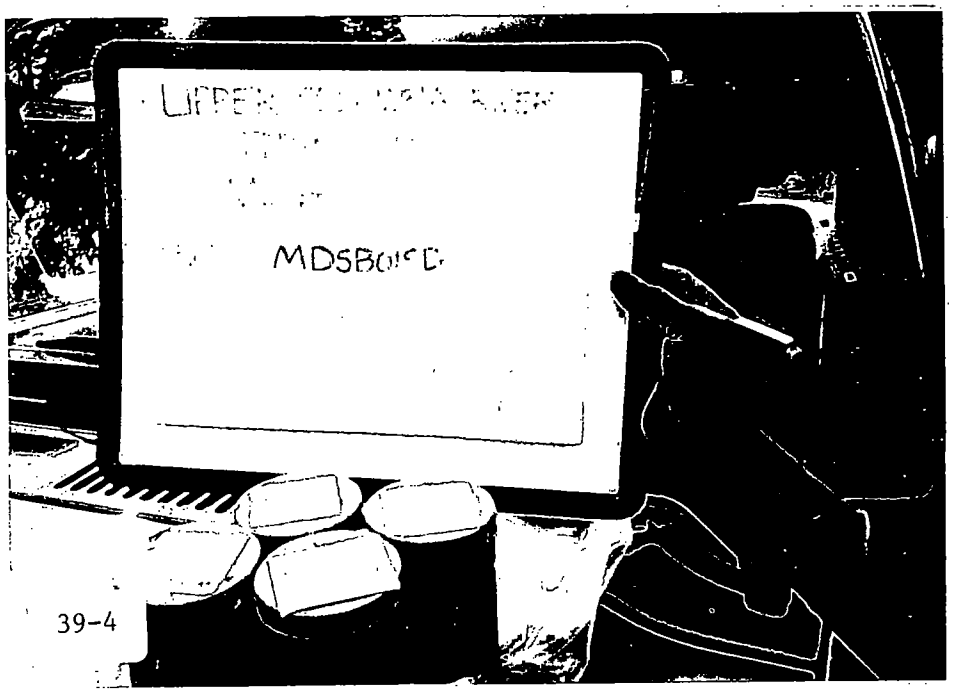

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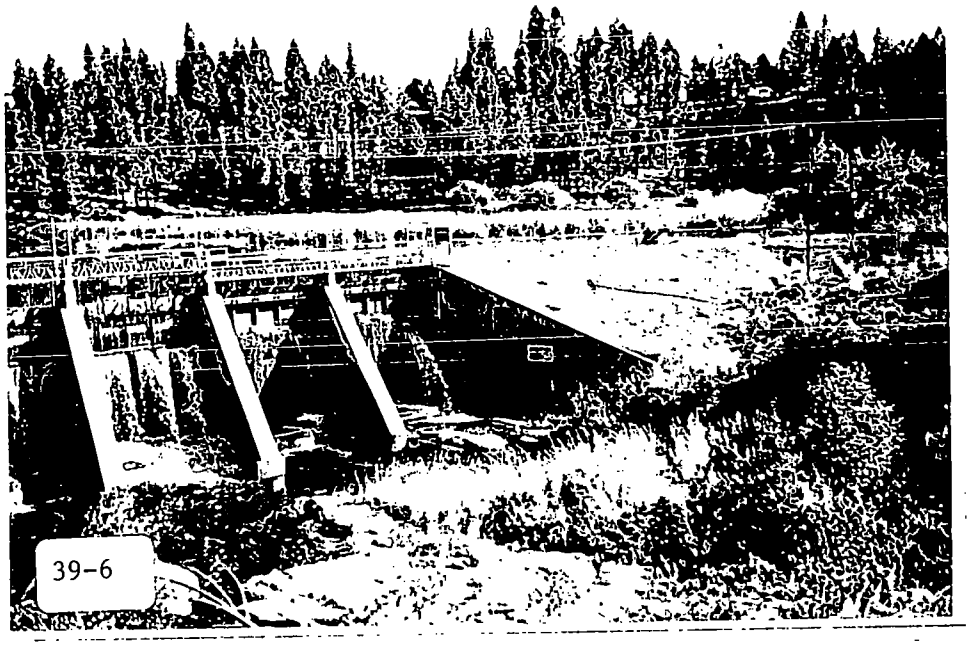

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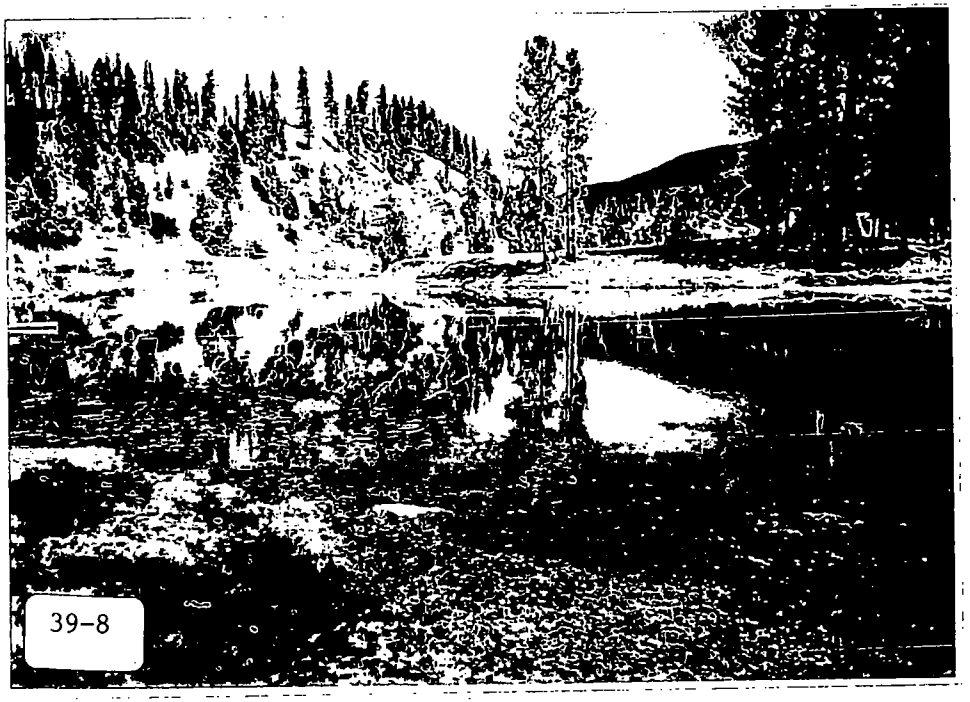

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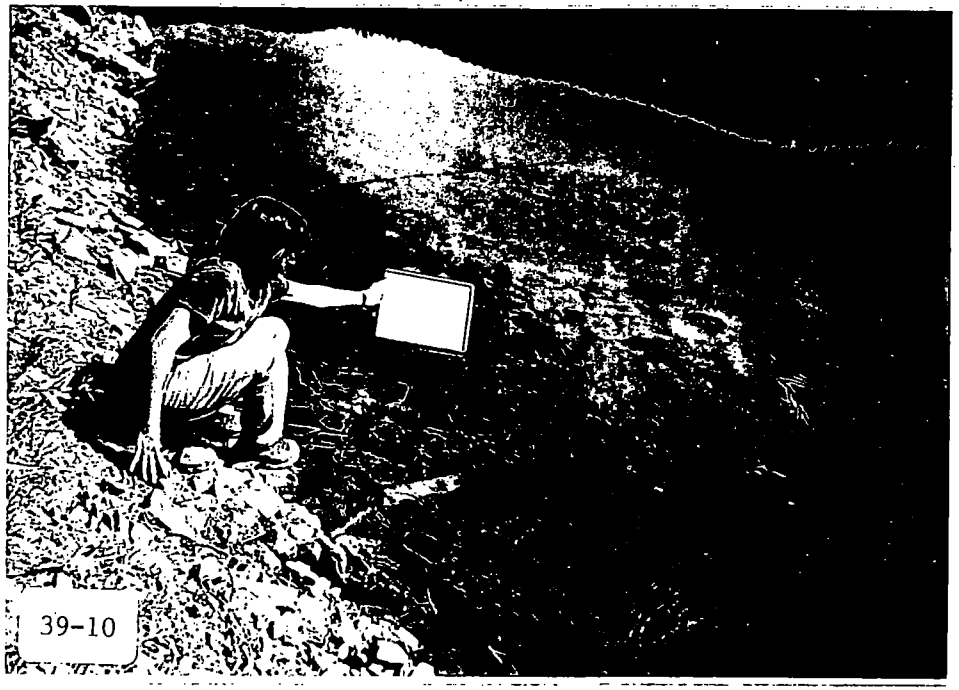

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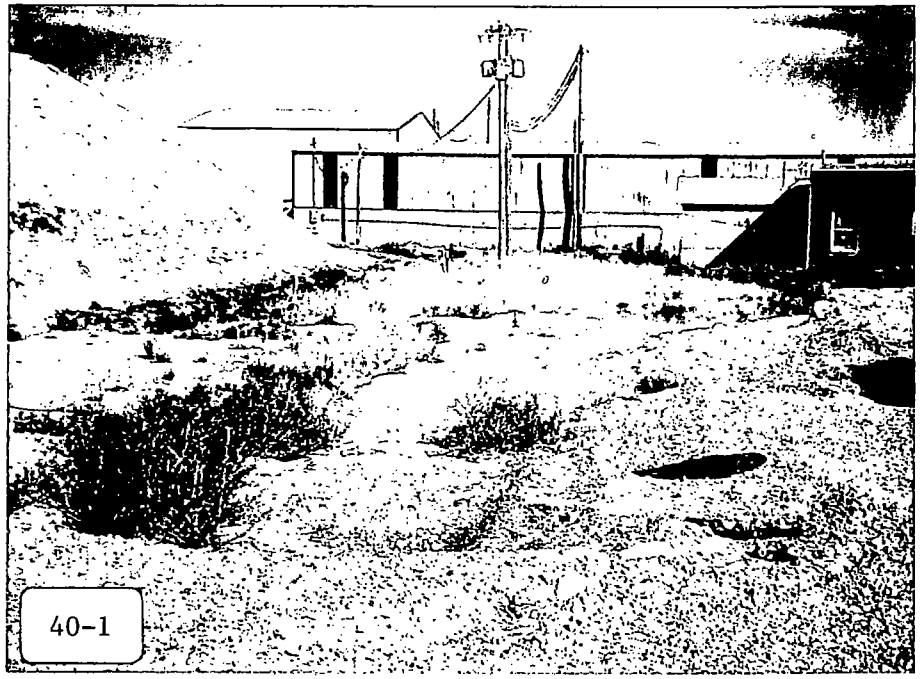

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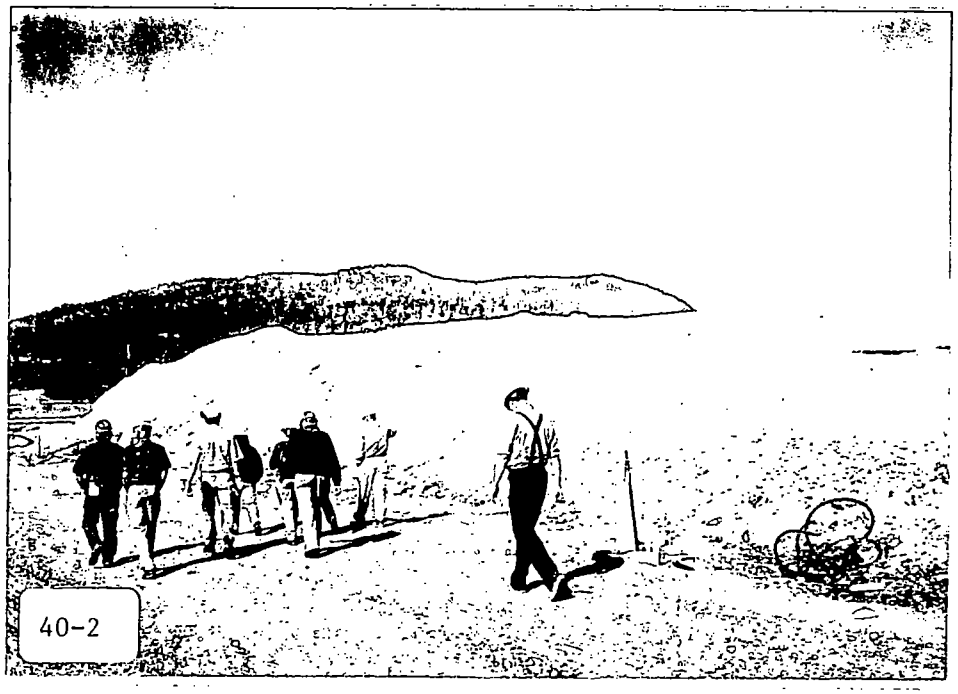

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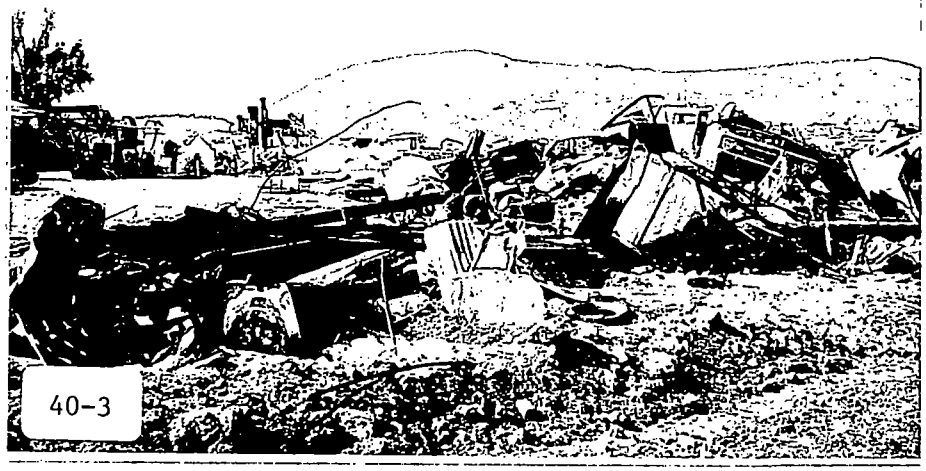

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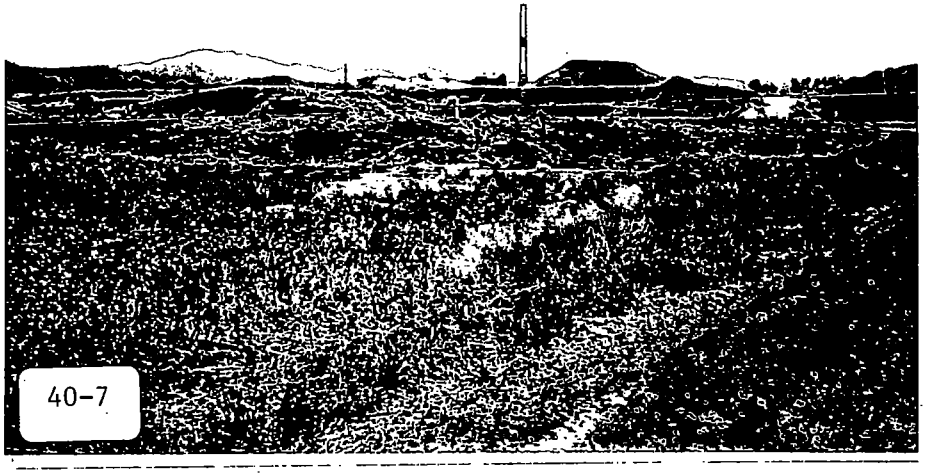

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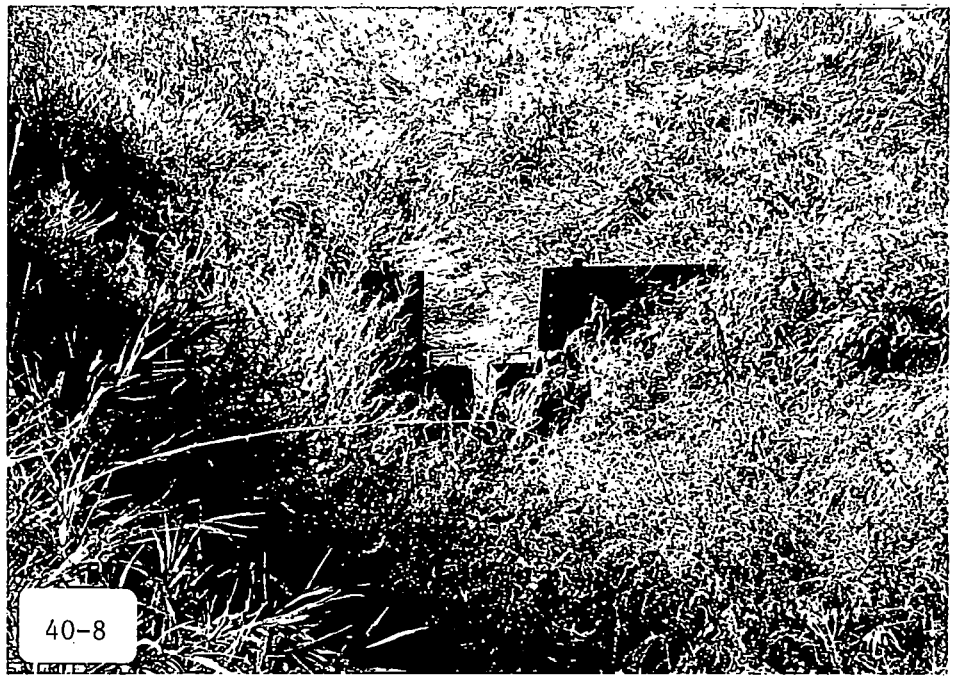

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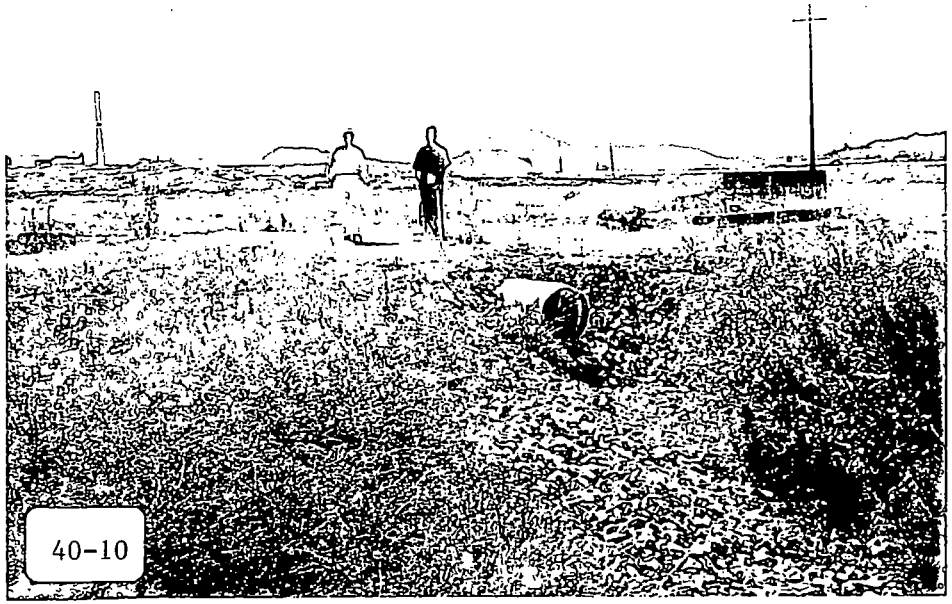

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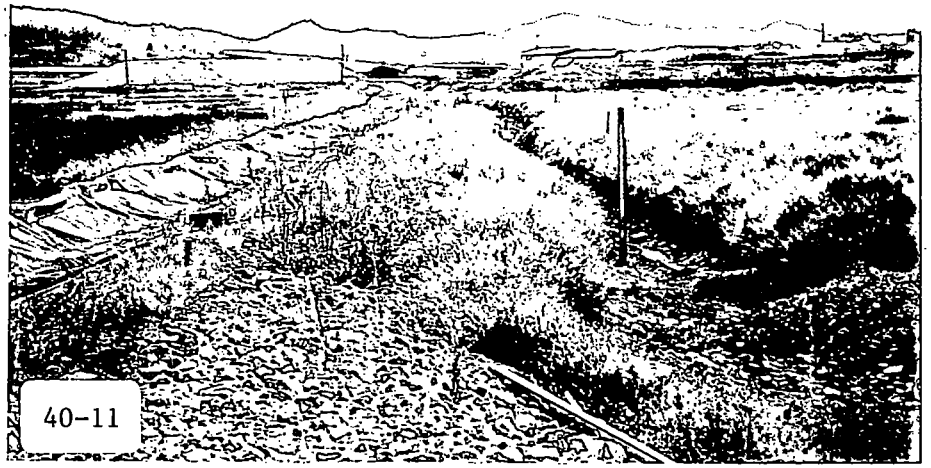

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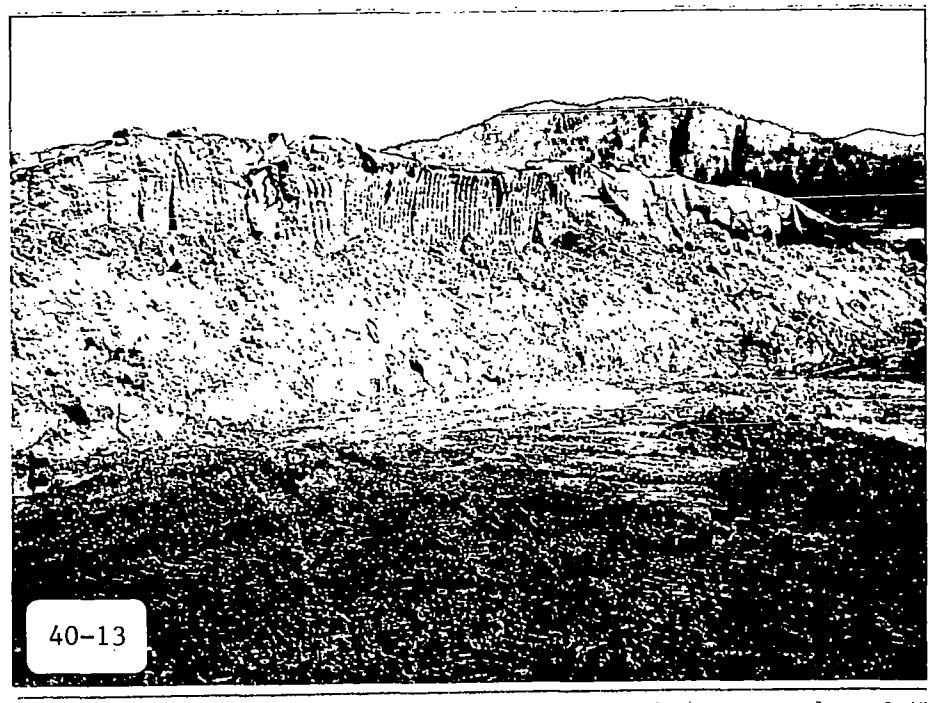

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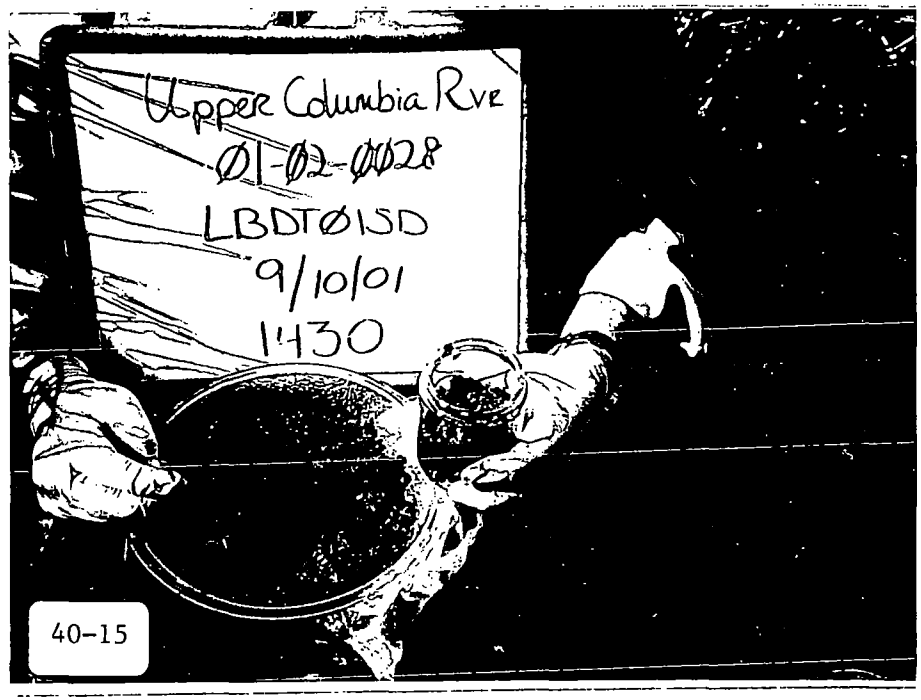

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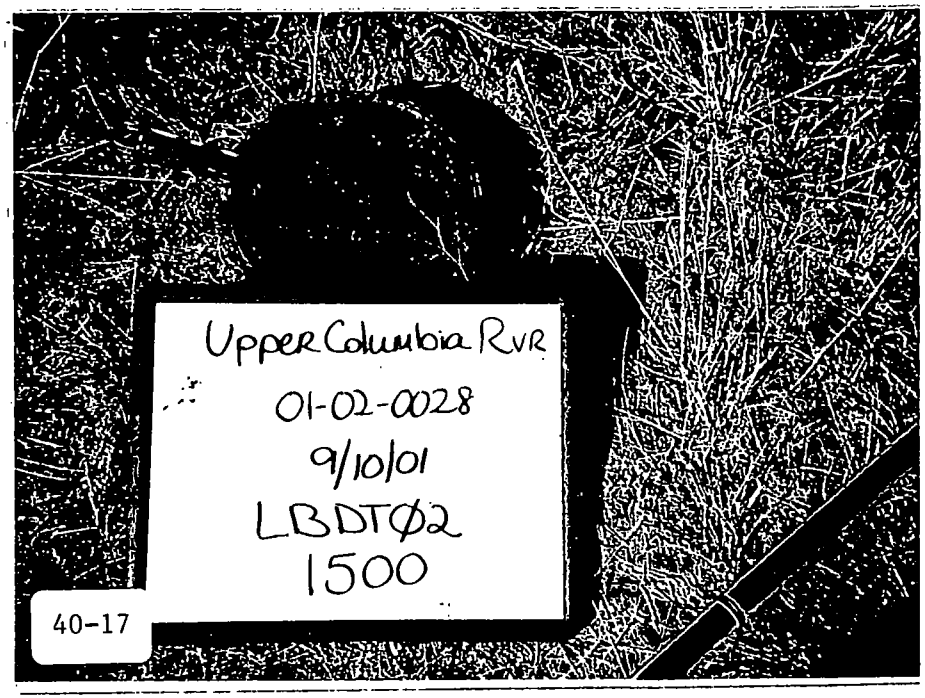
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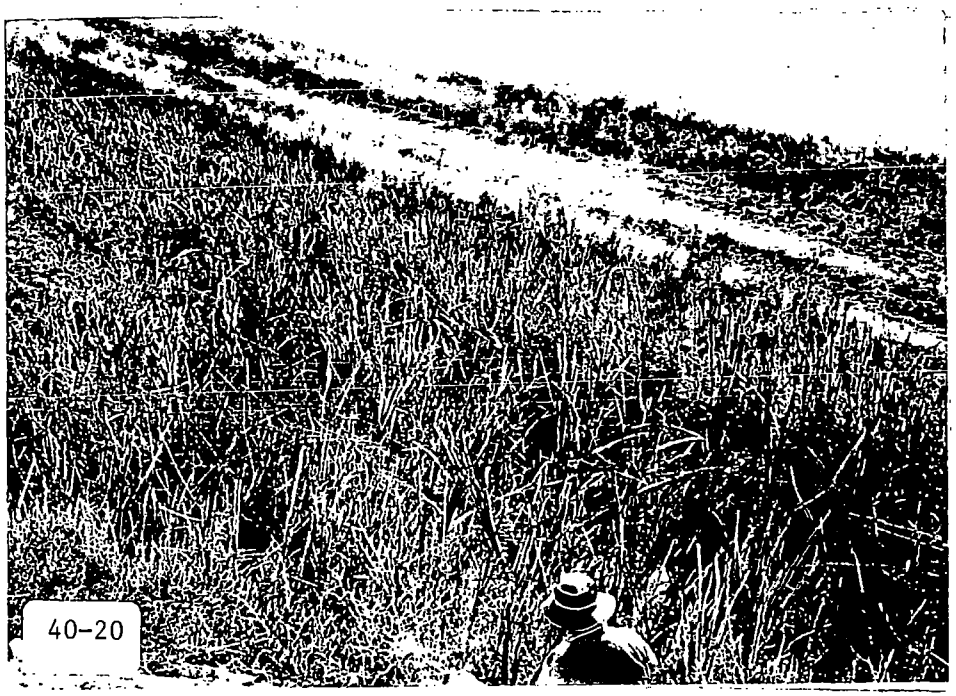

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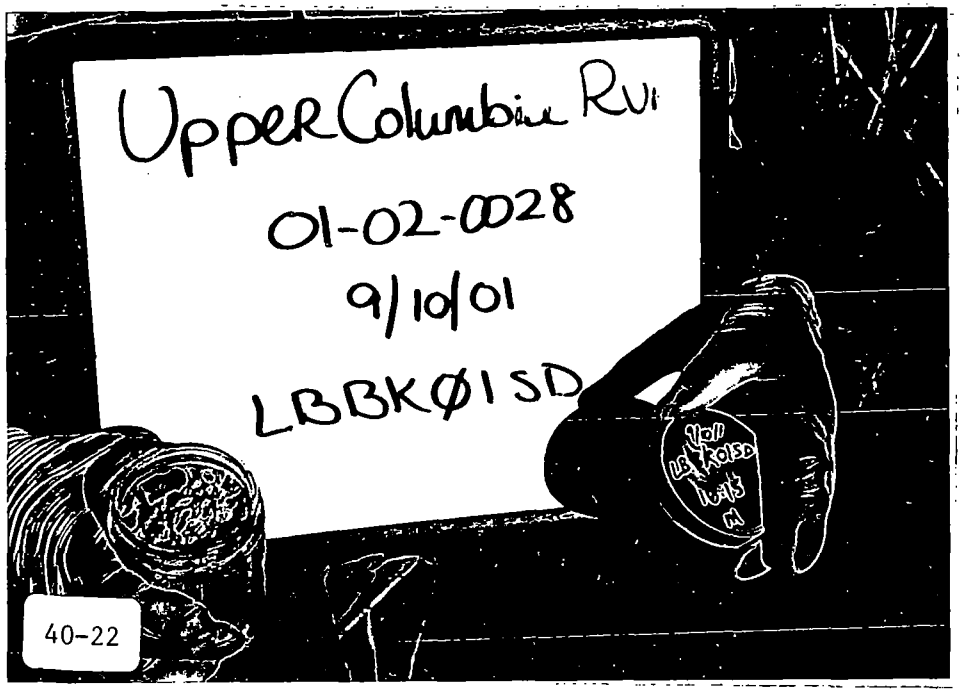

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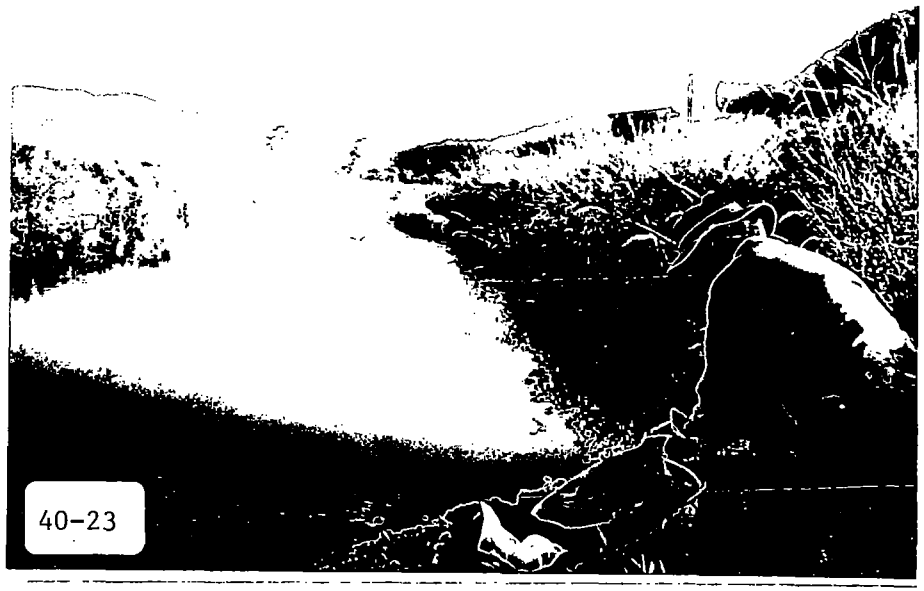

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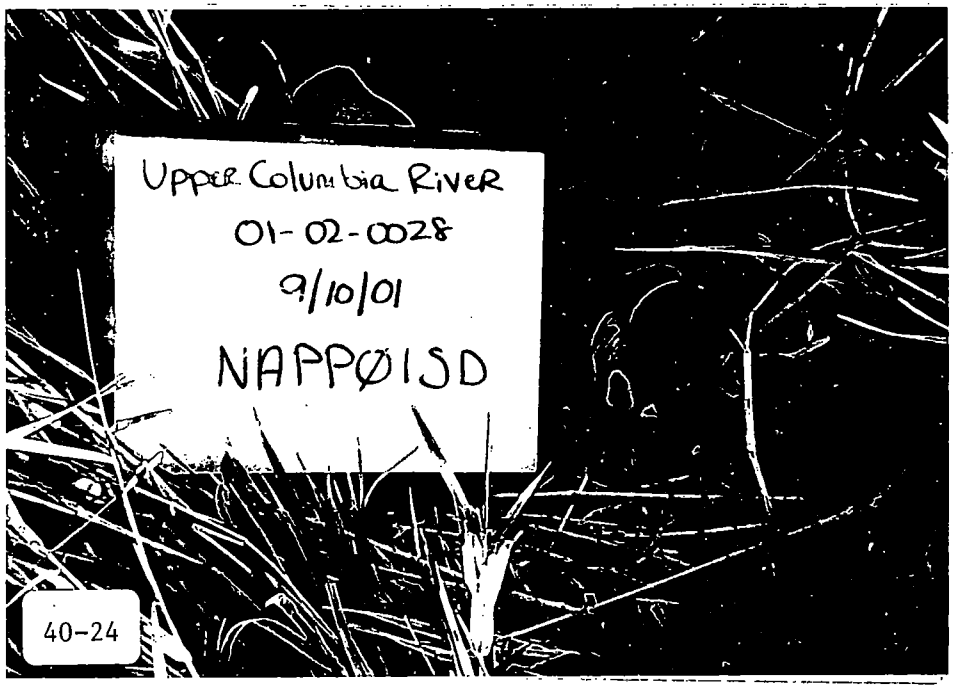
Upper Columbia River
01-02-0028
9/10/01
NAPPØ1SD
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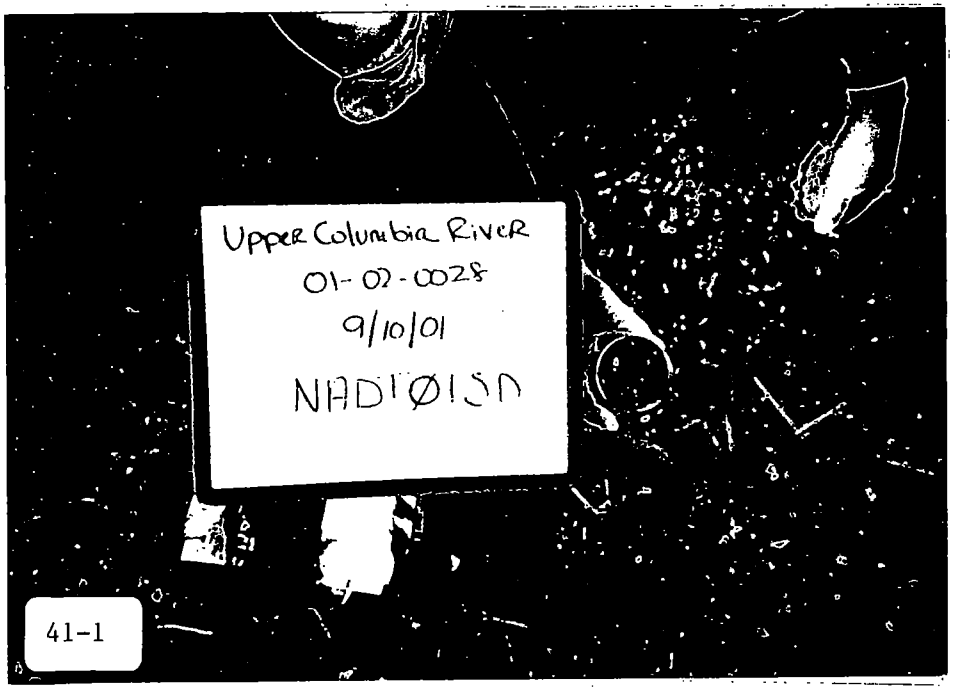
40-25


Upper Columbia River
01-02-0028
9/10/01
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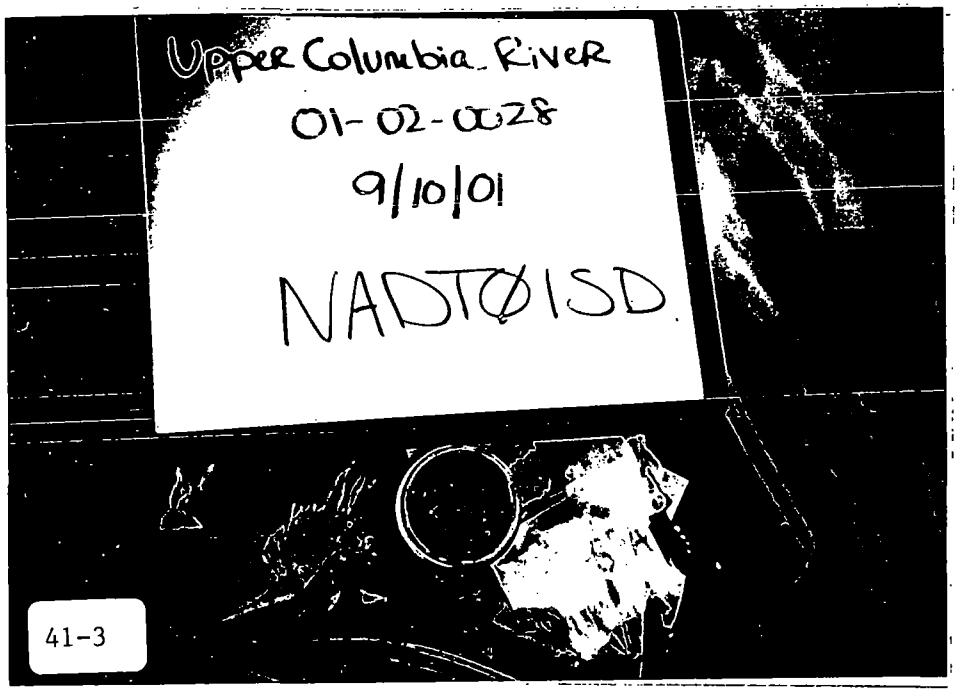
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01-02-0028
9/10/01
NADTØ1SD
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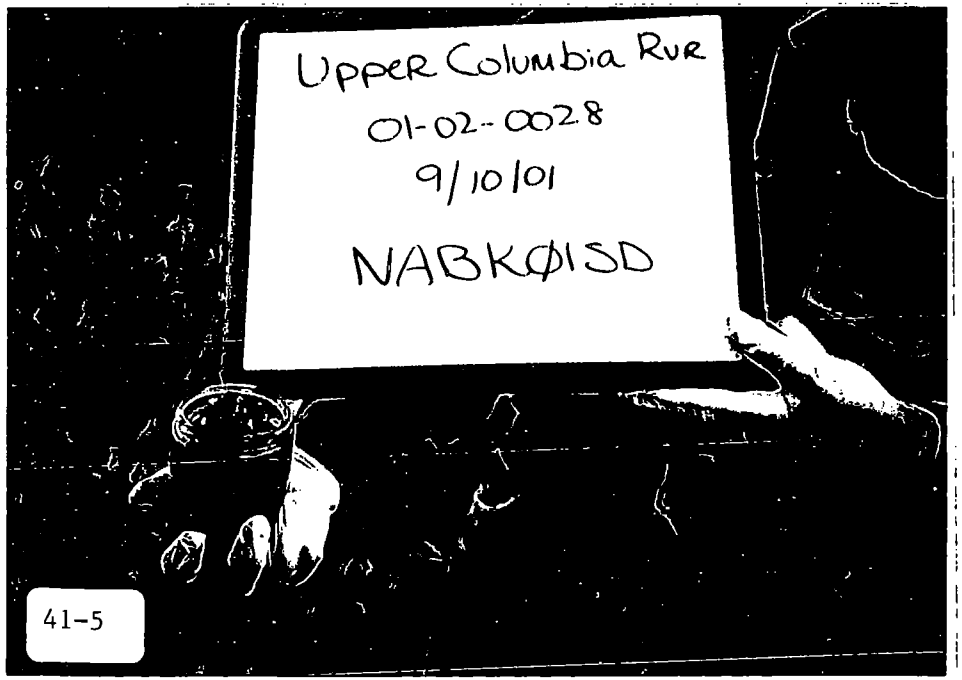
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01-02-0028
9/10/01
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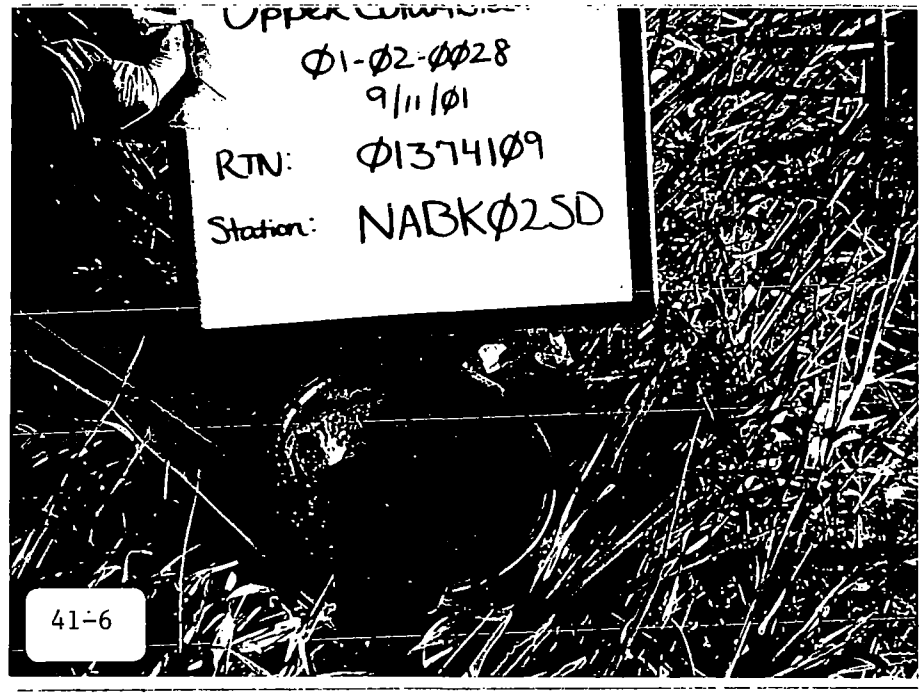
Ø1-Ø2-ØØ28
9/11/Ø1
RTN: Ø1374Ø9
Station: NABKØ2SD
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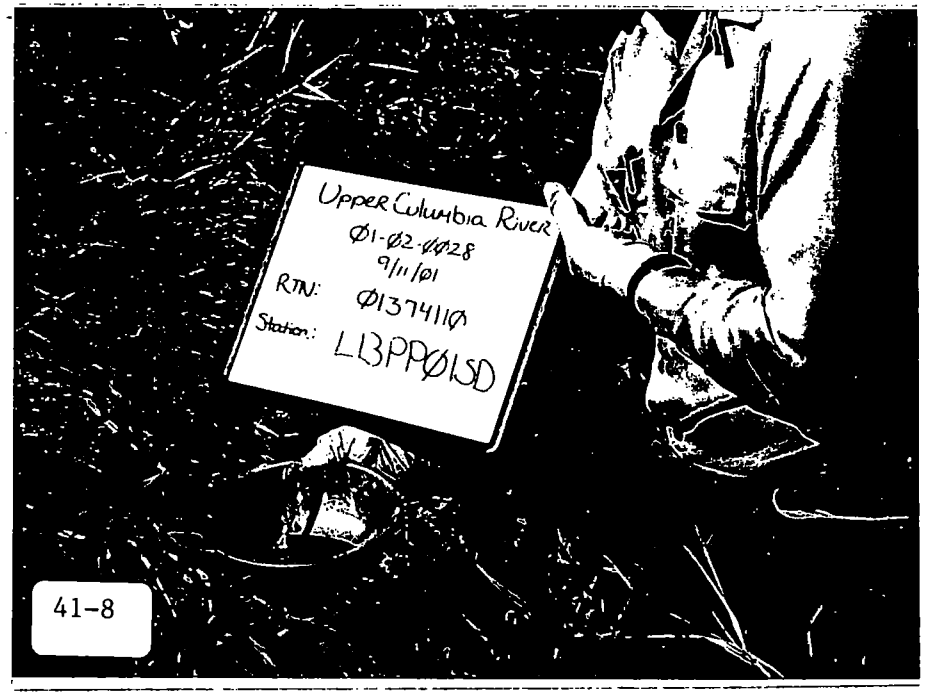

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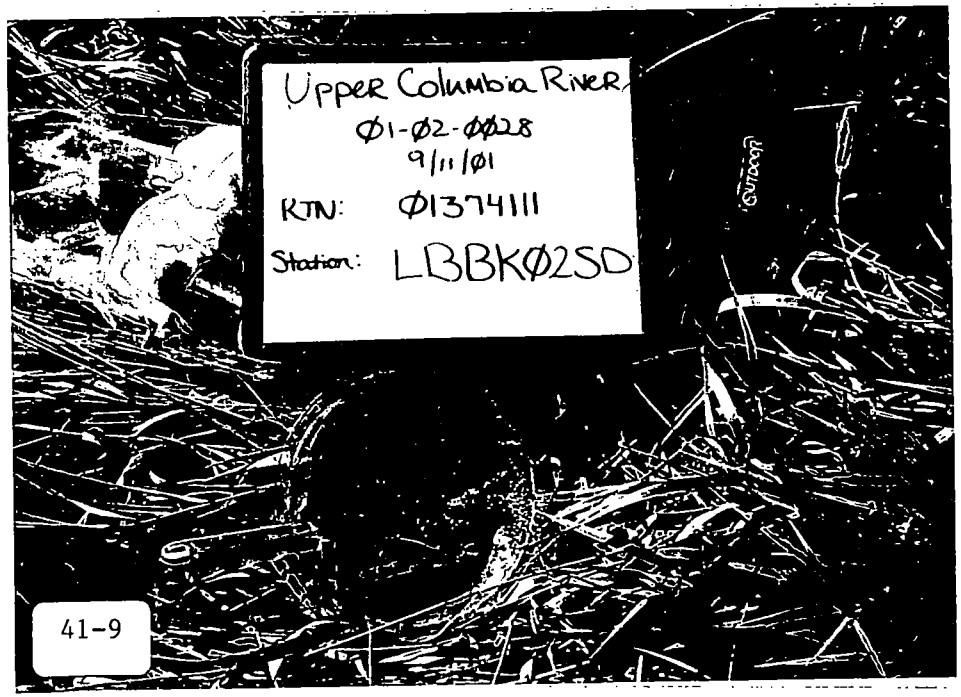

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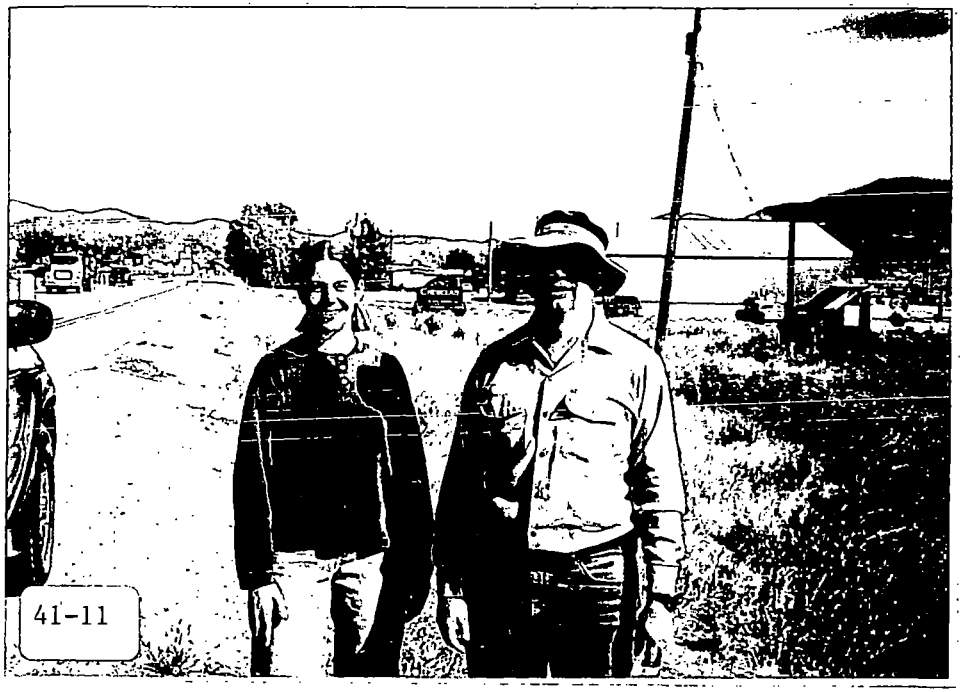

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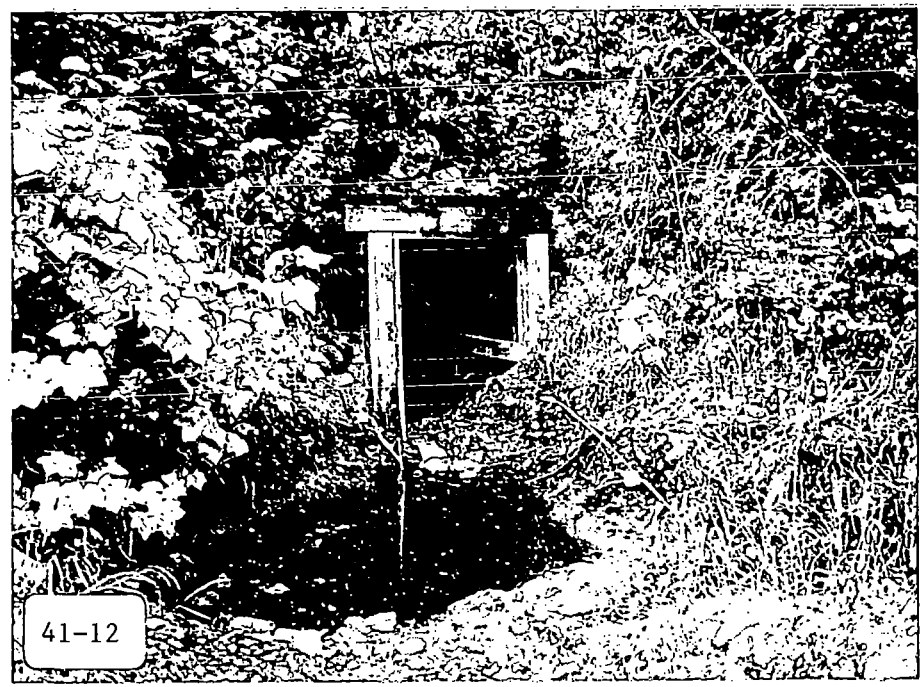

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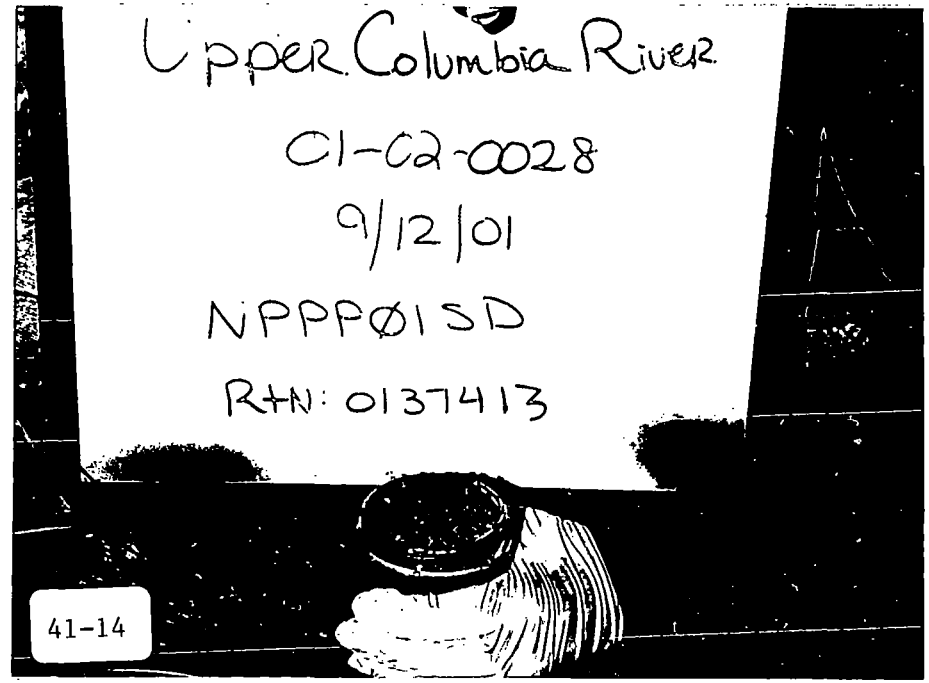

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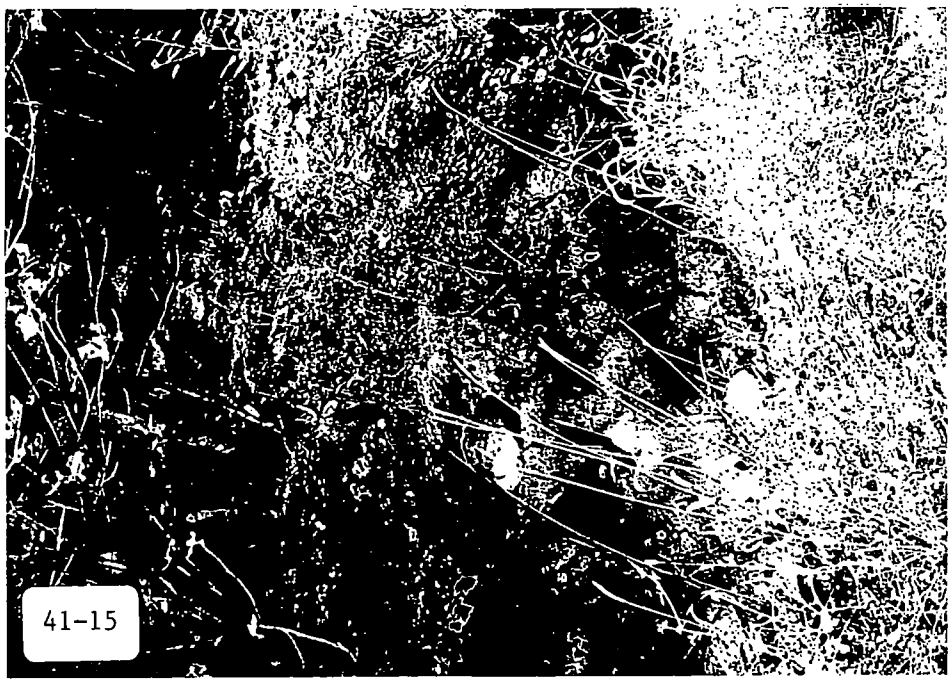

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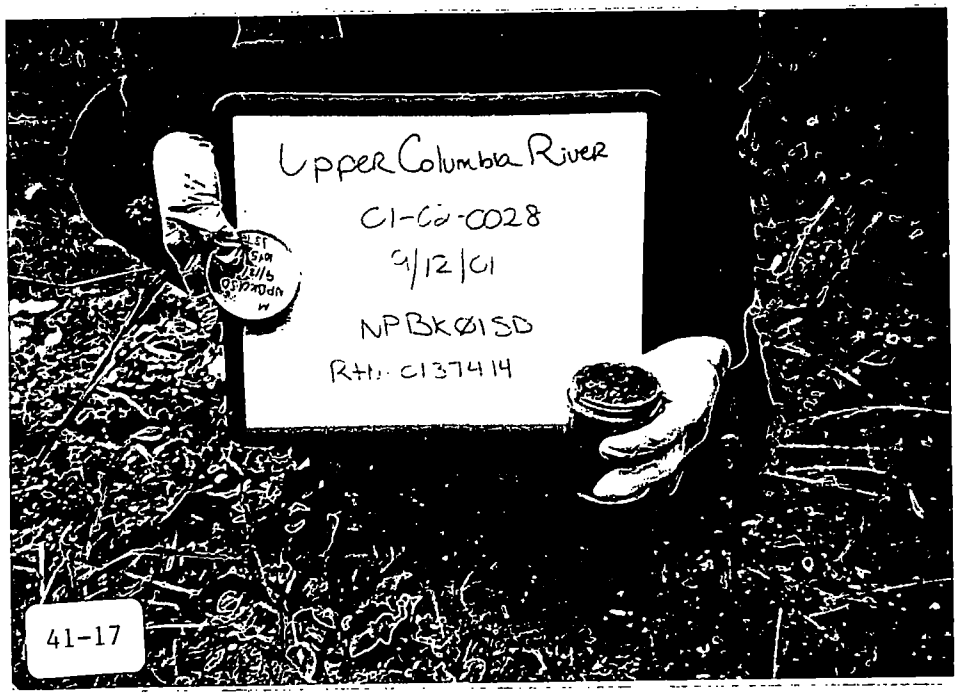

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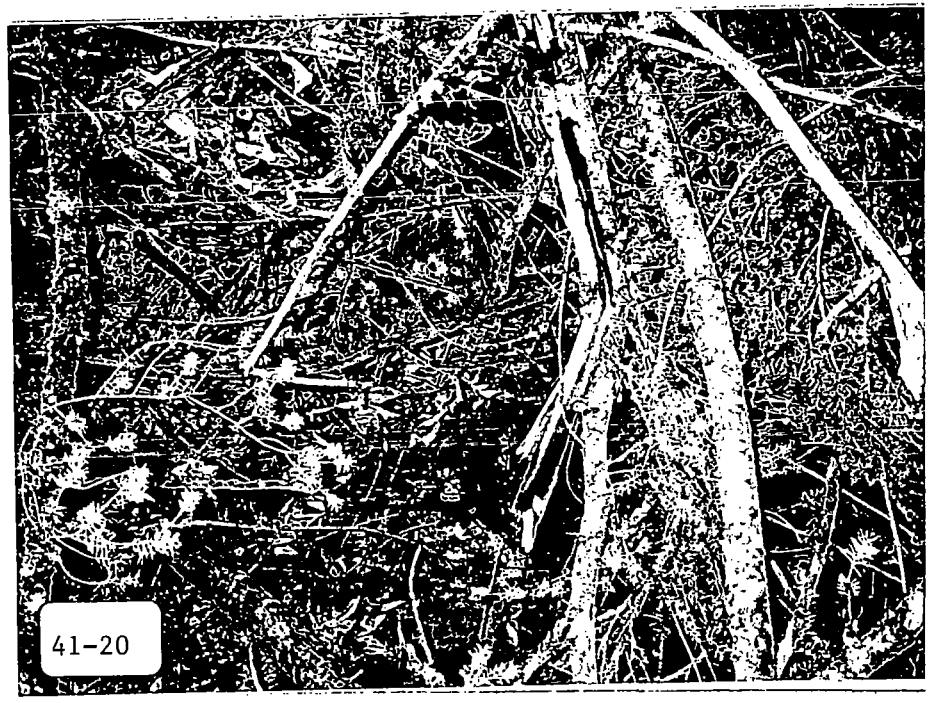

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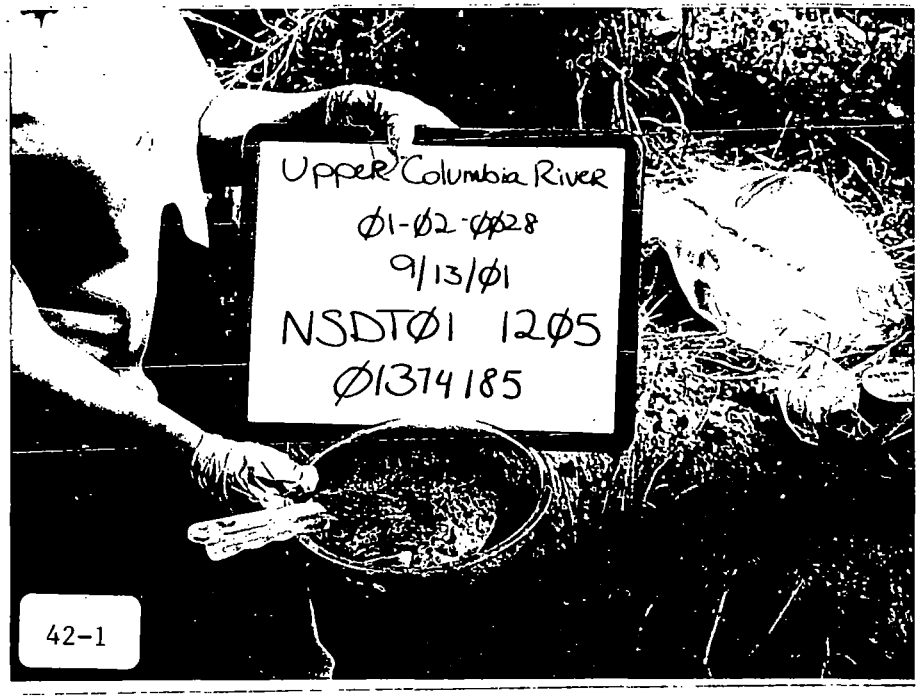

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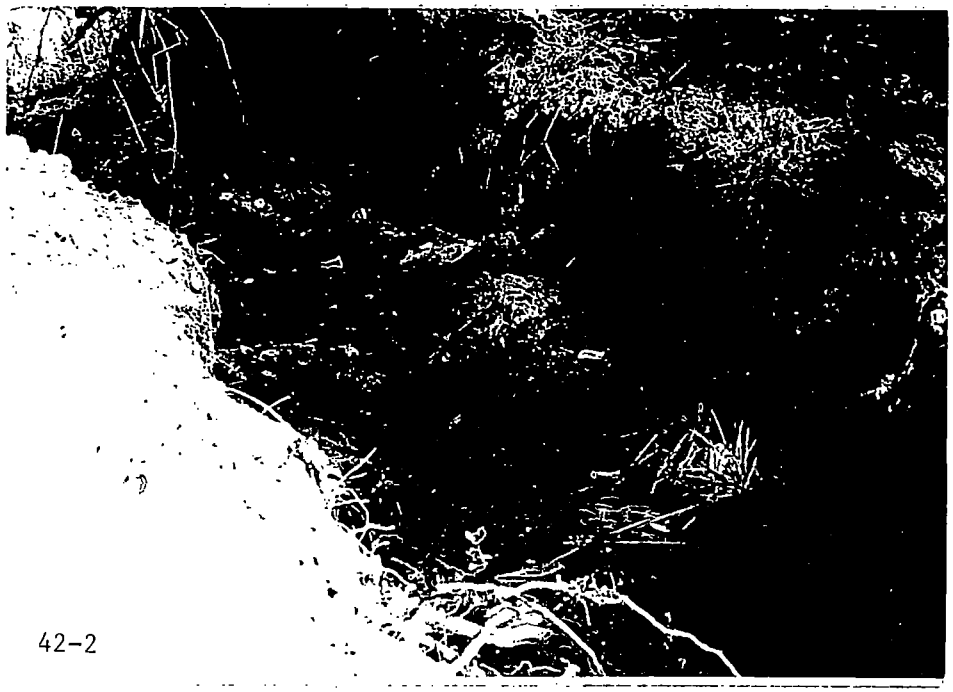

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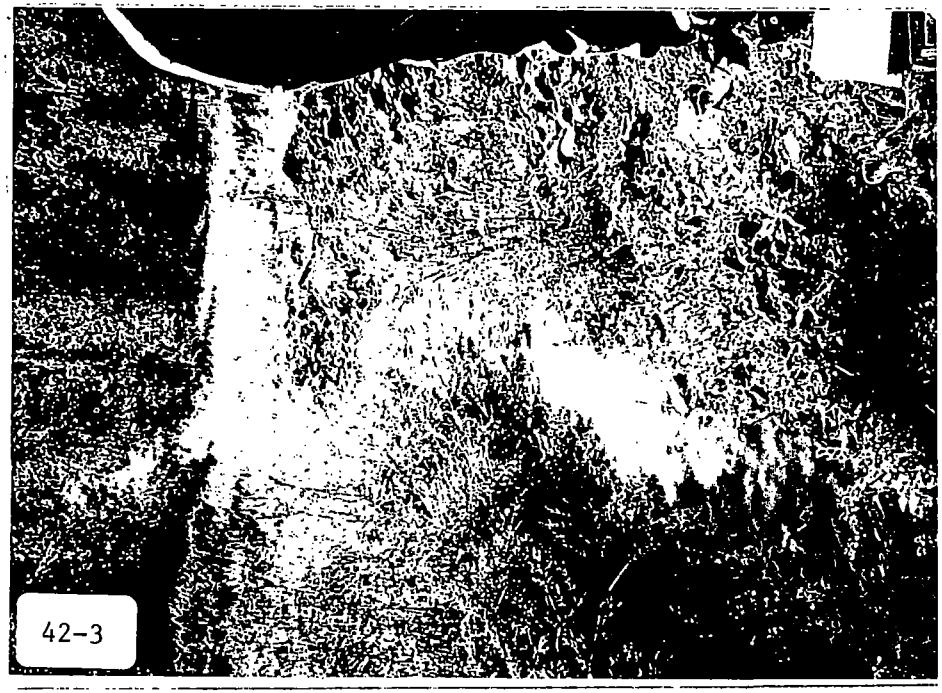

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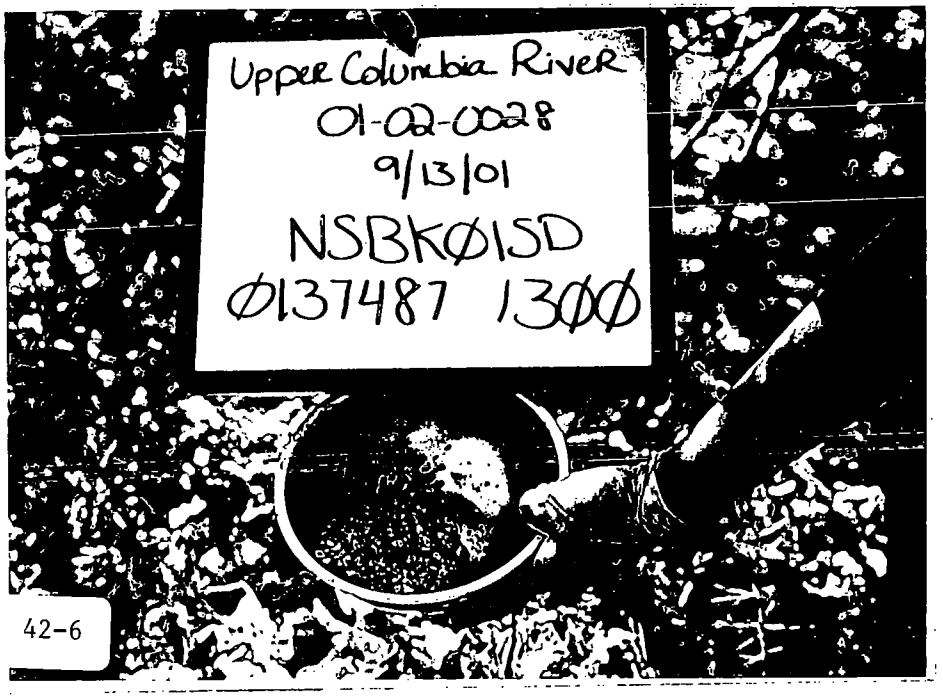

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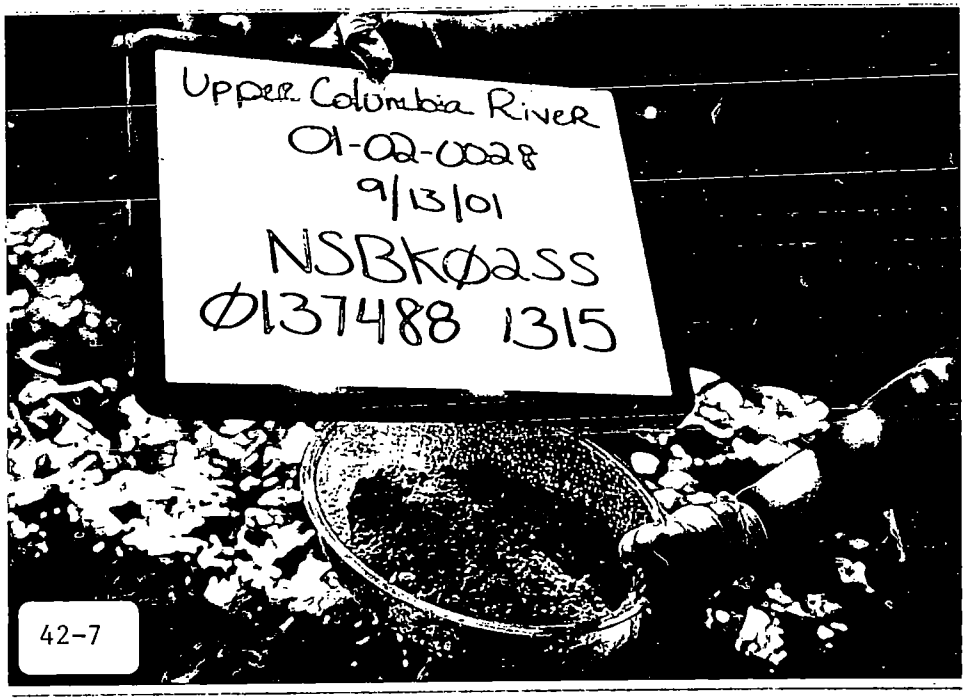

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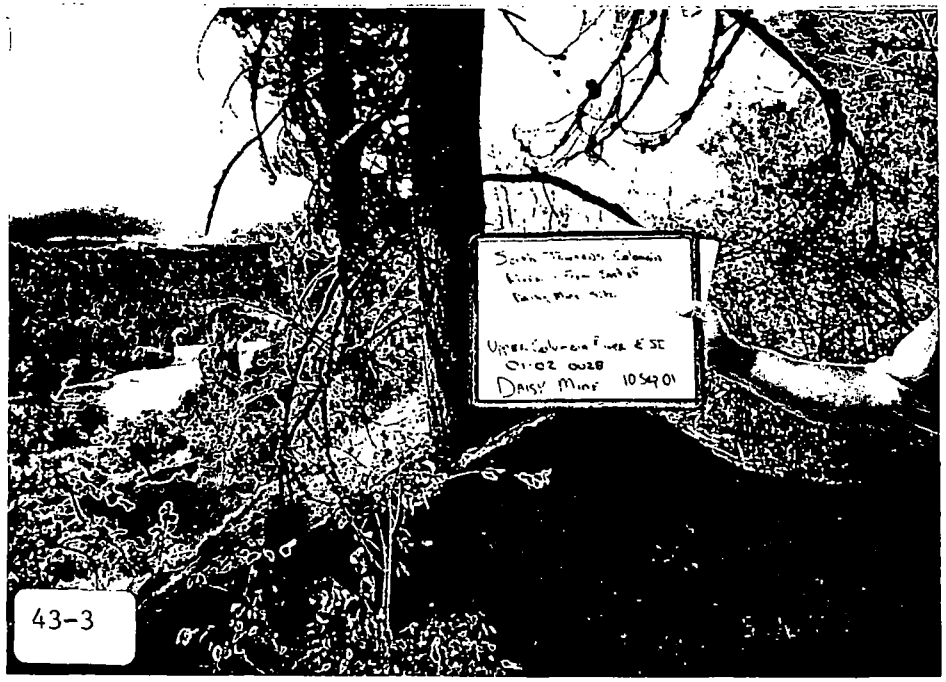

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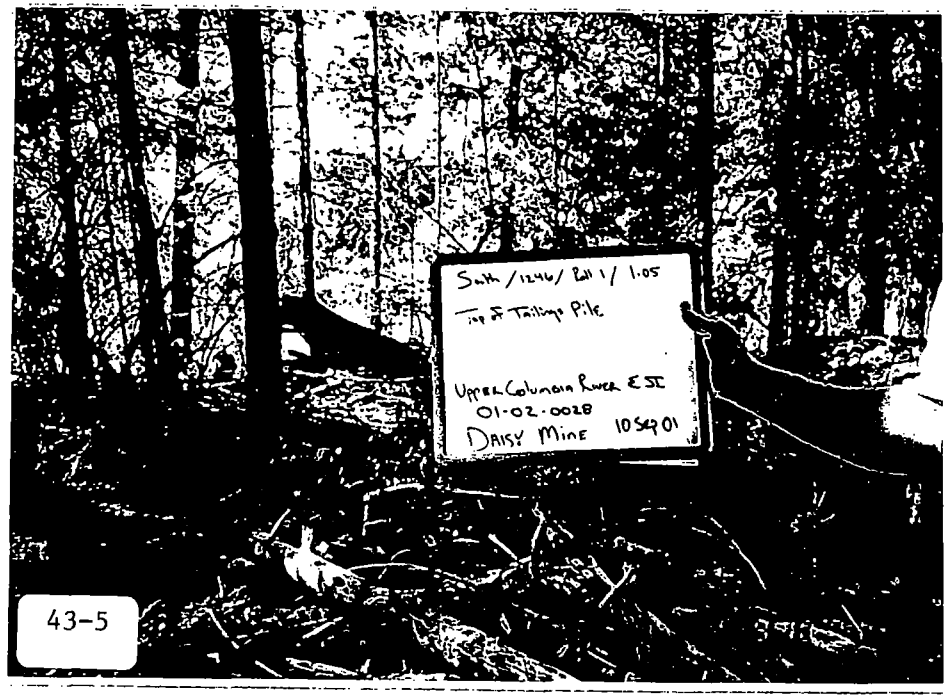

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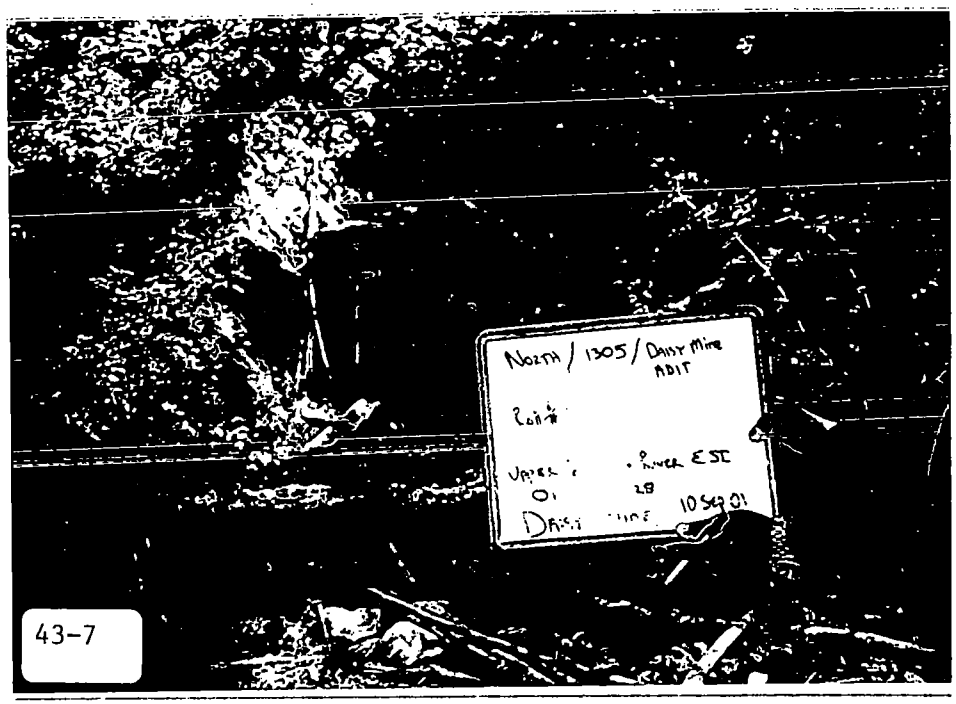

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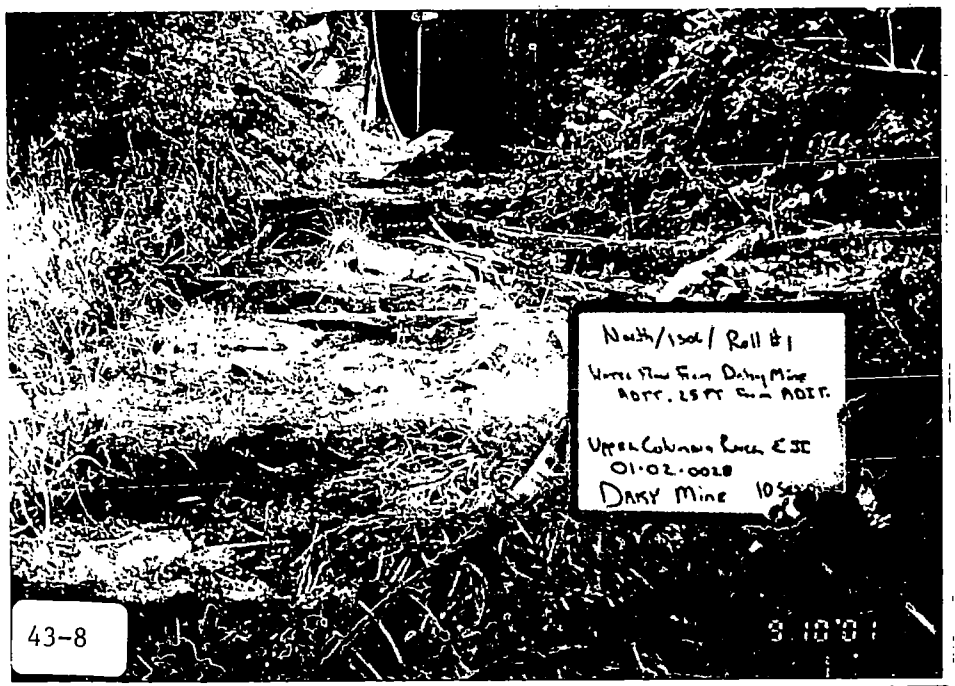

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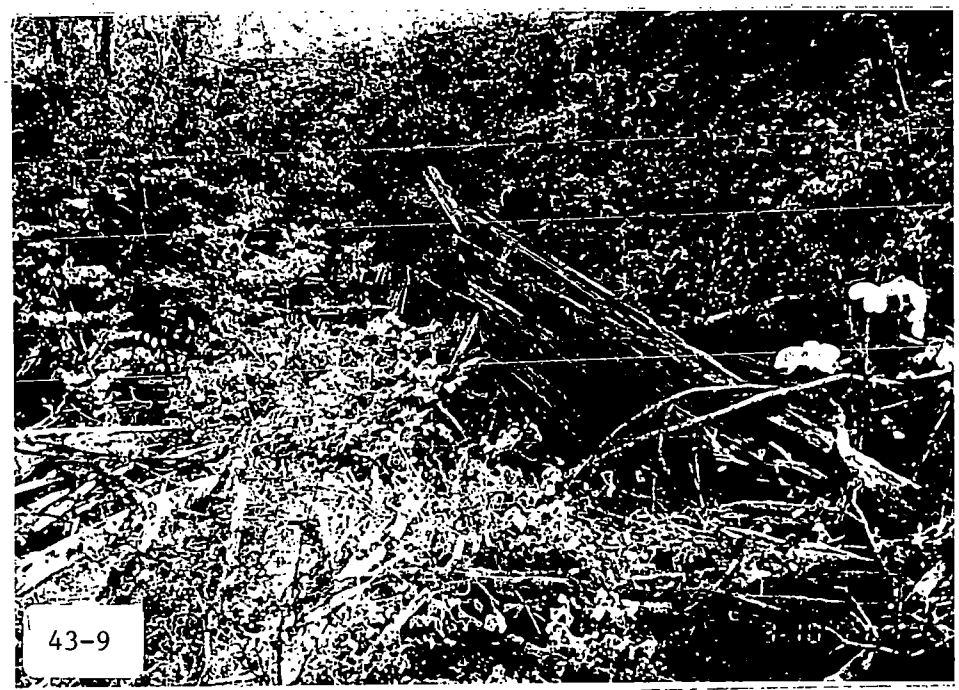

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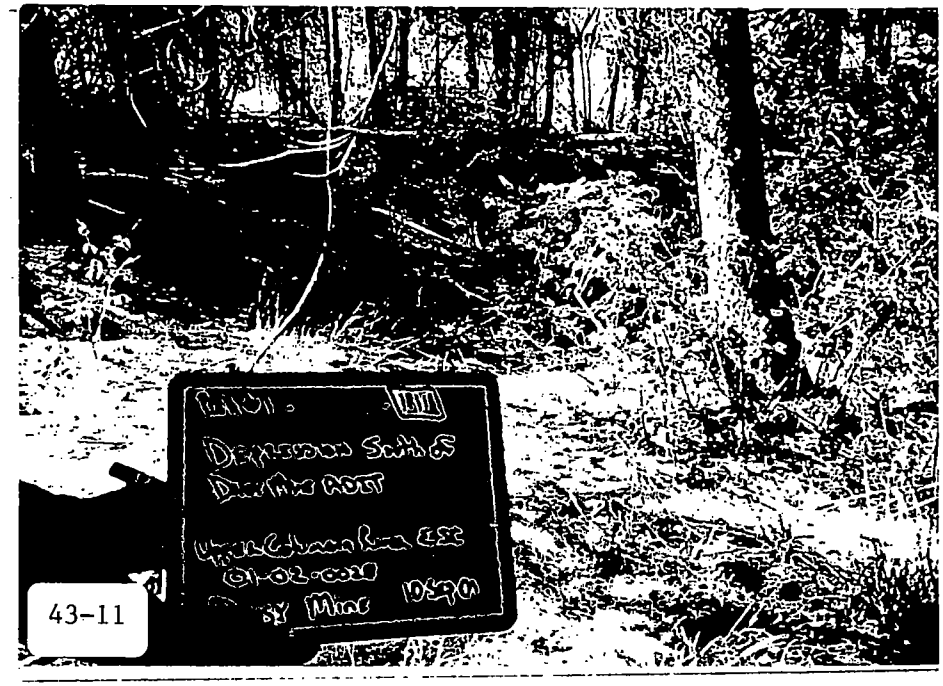

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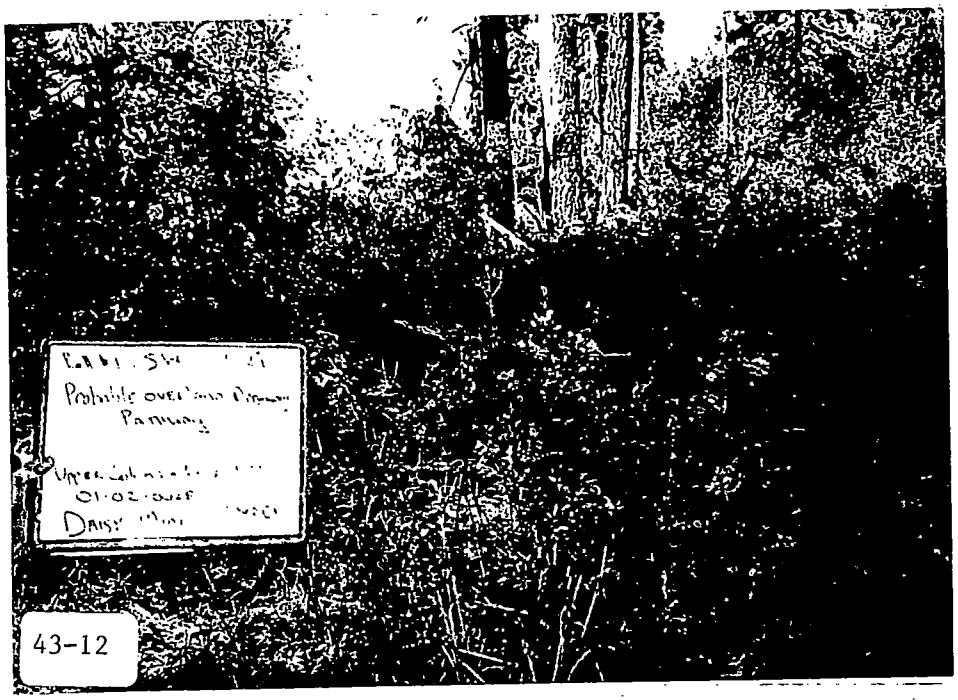

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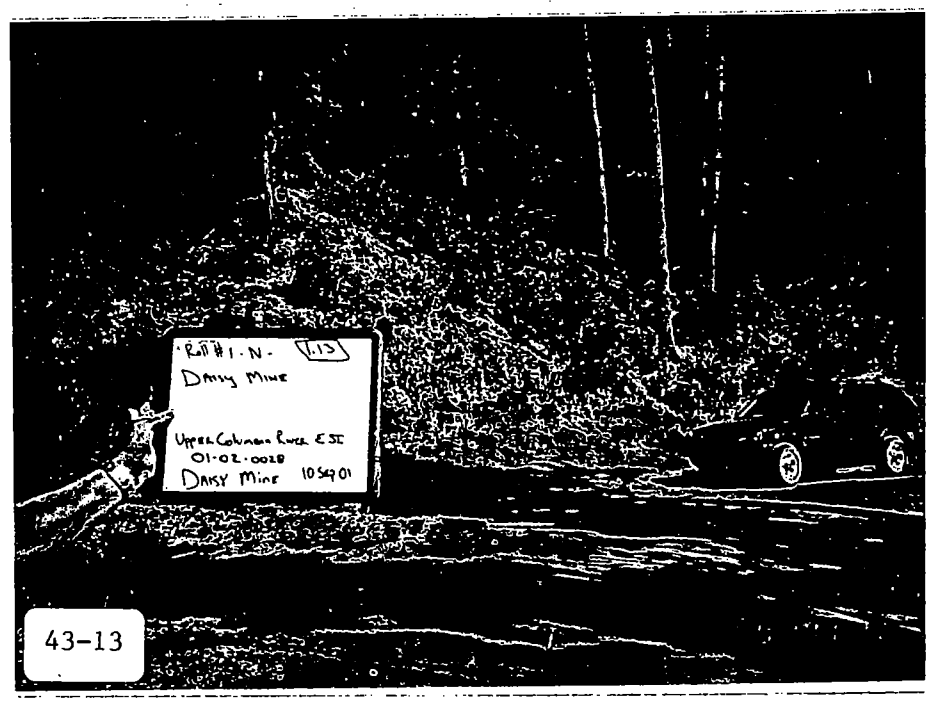

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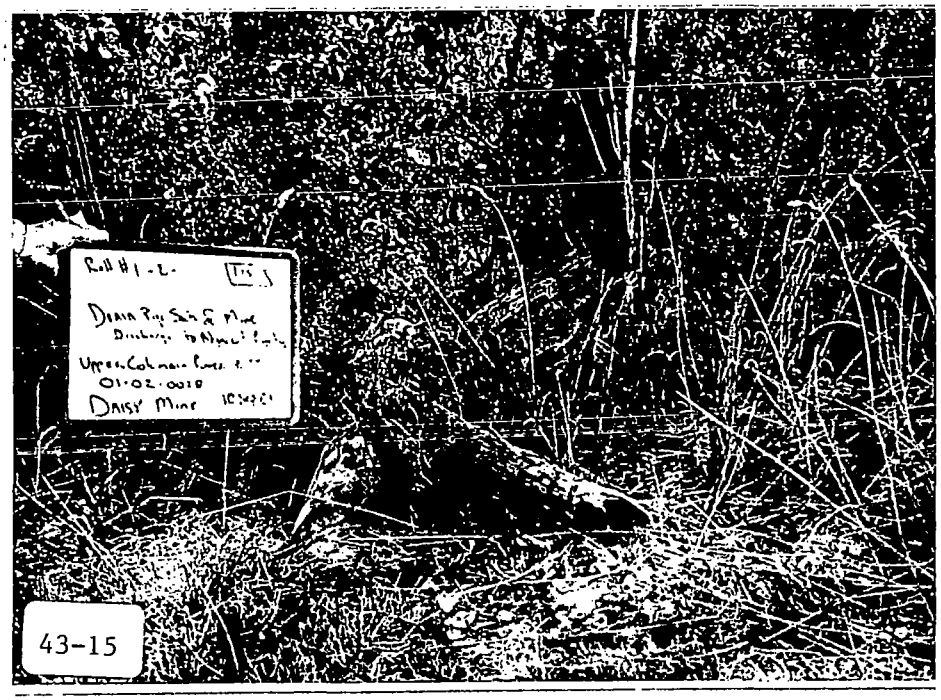

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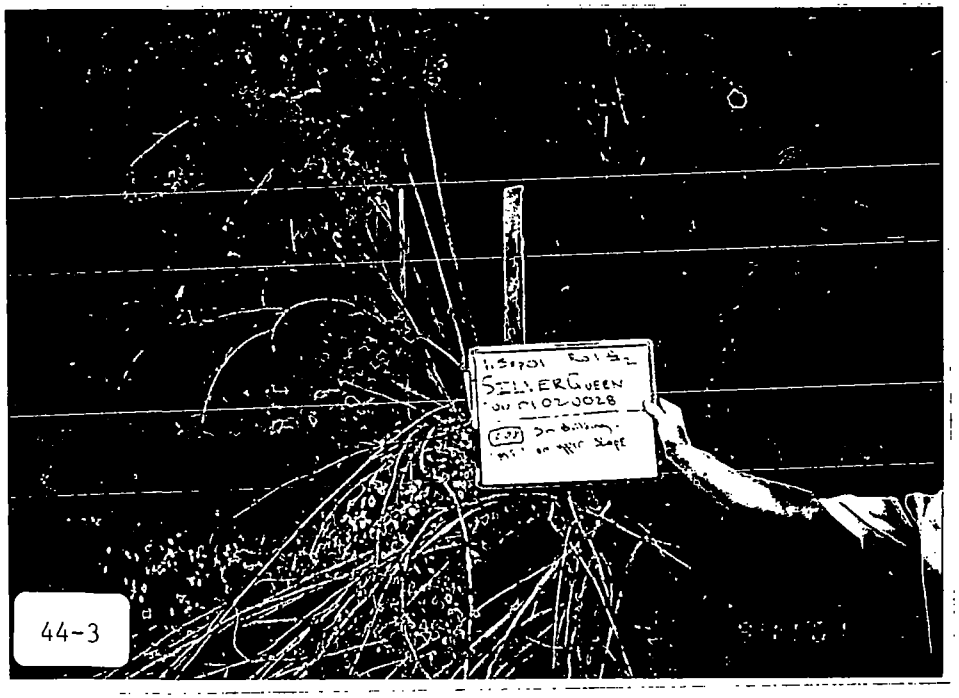
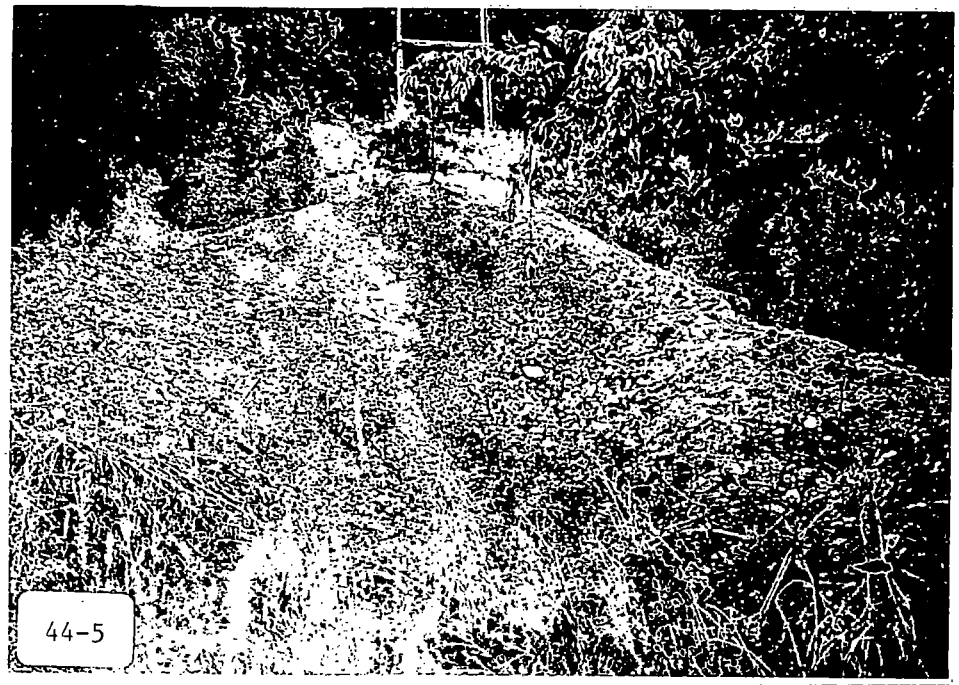
11Sep01 Roll #2
SILVER QUEEN
TBO 01-02-0028
Mine Shed 15'x20'
"MT" on
UPPER SLOPE
44-2


11Sep01 Roll #2
SILVER QUEEN
TBO 01-02-0028
44-3

44-4



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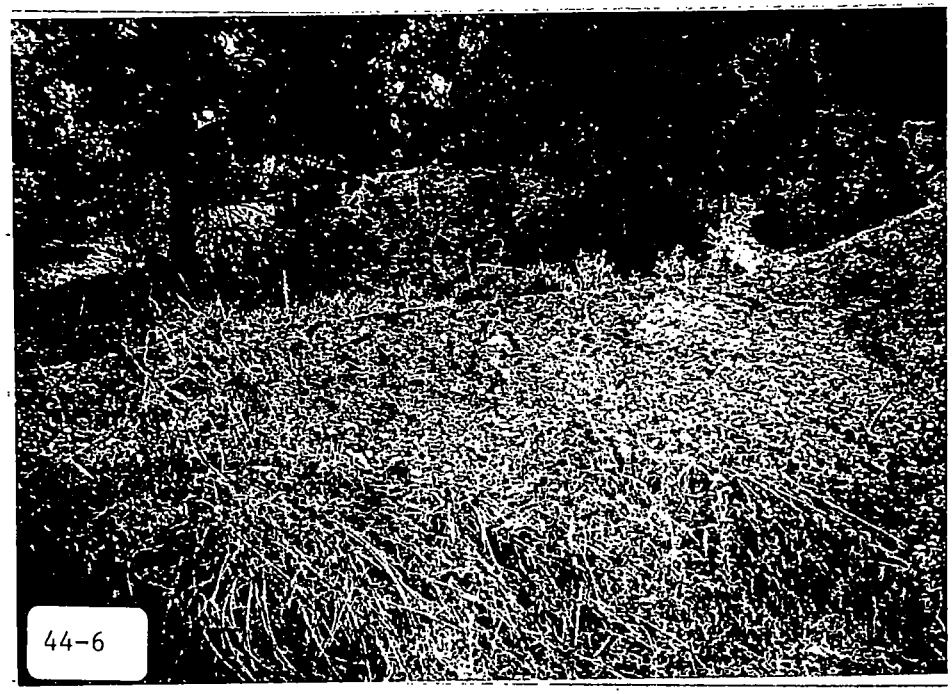

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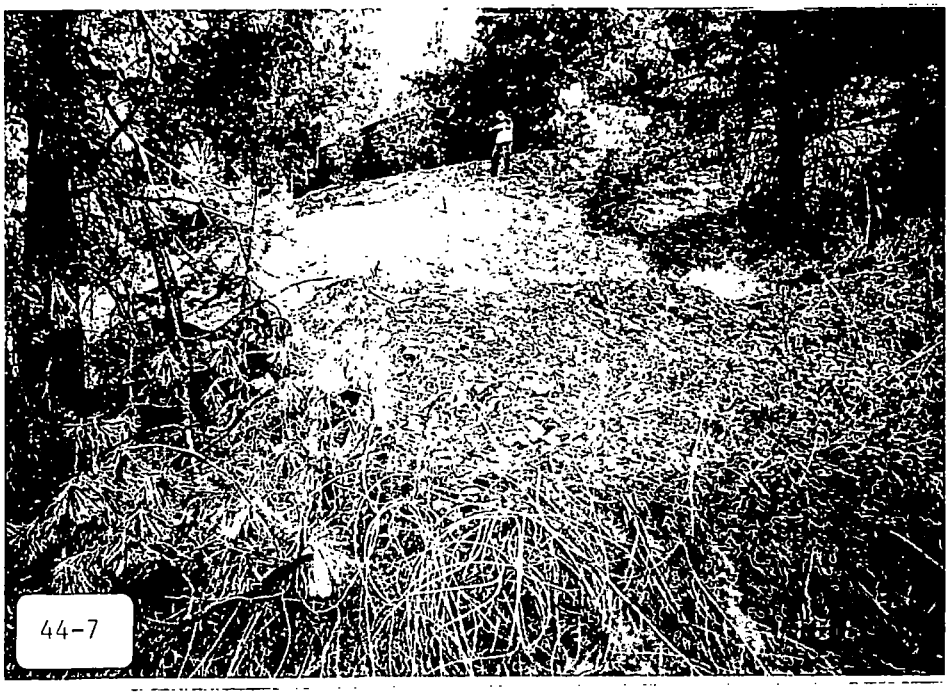

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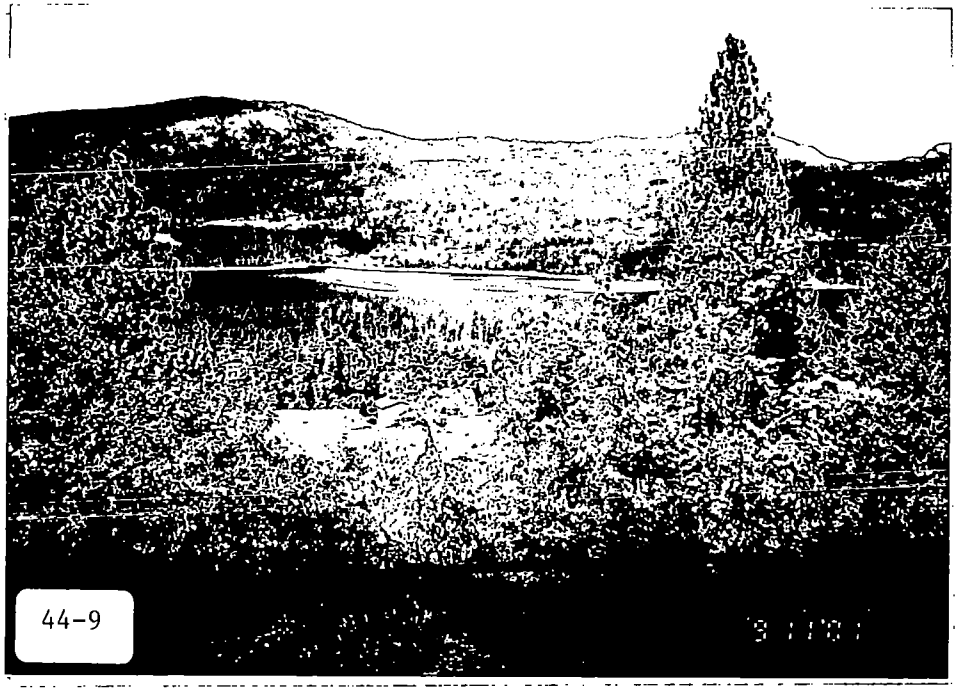

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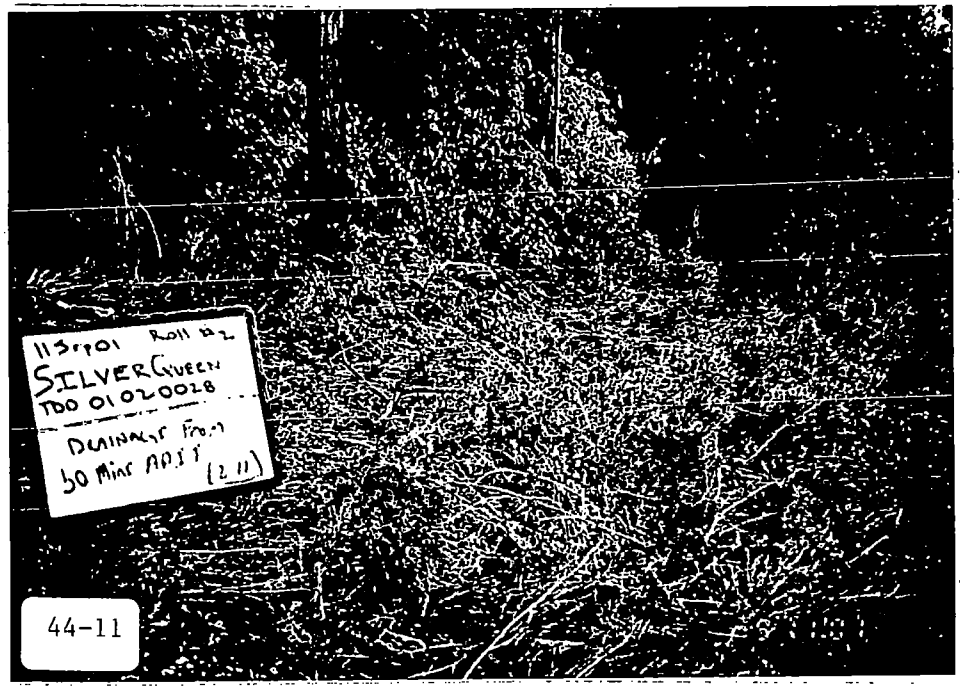

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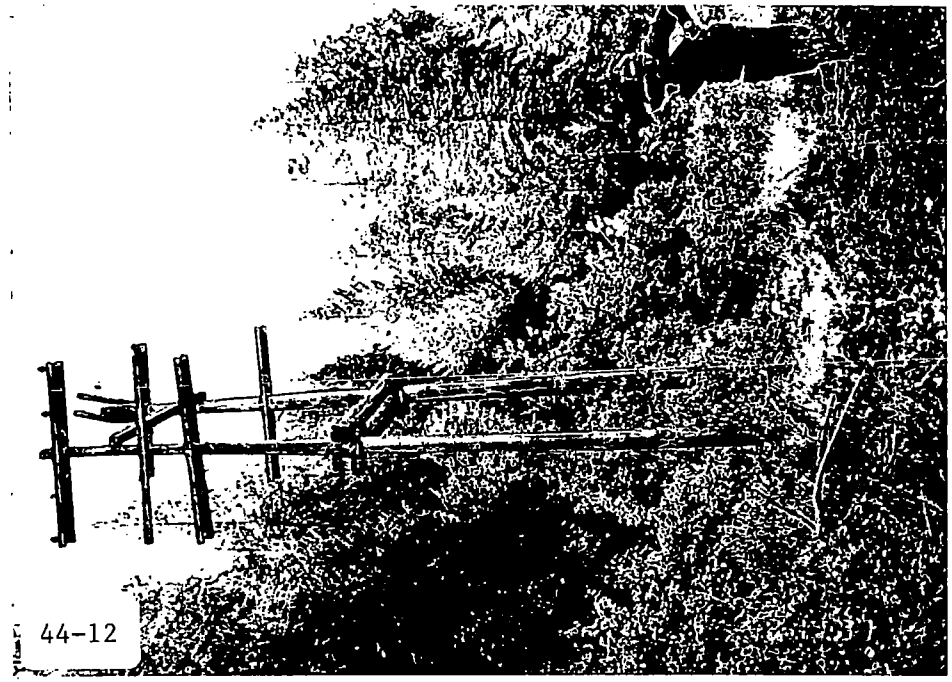

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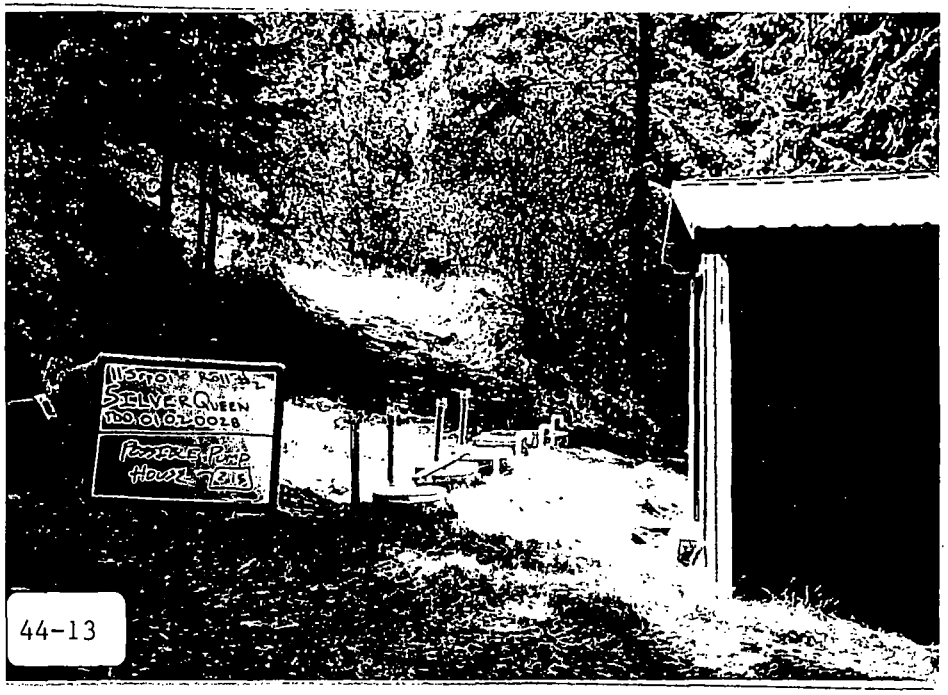

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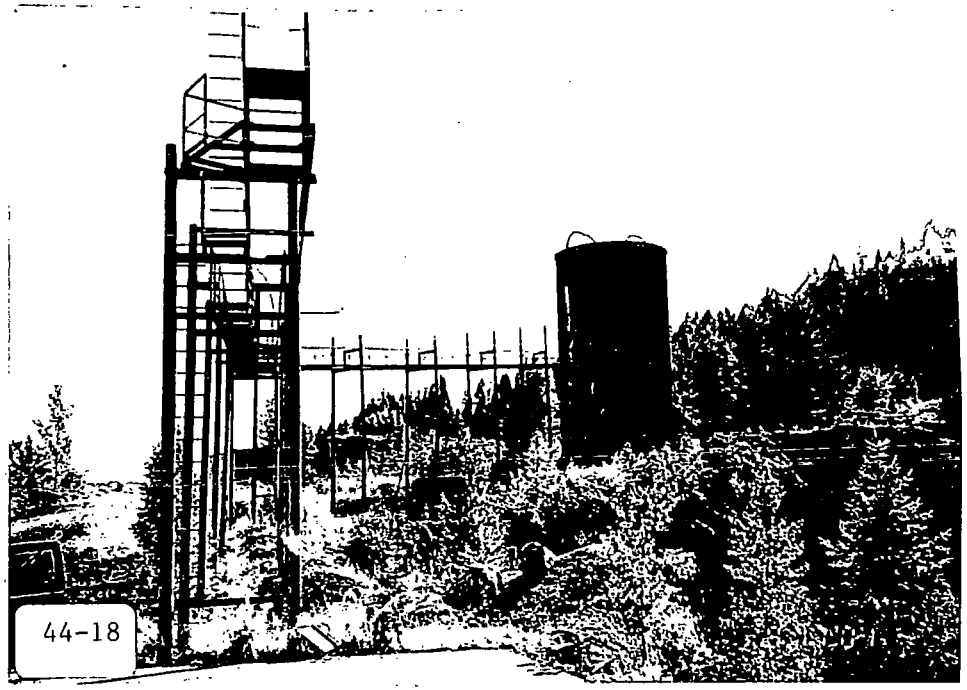

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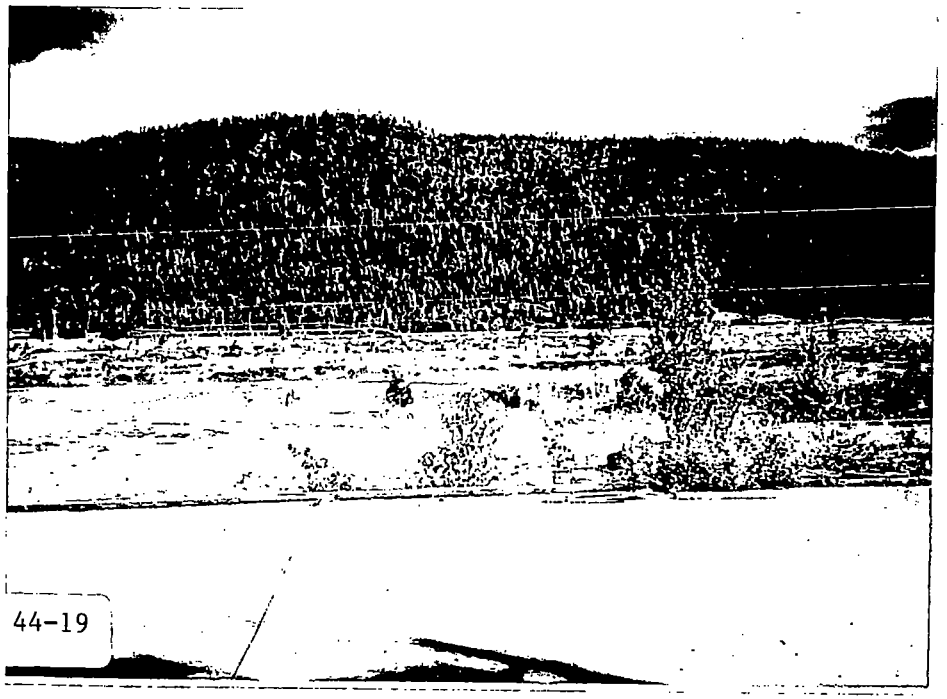

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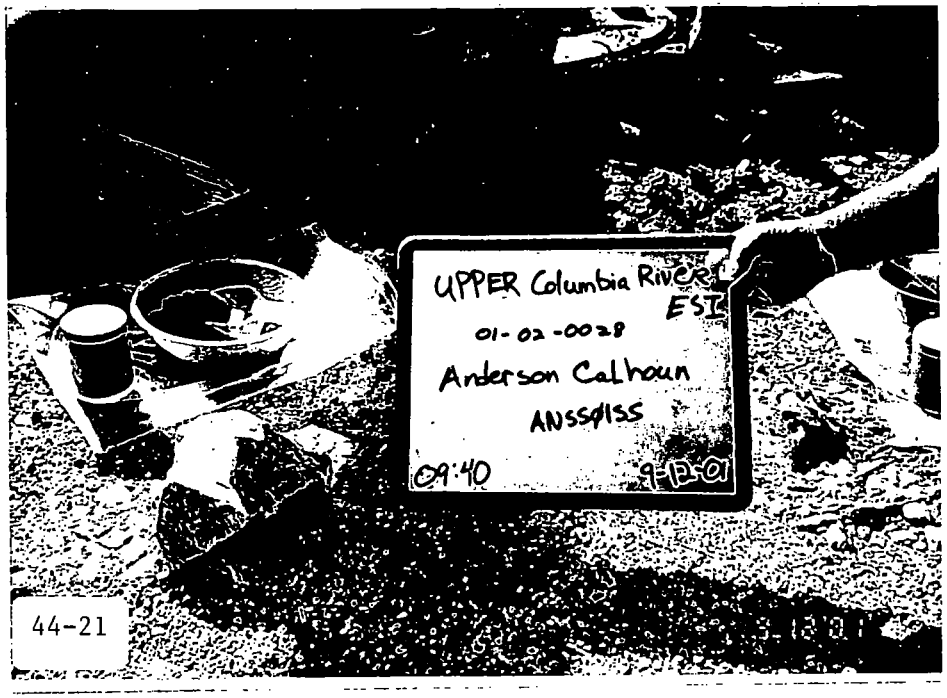

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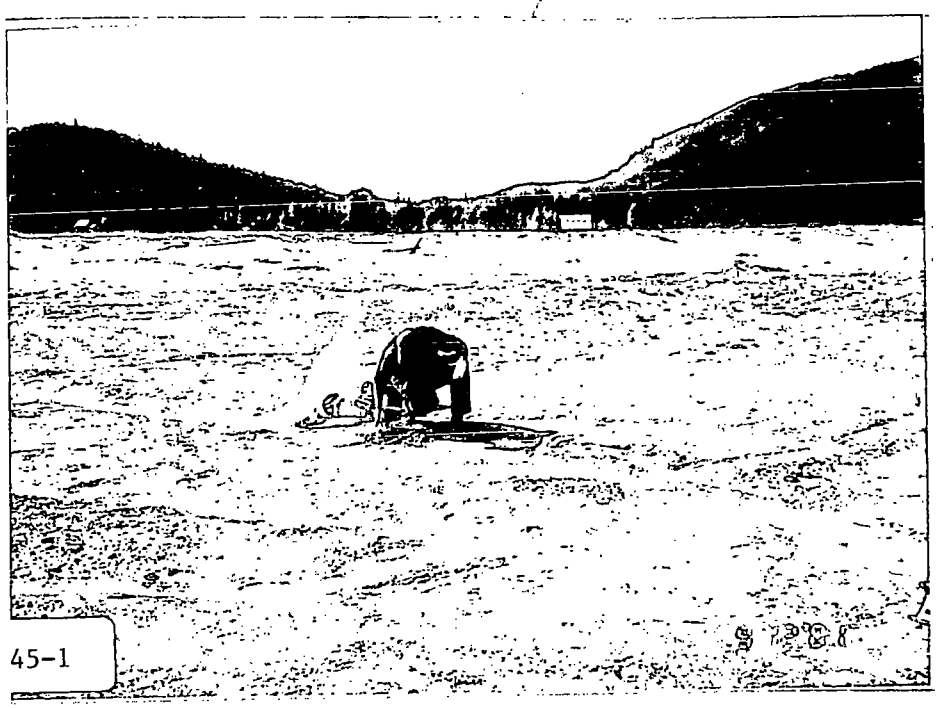

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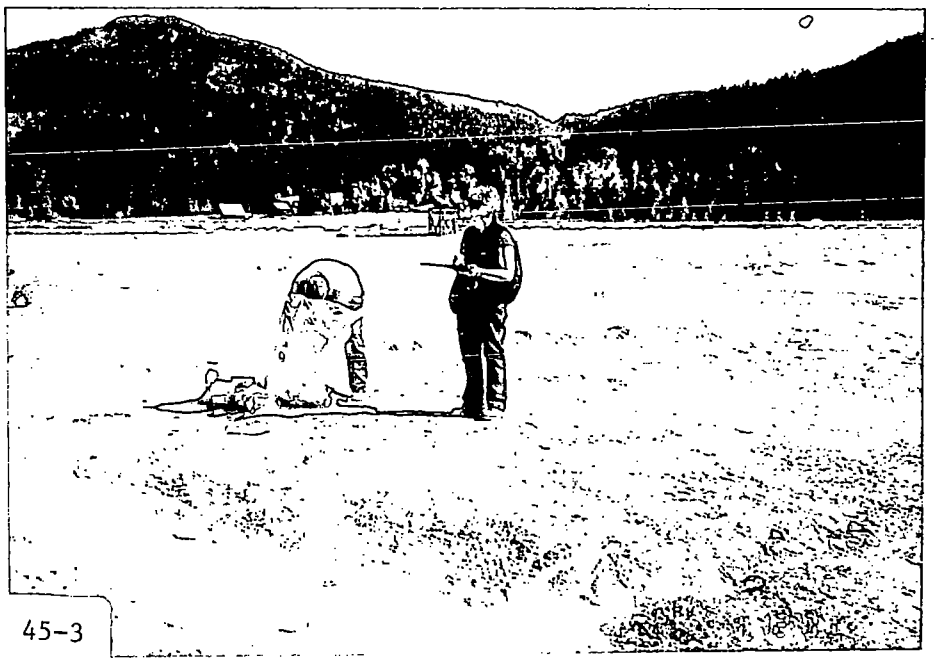

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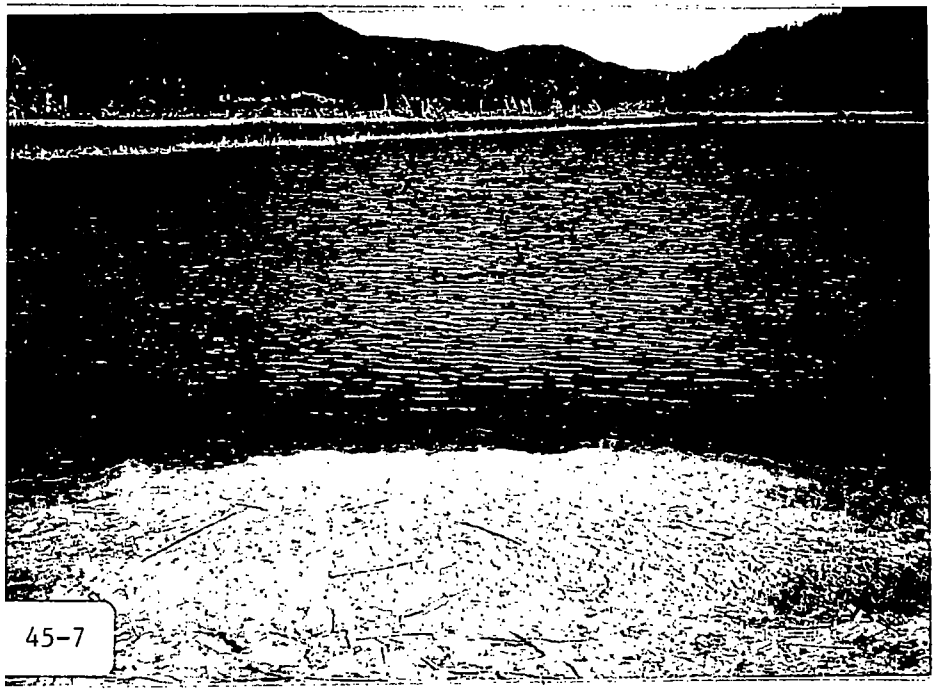

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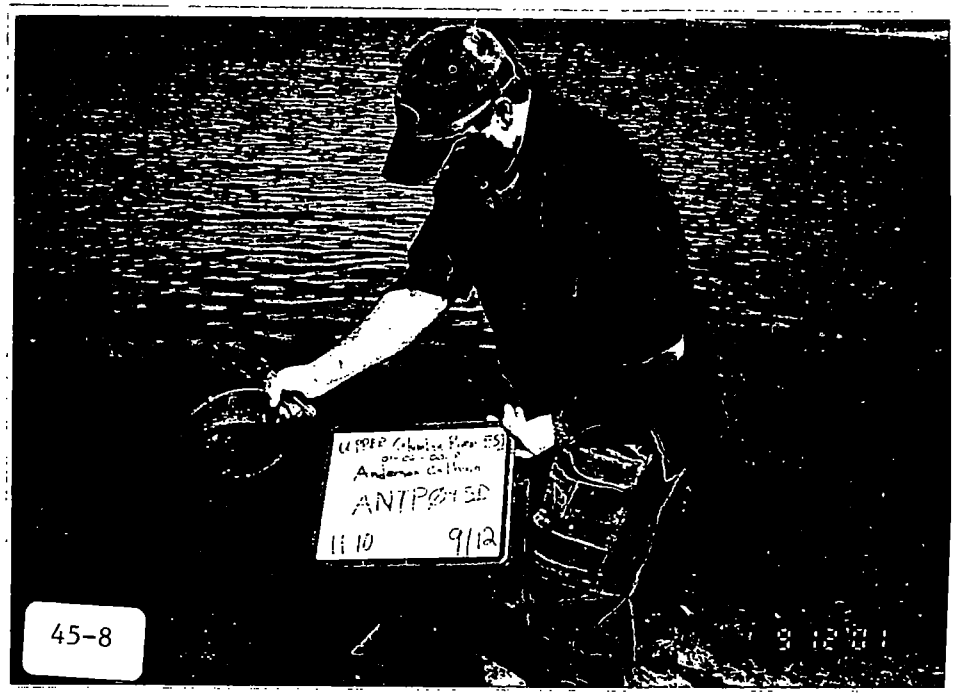

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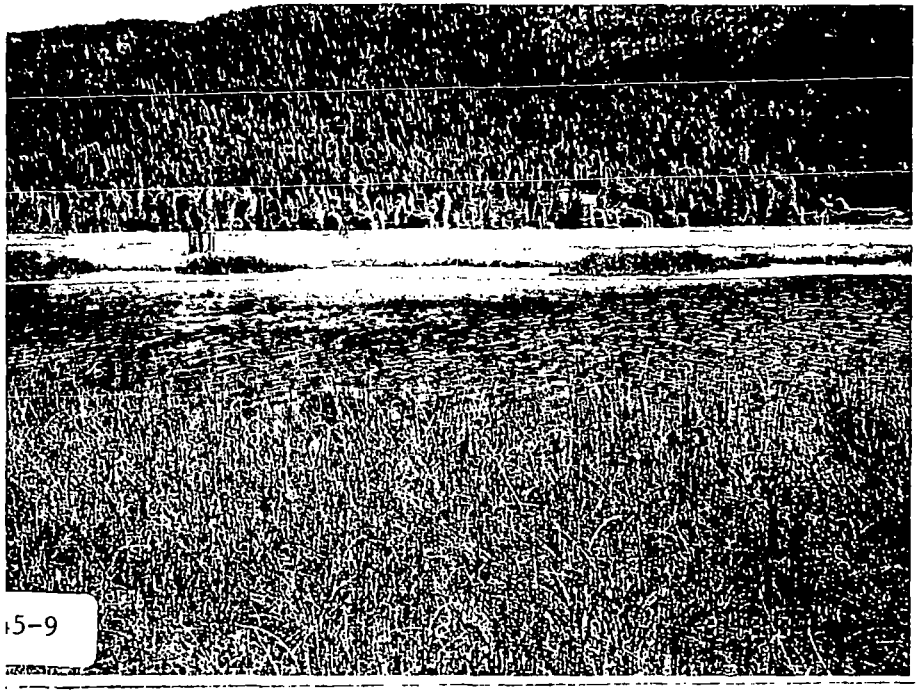

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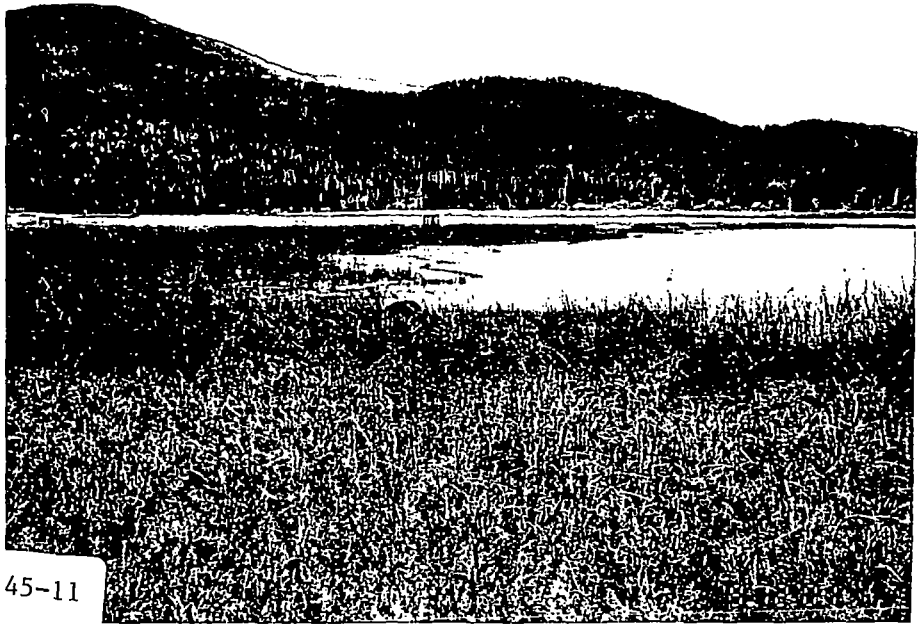

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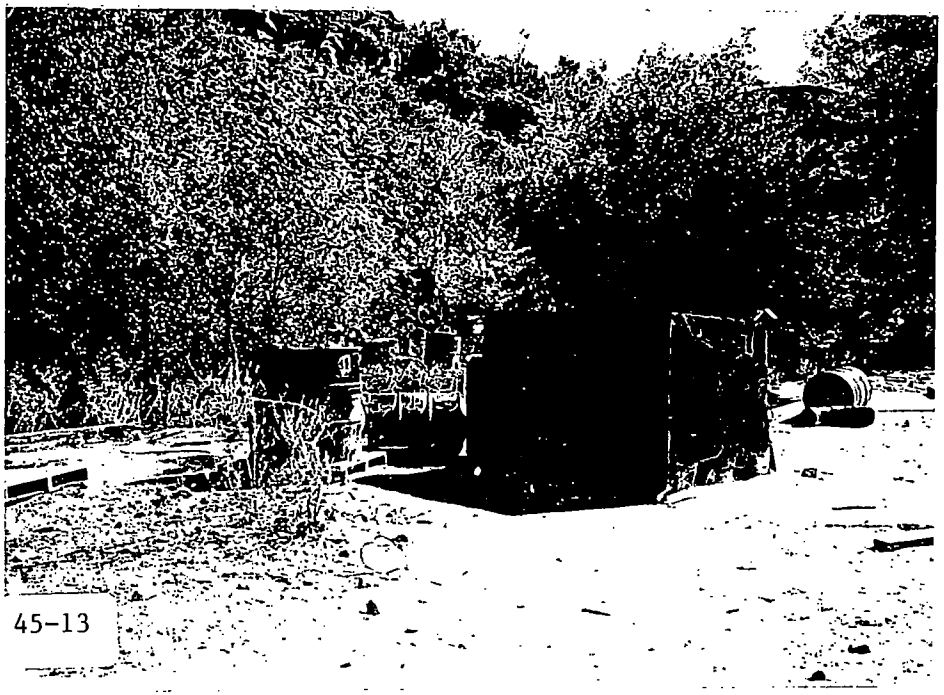

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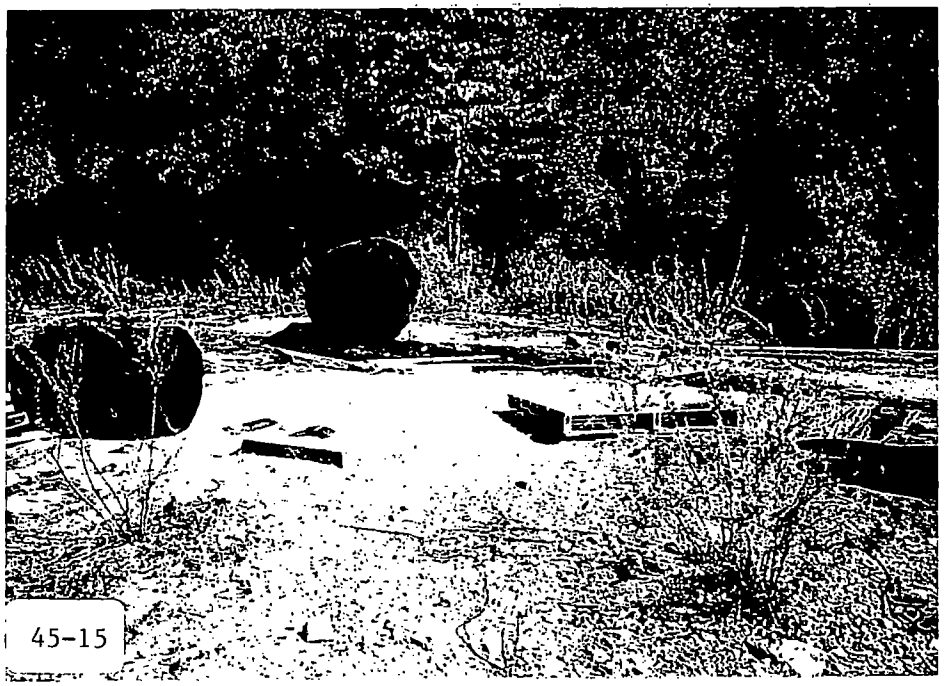

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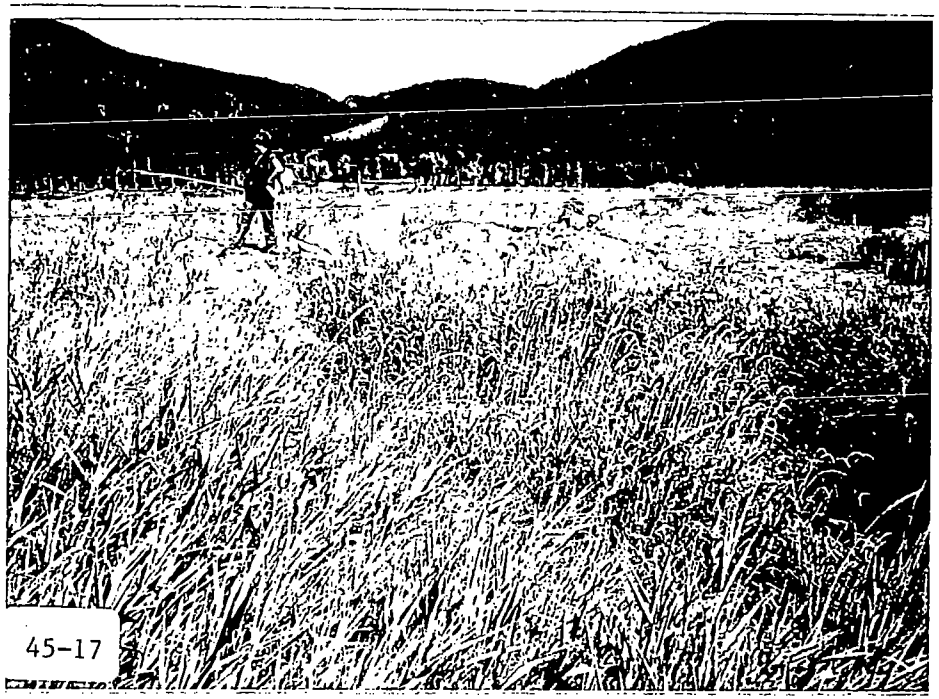

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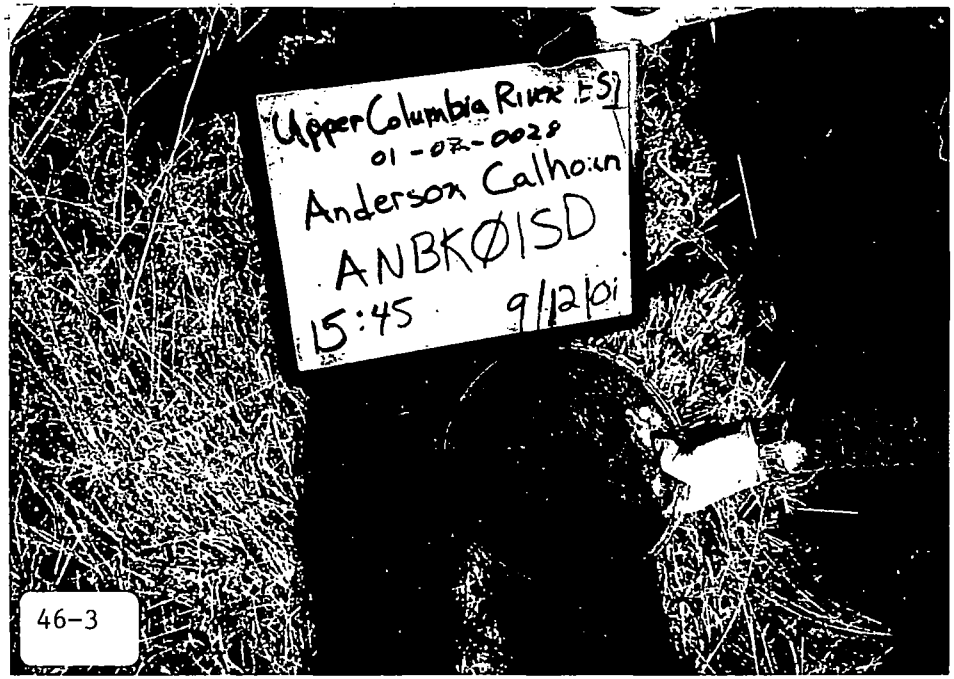

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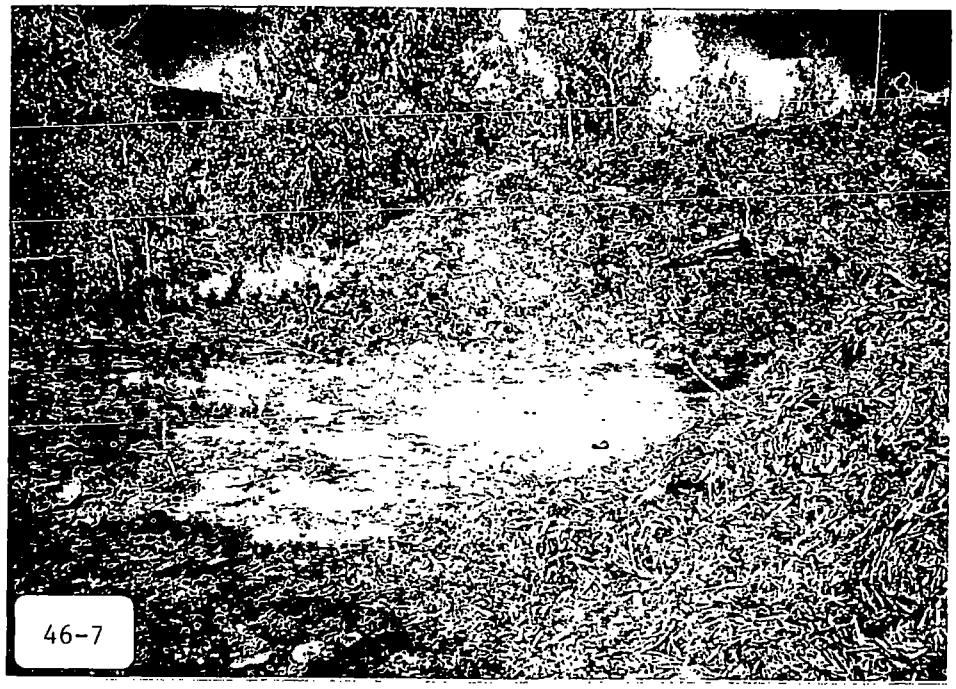

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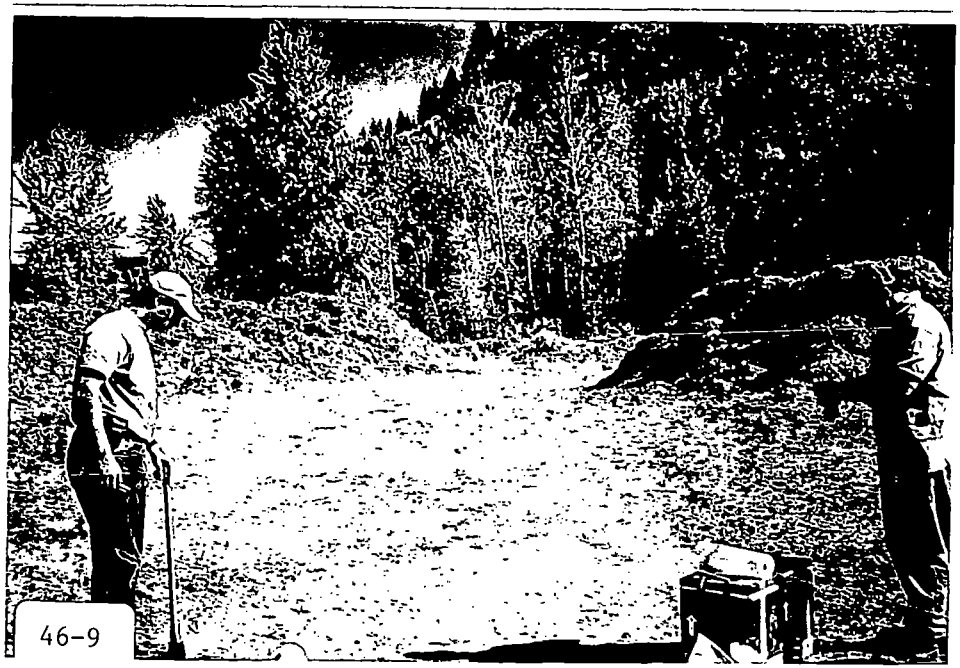

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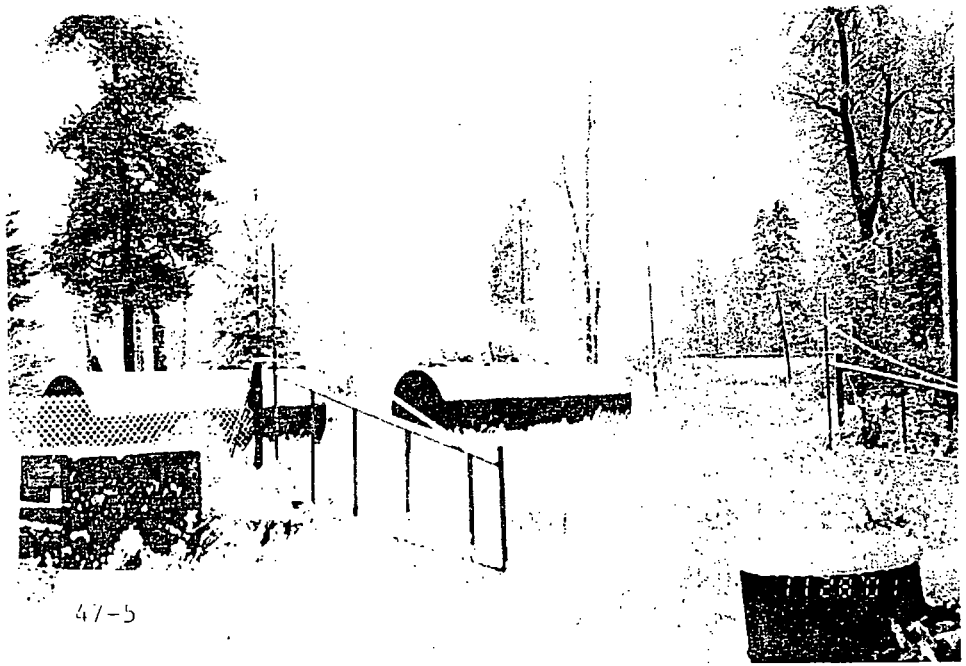

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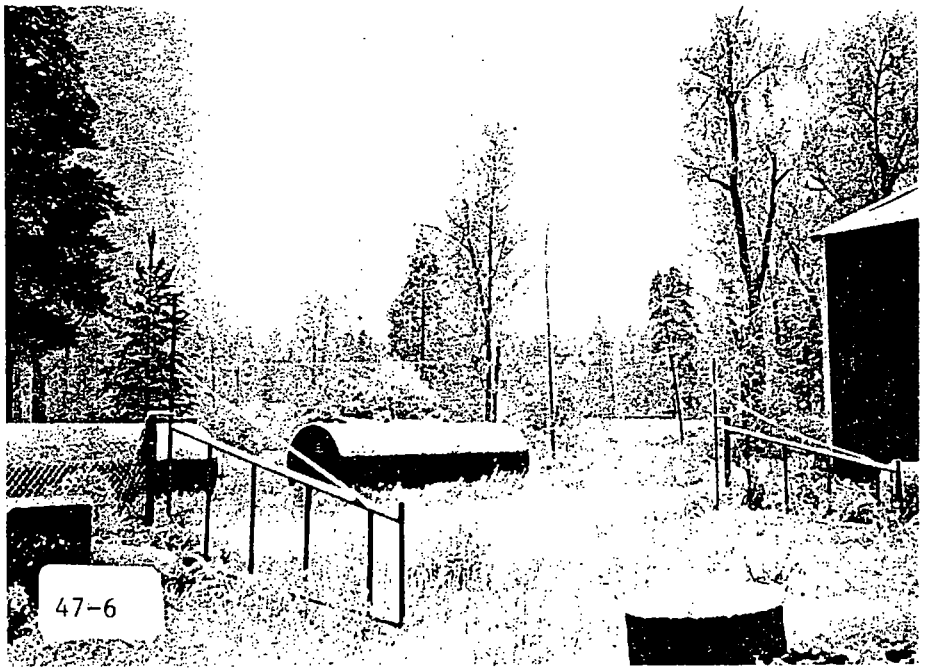

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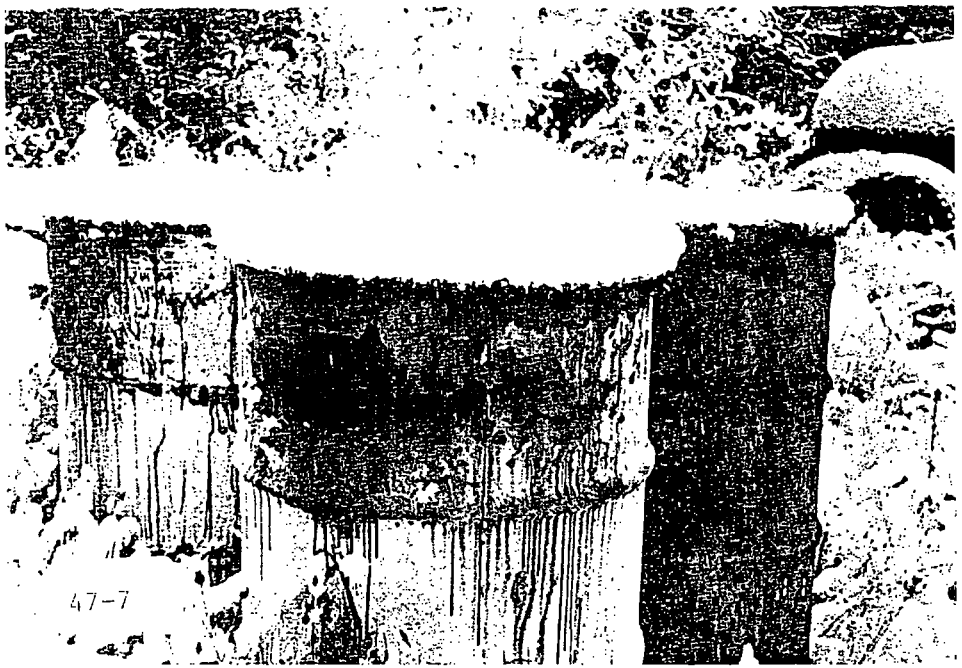

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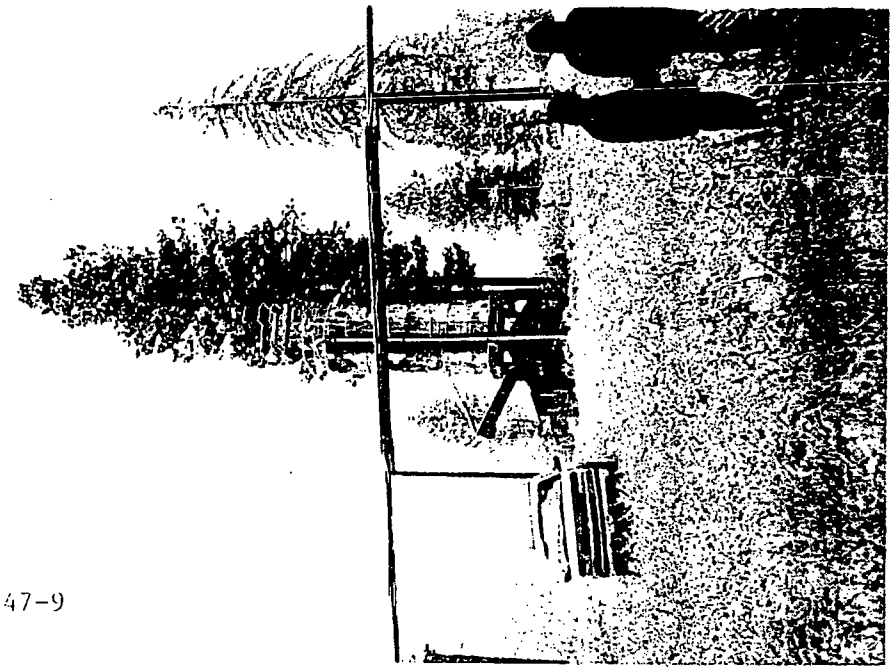

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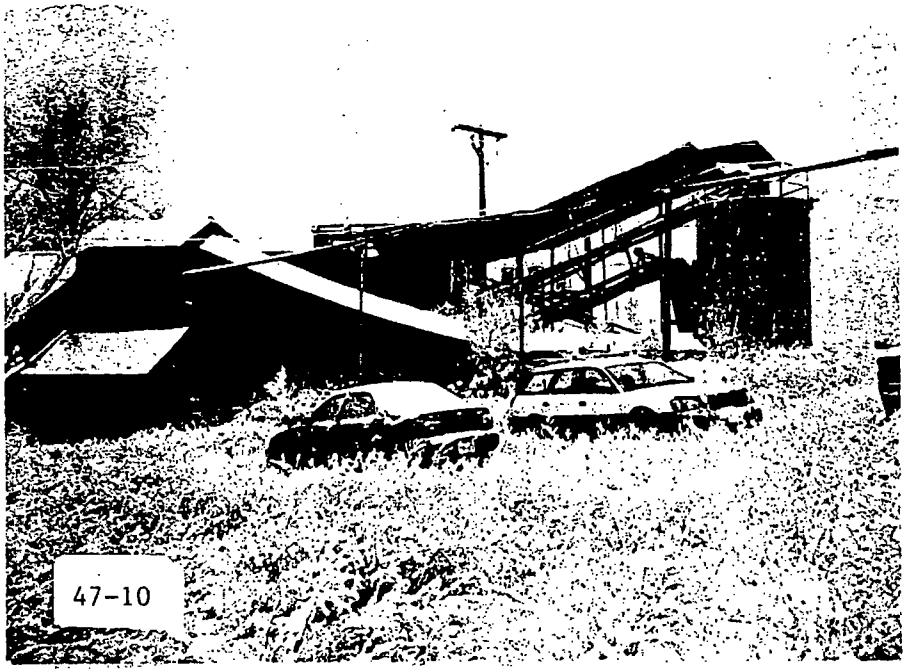

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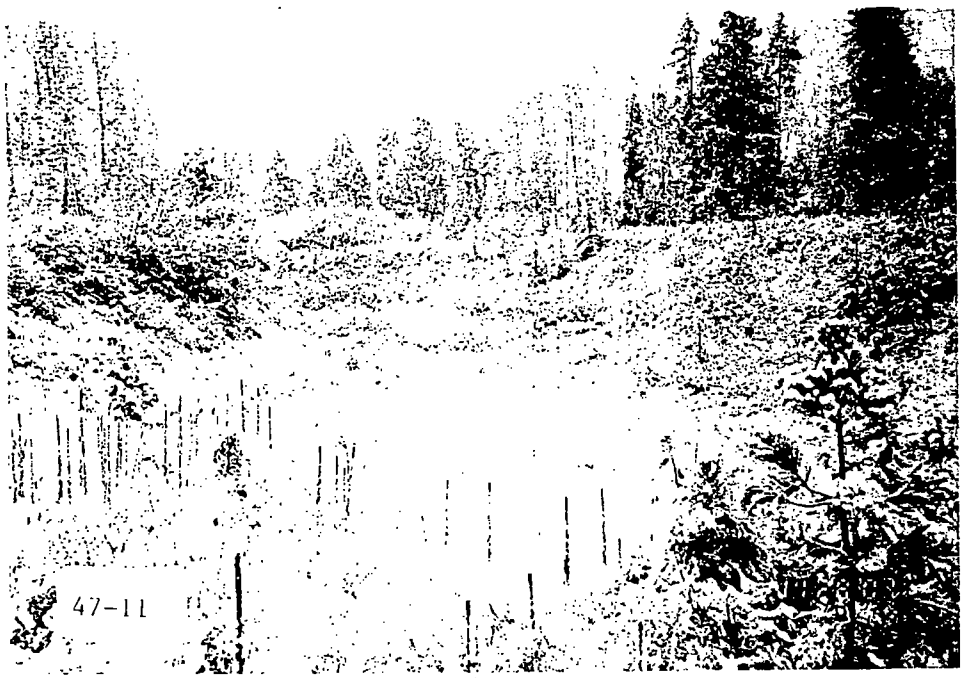

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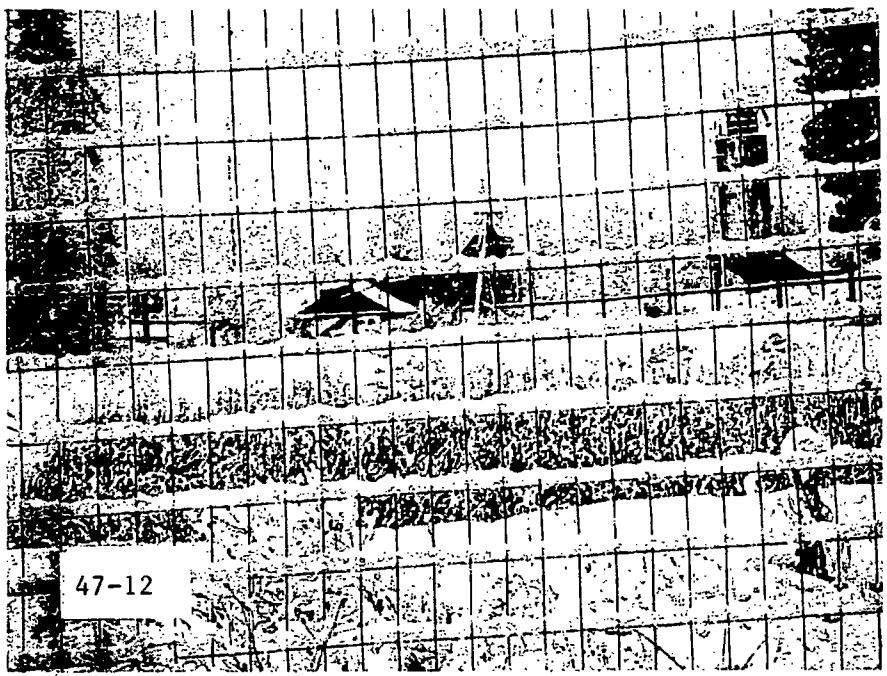

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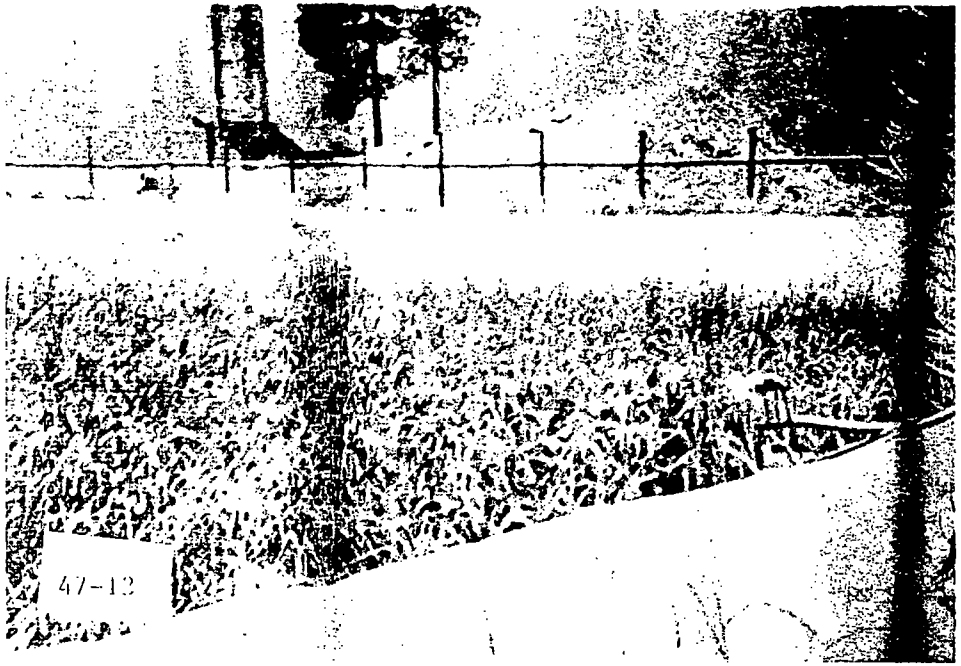

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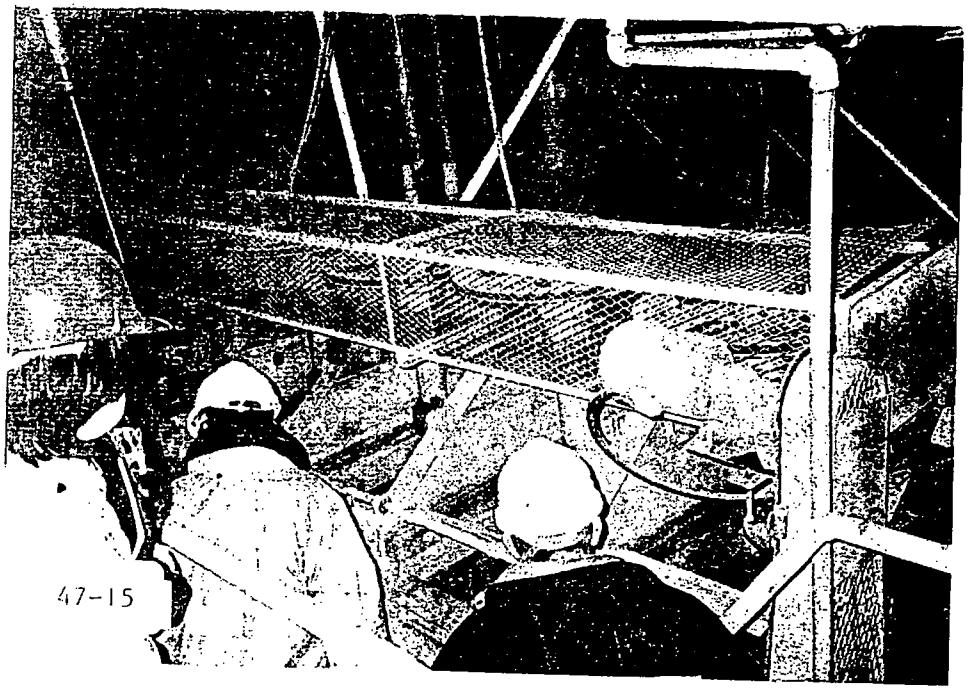

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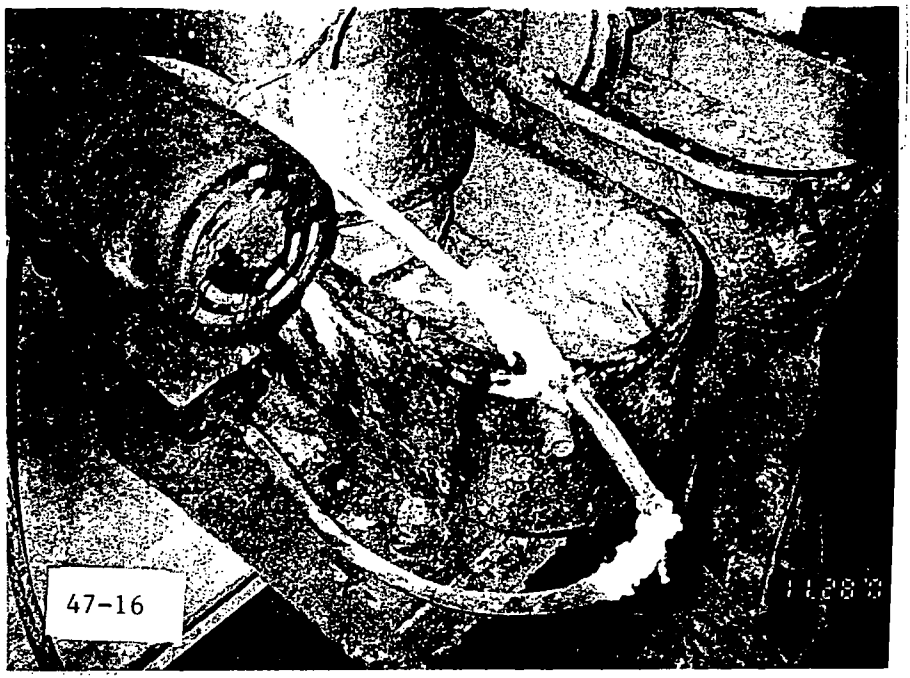

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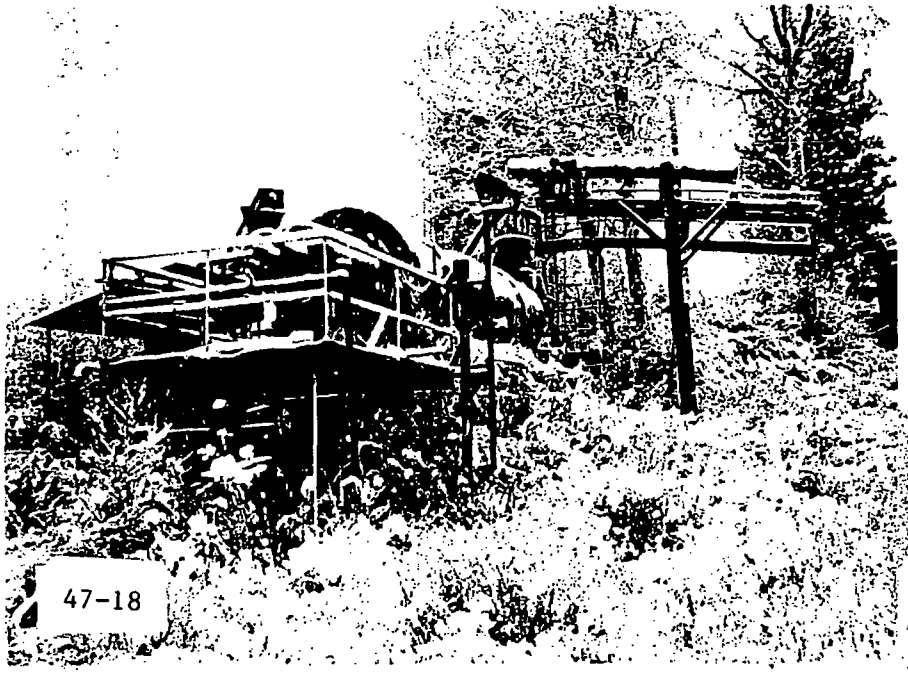

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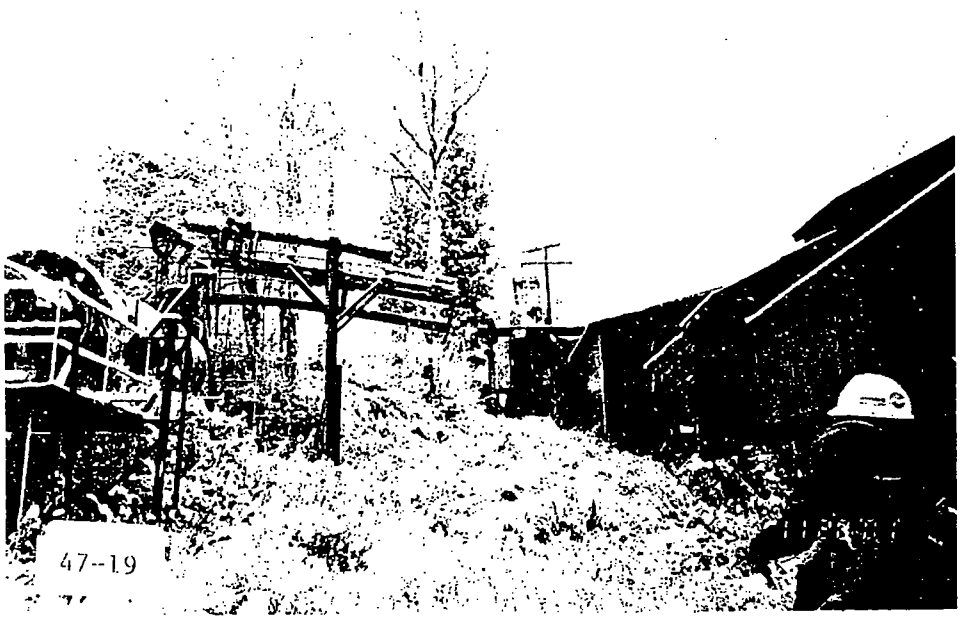

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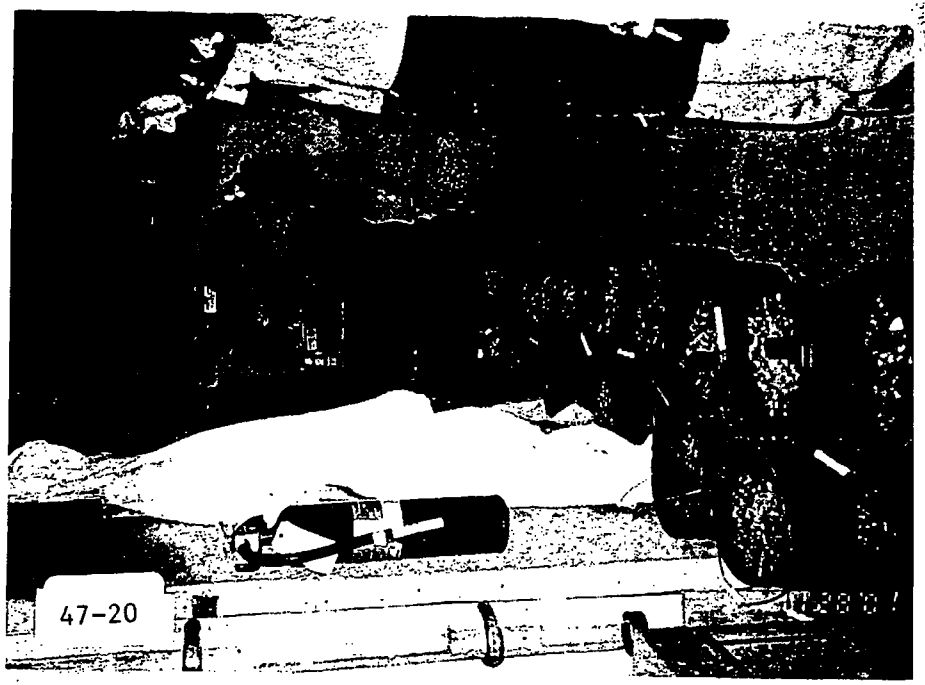

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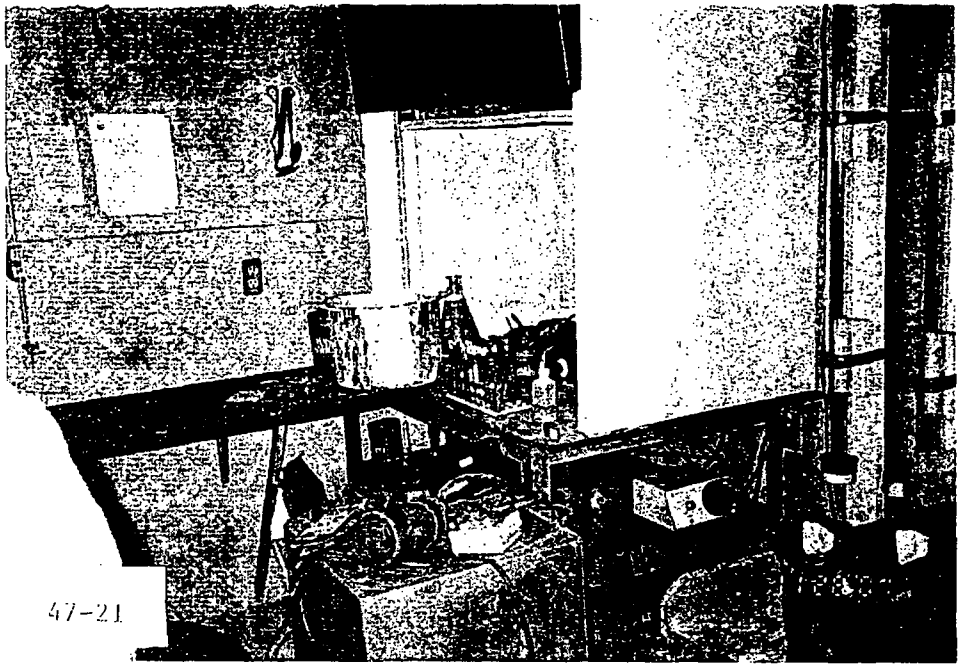

47-21

APPENDIX B

START-2 AND EPA LOGBOOKS

ecology and environment, inc.

International Specialists in the Environment

Job Number TDD 01-02-0028

Upper Columbia River

E & E Job Number _____

elephone Code Number _____

Site Name Upper Columbia River

City/State Northeast WA

TDD 01-02-0028

PAN _____

SSID _____

Start/Finish Date 9/12/2001, 9/12/2001

Book 1 of 1

E & E Emergency Response Center: (716) 684-8940
E & E Corporate Center: (716) 684-8060
MEDTOX Hotline: (501) 370-8263
E & E Safety Director (Home): (716) 655-1260

9/12/2001
9:08 AM Arrive at Meyers Dam on Colville Rvr
70°F Kettle Falls, WA
Sunny, clear sky
Slight breeze

Present: Monica Tonel, EPA
Patti Stone, Colville Tribe
Don Hurst, Tribe rep

GPS N 48°35.741'
9:43 AM W 118° 03.479'

MT 9/12/2001

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MTonel 9/12/2001

photo log:

FujiFilm disposable QuickSnap outdoor 24x36mm

1st exposure — Sample ~~prep~~ collection 9/12/2001 9:20 AM at Meyers Dam sand bar

2nd exposure 9/12/2001 9:38 AM — Sample ~~the~~ jars for location MDSB01SD sandbar at Meyers Dam observed to be sandy silt, gray

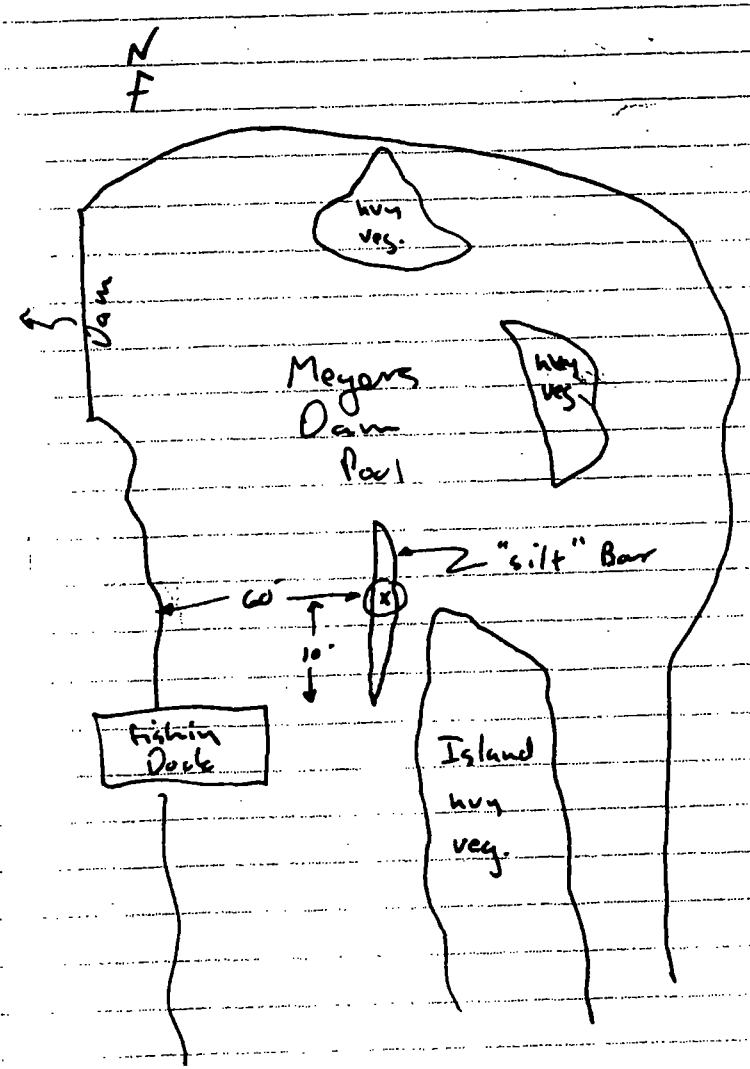
3rd 9/12/2001 9:38 AM 2nd exposure — Sample jars for location MDSB01SD

3rd exposure 4th 9:40 AM 9/12/2001 — Sample jars for location MDSB01SD

5th exposure 9:43 AM 9/12/2001 — taken from Greenwood Loop Rd looking SE overview of Meyers Dam sanbar in background

6th to

MTonel 9/12/2001



09:45 AM Depart Meyers Dam

MTonel

9/12/2001
11:25 AM Arrive Kettle River location
mid 70's °F
sunny
clear sky
those present: Monica Tonel, EPA
Patti Stone, Colville Tribe
Don Hurst, Tribe rep

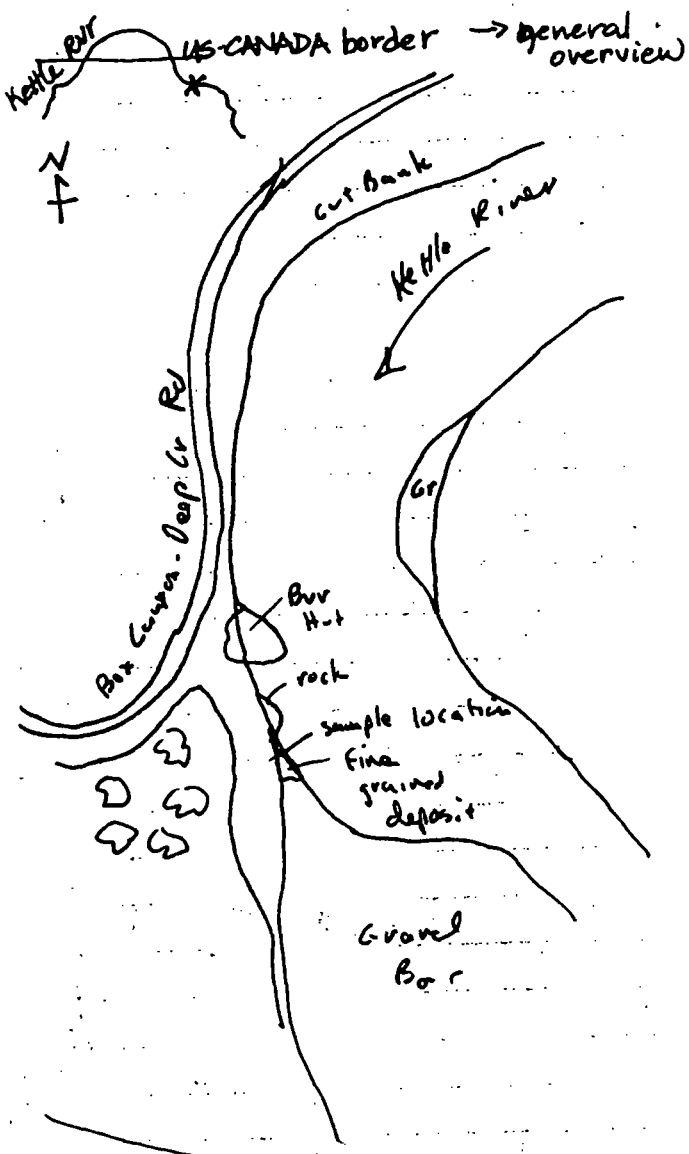
photo log:
7th exposure Sample location KRBK01SD
9/12/2001
11:57 AM at Kettle River showing
sample jars.

8th exposure overview shot taken
9/12/2001
12 noon from sample location looking
North upstream

GPS location of sample location:
N 48° 59.713'
W 118° 13.207'
Alt 1460 ft

Road coming into/along Kettle River, where stopped to collect sample is
Box Canyon - Deep Crk Rd
observation of sediment: sandy silt, dark brown

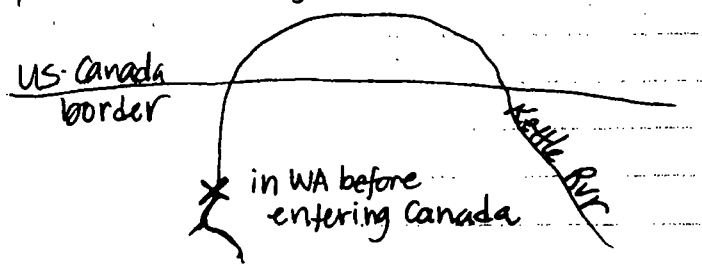
MT 9/12/01



MT 9/12/01

9/12/2001
12:50 PM Arrive Kettle River location
~85°F
sunny, clear sky
those present: Monica Tonel, EPA
Patti Stone, Colville Tribe
Don Hurst, Tribal representative

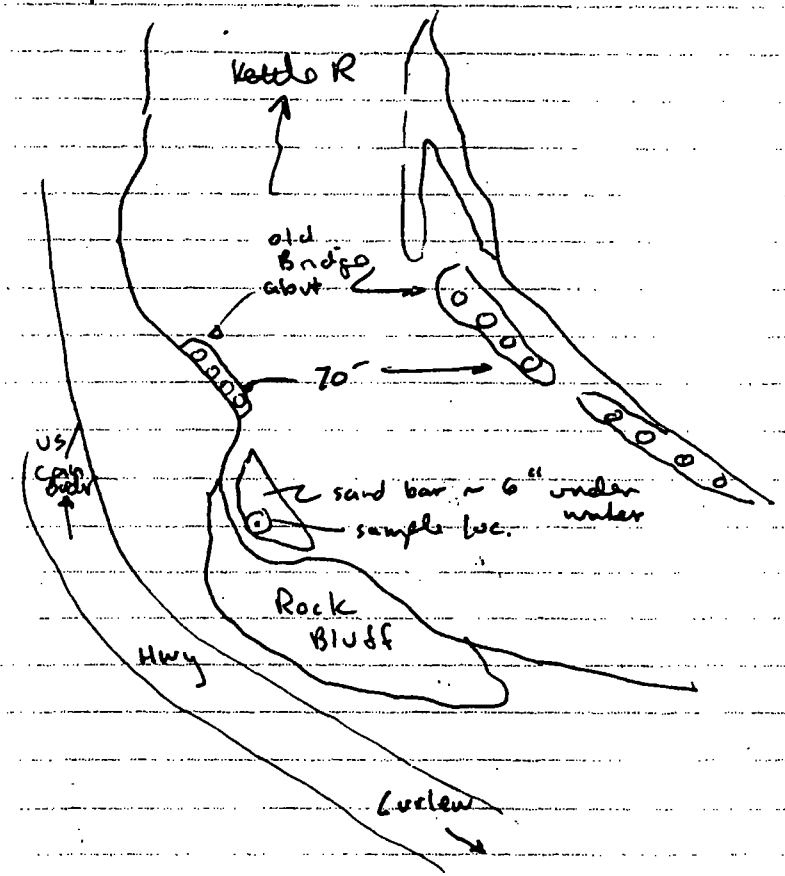
photo log:
98th exposure sample jars at Sta. loc. KRBK025D
2:15 PM from along Kettle River
9/12/2001



99th exposure Sample location and general
2:17 PM overview of area
9/12/2001 taken along bank of Kettle Rvr
looking North

GPS Coordinates of sample location
N 48°53.76' 1864' elev.
W 118°35.3[illegible]'

Observation of sediment - brown sand



Depart location, 2:48 PM

9/13/2001
7:03 AM Arrive LeRoi Smelter / Northport Smelter
high 50's °F, clear sky
Those present: Monica Tonel, EPA
Tara Karamas, EPA
Murray McConnachie
KES Contracting Ltd
Leatta Dahlhoff, Ecology + Envt
Howard Zorzi, E+E
Joy Marshall, E+E
Jessica Speigel, E+E Geologist
Don Hurst, Tribal Representative

This visit is ~~a follow up to~~ in relation to the Upper Columbia River site investigation. The property owner is K.E.S. Contracting Ltd represented by Murray McConnachie. Mr. McConnachie, EPA, E+E + Tribal rep conducted a walk-thru of the property. A significant portion of the property is paved with 'slag' bricks. A number of areas throughout the property also had chunks of shattered slag, mostly scattered pieces. Figure on next page shows approximate locations of some of these areas. During a visit to the Northport City boat launch in June 2001, shattered slag peices were observed

near the City Park Access Road outside the former LeRoi Smelter property. During the June 2001 visit, the E+E geologist (Charlie Gregory) documented slag in the Columbia River near the former LeRoi Smelter. During this visit, 9/13/2001, Jessica Speigel, E+E geologist made visual observations of slag bricks and shattered slag areas.

Monica Tonel 9/13/2001

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ecology and environment, inc.

International Specialists in the Environment

Job Number 01-02-0028

Upper Columbia River/Mines
Stevens and Pend Oreille Counties
Washington

Project Area Documentation Logbook #3

Team # 1

E & E Job Number _____

Telephone Code Number 12810073

Site Name Upper Columbia River Mines
Stevens and Ferd Orille Counties

City/State Washington

TDD 01-02-0028

PAN 001281.0073.01.SR

SSID _____

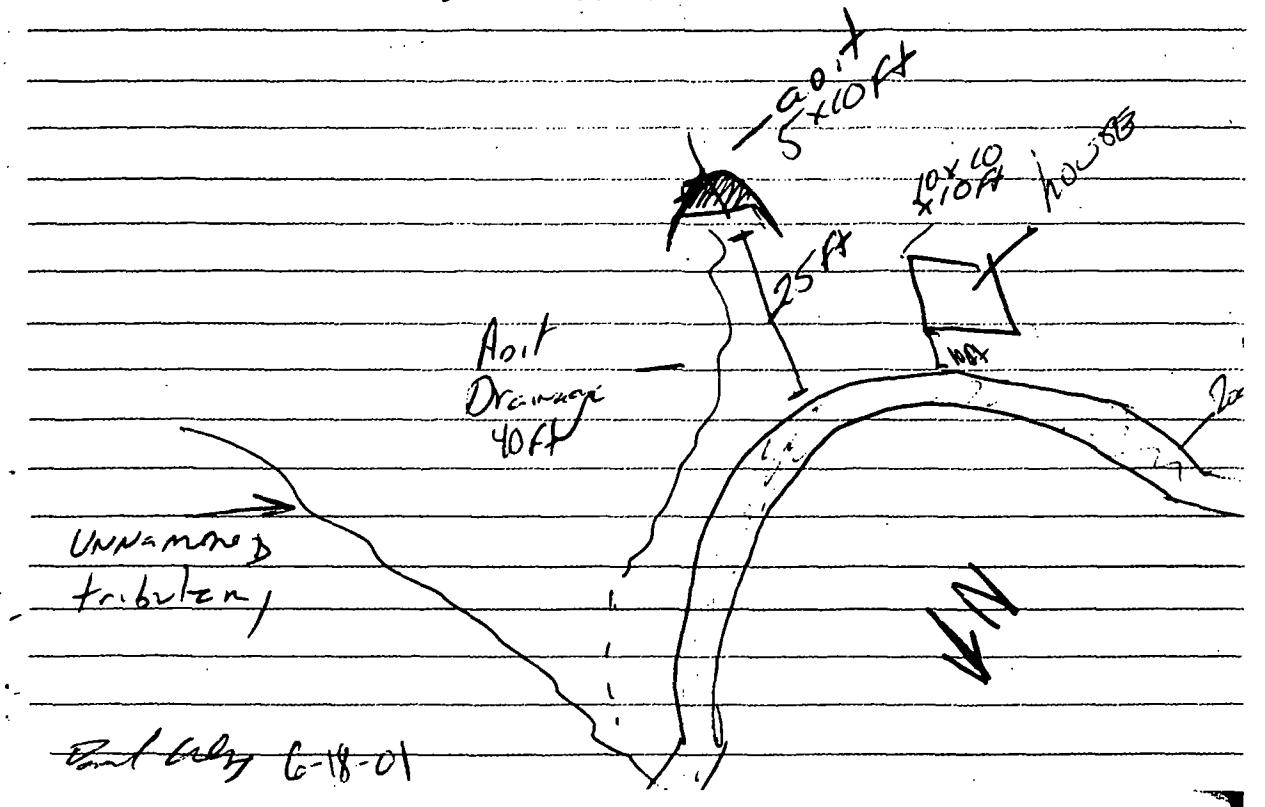
Start / Finish Date _____ / _____

Book 3 of _____

E & E Emergency Response Center: (716) 684-8940
E & E Corporate Center: (716) 684-8060
MEDTOX Hotline: (501) 370-8263
E & E Safety Director (Home): (716) 655-1260

2 01-02-0028 Upper Columbia River Team 1

6-13-01 0910 DW and NA arrive Northport and
Do some field work before meeting
Trent Lang from Waggoner Bros.
1045 Meet Trent Lang with Waggoner Bros Lumber and
Go to Melrose Mine
1145 Arrive at Melrose Mine to Sample. This site
has an adit which is draining into a unnamed
tributary to Tom Bush Creek. The flow is
estimated at less than 10GPM. There is NO
waste rock piles. It appears that any piles
may have been spread to make road. There is
a small building that has test core samples in it.
We did a Jerome Reading and it read .021
GPS point collected approx 10 ft N of PPE.
Refer to Sample logbook for Details. Access is unrestricted
and there been roads. No GPS available for Adit sample.
Site location GPS point approx 15 ft S of adit.



Paul Colby 6-18-01

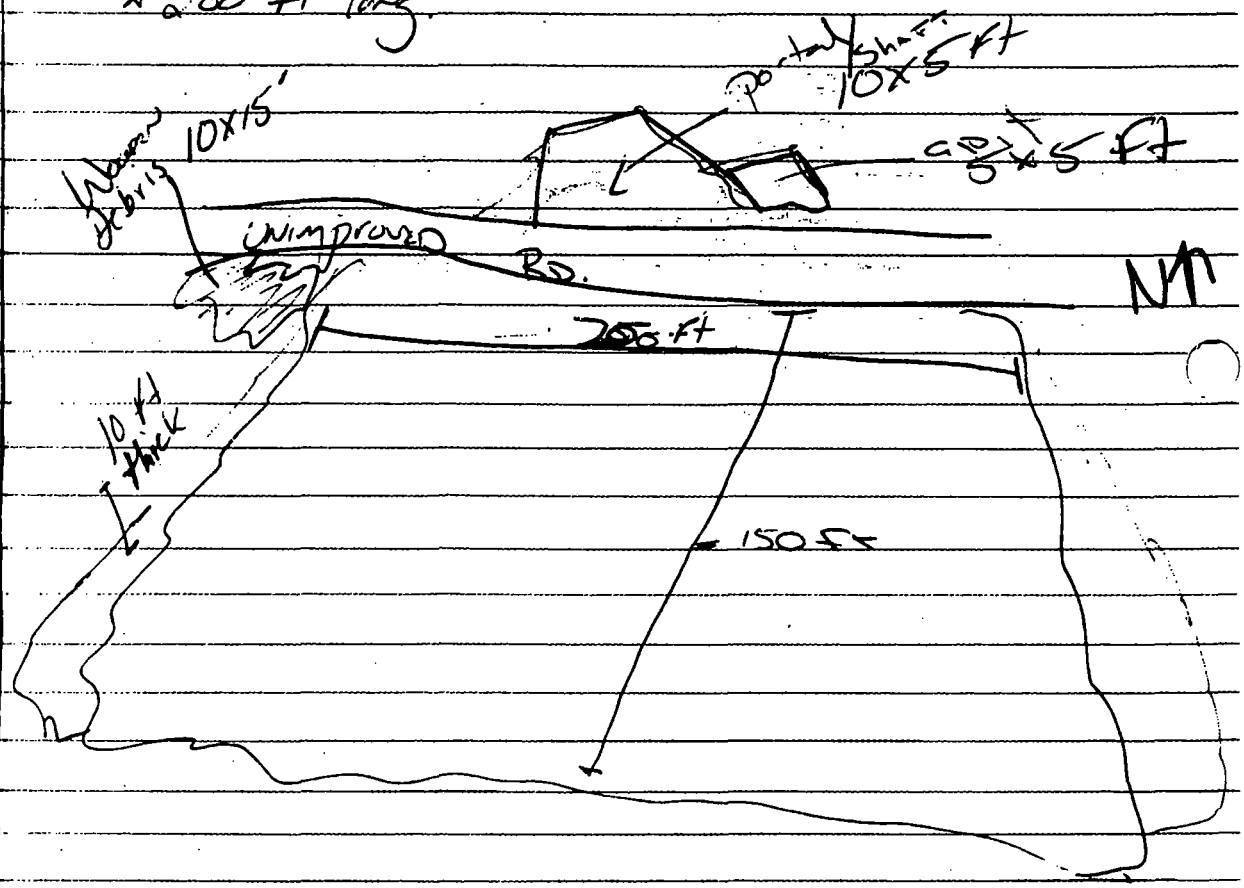
01-02-0028 Upper Columbia River Team 1 6/18/01

Lots of moss and algal growth near the mouth of the adit.

1240 Leave Melrose Mine

1440 DW, LO, NA and Trent Long searched the area in the vicinity of Copperking mine. Hillside is very overgrown, we found test-type pits but saw no piles or drainage adits. After an exhaustive search. GPS points taken, no samples.

1530 Arrive by foot at Red top mine Stevens Co. NA begins XRF of waste rock, which is estimated to be approx 150 in height x 10 ft deep x 200 ft long.



Trent Long 6-18-01

No discharge was observed from either adit on the portal. No surface water observed near Downstream so No PPE Sample. Three WR samples will be collected following XRF screening 1800 DW and NA return to hotel. ~~Other~~ Prepare sample documentation

OVERVIEW OF DAY

- Drove past Black Rock Mine to assess
- Samples collected at Melrose Mine. One PPE sediment ML PP 01 SD, and one ADOT sample ML AD02SW.
- Sample team went to Copper King Mine, which was ~~other~~ near the Red Top Mine in Stevens County. This mine is not the one that was identified in the SQAP. There is no sources to be sampled at the site. GPS and photographs were taken to document.
- Sample team identified the remaining Kaiser Bros property mines. Although according to their property maps the Copper King Mine that is identified in the SQAP is not on their property.

6-18-11

Item 1

01-02-0028 Upper Columbia River 6/18/01

ADDENDUM: OVERVIEW OF 6-18-01

· Sample team went to Roo Top in Stevens County
Three WASTE ROCK samples were collected.
RDWR01SS – RDWR03SS.

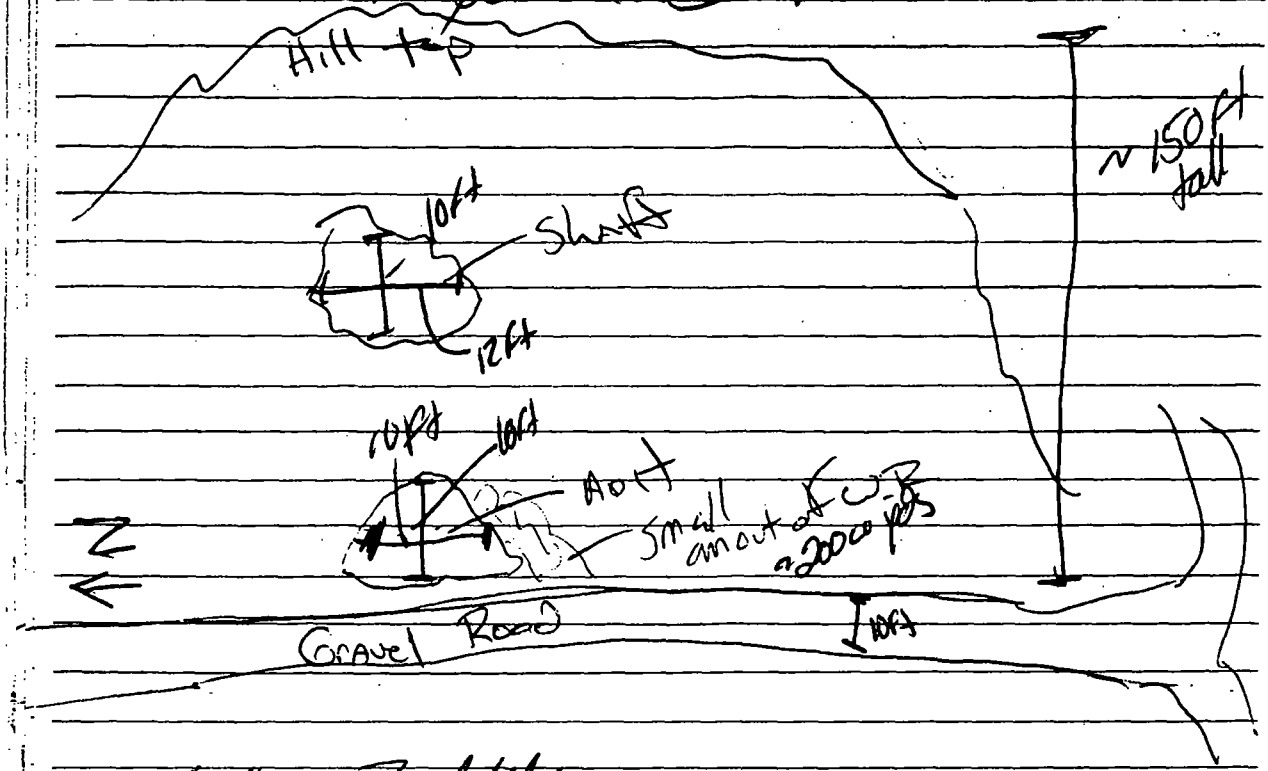
6-18-01

6-19-01 Upper Columbia River 01-02-0028

0830 DW, NA Leave for sites.

0900 DW NA Arrive at Former Mine

0930 After a recon of the mine we observe a shaft and an adit. The shaft has water in it but the water level is approx 20 feet from the mouth of the shaft. No water is observed to be flowing from either the adit or the shaft. There is no S.W. body immediately nearby and thus no PPE. Access to the site is restricted. Veggon Bros does log on the site. It appears that most waste rock that may have been present on site has been moved for logging road construction here and elsewhere. No significant piles of waste rock or tailings exist on site. No building features are observed. GPS points collected.



6-19-01 [signature]

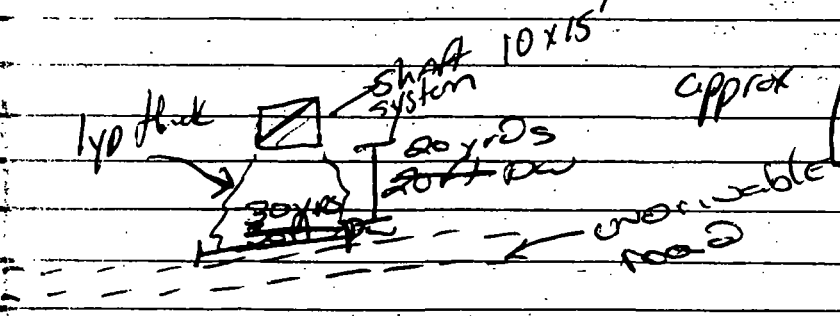
01-02-0028 01-02-0028 Upper Columbia River

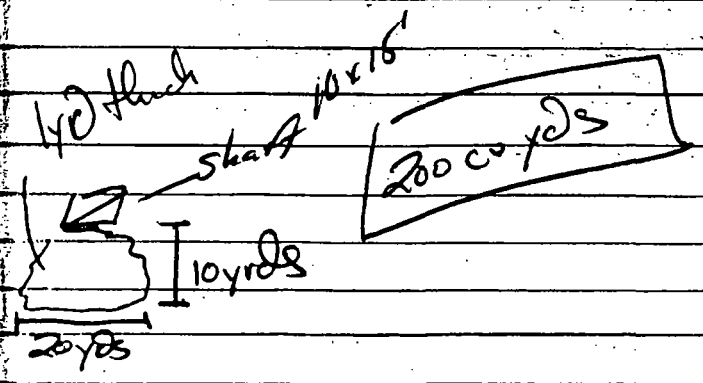
1000 Leave Farme Mine.

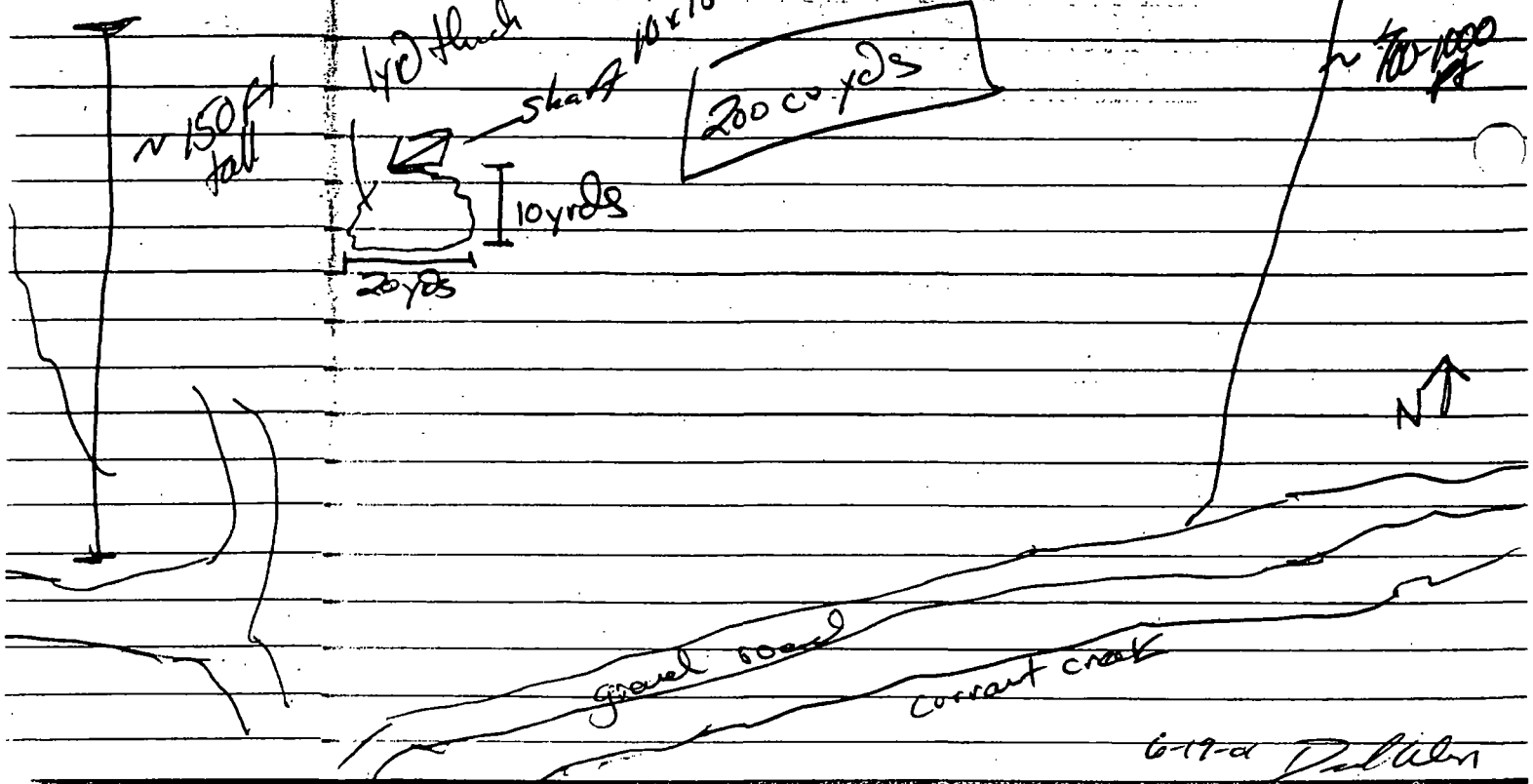
1030 Arrive at area to begin searching for mail. Mine on foot.

1130 Arrive at upper shaft system. It appears that there is 1 or 2 shafts. We could not check closely due to safety concerns. GPS points collected at upper mail. Waste rock appears to be approx other S.W. PPE. Bags most seen bags elsewhere tailings are

approx 500 cu yards at most







6-19-a

approximately 500 yds at most. No water is draining from the upper shaft system and no PPE. Access is restricted from the lower road. It may be possible to gain public access from other areas on foot. The lower shaft appears to be filled into within 15 ft of the surface. There is no water in the shaft or draining anywhere on this hillside. Therefore no PPE is apparent and will not be sampled. There are no structures at either shaft and no milling seems apparent. GPS points were collected, rather MAK. Lower. No samples were collected at the MAK MINE SITE

1220 Arrive back at car. Break for lunch.

1240 End lunch. Leave for Copper King Mine

1330 Arrive Copper King Mine begin to assess area. Begin with Jerome and get readings between 0 and 0.20 most of which were closer to zero.

1350 Arrive at upper shaft to sample waste rock around shaft. Shaft is approx 1520 feet to standing water but none is flowing from shaft or near vicinity. Waste Rock pile is approximately 25 yards across top x 40 yards tall x approx 2 yards thick on average = 2000 cu yards. We will take two surface soil samples based on XRF screening at upper area. GPS points will be collected at each sample point. Waste rock is a med fine orange-brown sandy material. Access is unrestricted and it appears that some logging has occured here. There is no evidence of a mill building or any former

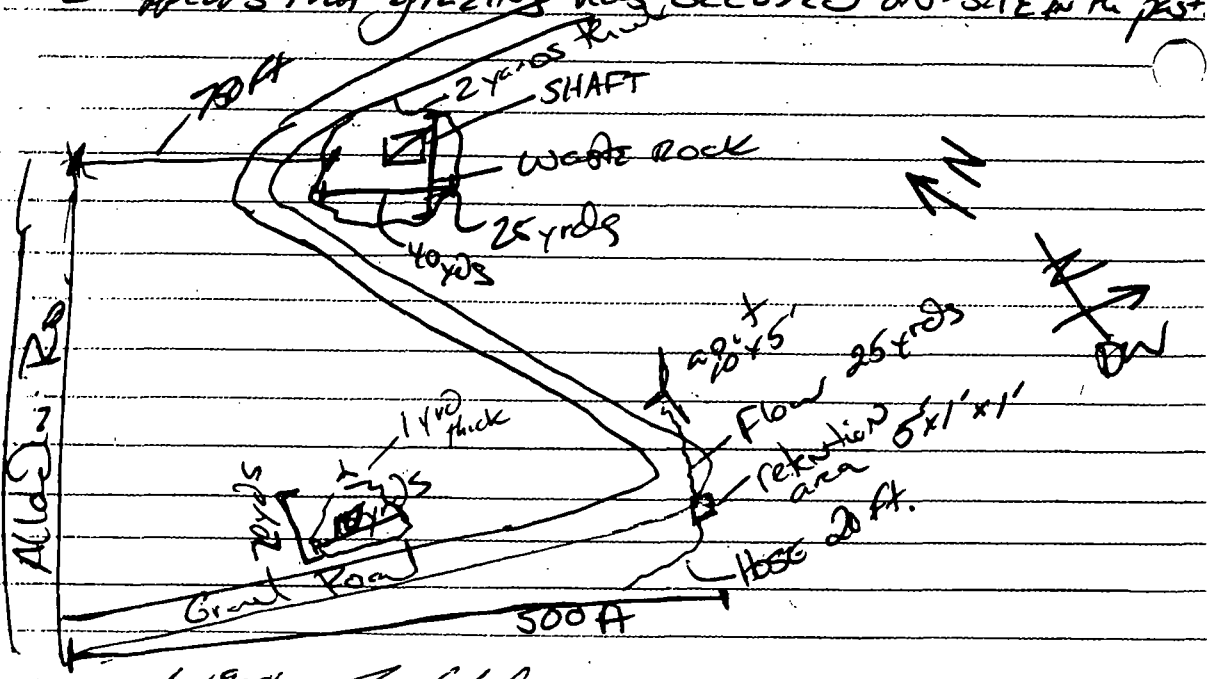
6-19-01 Paul Wiles

01-02-0028 01-02-0028 Upper Columbia River

Structures

MSS Mine at lower adit. There is water trickling from the adit which flows approx 25 yards before it infiltrates the ground. During higher flow it may potentially reach Deep Creek. Source will collect an adit and PPE sample. There are no significant amounts of GWR here. It appears to have been spread around and potentially taken off-site for construction purposes. Flow of the adit water is just a trickle, much less than 1 GPM. There are no structures here or mills. At the PPE there is a sort-of collection area made with small logs and plastic sheeting which will retain at most 15 gal. The water will run over the top and flow downslope in small channels or sheet flow. There is an approximately 20 ft hose which runs downslope from the retention area. It will then

It appears that grazing has occurred on-site in the past



6-19-01

Not accept all of the water in the retention area when it is in higher flows. There is a lowest adit with no water flowing that has a waste rock pile that is estimated to be 20 x 10 x 1 yards = 200 cubic yards. No samples are collected here and No flow or obvious drainage was observed.

1540 Leave Copper King to go to Northport for ice and then to Black Rock Mine.

1610 Arrive in Northport, get some ice.

1640 Arrive Black Rock Mine. Site has one large tailing/W.R pile which measures approx 60 yards x 40 yards (tall) x 10 yards deep = 24,000 cu yards. There is the remains of a possible mill structure and 2 sorting bins. We will collect 3 surface soil samples from the waste rock. The mill is collapsed on top of it self. We spoke with a Neighbor to the site who said his grandfather formed the mine in 1895 and did try some milling at the mine. There is a shaft on the site. It is not flowing any water nor is there a pipe from the mine to Deep Creek which is across Colladay/Northport Rd and 300 yards through a field (check map for detail of distance). Access is not restricted and it appears that people have been removing some of the rock. No logging or grazing occurs at the mine. While we did the walk through with the Sevone, readings ranged from 0.0 to 0.03. GPS points taken at sample locations. Only 2 samples will be collected at the mill because there is very little safe access due to the mill being collapsed upon itself and the waste rock pile eroding onto it. There is no evidence of transformers or a dump site at the mine.

Paul Ulus 6-19-01

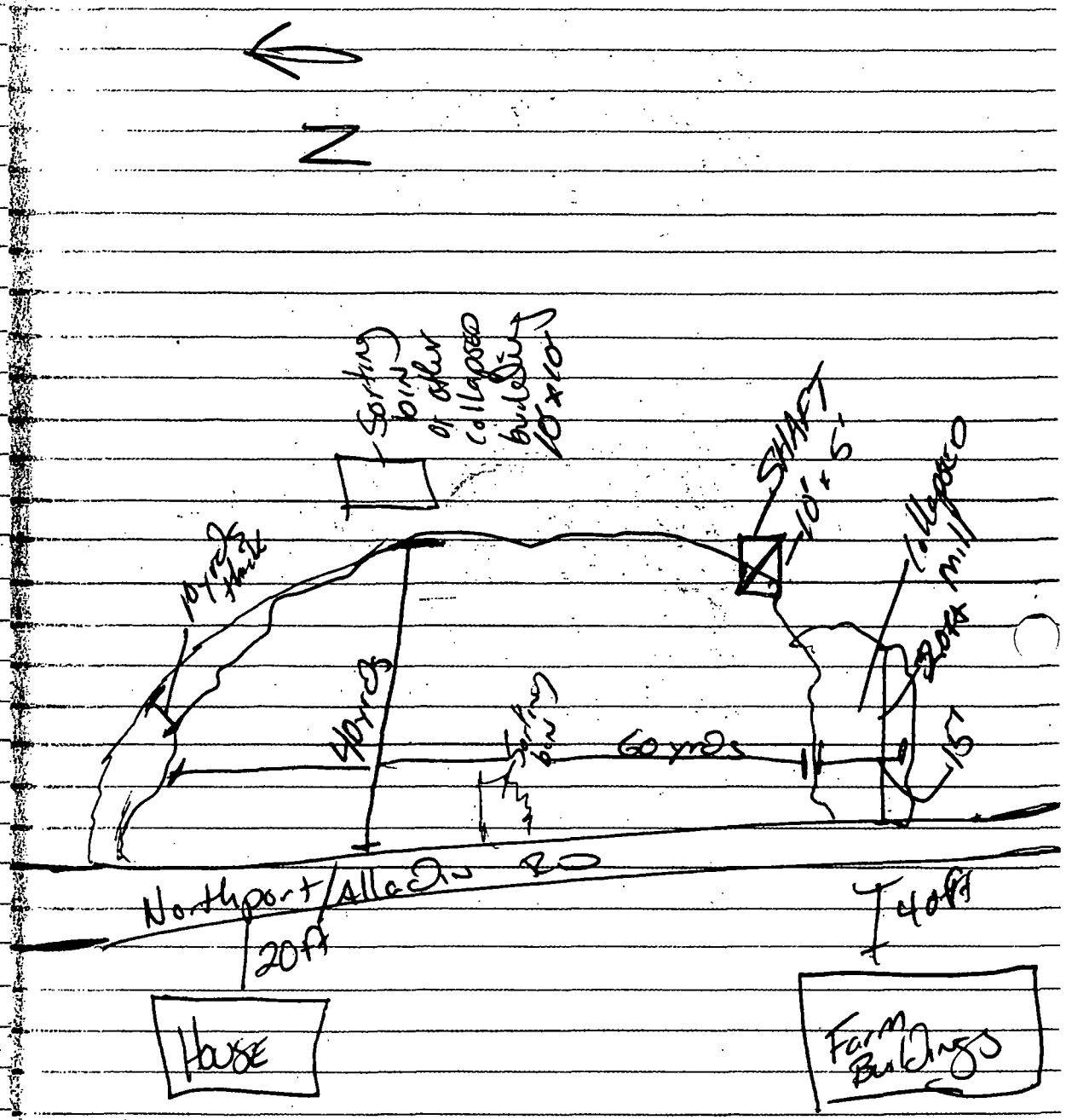
01-02-0028 01-02-0028 Upper Columbia River 6-19-01

area where it
No

= 200

SERVED
ice

age tailing
yards
cu yards
structure
3 surface
IS
th a
after
milling
is not
e from
s Gladden
Check
restricted
removing
zinc
lb through
0.0 to
Only 2 sample
latter
upon itself
there is no
of the mine.



Dave Weiss 6-19-01

12 Upper Columbia River 01-02-0028 6-19-01

1815 Finish sampling and return to hotel.
1850 Return to hotel

Overview of Day

DW and NA first went to the Farmer Mine
- No samples were taken
- 1 shaft
- 1 adit
- small amount of W.R.

Maki Mine
- No samples taken
- 2-3 shafts
- small amount of W.R.

Copper King Mine
2 WR samples taken
- 1 PRE sampled ADIT sample

2 WR piles only one sampled
1 shaft 2 adits
1 of the adits was draining

Black Rock Mine
3 WR samples taken
2 mill soil samples taken
possible mill building
1 shaft

6-19-01

Upper Columbia River 01-02-0028 06-20-01

0900 Arrive at Last Chance mine to begin walking up to the workings.

0950 Arrive at Last chance mill area. As described in the previous PA there is the remains of a mill building which is surrounded by tailings which are in and around the creek running through. There are PPES to the creek which will be sampled and samples will also be collected from the tailings and the mill area according to the SQAP and the SOPs. All other pertinent information on site remains as was described in the SQAP and PA. At the mill NO evidence of transformers is observed. Access to the site is unrestricted. When we arrived at the site we did a walk through with the Jerome and readings averaged 0.0 to 0.03 mg/m3 and the Mini Ram we received a reading of 0.09 to 0.14. GPS points will be collected at all sample points unless mentioned specifically.

Sample LCPP045D is the lower PPE at the mine, it is PPE 2 on the figure from SQAP.

Sample LCTP075S is the soil interface

1200 Start hiking up to Upper area of Last Chance mine

1310 Arrive at Upper mine area. As described in SQAP there is an adit which is flowing at about 1 GPM into the unnamed trib. There are two W.R piles 1 small, 1 very large. We will sample the adit and the PPE at the adit 3 samples from the large WR pile. GPS of adit sample was collected approx 40 feet S of sample location.

1500 Arrive at car. Break for lunch

1520 END lunch go to look for Great Western Mine.

1700 Return to hotel

Paul Wiley 6-20-01

MINE

of W.R.

W.R

Upper Columbia River 01-02-0028 6-20-01

OVERVIEW OF DAY:

DW and WA sampled at LAST CHANCE MINE

- 2 WR piles
- 1 tailings pile
- 1 flowing Adit
- 1 mill

3 mill samples
3 tailings samples
3 W.R. samples
2 PPE samples
1 Adit sample

[signature] 6-20-01

-01 Upper Columbia River 01-02-0068 06-21-01

~~[illegible]~~

UCE Mine

0725 Arrive at Great Western Mine. Above the Knowlson Rd there are several shafts and adits with small piles associated with them. The uppermost area has a series of 3 shafts/adits within 30 feet of each other. They have ONE UR pile associated with them which measures 5 yards x 10 yards x 1 yard thick. There is NO water draining from any of them. This will be referred to as ~~shaft~~ 1

Just below shaft 1 system is SHAFT 2. It is a large hole which appears to have 3 different tunnels within it. There are no piles associated with SHAFT 2 and no water draining from it. The shaft measures approx 15 feet across.

Aside-note: When we arrived on site readings were taken with the Jerome and values ranged from 0.00 to 0.02 the mini ram readings were 0.

Approx 30 feet below ~~shaft~~ 2 is another shaft, no. 3 which has a pile which measures 5 yds x 10 yards x 1 yd thick. The shaft has 2 open holes associated with it and has no water draining from it. This shaft is approx 40 ft above the Knowlson Rd. The next hole down is an adit at the road level which is filled in. It has no pile directly associated with it and no drainage. This is adit #4. Below the road there is the remains of an adit house which has collapsed over the hole. This is adit #5. There is a pile here which measures 30 yards x 30 yards and is approx 1-2 yards deep. ≈ 2000 cu yards. We will collect 2 ur samples from this pile based on XRF readings. There is no water draining from the lower area and thus no PPE or adit water samples are to be collected. Access to the site is unrestricted.

 Upper Columbia River 01-02-0028 06-21-01

There is evidence that grazing has occured and logging was actively occuring within 0.25 mile of the mine. There is no evidence of transformers. GPS points taken at sample points.

1140 Finish at Great western mine head for Tyee Mine

1240 Arrive in the vicinity of Tyee Mine. No access has been granted so we will look for edge of the mine and take a GPS and photos. The mine workings were not located but a cabin nearby was observed. From the topo map USGS it appears that the adits were along the unnamed creek draining into Deep Lake. No mine workings located. Due to the small amount of production (approx 300 tons) of ore it is assumed that they would be hard to locate even with access. It is reported that this was an iron mine.

1300 Break for lunch

1320 Finish Lunch

1500 Arrive at Gladstone mine. The mine has 3 shafts and 2 buildings. There is a tailings pile between the two buildings. One building is a loader and the other is potentially a mill although it is the size of a small cabin with no milling machinery present. We are assuming it to be a mill due to the tailings nearby. The shafts are located above the road. Shaft 1, furthest to the S ~~SE~~ has a small WR pile associated with it measuring 5 yards x 10 yards x 1 yard thick. Shaft 2 is approx 25 yards N of Shaft one. It has no discernable WR pile associated with it. Shaft 3 is approx 20 yards N of #2 AND a bit lower AND has no WR pile associated with it.

David Ellis 6-21-01

Upper Columbia River 01-02-0028 6-21-01

6-21-01

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Tyee Mine
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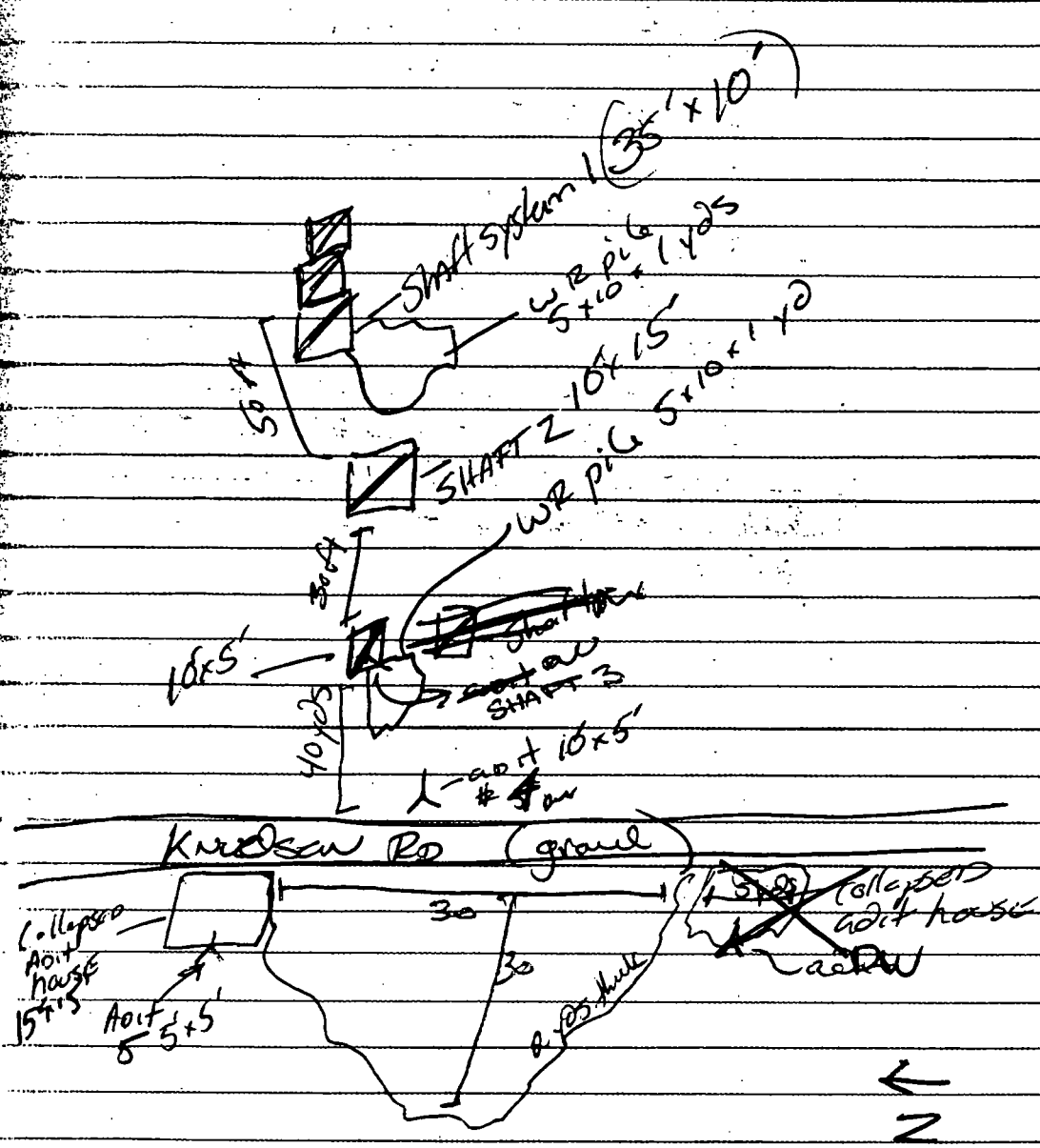
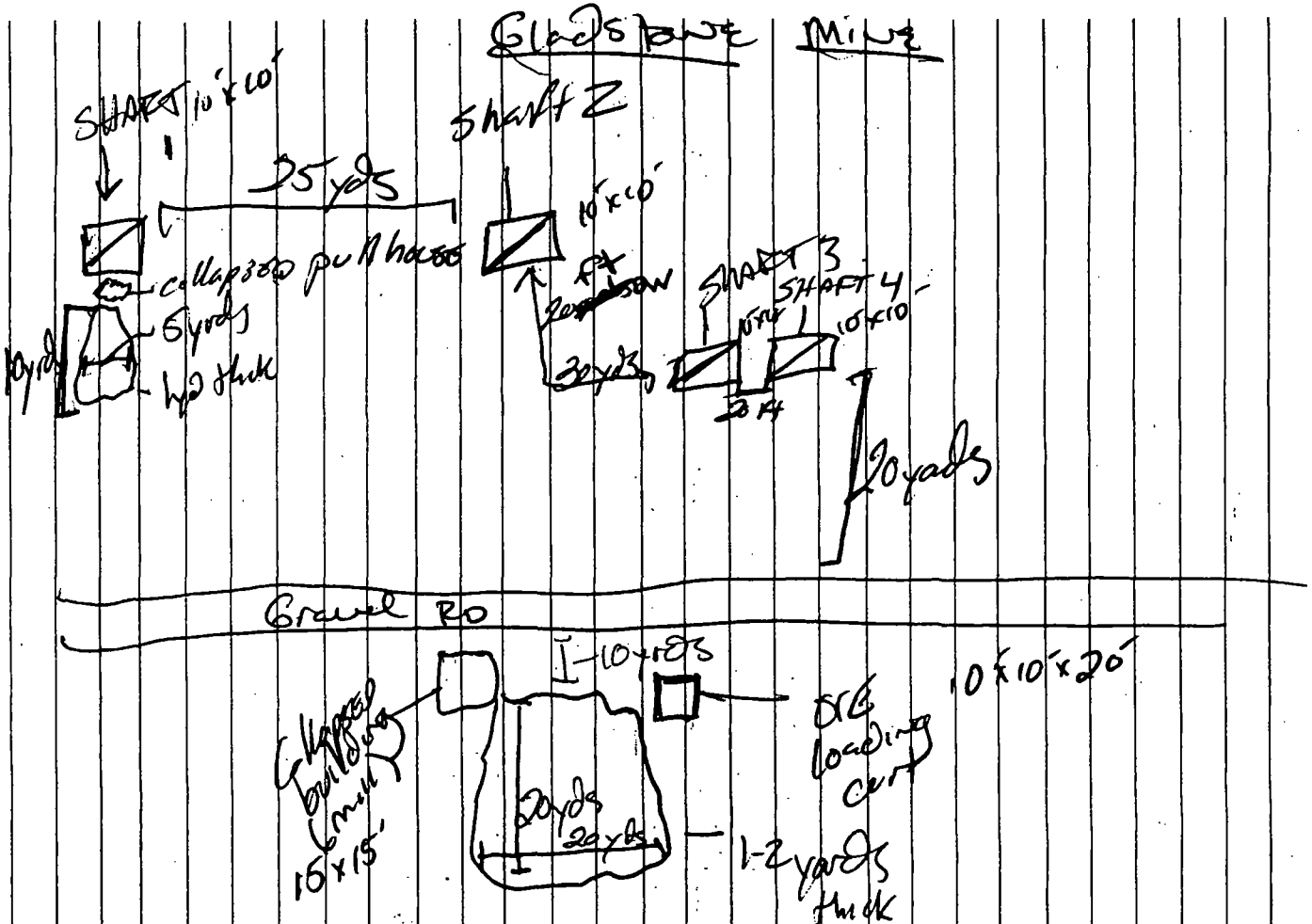
Great Western Mine



Paul Ahs 6-21-01

Upper Columbia River 01-02-0028 6-21



Partially 6-25-01

Upper Columbia River 6-21-01 01-02-00 28
Shaft 4 is located approx 20 ft N of Shaft 3. Both shaft 3 and 4 are collapsed or filled in potentially with the WR since no real WR piles are associated with either mine shaft. There is no water draining from the shafts or the site. Access is unrestricted. Some logging has occured here in the past. There is no evidence of transformers at the mill site.
No GPS available for GLTP01SS.
GPS points taken at GLTP02SS 10 ft E of sample point GLTP01SS. Sample GLTP03SS is at the soil interface.
1700 Finish at Gladstone mine and return to Motel

Overview of Day:
Great Western mine
3 shafts 2 adits
3 WR piles 1 collapsed adit ~~shaft~~ house
2 WR samples
Tyee Mine - Photo and GPS nearby
Gladstone Mine
4 shafts
Potential mill - 3 samples
1 WR pile - no samples
1 tailing pile 3 samples

Paul Allen 6-21-01

1-2 yards fill

1 x 1

1 x 1

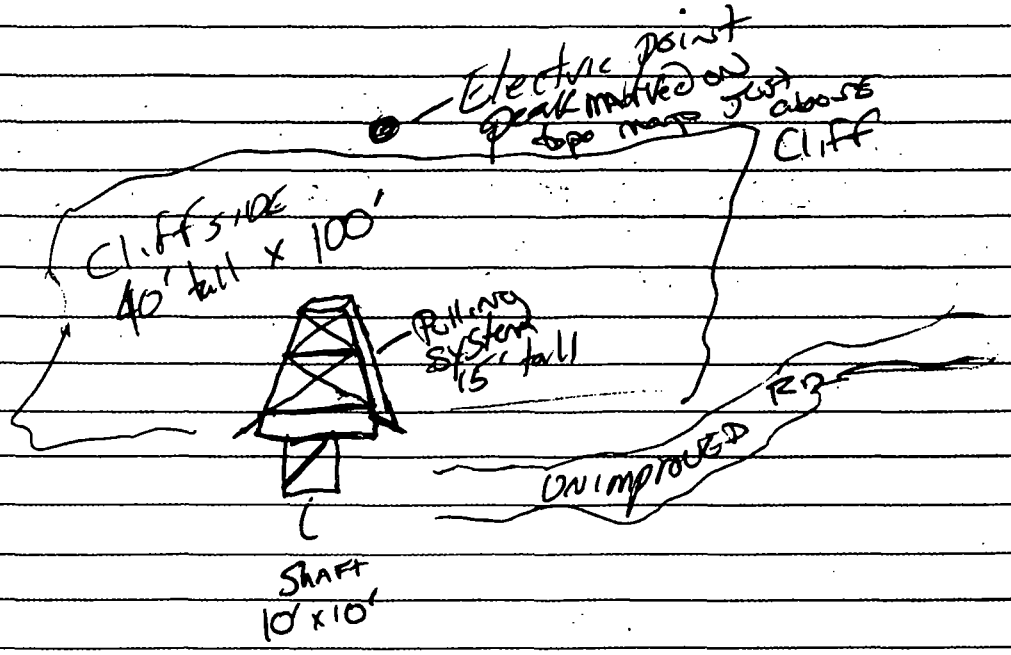
N↑

6-21-01

Upper Columbia River 6-22-01 01-02-0028

1040 Arrive at what we believe is the Lucky Four Mine. It consists of a shaft with a crank or pulling system above it. There is no discernable waste rock or tailings present. There is no mill or other buildings besides the pulling system, therefore no transformers. There is no water draining from the mine. There will be no samples collected here. There is evidence of people at the site (beer cans) and access is unrestricted. GPS points taken 50' SW of shaft.

1100 Leave Lucky Four Mine



Rick Wilson 6-22-01

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6-2201

Upper Columbia River 6-2201 01-02-0028

1145 Arrive at Electric point mine. Do site walkthru with the Jerome and get readings ranging from 0.00 to 0.04 and the mini-ram readings were 0.0 to 0.1. The site consists of one or two shafts at the upper area which are collapsed so can't tell how many exactly. There are two WR piles and a mill. There is also a loading bin and what appears to be a tailing pond. It has a berm around an area that contains tailings. The area is dry. There is no water discharging from any areas on the mine. Access is unrestricted. There is no signs of transformers or a dump. There are signs of people using the area (beer cans). The upper pile is estimated to be 50 x 100 x 2 yards = 10,000 cu yards. Three samples will be collected. Since there is no water draining and no sev body nearby there is no PPE.

NOTE: In photo 6.16 whiteboard says RTN 01254189 should say 01254185
photo 6.18 says 01254190 should be 01254186
Photo 6.20 says 01254191 should be 01254187

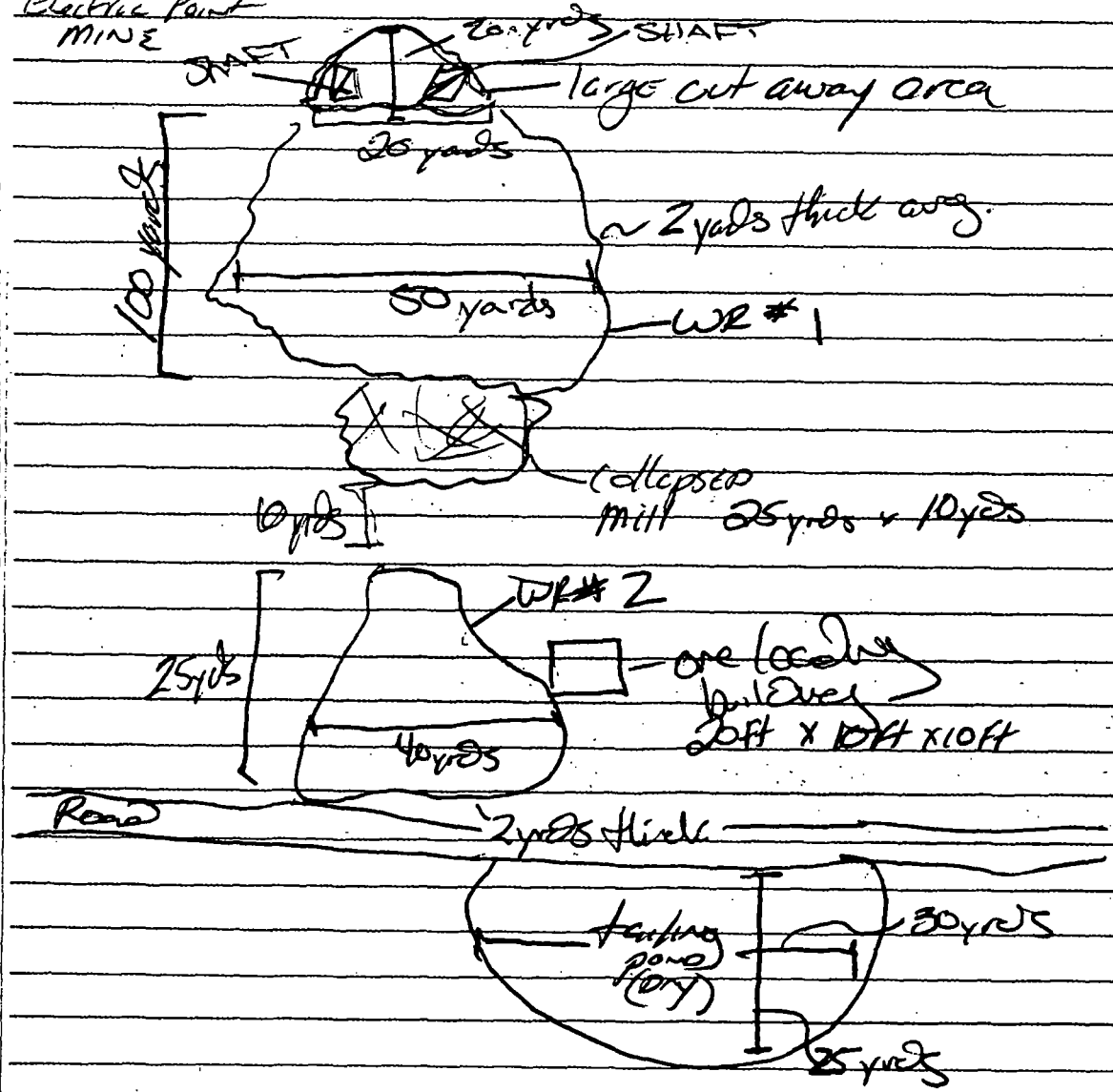
1340 Break for lunch
1358 finish lunch.

The tailings pond/impoundment measures 30 yards x 25 yards x 1 yard (or less thick). The lower WR pile #2 measures 25 yards x 40 yards x 2 yards thick = 2000 cu yards. We will take 2 samples in WR pile 2 and 3 in the tailing pond. The tailing pond has trees growing in it and do not have any evidence of water in it. Sample EPTPLSS is the soil interface.

Paul Hess 6-2201

Upper Columbia River 01-02-0028 6-22-01

Electric Point MINE



N →

6-22-01

6-22-01 Upper Columbia River 01-02-0028 06-22-01

1500 Finish at electric point mine

1515 Arrive at road to keystone mine area

area Mine reportedly has no workings according to USFS so it is unlikely we will locate the exact area. Photos and GPS taken.

avg. 1600 Arrive at what is assumed to be the lead trust mine. There is a large indentation in the ground measuring 10 x 10 yards. It is filled in and it is uncertain if this was an adit or shaft. We have searched all other roads in the area and have not located anything else to resemble a mine. There are no poles or structures. There is a small amount of scrap metal nearby but nothing else resembling a mine structure.

10yds

7x10ft

- Return to Hotel for paperwork

Overview of Day

- Lucky Four Mine - 1 shaft w/ pulling system
  No samples
- Electric point
  2 ore piles - 5 samples
  1 tailing impoundment - 3 samples
  mill building - 3 samples
  ore loading structure
  No pipe or drainage

30yrds

25

- Keystone - Did not locate - photo gps
- Lead trust - photo + GPS at suspected site

Paul Ackles 6-22-01

6-22-01

Upper Columbia River 01-02-0028 6-23-01

0900 Arrive at Van Stone mine to drive through WR pile to assess sample areas. Three XRF samples will be collected for each sample taken. We will collect 12 WR samples throughout the entire pile.

1030 On the piles to the W of the blue lagoon we will take two samples. One on the upper tier and one on the lower tier. The lower tier is approx 75 ft below the upper. GPS points are taken at all sample locations unless noted.

1130 Return to main pile area on W side of lagoon and prepare to do three samples in the upper third above the mill and ASTs. Sample VSWR03SS is at the upper most part. Sample VSWR04SS is to be collected approx 40 ft below the vicinity of sample VSWR03SS. Sample VSWR05SS is below VSWR04SS just up from the AST area above the mill

1250 Complete sampling the upper 1/3 of main pile area break for lunch.

1320 End lunch

1325 Sample VSWR06SS is taken from WR around the mill building. There are several areas where WR has been piled and a sample will be collected based on XRF results

1346 Sample VSWR07 will be collected in the area just above the mill building based on XRF results. This is approx 40 ft above the approx location of sample VSWR06SS.

Sample ~~VRWR~~ VSWR08SS is approx 75 yds W of the mill on the same approximate level.

Sample VSWR09SS is collected approx 50-75 yds W

David Wood 6-23-01

Upper Columbia River 01-02 0028 6-23-01

of sample VSWR0855, just east of the cliff down to the lagoon

1500 Sample VSWR1055 will be collected near the bottom of the WR pile closest to the lagoon.

1525 Sample VSWR1155 is to be taken approx 100 yards NE of sample VSWR1055, along the lower tier

1550 Sample VSWR1255 will be collected approx 75 yards NE of sample VSWR1155

1600 Finish sampling for the day. Return to hotel for paperwork.

Overview of Day

Van Stone Mine

12 WR samples collected

[signature] 6-23-01

Upper Columbia River 01-02-0028

Addendum:

- Anaconda mine was searched for on the same section as Copper King Mine on 6-18-01 and was not found. GPS and Photo taken for Copper King on 6-8-01
- TOC was not collected for sediments due to lack of direction from EPA
- Only three tailings samples were collected from Last Chance mine due to lack of access to enough of the pile to sufficiently space the samples above three.

Paul Ally 6-21-01

ecology and environment, inc.

International Specialists in the Environment

Job Number 01-02-0028

Upper Columbia River/mines
Stevens and Pend Oreille Counties
Washington

Project Area Documentation Logbook #6

Team #2

5-8810

5-6501 or
208 263-7574

E & E Job Number _____

Telephone Code Number 12810073

Site Name Upper Columbia River/Mines
Stevens and Pend Oreille Counties

City/State Washington

TDD 01-02-0028

PAN 021281.0073.01.SR

SSID _____

Start / Finish Date 6-18-01 / _____

Book _____ of _____

E & E Emergency Response Center: (716) 684-8940
E & E Corporate Center: (716) 684-8060
MEDTOX Hotline: (501) 370-8263
E & E Safety Director (Home): (716) 655-1260

01-02-0028 6-18-01 Upper Columbia River

0815 After packing equipment, Mark Woodke and Cami Grandinetti leave Colville for 15 mile Road, where 5 or 6 mines are located. None of the mines are exactly located on the map, so the team drives on several "road branches" also.

1100 48° 52' 09.296" = Lat/long readings at "Tree plant"
118° 03' 03.776" This is a possible former mine sign location but also may be a small landslide. The team takes ~~survey mark: 15 mark~~ pictures of this location but no samples as the size of the "waste rock" pile is much less than 1,000 cubic yards (yd^3). There was no sign of surface water running through or adjacent to the waste rock piles. A dry creek bed was found approximately 50-100 yards across the road; no water was noted here either. The team continued driving on various branches of the road to points on the map that were not accessible for the team ~~after~~ or that appeared to be past the point on the road of the listed mine site locations. The team also noted 2 buildings at a fork in the road - one of the buildings has a small (30' x 15' x 3') "rockpile" (rocks with much soil mixed in) in front of it; this may be a second mine location. Four pictures were taken at this location, but lat/long readings were not possible due to forest cover. The team then continued down the road, again checking most branch roads where the listed mines were likely to be - no other likely former mines were found.

1300 The field team then drove around looking for a road that would lead to Hubbard Mine; the most likely road to lead there was fenced off after approximately 1 mile, so any sign of a mine was not found. The crew then headed back to Northport and drove towards the Morning and Alexanna Mines.

Mark Woodke 6-18-01

01-02028 6-18-01 Upper Columbia River

The crew again drove approximately 2 miles past where the former mine sites appeared on the maps; there were no indications of mines on any of the roads attempted. The field crew was unable to use a cellular phone and communicate this information, so the crew headed back to the hotel to await the other teams.

Summary of the day's work:

Mine #	Name	Work Completed
196	Lottie	For all 8 mines, two locations ~~were~~ were sampled, but it is unclear which locations were sampled. The most likely locations are 191, 219, 207, 198, + 196.
198	Minorca	
207	Antelope	
219	Homestake	
191	Hope + Twin Cabins	
164	Hubbard	
252	Morning	
282	Magma	

Mark Moeller 6-18-01

6-19-01 01-02-0028 Upper Columbia

0800 The sampling team exits the hotel for Northport to pick up Mr. Joe McNamy, a local miner that is familiar with the area mines.

0915 The sampling team picks up Mr. McNamee + heads for the 15 mile road mine area.

1000 The sampling team arrives at a mine with a ≈ 10' * 10' shaft (surface dimensions). The shaft goes approximately 35 feet. Coordinates. R061917A, SV 7/7, PDOP 2.8, R. The aboveground soil is << 1,000 yd³, therefore no samples were collected. The mine is believed to be the Ibex by Mr. McNamee. No reading was on the mini-ram (0.00 mg/m³).

1050 The team arrives at Big Iron mine, near the Ibex. Coordinates SV=5/6, PDOP 3, R, R061917B. The waste rock pile is < 1,000 yd³, so no samples were collected. No reading (0.00 mg/m³) was obtained by the mini-ram.

1310 After driving in the alleged area of the Hubbard Mine for ≈ 1 hour, the team photodocuments a rock pile area adjacent to the road. Location SV 5/5, PDOP 4.2 R061920B. No samples were collected. Air and Mercury readings were both 0.

1550 After making several attempts to find the mine, phone calls and personal contacts were made to find the Bullion mine. A photograph was taken, but no samples or monitoring readings were taken. Location 061923A, PDOP=4.2, SV 4/4, R. The size of the hole (overgrown) is ≈ 6' deep * 30' long * 10' wide; deposited wastes were ≈ 2 yd³. The site was reached by driving past Bull Hill Ranch. Directions were provided by the brother of the ranch owner, Dan Guglemino.

1610 The team then headed back towards Northport, then to the Deep Creek Mine. The gate was locked on

Mark Noble 6-19-01

6-19-01 01-02-0028 Upper Columbia River

Site None
Arlington
Minorca
Lottie
Homestake
Hope
Twin Cabins
Hubbard - Drove to the end of the most likely road - no sign of a mine.
Coyote - Drove on most likely roads - No indication of a mine.
Mountain View - "
Bullion - Collected photo & GPS information - no sample.

Repeat from yesterday - went with Joe McNamee to see if any of the mines he knew of were these mines.

arrival, but the team was able to walk around the gate and visit the property. The features listed in the SAP were found and estimated numbers and types of samples to be collected from this property were approximated. The team then drove to the area of the Sierra Zinc mine to verify it's location for tomorrows sampling. The sampling team arrived at the hotel at 1830 and completed paperwork and equipment setup for tomorrow.

Mark Nicolle 6-19-01

6-20-01 Upper Columbia River 01-02-0028

Deep Creek/Pipe	S/V	PPM
LC02021A	6/6	2.8
	2/8	2.0
	7/8	2.8
	↓	2.6
	5/8	2.9
	↓	3.7
	↓	2.8
	↓	2.8
	5/8	3.2
	7/8	3.7
	7/8	3.0
	↓	3.4
	8/8	2.9
DWP02	6/8	2.9
05	↓	2.8
06	↓	↓
DCWP07SS	↓	↓
		2.7
		3.3
	↓	3.7
	5/8	3.2

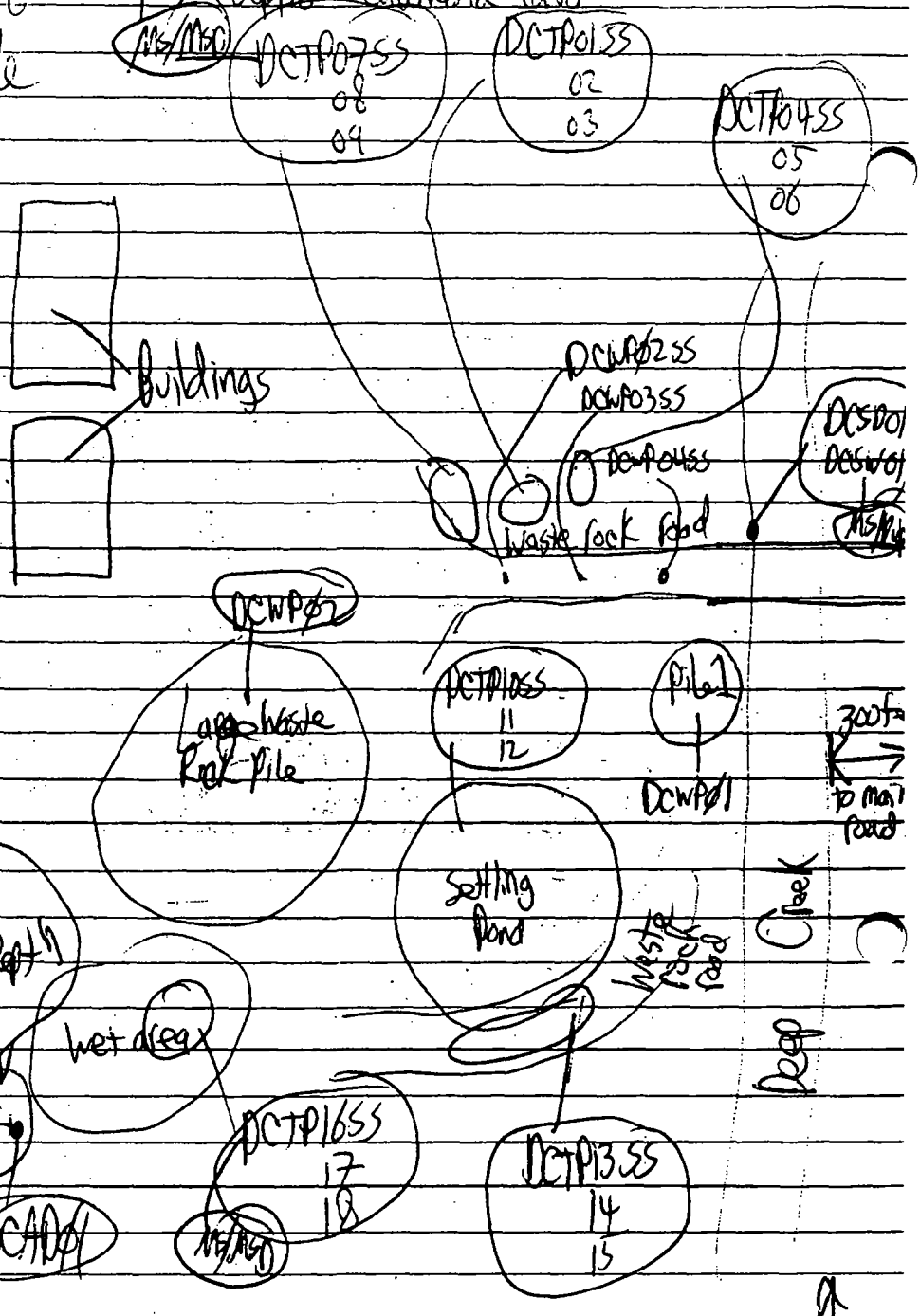
Readings were not obtained for all locations due to the proximity to the mills.

Late Notes: Mark Woodke and Cami Grandinetti arrive at the Deep Creek Mine property at ≈0900 and prepare for sampling activities. The crew walks through the property. Mark Woodke (MW) begins XRF calibration, then marks out sample locations in conjunction with Cami Grandinetti (CG). See the next page for sample locations. No signs of transformer leaks were noted, the transformers were located on concrete flooring. The pH for both water samples w/ ≈6. Jerome and Mini-Ram readings were all Non-detect.

Mark Woodke 6-20-01

01-02-0028 01-02-0025 6-26-01 Upper Columbia River

Not to scale



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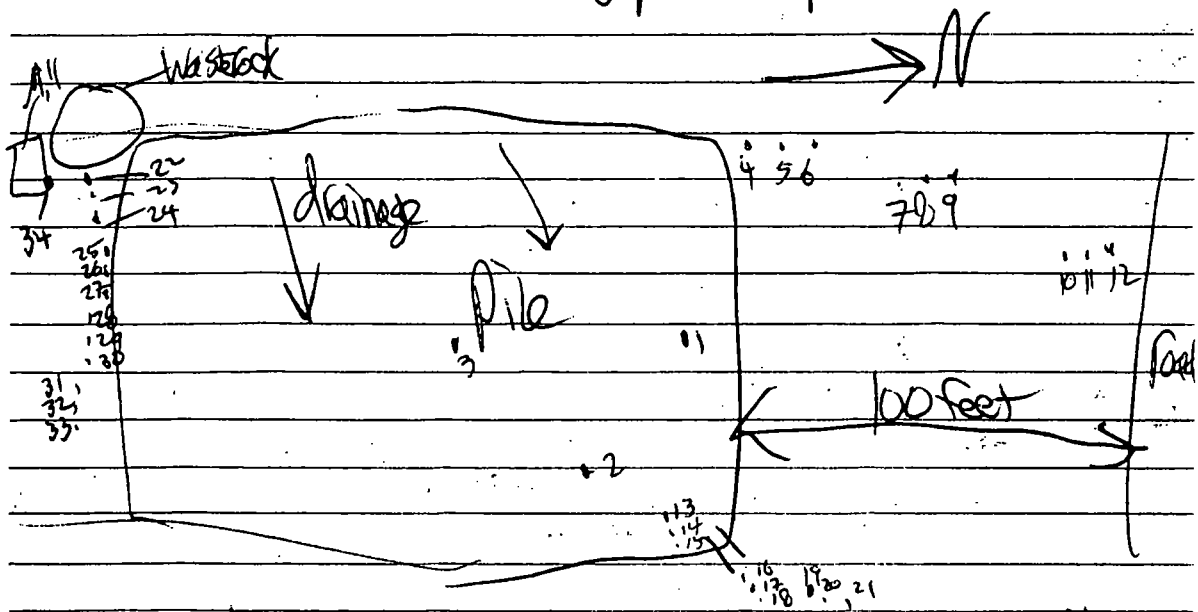
6-26-01

Mark Noble 6-26-01

6-24-9 Upper Columbia River 01-02-0028

0945 Mark Woodke (MW) and Guy Gregory (GG) of the Washington Department of Ecology arrive on site & set up at the Sierra Zinc Mine for the day's work. GG begins photodocumentation while MW calibrates the XRF. Jerome and Mini-ram readings initially taken were all non-detect. A Jerome reading at 1015 was 0.002. R062116A - only the 3 tailings piles samples were recorded.



1200 The team goes to the Northeast Corner of the tailing pile. R062149A is the file for GPS information in this area. The tailings pile is ≈ 2100' * 1000' * 20' ≈ 1,300,000 yd³.

1300 The sampling team heads for the Morning mine area during lunch - the gate is again locked. The team finishes eating lunch & returns to the Sierra Zinc Mine. Mercury readings in the area were up to 0.009. R062122A = GPS file for the area. The apparent owner of the mine (Mr. Higginbotham) gave Vesha permission to collect samples from the mine. See the appropriate logbooks for photos and sample information. Discharge from the adit was estimated at 0.5 gallon/minute; the discharge went into the ground above the waste rock pile. The volume for the wastrock pile is estimated at ≈ 700-800 yd³ (100' * 50' * 5' depth). Mark Woodke

01-02-0028

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01-02-0028 6-21-01 Upper Columbia River

1555 To team leaders the Burros Mine. R062122B — did pit work
Waste Soil totals 254 yd³ — No tailings or waste rock.
The nearest surface water is ≈ 720' North (across the road)
Map Section 13 T37N R41E

N

Burros Mine

Hg = 0.005
No Mini RAM reading

30' high * 25 across
* 1' deep

Rocky Creek

Road is adjacent to the Burros Mine
Brent Olson owner of the Burros Mine property if any follow up work is needed.

Late Notes for Sierra Zinc Mine
Samples 1, 2, + 3 were tailings, 4–33 were soils associated with the tailings pile and/or waste rock pile, and 34 was a mill area soil sample. A tractor was observed working on the mine tailings pile and deer prints were noted on the pile also. Areas around the ~~dump~~ tailings pile were built up, but there was a small (1×2') area in the northeast corner where water could exit; this "pathway" lead to a forested area. There was a fence around most of the accessible areas of the tailings pile. The nearest residence is ≈ 100' ~~southwest~~ southeast of the Mill building.

Mark Woodke 6-21-01

6-22-01 Upper Columbia River 01-02-0028

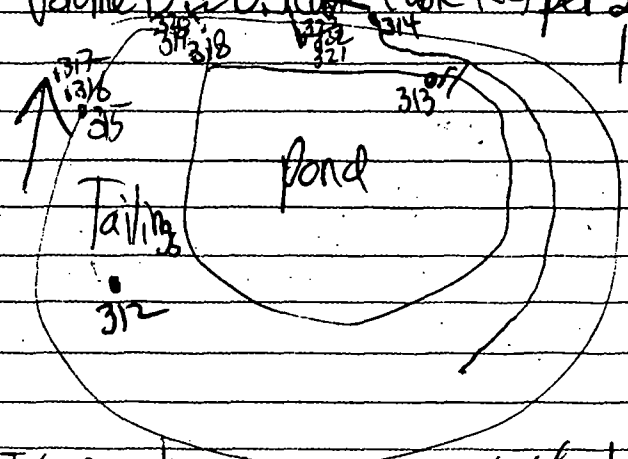
0900 Mark Woodke (MW) and Al Johnson (AJ - U.S. Forest Service) arrive at the Van Stone Mine and get a tour (along with others) from Randy Mueller, the caretaker. Several tailings piles, buildings and other areas of concern were noted.

1115 The tour ends and the team (MW + AJ) set up sampling equipment.

1220 Sample 01254312 is collected from the tailings pile

1250 Sample 01254313 is collected from the edge of the tailings pile (near drain)

1325 Sample 01254314 is collected from the PPE into an unnamed creek on the north side of the tailings pond. The team made their best estimate as to the PPE location; the creek volume is ≈ 0.3 cubic feet per second. The creek is ≈ 150 feet north of the tailings pond.



Dimensions for the Tailings Pile are GPS recorded. The pile is ≈ 10-20 high as an estimate

1410 The sampling team arrives at the bottom of the tailings pile to collect soil samples (after XRF analysis)

≈1445 After sample VS1P01SS is collected, the XRF overheats and is turned off and recalibrated (using up ≈ 25 minutes). R06222A is the GPS file for these samples. The samplers then continued sample collection at the bottom of the tailings pile.

1640 The sampling team finishes sample collection at the bottom of the tailings pile, then heads up the hill to meet with the landowner to determine the scope of work for tomorrow.

1745 The sample crew departs the site for the hotel.

Mark Woodke 6-22-01

01-02-0028

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Noelke 6-22-01

01-02-0028 6-23-01 Upper Columbia River

845 The sample collection team (Mark Woodke and Al Johnson) arrives at the Van Stone Mine property and sets up for sampling.

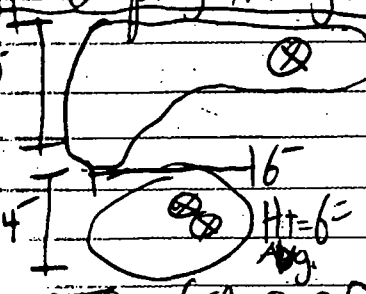
0920 Sample VSSS0155 is collected from the stained soil area (sheen on the water) near the LP tank and mill buildings. Mercury Vapor readings = 0.010 in the area.

0940 Sample VSSS0255 is collected from an orange stained soil area near the old mill buildings and elevated transformers.

1010 Sample VSSS0355 is collected from the "outfall" area of an AST in lined secondary containment. A petroleum odor is noted in the area.

1045 Sample VSSS0455 is collected from a transformer storage area on a concrete pad.

1047 Sample VSSS0555 is collected from the same transformer storage area as sample VSSS0455. The concrete pad (thickness unknown) is not impervious, as there was water noted seeping through the side walls and floor. Pile dimensions



Transformer information - All 3: Westinghouse 5 Kilovolt Transformer

Individual Serial #	Style	
4871591	EMT 8595	2400/4160 V
4871595	EMT 8595	240/480
4871593	EMT 8595	

GPS File R0623 16A

Associated samples - (15 waypoints)
VSSS0155, VSSS0255, VSSS0355, VSSS0455, VSSS0555, VSSS0655, VSSS0755, total samples collected from the Van Stone Mine on 6-23-01 by this sample collection team.

Mark Woodke 6-23-01

6-23-01 01-02-0028

1130 ~~1045~~ Sample VSSSP05S is collected from stained soil near potentially leaking drums. One open & likely leaking drum is labeled "Transmission and Drive Train Oil, SAE50" and also states that the product is not hazardous per Federal and/or State right to know laws.

1135 Sample VSSS07SS is collected from the low point in containment (unlined) for ≈ 5 ASTs. The sample has some organic matter in it. There was a slight petroleum odor. Water had accumulated in the low point.

The sampling team then has lunch down at the bottom of Tailings Pile 1 (TP1), then heads to Tailings Pile 2 (TP2) to collect 9 samples from the area of TP2.

1335 Sample VSTP00SS is collected from Tailings pile 2 (upper with only partial ownership by Van State Mine) at the interface.

1345 Sample VSTP11SS is collected downgradient (from soil) from VSTP00SS.

1350 Sample VSTP12SS is collected downgradient from VSTP11SS (soil)

1400 Sample VSTP13SS is collected from Tailings Pile 2 ~~at~~ downgradient of VSTP12SS.

1405 Sample VSTP14SS is collected from " "VSTP13SS.

~~1410~~ ~~1420~~ Sample VSTP15SS is collected from the interface of Tailings pile 2 and soil.

~~1415~~ ~~1425~~ Sample VSTP16SS is collected from downgradient of VSTP15SS.

~~1420~~ ~~1440~~ Sample VSTP16SS is collected from the interface of Tailings Pile 2 and soil.

1445 Sample VSTP17SS is collected from ~~the interface~~ downgradient of VSTP16SS.

1545 Sample VSTP18SS is collected from the same area as VSTP05SD (for PCBs)

1545 Sample VSTP20SS is collected from the same area as VSTP02SD (for PCBs)

The sample team finishes packing equipment and samples and exits the site for Cobalt.

Mark Noble 6-23-01

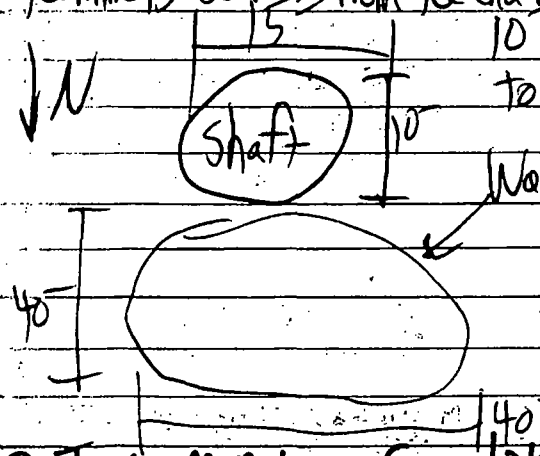
6-24-01 01-02-0028

0825 Mark Woodke and Al Johnson leave Colville after collecting BG0155 near the hotel at 0800.

1000 Mark Woodke and Al Johnson (the team) reach the Antelope Mine at the end of the road.

File 0624SA for all grab samples collected today by this team.

The mine is 50 feet from the end of the forest road



10 from surface to water

Waste pile = 40' x 40' x 2' = 3200 ft³ avg depth

No surface water was noted in the area of the shaft.

1130 The team returns from hiking and finding several Homestake mine shafts, pits, & rock. Total area ≈ 300' x 100'; waste rock ≈ 300' x 40' yd³.

1145 The team reaches the Lottie Mine - this was the area searched on Monday, 6-18-01, with a structure on each side of the road at an intersection. Dimensions were recorded on 6-18-01. A lat/long reading was obtained from the road ≈ 40' east of the mine building. An upper area was found up the road ≈ 500' away from the buildings.

The first hole found is ≈ 5' x 10' x 25' deep and hole 2 is 5' x 10' x 10' deep. The largest waste rock pile is 60' x 30' x 10' high and the smaller is 15' x 15' x 4' high.

1310 The team hikes for ≈ 1 hour in the woods in the area of the Minnie Ca mine - the mine was not found.

1530 The team finds one shaft of Hope & Twin Cabins after a 15 minute hike. The dimensions of the shaft are 15' x 15' x 30' to water. The waste rock volume is ≈ 100 yd³ based on dimensions of 25' x 35' x 4'

Mark Woodke 6-24-01

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and/or

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the sample has
a slight petroleum odor.
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eads
ow

ilings pile 2 (upper
mine) at the interfac
ent (from soil from VSTP155)
nt from VSTP1155 (soil)
e 2 (downgradient of VSTP144)
VSTP165

ce of Tailings pile 2 and soil
ient of VSTP1355,
ce of Tailings Pile 2 and soil,
downgradient of VSTP165,
rea as VSTP0150 (for Pb)
areas VSTP0250 (for PCBs)
ipment and
ille.

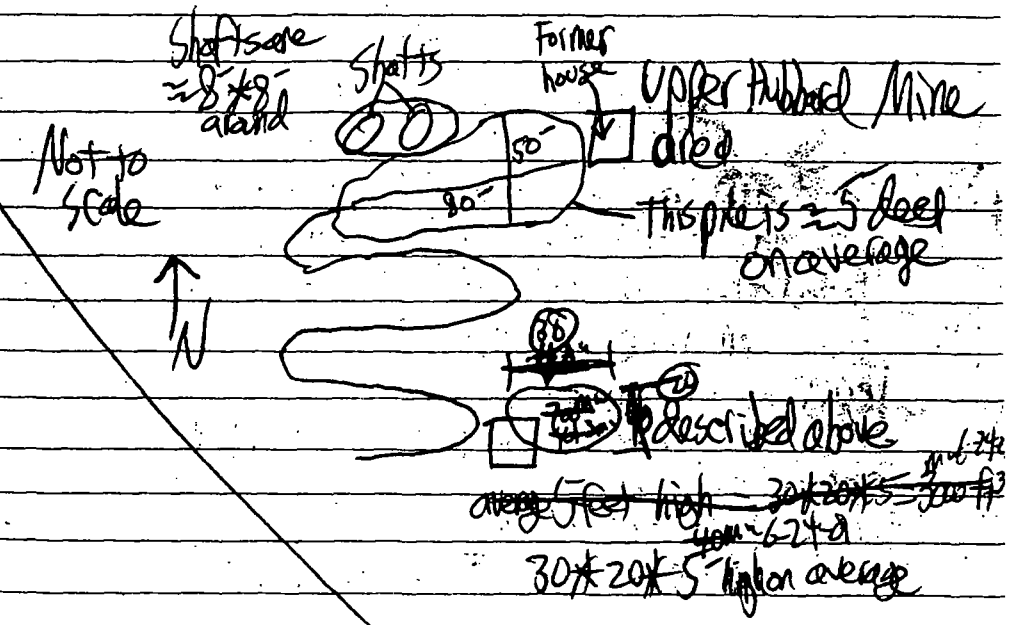
Date 6-23-01

6-24-01 01-02-0028

1715 The team arrives at the Hubbard Mine. The most recent sign on the log building says "Proof of labor, 5-19-2001, Leo J. Bruce". Total waste at the mine area is ≈ 40*40*20 ≈ 700 yd³. No surface water is noted in this area. The purpose of the log building is unclear. See photo below.

1830 The team reaches the Beckto Mine area - GPS recording didn't work in the area. Photos were taken, then the team headed towards Metaline Falls.

2000 The team reaches Metaline Falls.



Mark Moelle 6-24-01

6-25-01 01-02-0008

0800 The sample team (Mark Noodle, Al Johnson, and Neal Amick) arrive at the Kendoreille Mine for Safety training, then begin to label sample jars.

0935 The sample team collects POSP0150 from spring #1 along the edge of tailings pile #1. The sample was collected as a sediment from 0"-6" below ground surface (bgs) by Al Johnson.

0950 The sample team collects sample POTP0155 from the tailings pile/soil interface along the opposite side of the creek from the large pile.

Sample POSP0150 is collected as a sediment from near a spring leading down the hill near TP1 (Tailings Pile 1).

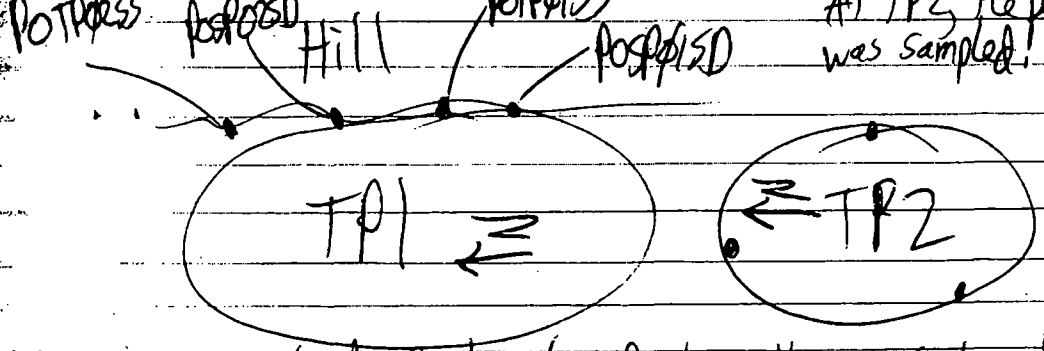
Sample POTP0255 is collected from the interface of tailings and native soil near the drainage trench.

1045 Sample POTP0355 is collected from the native soil/tailings interface near Tailings Pile 1.

1115 Sample POTP0455 is collected from the Tailings Pile 2 area interface. The sample is a mix of sand & tailing (white + brown) with dry.

1145 Sample POTP0555 is collected from Tailings Pile 2 area interface. The sample is darker soil and tailings than POTP0455.

1200 Sample POTP0655 is collected from Tailings Pile 2. The soil is brown fine dry with mixed tailings (gray, fine, dry).



At TP2, the perimeter was sampled!

1230 The sampling team heads for lunch and phone calls at the hotel.
1330 End of lunch.

Mark Noodle 6-25-01

6-24-01

6-25-01 01-02-0028

1405 Sample ~~[illegible]~~ PO1H0255 is collected from tailings pile 2.

1412 Sample ~~TOC~~ PO1H0255 is collected from tailings pile 2. The material is fine gray and brown sand + tailings.

1422 Sample PO1H0255 is collected from tailings pile 2 at the soil/tailings interface.

1550 Samples ~~PO1K0150 is collected from Creek 1 [illegible]~~ PO1BK0150SD (sediment) and PO1BG0150W (water) are collected from the stream gauge area at (Creek) Threemile. The sediment is very large beige sandy material with larger black rocks. The GPS unit would not record the location of the sample - a reading was taken at the road intersection with Threemile Creek. ~~[illegible]~~ The sample was collected approximately 15 feet down stream from the stream gauge, which read ≈ 0.85 on the stick. The GPS ID for the intersection may have been deleted and therefore blank.

1620 Sample PO1K0150SD is collected from Creek 1 (as listed in the SQAP). The sediment is dark sandy material. Stream flow is ≈ 20-30 gallons per minute.

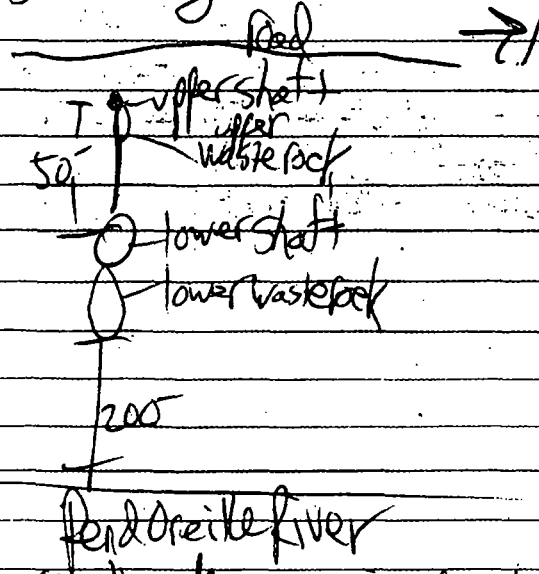
1700 The team exits the Red Cliff mine site for the day. Dave Gallowski, the environmental manager for the mining company, informs Mark Noelle that the ground water well on site does not have a spigot at the wellhead and that the stained soil from the ~~[illegible]~~ mill area (copper stains) have been removed since last years' site work. The Ecology and Environment project manager was informed of this information. The team then exited the site for the day and prepared sample equipment for tomorrow.

Mark Noelle 6-25-01

6-11-01 01-02-0028

0930 The Sample Collection Team (Mark Woelke, Al Johnson, Neal Amick) meet Ed Tomechina, a representative of the Riley Creek Lumber Company, in Metaline and head for the mine sites.

0945 The team reaches the Metaline mine hole. The upper shaft is ≈ 4' x 6' x unknown feet deep – it apparently connects with the other shaft ≈ 50' below. There is a waste rock pile ≈ 10' x 5' x 5' high at the upper shaft. The lower shaft is ≈ 6' x 6' x 3' deep (it connects with the upper shaft ≈ 50' uphill). The waste rock pile at the lower shaft is ≈ 50' x 15' x 5' high. The nearest water is the Pend Oreille River ≈ 200' west. There is no obvious drainage route from the rock to the river.



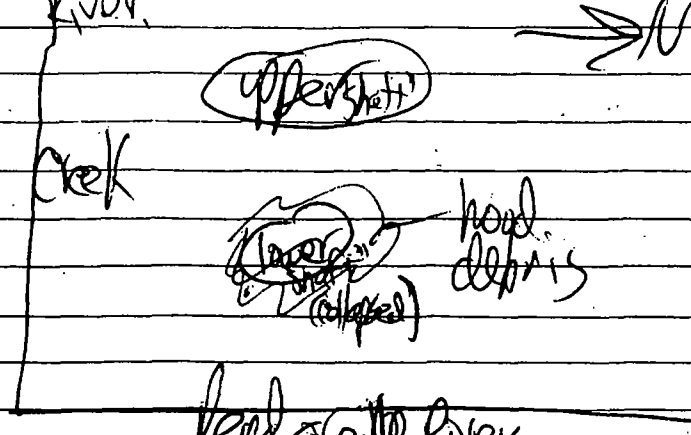
No GPS reading was obtained here.

0940 The Sterling Mine area is reached ≈ 100 yards – 200 yards south of the Metaline Mine. There is approximately 30' x 20' x 10' deep of a cut into the hill at the upper shaft; the lower area has some wood debris and partial concrete foundation. There is no obvious waste rock; Ed believes that the rock was removed.

Neal Amick 6-26-01

6-26-01 01-07-0028

There is a running creek (≈ 60-80 gallons per minute) approximately 100 feet south of the mine. The mine is also ≈ 150' west of the Pend Oreille River.



The mine is in a low point; drainage would likely go to the southeast. The Metaline and Sterling mines were both ≈ 250' east of the highway. There were no GPS readings at either location. A reading on the highway was taken and called Metaline Mine. The reading at the cars was 48° 50 19.18 N and 117° 23 30.54 W.

1015 The team exited the area of the entry point to the Metaline and Sterling Mines (≈ 200 yards south of the "Mile 2" marker) to head up Boulder Creek, the Cemetery Parole Road, then Oriole Road (under power lines after ≈ 2 miles).

1030 The team reaches the West Contact Mine. The coordinates are 48° 51 07.88 N & 117° 25 01.00 W. (Times of signal lost & regained on the GPS filter is the West Contact Mine based on the map). The shaft is 10' x 10' x unknown depth. There is no visible waste around the shaft and no surface water at the time of the visit.

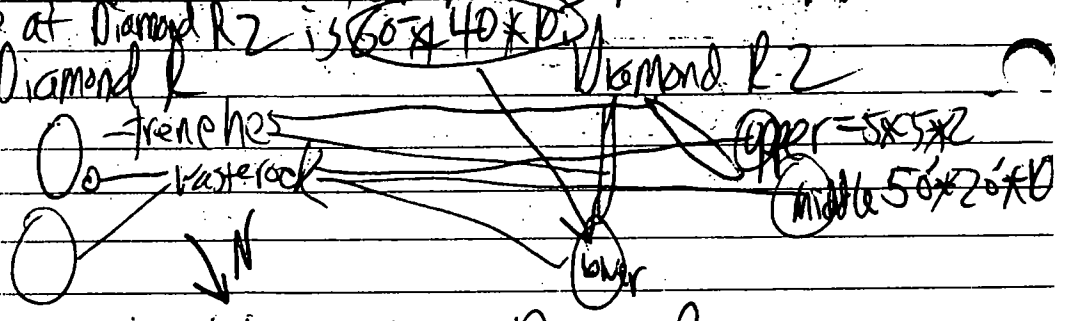
N ↓ ⊕ 10'

Mark Neathe 6-26-01

6-26-01 01-02-022

The team begins hiking to the Diamond R. mine. The shaft has been collapsed, the open area remaining is ≈ 60 x 10 wide x 15 average depth. There is approximately a waste pile of rocks ≈ 10 x 8 x 2 deep. There is no surface water in the area. The lower wastered area is mostly soil covered and is ≈ 40 x 30 x 10 deep. This mine is suspected to be the Diamond R. (at 48 51 12.00) are the coord. of our location. long 117 25 18.6

120 The team reaches another "mine-well" called Diamond R 2 (at 48 51 14.00) It is ≈ a 3 minute walk to this hole from long 117 25 17.4 the "first" Diamond R. (Note: There is a team of 5 people working on finding the properties today with several maps; one of the 5 (Ed) knows the area, and it's still unclear even with lat/long readings, which mine is which when they are relatively close to each other.) Dimensions are 50 x 20 x 10 high. There is no surface water at either Diamond R. The lower waste pile at Diamond R2 is 60 x 40 x 10.



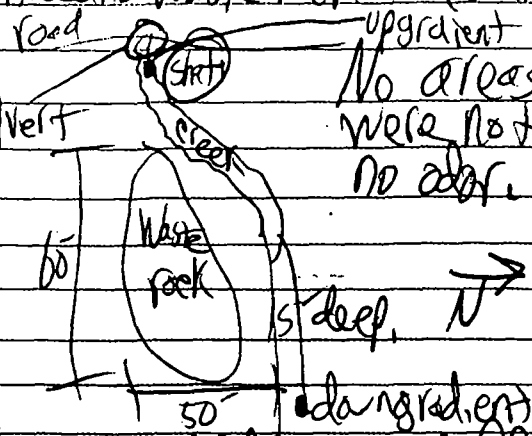
The more northerly trench at Diamond R. 2 is approximately the same dimensions as the first trench.

130 The Blue bucket mine is reached just off a forest road. The mine shaft is again "blown out" with a "U" shaped excavated area approximately 15 x 15 x unknown depth. The creek flow is ≈ 20 gallons per minute. The waste rock pile is ≈ 250 yd³ (50 x 60 x 15) and is covered by native soil. 48° 50 48.60 N + 117° 24 24.30 west. = location

Noah Nowell 6-26-01

6-26-01 01-92-0028

(Blue Bucket continued). There is a culvert under the forest road that flows near the mine and waste rock - the culvert is zinc-coated.



No areas of staining were noted. The water flows clear with no odor.

Samples BBPØ15D and BBPØ15W were collected downgradient at a drainage area below the waste rock. The sediments are very sandy and multicolored from downgradient.

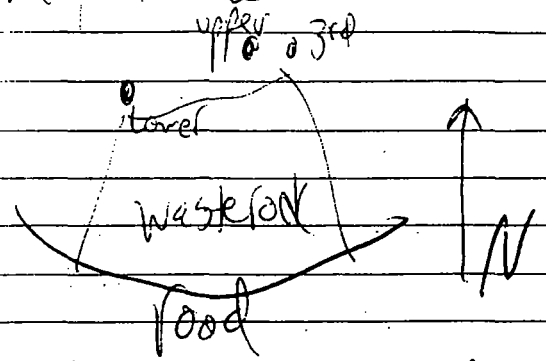
Samples BBPØ25D and BBPØ25W were collected upgradient from the shaft near the culvert. The sediments are gray and dark brown at the upgradient area (behind a small fenced area) and were fine grained. At the time of sample collection, there was no flow from the culvert.

1330 The Bella Mau mine is reached. The shaft is ~6'*6' at least 30' deep (horizontal). The mine was not [illegible] a significant sign of waste rock (<100 yd³) and no water in the area. The upper shaft is 5'*5'*30' (at least) vertical. The third shaft is ~5'*6'*50' horizontal and connects with the Lehigh Mine nearby. The waste rock pile is ~100'*50'*5', it spreads out in a triangle shape from the top to the bottom. No water is noted in the area, drainage is to the road.

Mark Markle 6-28-01

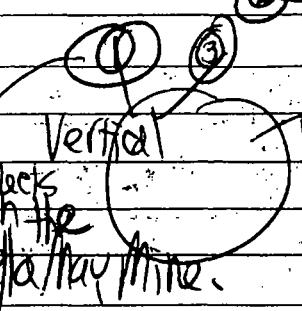
6-26-01 9HL-0028

Bella May Mine



1400 The team reaches the adjacent Lehigh Mine (No. 2). NO. 1 NO
The shaft here connects with the Bella May Mine
(~ 100 yards west of the Lehigh Mine (No. 2)).

Shafts ① ② horizontal shaft ③ vertical



Waste rock (~ 5' thick * 67 * 100), ~~but mine due to~~

connects with the Bella May Mine.

48° 50' 52.8" N and 117° 24' 20.2" west

The waste rock is very spread out and shallow. (Based by Ed, the pile is 67 down * 100 *

Shaft ① Connects with Bella May - (15 * 15 * 100 deep)
② Horizontal (5 * 5 * 20)
③ Vertical (5 * 5 * 30)

6-26-01
Note: the 1400 Mine is Lehigh No. 1.

1445 The Bella Mine is reached with the help of Ed Pomeranig. There is some timber remaining from a former structure at the lower area.

Note The upper area has a water discharge that goes
6-26-01

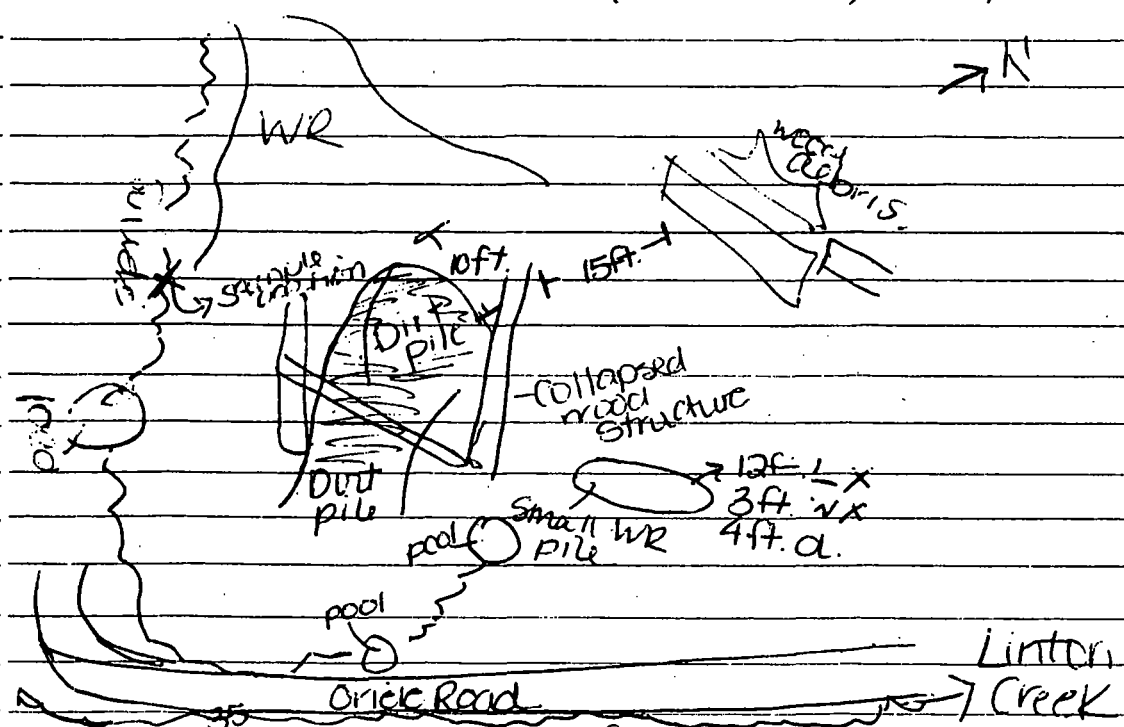
6/27/01 Upper Columbia River 01-02-0028

1320 RN & NA arrive at background location. which is 300 ft South of Suspected Lehigh No. 2 GPS location Lat 48°51'34.94 Long 117°24'56.77 Alt. 878.5 m. sample BK0355 collected at 1330 by NA. Analysis TAL metals only.

1340 RN & NA break.

1400 RN & NA arrive at lower waste rock. Since the stream contacts the waste rock pile, 1 sediment sample will be collected below the waste rock pile. The lower level of the Oriele Mine consists of 1 waste rock pile and a collapsed wooden structure. GPS collected Lat. 48°51'36.48 Long 117°24'48.58 Alt. 84 = 91 pH is 5

1405 NA collects ORSP01SD Analyze for TAL met, Pest/ Cl, FLG



waste rock 40 ft. L x 55 x w x .2-3 ft. d = 192 yd³

The pile of dirt ~~[illegible]~~ atop the collapsed wood structure appears fresh. RN assumes it's dirt from the tunnel (piping) installation, therefore it is not included in the waste rock dimensions. wood structure appears to have been 12ft x 12ft.

1430 RN & NA depart Oriele Mine

~~1500 RN & NA return to hotel~~

RNCdeen 6/27/01

-02-0028
ft South
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ICG
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6/27/01 Upper Columbia River 01-02-0028

Daily Overview
- Oriole Mine - 1 surface water, 2 sediments collected.
- Lehigh No. 2 - photos and GPS only
- Background surface soil upgradient of Lehigh No. 2
- Noted domestic water supply at corner of Cemetary Rd and Oriole Rd.

[illegible]
6/27/01

6-28-01 01-02-0028

0740 The background sample collection team (Mark Woodle and Neal Amick) go buy ice and gasoline for the background sample collection activities.

0805 The sample team meets with EPA and Weston personnel to confirm the sample locations.

Area	To be Collected	
Deep Creek	2 Surface soils	(each for metals only)
Sorra Zinc	1 " "	
Iroquois	1 " "	
Gladstone	1 " "	

0927 The Northport area is reached. A photograph of the Sterlett Mine area was taken from the north side of the Northport ~~bridge~~ 6-28-01 bridge of the Mine area; access had not been granted to this private mine.

0935 A photograph of Silver Crown Mountain is taken from the road; access had not been granted to this private mine. A GPS reading was from the point on the Aladdin Northport road (near the old highway intersection) ~~6-28-01~~

1000 The team reaches the Sample mine area; a no trespassing sign is right on the Aladdin Northport road; the team collects a GPS reading and a photograph. The sign says "Fowler, 3237 Aladdin Road, 782-0425". The team heads up Black Canyon Road to look for a background soil sample location.

1010 Sample collection area BK0455 is reached approximately 2.2 miles up Black Canyon road. The GPS reading was obtained approximately 0.1 miles back down the road as no reading could be obtained at the sample site. No water or creeks were noted near the sample location.

1110 Deep Creek Mine is reached. See next page. BK0555 is collected off the road near Deep Creek Mine.

Mark Woodle 6-28-01

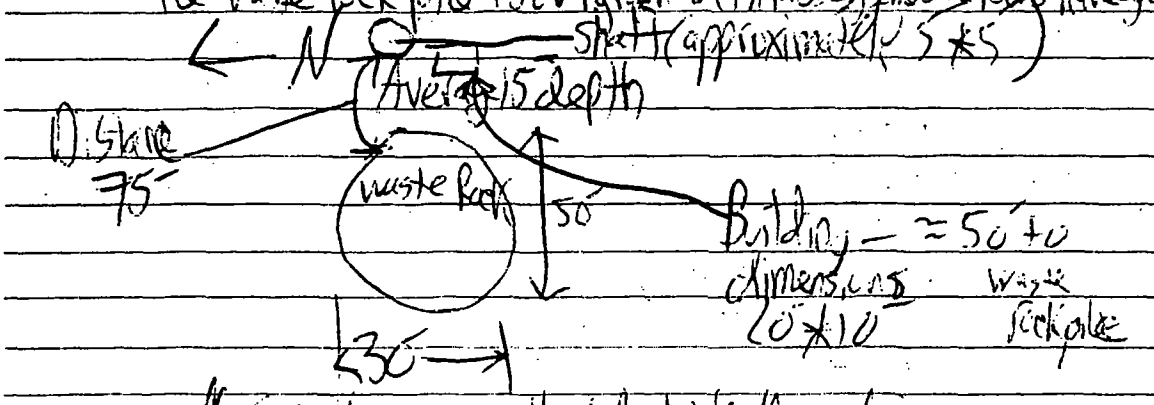
Building
Building
Building
Building
Building
Building
Concrete Pad
Concrete Pad
Concrete Pad

[illegible] 01-03-2013

The sediment in the creek is very fine, black + moist with some gold flecks noticeable in the sediment. BKG55 is fine brown dry soil with few organic or rocky material.

1210 The sample team heads to the Magma Mine area for photographs and GPS readings. The locked gate (keys held) is photographed. The team heads towards the Magma mine area.

1300 The Magma mine is reached via an old road. The shaft is collapsed and there are the remains of 2 buildings here. There is no surface water flowing in the area. The waste rock pile is overgrown with moss, grass & trees. [illegible]



No samples were collected at the Magma Mine

1340 The sample team exits the Magma mine area. The team goes to sample location BKG55 to collect a background sample (≈1.5 miles up the road from the Magma Mine). The sample is fine brown, dry soil. The team then heads towards the Burns US Mine (Burns Mine) area for contamination.

1415 The Burns (Burns) Mine area is reached. The mine is blocked with no access so only a photograph of the is taken. This area is ≈ 100 yards east of what was referred as the Burns Mine; this is the more likely area of the mine. No GPS was recorded due to lack of satellites in the area. Tom R was not with the

6-28-01 0102-0028.

1445 The sample collection team heads to the Star Mine area. Access was not obtained, so only a GPS and a photograph was obtained off of Nathan Aladdin Road. A road was seen on the West side of the river, but an area to access this mine was not found.

1500 The sample team heads up Silver Creek Road to collect sample BK0755. The soil is brown, slightly moist soil with some organic material and small pebbles.

1545 The sample team reaches BK0855 (background near the Tropicana mine area) The sample is brown with some pebbles and/or organic material and is dry.

1605 The sample team reaches the Bentzland and Thompson mines area. Photographs of each area were taken from the Wilderness West resort across the road from the mines up the hill. The GPS reading was taken from the resort location. The sample team then headed back towards Metaline Falls.

Sample Summary
5 background surface soil samples.

[signature] 6/28

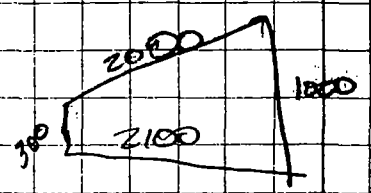
6/21/01 GJC

10 1111 Brn still sandy clay - -6"

11 1113 brn/grey sandy clay -6"

12 1116 brn/grey sandy clay -6"

Est TAILS Volume



2100
700

= 2100 x 300 = 630000 ft²

+ 1/2 700 x 2100 = 735,000 ft²

1,365,000

est depth avg = 20'

= 27,300,000 ft³

= 1 my³

SERRA ZINC 6/21/01
AKA Blue Ridge
~~RC~~, T3N R4E
NULTAILS - BIOREMEDIATION

1 - 1030 black/grey silty tailings - -6"

2 1035 white sand tailings -6"

3 1040 beige fine sand tails - -6"

4 1052 Brn/Blk silty sand -6"

5 1054 Brn blk silty sand -6"

6 1056 Brn/blk silty sand -6

7 1058 tan sand -6"

8 ~~1100~~ 1104 pale grey sand, -6"

9 tan brn silt -6"

4/21/01 GVB

22 1400 Or/brn sand 6"

23 1405 Or/brn sand w/ woody debris 6"

24 1410 TAN SAND + SILT W woody debris - 6"

Samples taken on W side of mill in cat track at base of adit dump -

Prior to accessing mill area, discussed access w/ neighbor claims to own the mill. Said most tails came from mine "down" the road, plausible as mine dump is at or slightly less than 1000 yd³.

4/21/01 GV

13 1224 - Grey stiff clayey silt 6"

14 1227 Grey stiff clayey silt 6"

15 1229 Grey stiff clayey silt 6"

16 1233 beige/tan clayey silt 6"

17 1235 beige/tan clayey silt 6"

18 1237 beige clayey silt 6"

19 1241 beige/tan clayey silt 6"

20 1245 tan silty clay, 6"

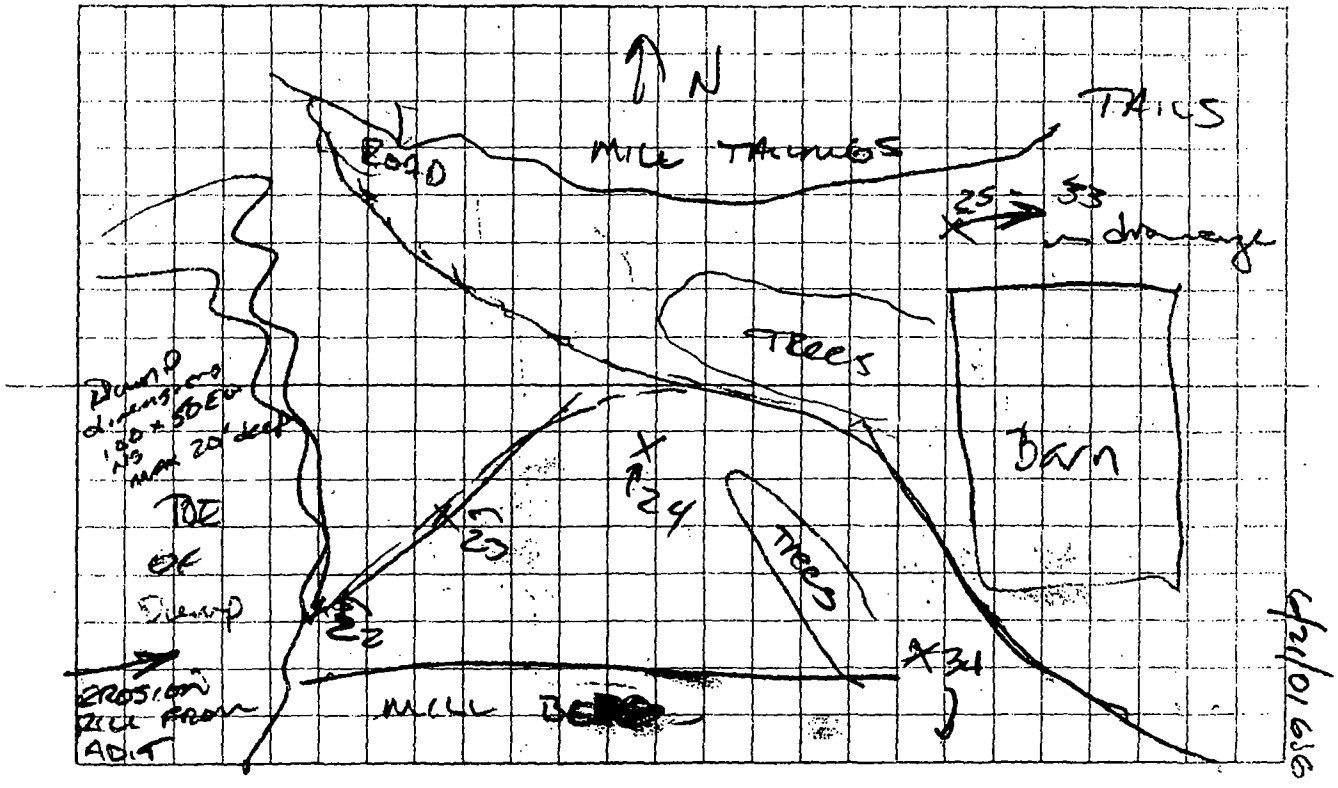
21 1248 brn/tan silty clay 6"

sign on house
"Higginbotham Bros. Sierra Mill"

out 1540

6/21/01 GJG

25	1422	Gray sand -6"
26	1425	TAN SAND TAILS -6"
27	1428	TAN SAND -6"
28	1433	TAN/GR SAND -6"
29	1436	TAN GR SAND -6
30	1439	TAN SAND -6
31	1444	TAN SAND w/organics -6
32	1447	Gray sand -6"
33	1450	Gray/tan w/organics sand -6"
34	1455	Gray sand, sl petrol odor 6"


N
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TAILS
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EROSION FILL FROM ADIT
MILL BE

6/21/01 696

ecology and environment, inc.

International Specialists in the Environment

Job Number 01-02-0028

Upper Columbia River / Mines
Stevens and Pend Oreille Counties
Washington

Project Area Documentation Logbook # 9

Team #3

E & E Job Number _____

Telephone Code Number 12810073

Site Name Upper Columbia River/Mines
Stevens and Pend Oreille Counties

City/State Washington

TDD 01-02-0028

PAN 001281.0073.01SR

SSID _____

Start / Finish Date _____ / _____

Book 9 of _____

E & E Emergency Response Center: (716) 684-8940
E & E Corporate Center: (716) 684-8060
MEDTOX Hotline: (501) 370-8263
E & E Safety Director (Home): (716) 655-1260

6/17/01 Upper Columbia River/Mines Ø1-Ø2-ØØ28

Week one: Case # 29440

organics: Envirosystems Inc (Envsys)
JØFJØ (J, K, L, M, N, P, Q, R, S, T, W, X, Y, Z)
JØFØØ (Ø, A, B, C, D)

inorganics: Sentinel Inc (Sentin)
MJØFJØ (J, K, L, M, N, P, Q, R, S, T, W, X, Y, Z)
MJØGØØ (Ø, A, B, C, D)

RTN: Ø1254351 - Ø125449

RVordeen
6/17/01

ES 01-02-0028 6/18/01 Upper Columbia ~~River~~ 01-~~01~~ 02 0028

0815 Tara Karamas (TK), Renee Nordeen (RN) and Louis Dahlhoff (LD) depart from hotel to Springdale to meet Jake Jakobsky (JJ) of ~~USFS~~ BLM and visit Cleveland Mine Site

R, S, T, W, X, Y, Z) 0930 TK, RN leave Springdale with Jake en route to Cleveland Mine.

1000 Arrive Cleveland Mine

R, S, T, W, X, Y, Z) Jake showed us former lower tailings pile (heap) location. It has been covered with topsoil. BLM diverted stream to the far side of tailings heap (stream used to flow through tailings). BLM installed a settling pond in the stream. BLM installed concrete w/wire to help runoff flow into stream + prevent flooding.

(grown) Mill burned in 1994; tailings dumped in creek below mill(s); mine shafts w/adit water; open pits

Second stop - property line. operational until 40s. BLM removed tailings from stream below property line. 200-300 miners when operational. Tailings present on private portion of stream.

Third stop - mill building - delapidated over stream. waste rock pile. Flume present which deposited tailings into stream. Creek appears to flow over top edge of waste rock pile.

1030 Met Mr. Bakey. He signed access letter. RN/TK looked at Adit #1 pH = 6.0. Took picture. Adit ~~fr~~ water flows through a rock bridge. Adit approx 150' to road (see page 4 Drawing)

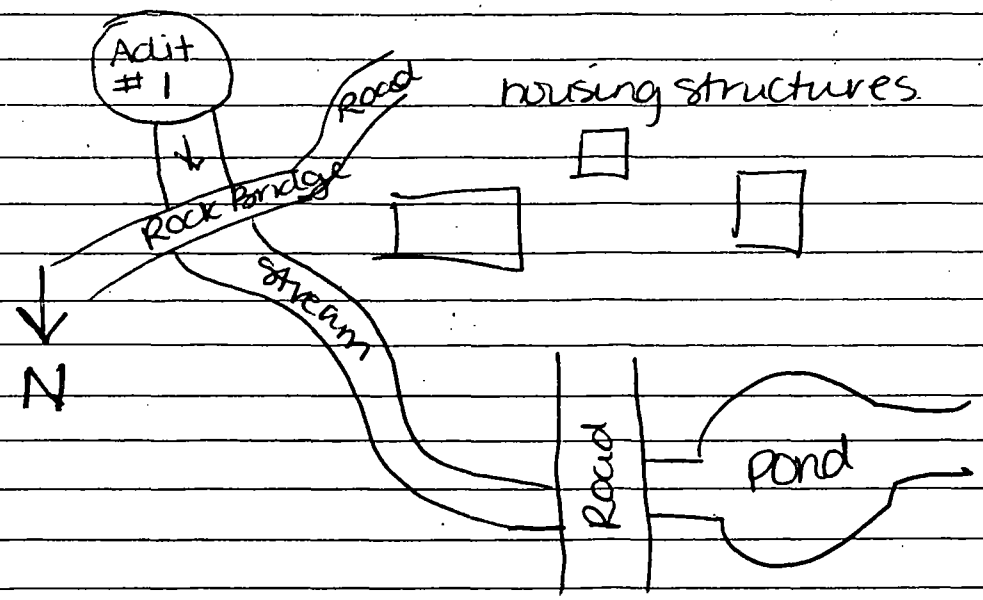
1100 Arrive at open pit, waste rock, tailings area. TK takes Jerome and Miniram readings around perimeter. Readings on Jerome are Ø readings on mini-ram are Ø

~~1~~5 TK to collect background Cleveland surface soil sample. Sample location is approximately 0.25 mi from waste rock/tailings piles. PS collected ~5' from sample loc. lat 48° 7' 5.325" long: 118° 01' 22.708" Ht 3542.22

6/18/01 BV

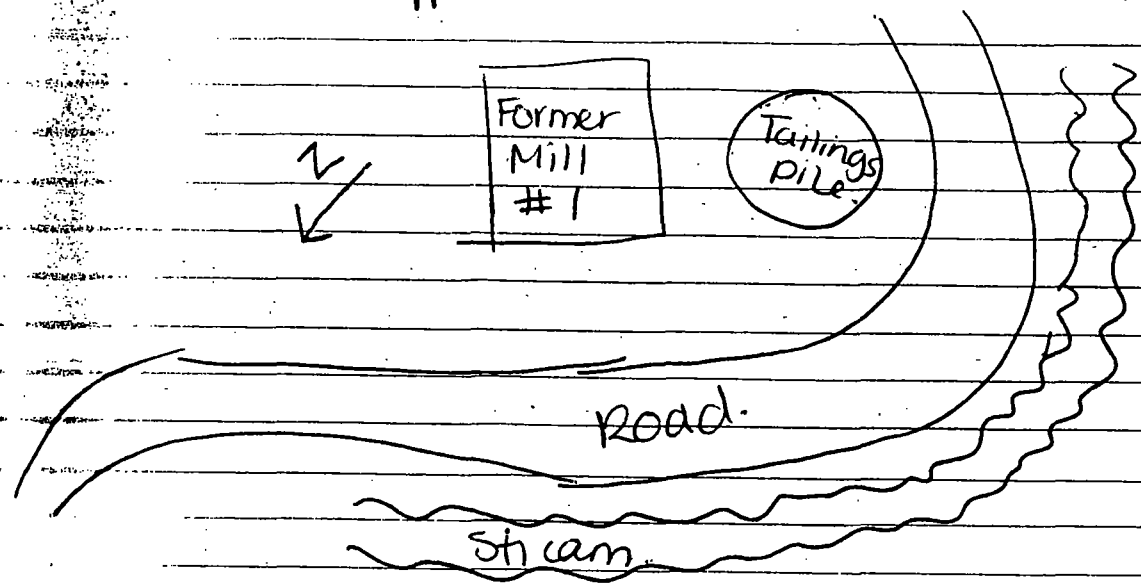
6/18/01 Upper Columbia River 01-~~02~~ 0028

Adit 1 Area



1205 - CMTP01SS location approximately the center of the large pit
See photos 1-7 thru 1-13. GPS location collected lat: 48°06' 59.567
long: 118°01' 27.217 Alt: 3409.46
1220 - CMTP02SS location. South of shaft see photo ~~1-14~~ 1-14
GPS location collected lat: 48°06'58.116
long: 118°01'29.352 Alt: 3392.71
1230 TK & RN take a lunch break
1300 TK & RN resume work at Cleveland Mine - Former Mill #1
TK collects Jerome and Mini-ram readings. readings are all Ø
All that remains of this building is minimal stonework and burnt wood - JJ indicated the property owners burned the structure in the 1990
sample CMTP03SS will be collected from tailings pile to the SE of the m
1310 RN collects sample CMTPØ3SS. Pile is 47 feet tall, as measured with a tape measure.
GPS location collected lat: 48°06'56.789"
long: 118°01'35.284" Alt: 3318.88
Pile is ~~6~~362 feet along base next to mill.

RNordeen 6/18/01



1330 Adit #2 drainage photos taken

e large pit
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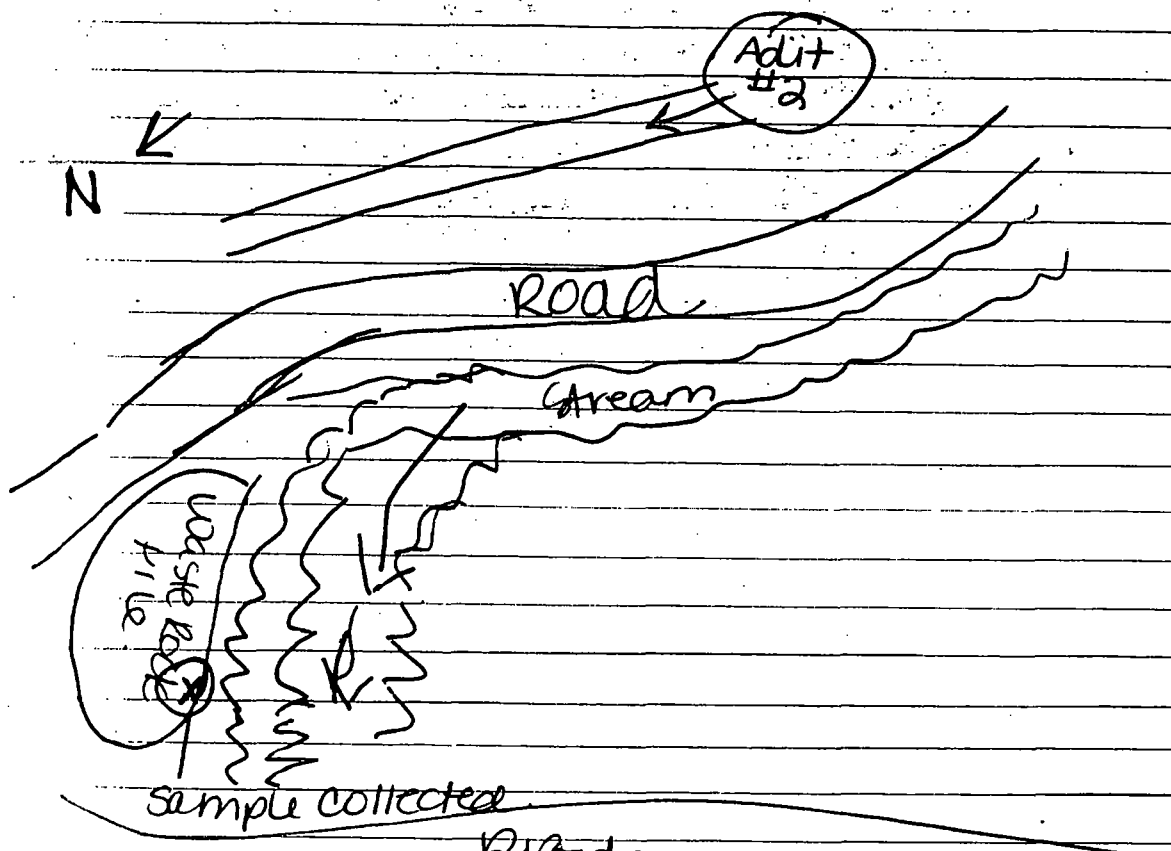
s are all Ø
d burnt
re in the 1990s
SE of the mill
47 feet



BVordeen 6/18/01

6/18/01 Upper Columbia River 01-OK-C

1333 Arrive Mill Bldg #2. pile to SE of former building appears to be waste rock not tailings. Estimate size to be 150 ft long, 50 ft wide & 8-10 ft high. The creek flows over the waste rock pile and then down adjacent to the former mill building. TK determined that due to the presence of the stream flowing over the waste rock pile the pile should be sampled. lat: 48° 07' 01.390" long 118° 01' 43.610" Alt. 3223.45 ft.

1405 TK + RN return to Mr. Bakey's summer home to provide him with the receipt for samples.

1410 TK + RN begin to leave Cleveland Mine. Stop to talk to Jake - got directions to Gold Bar.

1430 TK + RN leave ~~Cleveland Mine~~ Cleaveland Mine

1530 Turned off Rt 25 to unnamed road in search for Gold Bar mine. Top of road - found nothing - no signs of mining activities. "Federal Mining Claim" sign

Claim name: Phenomanamaly Mining Claims #2, 3, 4, 5, 6,

Claimant: Rocky Rhod Mining + Exploration LLC
1301 N Hwy 25 PB 712 Marcus WA 99151-0712
ORMC 154763, 154764, 154765, 154766, 154767, 154768; These signs are posted on both sides of the road from
Road forks (2nd time) to right - signs continue then change to "Dead Horse Mine #1", Rocky Rhod Mining + Expl. LLC, same address

Ser. # ORMC 154228
1st fork in road, still mining claims.
heavy forestation; took 2 pictures for location documentation.

1530 Determine best path to New Leadville, KJ, + Uncle Sam mines and leave current site (where Gold Bar should be)

1540 Can not find locations of New Leadville or others near site. Topo map indicates sites should be adjacent to the Clugston Creek Onion Creek Road. No sign is of mining

SOD 6/18/01

activities in the vicinity. TK and RN drive road 3 times attempting to find a pathway to the mine locations. No pathways were located.
1540 TK & RN leave area for hotel to complete sample doc.
1617-1715 TK & RN arrive at hotel.
- RN & TK visited Cleveland Mine and collected 1 background, 3 tailings piles and 1 waste rock pile samples.
- RN & TK attempted to locate Gold Bar Mine. All roads in the area were marked on both sides by Federal Mining Claim signs of different names. Photos were taken of the location.
- RN & TK attempted to locate New Leadville, A & C, Uncle Sam mines. Could not find access from the Clugston Creek Onion Creek Rd

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1/18/01

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6/19/01 Upper Columbia River 01-02-0028

0745 RN left message with Jake Jakobosky to get assistance locating New Leadville. (509-536-1221)

0840 RN, TK, & LD depart gas station heading to Frisco Standard Mine to meet Charles Shaw (CS).

1140 TK, LD, & RN arrive at Frisco Standard & meet w/ Mr. Charles Shaw. Mr. Shaw showed a ~~USG~~ (RN) Wa. Geo Survey Bulletin No. 23 from 1919 that contained information regarding the mine claim

1200 TK, LD, & RN searched and found 2 potential adits/shafts and 1 possible exploration tunnel. Mr. Shaw said he bought mine last year and this was his first visit to mine.

1210 RN collecting altitude reading on top of tailings pile. FSWP01 - station # in GPS. GPS location:
lat: 48° 59' 35.725" long 117° 26' 44.211"
alt: 3771.76 ft

1215 GPS locations at bottom of the waste pile:
~~3650~~ TK 3718.81 feet alt
63 feet tall x 25 feet wide x 3' feet deep

1220 There are no pathways present at this location. Therefore no impact can be attributed, therefore, no samples were collected at Frisco Standard Mine. None of the possible adit/shafts were flowing. WR pile is approx. to the SE of the Jubilee ~~stream~~ (ES) creek or unamed trib.

1345 Stop for lunch.

1410 TK + RN search of Myeerah mine.

1420 TK/RN at Myeerah Mine. Only presence of mine is a dilapidated housing structure and one waste rock pile across the TK road from building structure. (~~South~~ North TK farm structure)
GPS collected: lat 48°59'26.308", long 117°27'16.160"
AH: 3835.67 ft.
GPS collected on top of waste rock pile.

RVOrleen 6/19/01

1-02-0028 Upper Columbia River 01-02-0028

1415 Rock pile = 20 ft wide, 20 feet tall, 2 feet deep (estimated from top of pile).
Collapsed adit located inside shed. Another waste rock pile (10x10x2) observed to the west of the shed. 2 Signs on shed "Danger" → forest service abandoned mine hazard sign (P61-23). Sign on Shed "Keep out Pure Luck Mining Claim". Beneath this sign is a small wooden sign "work- current, Aug 1992, Aug 1996, Aug 1997."
1435 TK + RN leave Myeerah Mine. Attempt to find United Treasure mine.
1445 United Treasure possible adit. Structure is collapsed and RN climbs hill and determine structure could be an adit. Photos and GPS location taken. C Lat 48° 59' 24.966' Long 117° 27' 09.9
Alt. 3825.57.
1455 TK/RN leave to locate Roosevelt Mine and Clara Mine.
1505 Note: Adit in shed at Myeerah mine was not flowing.
1540 TK + RN turn onto Garvey Road to look for Roosevelt Mine. No roads led to mine from what was seen on map. All roads off Garvey were private. No attempt was made to continue down any private road. No GPS or pictures were taken because the location of the mine appeared to be mile(s) away from car location.
1550 TK + RN leave to locate Admiral Mine + Mill.
1725 RN + TK arrive at Lakeview Mine. The area is heavily forested with no signs of mining activity. Approximately 0.25 mi N of the location the land has been clearcut. GPS collected. Lat 48° 57' 51.967 Long 117° 32' 46.607" Alt 3792.45
1750 TK + RN attempted to locate TK Lucile Mine which should have been on FS road 910; however this road is impassable. Because no mine was located due to adverse road conditions, no

6/19/01 Rodeen

6/19/01

~~Photog~~ Upper Columbia River 01-02-0038

photographs or GPS were collected.

1751 TK + RN going to Gold Bar mine to collect GPS.

1900 RN+TK arrive at Gold Bar Mine location. photographs were taken on 6/18/01. Only GPS (GB01) collected too few SVs

~~Lat~~ Site is 0.5 mi. South of Evans campground entrance + 500 ft. E. of road.

1916 TK+RN return to hotel.

Daily Overview

- RN, TK, LD go to Frisco Standard Mine, meet with owner Charles Shaw. 2 possible adit/shafts located, 1 possible exploratory adit/shaft located. Waste Rock Pile estimated at 1,400 yd^3. Samples were not collected due to lack of receptors.
- RN, TK locate Myeeran Mine. Location currently consists of 1 collapsed dry adit located inside a metal shed, and 2 small waste rock piles. Samples were not collected because size requirements were not met. Outside of shaft labeled Pure Luck Mining Claim.
- RN, TK located United Treasure. Location approximately 0.25 east of Myrecan Mine.
- Attempt to locate Roosevelt Mine. All roads in vicinity marked "Private" "No trespassing"
- Lakeview Mine: area heavily forested, north of the ~~site~~ RN location is a heavily logged area.
- Lucile Mine - could not ascertain location because road was heavily forested.
- Gold Bar Mine - attempted collect GPS.

R Vodden
6/19/01

6/20/01 Upper Columbia River 01-02-0028

0800 TK + RN leave motel en route to locate A+C, Uncle Sam Mt, and New Leadville, and RJ mine.

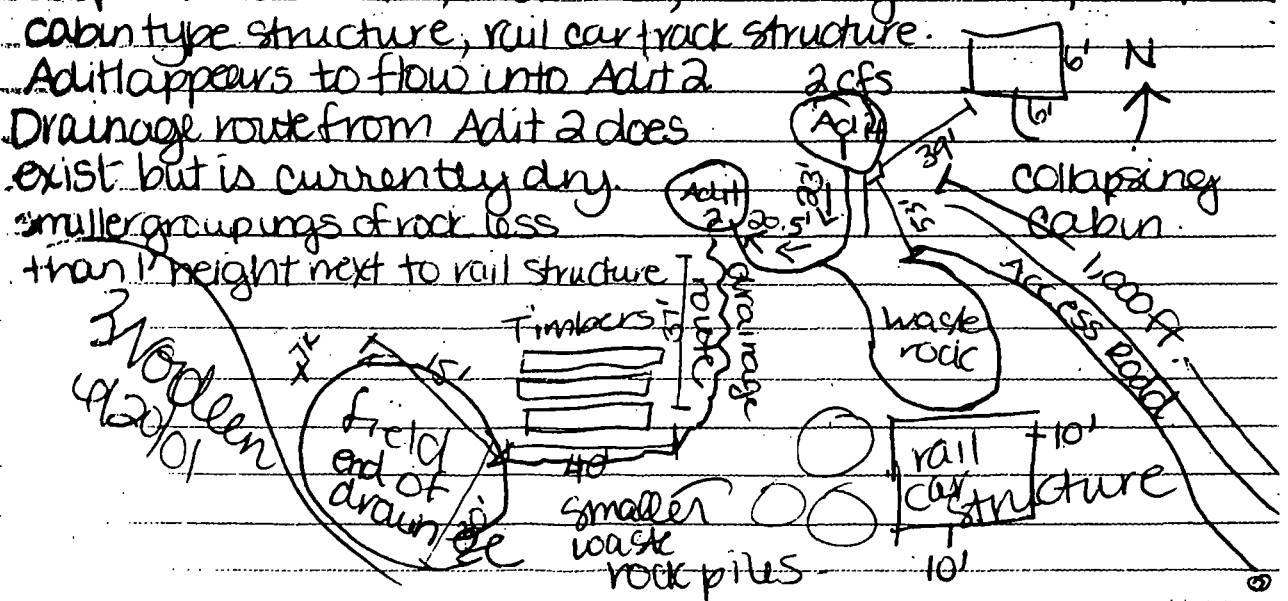
Note: on 6/19/01 from 2100 - 2230 TK, RN, LD met with Rod from USFS to discuss mines on forest service land. TK + RN discovered that the mine located on 6/19 as United Treasure was not the actual location of United Treasure. Rod located the mine on the map + described how to access it. TK + RN will search for United Treasure Mine today. TK + RN assume that the 6/19 location called United Treasure is part of Myeerah Mine.

0910 Arrive at possible A&C location. Collecting GPS to determine exact location.

0925 RN TK explore possible locations. GPS coordinates mos similar to a possible hole in an open field. Hole has been filled in but remnants of waste rock surround area. GPS collected. Lat. 48°44' 30.322" Long. 117° 51' 22.180" Alt. 3120.75 photograph also taken

1015 RN+TK depart and head to Uncle Sam site site no.

1088 RN+TK arrive at New Leadville Mine. on first inspection 2 shafts, waste rock, building debris, collapsing cabin type structure, rail car track structure. Adit 1 appears to flow into Adit 2. Drainage route from Adit 2 does exist but is currently dry. smaller groupings of rock less than 1' height next to rail structure



Woodlen 6/20/01

6/20/01 Upper Columbia River 01-OR-0028

1115 Above Adits 1 & 2 (NE) dispersement of waste rock of minimal proportion. Also, remains of rail lines. pH of water discharging from Adit #1 is 6. TK determined that due to pH level, and that discharge from Adit #1 is flowing to Adit #2, no water samples should be collected. waste rock estimated 40 w x 25 h x 5 dp.

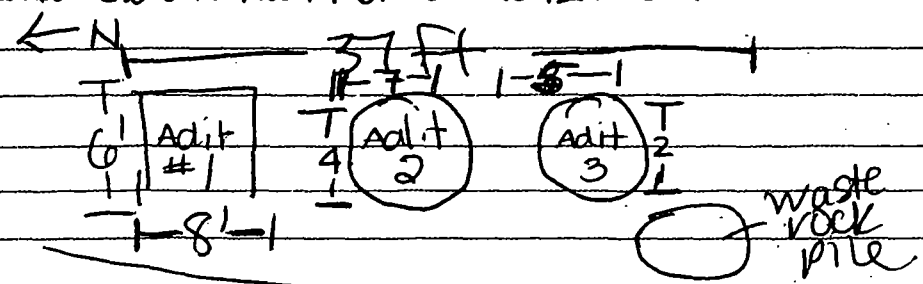
1125. Although pile is estimated at 1,666 yd³ due to a lack of targets TK directs no samples should be taken.

1135 GPS collected on the waste rock pile. Lat 48° 43' 59.480" Long 117° 52' 40.730 Alt. 3034.67 ft.

1155 RN + TK break for lunch.

1225 RN + TK depart from location. Head towards United Treasure.

1352 TK & RN arrive at United Treasure Mine. Location Lat 48° 59' 22.391 Long 117° 27' 57.066" Alt. 3642.89 Mine consists of 3 dry adits and 1 waste rock pile 5'w x 2'L x 1'd Photos and GPS collected. 1 adit marked with claim number ORMC 129483.



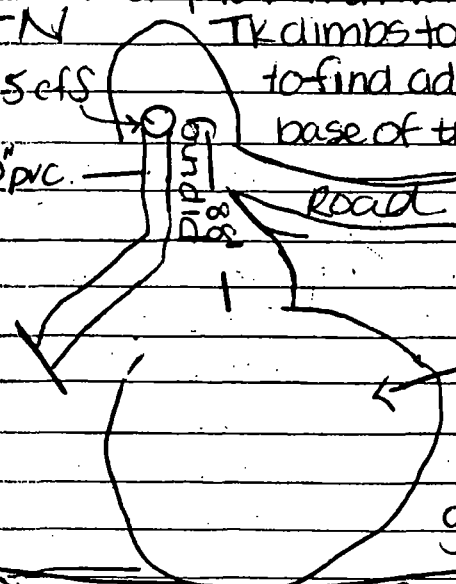
Closed forest service road.

Reviewed 6/20/01

01-02-0028 Upper Columbia River 01-02-0028

1100 Attempted Line generic from UT adits up FS 6270-210 "UT FSRD" RN, TK depart location.

1600 RN + TK arrive at RJ Mine. location consits of 1 flowing adit, ~~tailings pile~~ (RN) waste rock pile. Inside of adit, spray paint sign indicating "Eureka Surprise DRMC 154465" Since ownership of this claim is unknown, LD directed RN and TK to photograph and collect GPS readings but do not sample. lat 48° 43' 48.741" Long 117° 52' 40.699" Alt. 3025.27 ft. Adit water is being drained by PVC piping, Adit to waste rock = 88 waste rock pile dimensions 40' t x 90' w x 20' d (estimate)



TK climbs to bottom of waste rock pile in attempt to find adit discharge pathway area at the base of the waste rock pile is dry. PVC pipe runs approximately 50' then ends abruptly. discharge then flows another ~150 ft. before going underground. Vegetation is growing on the waste rock pile. Distance to main road 0.10

1650 TK + RN head back to Colville to hotel to prepare for sample shipment.

Daily Overview

- A & C Mine - collected GPS points, took photographs.
- New Leadville Mine - due to lack of targets no samples taken. GPS collected, photographs taken.
- United Treasure - no water, waste rock, or tailings present, no samples taken, GPS collected, photograms Taken.
- A & C Mine - possible ownership change so, no samples taken GPS collected, photographs taken

Brodie 6/20/01

01-08-0028 Upper Columbia 6/21/01

0700 TK to take Cami Grandinetti to Spokane, ship samples and pick-up Al Johnson. RN with LD conducting background research. refer LD logbook Daily Overview for activities.

- NO mines visited today

RNordlum
6/21/01

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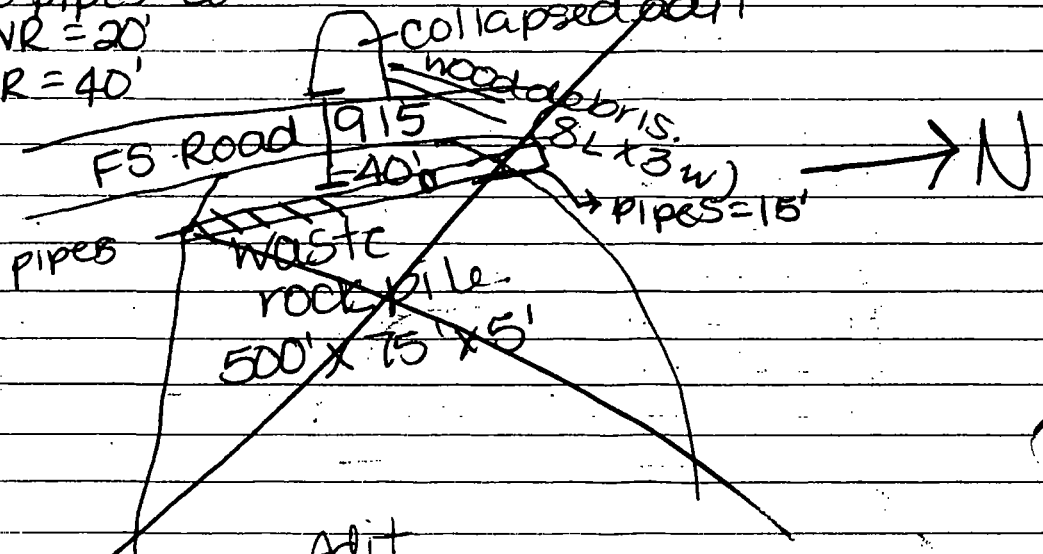
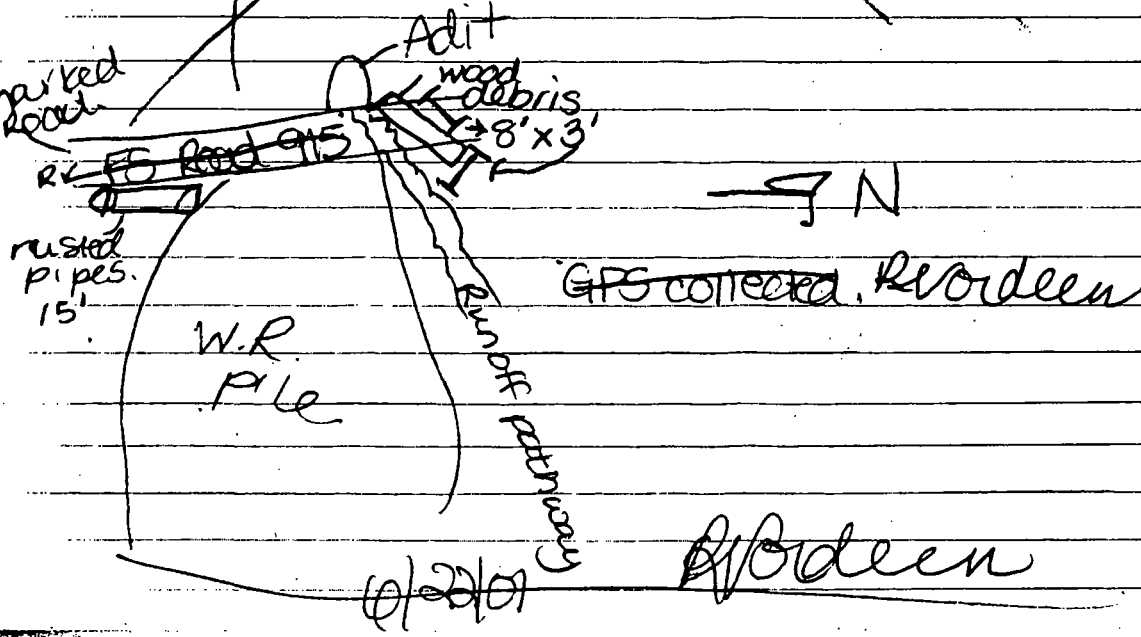
) logbook

10/22/01 Upper Columbia River 01-02-008

0830 RN & TK depart Colville for Lucille and Admiral Mines.
1107 RN & TK arrive @ Lucille Mine. Mine consists of 1 collapsed dry adit, 1 waste rock pile. Mine is located on FS Road 915, some wood debris also exists. Estimated waste rock pile at 500' x 75 x 5'. 6,210 yd³ estimated. Due to H₂S concerns regarding the steepness of the hill, RN determines it is unsafe to sample at this location. Further due to lack of targets, TK determines not to sample.

Measurements.
Adit to pipes = 30'
pipes to WR = 20'
Adit to WR = 40'





GPS collected. RWordeen

10/22/01 RWordeen

01/22/10 Upper Columbia River 01-02-2010

1130 GPS coordinates collected at 48° 57' 01.550" Long 117° 53' 17.763" Alt 3896.4 ft. Line comes from adit to FS Road 915 (labeled LU FS915 @ intersection of unnamed road and FS915. ~~[illegible]~~ Line generic "LU915" ~~to~~ RN from FS 915 to FS912 intersection.

1155 TK & RN leave location towards Admiral Mine & Mill.

1314 TK + RN arrive at the gate of Admiral Mine Mill. Due to a lack of access, GPS and a photograph were collected at the gate which has a "No trespassing" sign next to it.
GPS coordinates: Lat 48°55'29.245" long: 117°34'32.665"
Alt: 2335.38

1230 TK + RN leave to call Mr. Green TK, owner of Iniquois Mine.

1225 RN called William Green to inform him that TK & RN would be going to Iniquois today, but were unsure if we would sample. Mr. Green requested that a fax be sent to him indicating what samples had been collected.

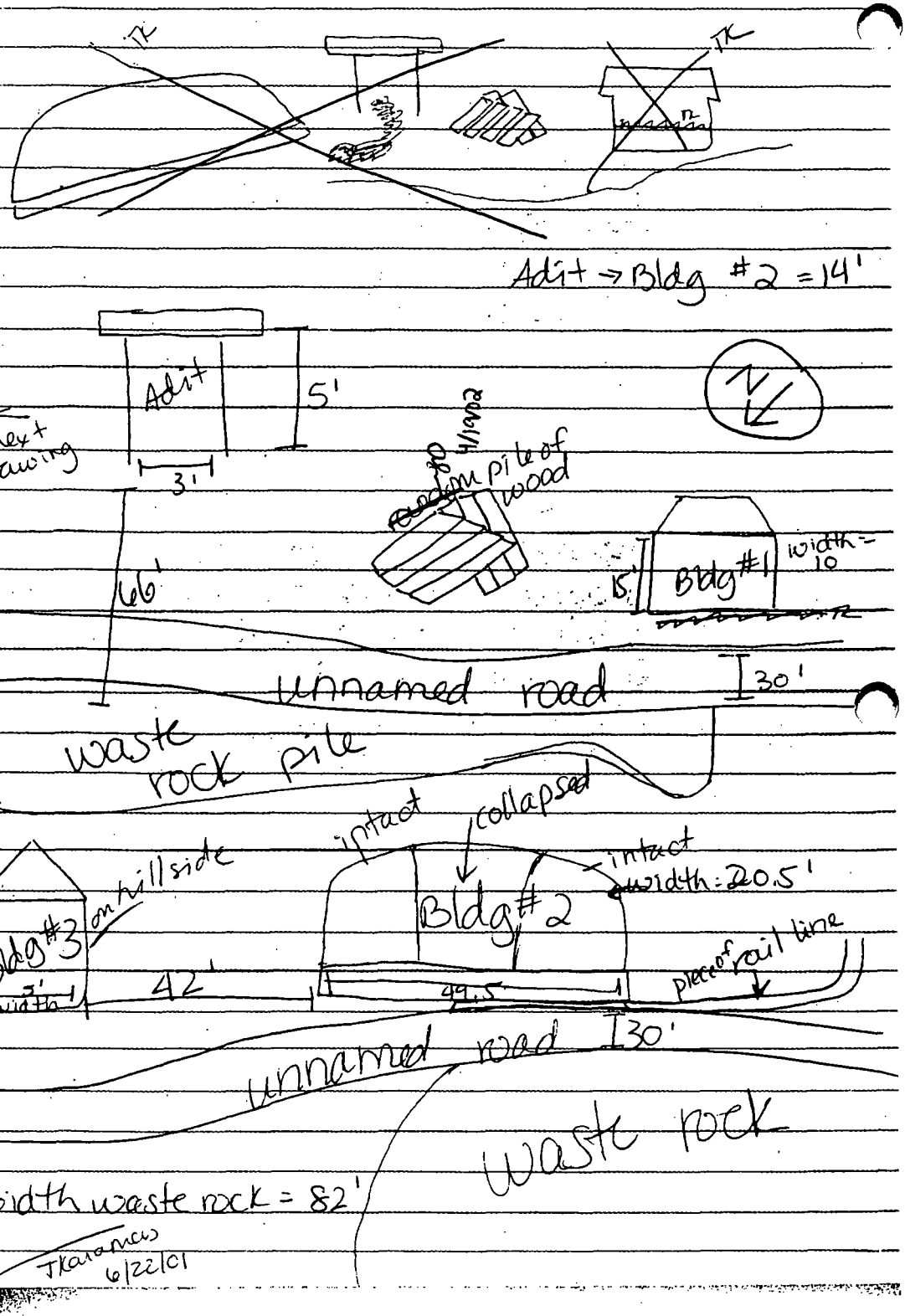
1245 RN & TK arrive at Iniquois Mine and break for lunch.

1315 RN + TK begin ~~site~~ recon. Observe 1 adit discharging water then flow goes underground. Across the road (unnamed), a pipe is discharging water - this is assumed to be adit water. The water flows down a hillside next to ~~tai~~ TK waste rock pile. Three metal buildings exist on site.
Adit → waste rock is 66 feet. Adit to corner of closest building #2 is 14 feet. Bldg #1 to #2 is 43 feet. Bldg #2 is 49.5 feet long and 20.5 feet wide. Bldg #2 is metal and sits on top of a cement/concrete foundation. Bldg #2 is collapsed in the middle. Adit proceeds 10 feet back from opening and is then collapsed. Flow of adit before it goes underground is estimated at 10 gpm. 27 secs to fill 1L Poly.

TK 01/22/10

01-02-0028 Map 1 Upper Columbia River 01-02-0028

Adit: approximately 5 feet tall by 3 feet wide.



Total width waste rock = 82'

JKaramas 6/22/01

6/22/01 Upper Columbia River 01-02-0028

1410 Sample IRAØ15W lat: 48°57'05.854"
long: 117°32'25.715" Alt: 2818.88 ft
GPS collected.

1425 RN collected sample IRAØ25W. Flow rate is estimated at 40 gpm ~~cfs~~. It took 10 secs to fill a 1-L poly. GPS coordinates collected
lat: 48°57'05.536" long: 117°32'26.310"
Alt: 2824.39 ft.

1445 GPS collected for sample IRWPØ1SS.
lat: 48°57'06.775" long: 117°32'25.632"
Alt: 2809.82 ft.

1451 Frogs observed in discharge water at the bottom of the waste rock pile.

1457 GPS collected for sample IRWPØ2SS.
lat: 48°57'05.825" long: 117°32'26.879"
Alt: 2791.60 ft

1505 Bottom altitude of waste pile is 2793.63. Waste pile is 82 feet at top; 170 feet across bottom; 30-40 feet tall, max 4' deep

1525 TK + RN leave Iriquois to find Silver Trail Mine.

1645 TK + RN spoke with Leatta who indicated that sampling at Van Stone Mine will take longer than expected. Therefore TK + RN turned around ~~and~~ TK en route to the motel to pack TK samples and complete sample doc.

1715 RN + TK return to motel.

T Kavanaugh
6/22/01

6/22/01 Upper Columbia River 01-02-0028

OVERVIEW 6/22/01:

- TK, RN locate Lucille Mine which consists of 1 collapsed dry adit and 1 waste rock pile (6,210 yd³). Due to h+s concerns regarding steepness of pile, RN determined it was unsafe to collect samples.
- TK, RN GPS + take photo at the gate to Admiral Mine. Due to lack of access, no further recon was appropriate.
- TK, RN called owner of Iriquois Mine and then proceeded to the mine. Mine consisted of 1 adit (flowing), 3 buildings (empty), and 1 waste rock pile (approx 1,000 yd³). 2 samples were collected from the waste rock pile in areas where it appeared drainage/runoff occurs. 2 samples were collected from the adit discharge; 1 as the water discharged in front of the adit; and 1 after the water flowed underground and discharged via a pipe on the other side of the road. Only 2 samples were collected from the waste rock pile because the size was barely over 1,000 yd³ - depending on which depth measurement was used, size of total pile ranged from under 1,000 yd³ to just over 1,000 yd³. To be conservative, since there were apparent areas where discharge/runoff likely occurs, 2 samples were collected in these areas. In addition, all flow/runoff ends in the field below the site.

Tamara Lamey
6/22/01

6/23/01 Upper Columbia River 01-02-0028

0745 TK + RN departed motel to go to Van Stone Mine. First stopping to buy stress drinks.

0830 Arrive at Van Stone Mine. Leatta Dahlhoff gave TK + RN tour and tasks for day (to collect PPE samples and overland routes (possibly).

0950 TK + RN arrive at a spring (unnamed) which originates from a waste rock pile (NE). The spring flows across dirt road and into the waste rock pile on the opposite side of road (NW). Spring from origin to road is 150 feet. Area along the road an spring is wet and/or contains pools of water. Distance of road to other waste rock pile (NW) is 38 feet. Observed 2 PVC pipes in/along other waste rock pile (NW). One ~~hose~~ pipe extends approx. 150 feet. The other extends 50 feet. No water was observed.

1050 RN collects SW sample. Recon for sed sample but no sediments were present - all moss and/or wet waste rock (closer to road). SW sample collected instead to characterize what SW is comprised of exiting the NE waste rock pile. Sample collected approx 20 feet from origin of spring. It took 36 secs to fill 1L poly.
GPS: lat 48° 45' 49.618" long: 117° 45' 31.941"
Alt. 3688.94 ft
Flow rate is 144 gpm.

1104 TK + RN arrive at water hole and unnamed creek. PPE samples recon completed downstream of where water hole discharges to creek.

1125 GPS collected: lat: 48° 45' 36.296" long 117° 45' 44.274"
Alt. 3519.41 feet. Flow of creek estimated at >10 cfs. Sample collected approx. 250 feet from discharge point.

Upper Columbia River 01-02-0028

1115 RN on shore of mine pond/lake/water hole.
RN collects water sample 30 secs to fill 1L poly Only
TML metals water sample collected only

1130 RN collects sediment samples.
GPS collected for VSMWØ1SD/SW: lat 48°45'36.072"
long: 117°45'42.607" Alt 3536.56 ft

1135 TK & RN walk to background/attribution location for unnamed creek

1145 TK & RN determined that an upstream sample from the PPE would not be beneficial as the unnamed creek flows through the waste rock pile past a safe place to again access the creek

1215 TK + RN stopped for lunch.

1245 TK + RN search for PPE6 - near second tailings pond

1310 TK + RN do line generic on GPS VSTPØ2_LNL for line generic on lower TPØ2.

1315 TK + RN recon any PPEs

1345 TK + RN arrive at PPE6 at SW portion of lower tailings pond. Unnamed creek has pH of 5.

1350 RN collects VSPPØ6SD.
GPS collected. lat -48°45'34.963" long - 117°46'38.766
Alt - 3146.25 feet

1410 TK + RN leave lower tailings pond Perimeter of lower tailings pond by car was 0.3 mile.

1503 GPS collected of unnamed creek which potentially could be a PPE but due to lack of access, no sample collected
VSPP BCØ1 Lat. 48°45'54.912"
Long. 117°46'10.650" Alt 3246.43
Boise Cascade

Next unnamed creek, again potential PPE or at least drains part of the mine VSPPBCØ2. No sample due to lack of access
lat 48°45'53.895" long 117°46'10.169" 3239.21

SAD 1/16/02

6/23/01 Upper Columbia River 01-02-0028

~~1510 RN + TK GPS portion of upper tailings pond.~~ TK

1520 After more driving, TK + RN determined not to GPS the upper tailings pond due to lack of interior roads.

1550 House count from entrance of Van Stone
1/2 mile = 5 houses
1/2 - 1 = 5 houses + 1 "Age House" not occupied yet (still under construction).

1600 TK + RN leave Van Stone Mine and head back to motel to package samples and complete sample doc.

Overview: TK, RN sampled at Van Stone Mine.
1 SW sample was collected from a spring which originated in a waste rock pile. Sediments were not collected due to the lack of sediments - substrate was moss or wet waste rock pile material.
- 1 sed sample was collected approx 25 feet downstream of PPE (no fine seds available at PPE) from mine water hole/pond.
- 1 SW sample and 1 sed sample was collected from the mine water pond.
- 1 sed sample was collected from another PPE located below the lower tailings pond area.
- GPS/photo were collected of other potential drainage creeks which TK + RN did not have access to. These creeks potentially drain portions of the site. Upstream PPEs on these creeks were not accessible/located.
- House count w/in 1 mile driving distance of Van Stone Mine entrance is 10. (0-1/2 mile = 5 houses) (1/2 - 1 mile = 5 houses)

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6/23/01

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6/24/01 Upper Columbia River 01-020028

0830 TK & RN meet in hotel to work on sample doc and preparations for shipping.
1000 RN call Ron Matney (509-681 0876) for access & meeting at Jackson Mine. Left message.
1100 RN & TK depart Colville in Budget Truck
1130 Metaline Falls Circle Motel.
1145 Arrive at hotel in Metaline Falls TK, RH, & LD
1145 Continue work on sample shipment preparations.
1700 Break for dinner. for remainder of day refer to project management logbook

New RTNs for week 6/25/01 to 6/30/01 01264351 to 101264400. Electronic CLP numbers to remain the same

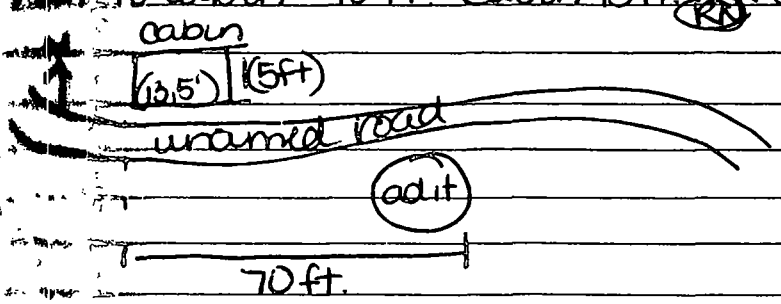
R. Verdeen
6/24/01

6/25/01 Upper Columbia River 01-02-0028

0800 Pend Oreille Mine safety meeting
0830 ~~depBN~~ TK + RN depart Pend Oreille Mine + head back to Cleveland Mine for further sampling as requested by Monica Tonel.
0845 RN spoke with Ron Matney (509-684-0876). He will meet RN & TK @ Cedar Lake @ 1400 today to perform visit @ Jackson Mine. TK & RN depart Circle Motel to head for Cleveland Mine
1000 RN + TK stop @ Don's Printery job for Van Stone Mine report not completed. RN + TK will return later in the day
RN + TK depart Colville for Cleveland Mine.
1140 RN + TK arrive at "Cleaveland Mine Rd". Upon discuss of BLM further sample locations request, it was realized that background sediment and surface water samples would need to be collected, because the team does not have access to topographic map(s) of the area, the team could not chose an appropriate background location within the time constraints of meeting Mr. Matney, the requested additional samples were not collected. TK + RN depart location + return to Colville to Dons Printery
1250 - RN calls Mr Matney @ home (509-684-0876) + on his cell phone (509-675-1485) to inform him that TK + RN were approaching Colville but had to stop + might be about ½ hr. late. no answer @ either number, left messages at both
1300 Stop at Don's Printery to pick up Van Stone reports.
1320 TK & RN depart from Colville to meet Mr. Matney at cedar lake.
1415 Met. Mr. Matney at the Cedar Lake boat launch. He then lead TK + RN to Jackson mine.
1430 TK, RN, + Ron Matney (RM) arrive at Jackson Mine. According to RM, the land had previously been the family homestead. The area surround the mine has been partially logged. RM stated he was logging because of the bears in the area. A small cabin is also located

RNodlin 4/25/01

the site. RM stated the cabin was built by his grandfa
used when working the claim. RM also stated that BLM
owned the property adjacent to Jackson Mine. The Jackson
Mine consists of 1 adit (not flowing RN) although RM stated that
it had been further back in the adit where approximately
[illegible] ft of water did exist), and the mining cabin. NO waste rock
was visible at the site. Photos, GPS, and measurements taken.
Adit to cabin = 70 ft. Cabin 13 ft. 5 x 5 ft W (RN)



GPS could not open file. New file "Team 3A" created. Collected
001. Lat. 48° 57' 33.013" Long 117° 3A' 10.462 Alt 3505 27
After taking the adit photograph rail lines inside the adit.
RN indicated that the family only produced enough in order
to fulfill the mining claim requirements
Line Generic JM Cedar LLC created to map claim access.
Need to change point generic & line generic from JM to JA.
1600 TK + RN depart Jackson Mine en route to Randy Miller's
home.
1700 TK + RN arrive at Randy Miller's house (owner of
Van Stone Mine) to return documents. No one
was home; documents were left leaning
against back door
1710 TK + RN leave Randy Miller's en route to
Metaline Falls.
1900 TK + RN arrive in Metaline Falls.

Daily Overview

Jackson Mine - located with RM (owner) collected GPS,

6/25/01

6/25/01 Upper Columbia River 01-02-0038

Overview (con't):

JM1 - photographic documentation, line generic for road location.

Cleveland - samples not collected. Need backgrounds, no topos for area available.

Van Stone - returned documents to Randy Miller (caretaker).

R Morden
6/25/01

01-02-0038 6/26/01 Upper Columbia River 01-02-0038

for road

nds, no topos

r (Caretaker)

1100 TK & RN arrive at PO Mine meet LD, Andrew Hafferty (AH), & Dave Godlewski (PO Mine; DG).

1115 TK collects POSP01SD from the spring in Tailings Pond #1

GPS collected on 6/25/01 Mark Woodke team

1150 TK collects POSP02SD from spring #2 in tailings Pond #1

GPS collected on 6/25/01 by MW team.

Note: Location photos for 2 above samples also taken by MW team

1210 TK, RN, LD, AH, & DG depart Tailings Pond #1, head to Waste Rock pile.

1230 Arrive at Waste Rock pile Collect 3 samples at various locations. Samples will be taken at the base of the slopes.

1235 location Lat 48° 52' 54.886 Long 117° 21' 44.317 Alt 2131.54 ft

1240 Sample "WPC2" PO WP02SS collected on northern edge of 2nd tier collected Lat: 48° 52' 56.251 Long: 117° 21' 44.902 Alt. 2113.76 ft.

1245 Sample at lower (river) level of waste rock pile collected at north. Pile has distinct water run off pattern that leads directly to River GPS collected Lat 48° 52' 55.454 Long 117° 21' 51.472 2082.75 ft.

1300 Relinquish splits of waste rock pile to DG and depart location. TK, RN, LD, AH return to motel to plan site visits for TK & RN.

DG collected splits of all samples, and same number of containers

1330 TK, RN, LD, AH, arrive at hotel

1400 TK, RN depart hotel to locate Josephine Mine.

1410 TK, RN arrive at Yellowhead Location consists of a concrete slab w/ rusted Westinghouse equipment. drainage route directly to Columbia River.

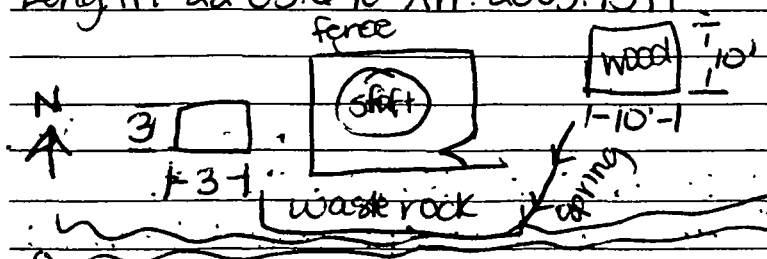
1415 TK collects PPE sediment samples Concrete blocks are visible in the water at the lakes edge. Sample YHPP01SD collected at water's edge. GPS collected Lat 48° 52' 34.353 Long 117° 22' 11.021 Alt. 2395.36 ft

Dev mine this was an old power station not the Yellowhead mine. All entries from 1400 to end of page should be deleted. Also sample collect will not be sent for analysis

BVordeen 6/26/01

6/26/01 Upper Columbia River 01-02-0028

1645 - Arrive @ Josephine via boat. ~~Site~~ mine consists of a shaft, collapsing wood structure. The mine is directly across the PO from the waste rock at PO Mine. The shaft is surrounded by an 8' barb wire topped chain link fence. The fence was open however indicating potential access. The shaft has water approximately 25' from the surface. The shaft has also had debris ~~fill~~ such as old rail lines. The site also consists of a spring that originates ~2ft from wood structure. Flow at spring is approximately 2-3gpm. GPS collected lat 48° 52' 58.278 Long 117° 22' 03.690" Alt. 2005.45 ft



from small building to fence 2ft. Shaft to wood structure 3ft. fence around shaft 20ft. square
GPS collected Lat 48° 52' 58.028 Long 117° 22' 02.961"
Alt: 1996.96ft.
waste rock is ~~20 yds.~~ 60ft. L x 10 ft. h x 2ft. d.
waste rock flows directly into the river so a PPE sample was collected @ River edge
1600 Arrive at Yellowhead Mine. Location consists of a ~~collapsed adit~~ stet, waste rock pile, and collapsed wood structure.
GPS collected lat 48° 52' 38.678 Long 117° 22' 13.907'
Alt. 2119.5 The surface drainage is over land approximately 200 yards into the PO River. waste rock pile estimates: 33ft L x 25ft. h x 2 deep. The area behind the collapsed wood structure is additionally covered with waste rock (area appx. 1000 ft²). The waste rock pile was not sampled because it could not be waste rock from Gold Hill, which is located approx. 0.1 mi. west of the YH location. Photographs and GPS collected.

BVGreen 6/26/01

01-02-0028 Upper Columbia River 01-02-0028

10 TK + RN leave Yellow Head en route to motel.

TK + RN arrive at motel.

(late entry) 0.1 mi. west of Yellowhead location was a possible mill building foundation, and waste rock pile. According to topo map this should be the Gold Hill Mine. The waste rock pile at this location ends at the edge of Flume Creek which flows directly into the PO River. ~~This mine site is not~~ BD The Gold Hill Mine is not identified on the initial list of ~~site~~ RH mines to visit by the Colville Indian Tribe.

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6/26/01

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6/27/01 Upper Columbia River 01-02-0025

0915 TK + Al Johnson (AJ) leave motel to locate Washington Mine.

1005 After hiking up hillside for 1/2 hour and found no traces of mine, TK + AJ turned around and headed down. Possible to access area via an upper road. If time permits, a team will attempt to access Washington Mine via upper road.

1030 TK + AJ go to collect background soil sample behind Circle Motel.

1035 TK + AJ arrive at sample location BK0255

1047 GPS collected lat 48°51' 56.063"
long: 117°21' 25.957 Alt: 2388.74 ft.
AJ gave TK permission to sign chain of custody for samples he collected throughout field event.

1050 TK + AJ back at motel waiting for C-O-C's to be printed so that TK can sign + send for shipment today.

1145 TK + AJ leave to find King Tut, Red Top, + Lead Hill.

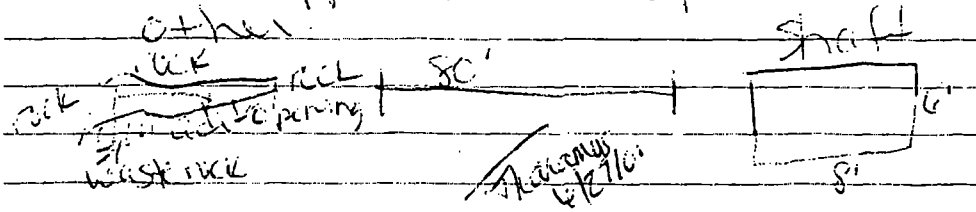
1150 Arrive at FS Road 3155 - gate closed. Two pictures taken of signs.

1200 TK + AJ attempt to find alternate route.

1220 TK + AJ talk to FS at Sullivan Ranger Station. The person in charge of gate keys is at lunch. She will return later. TK + AJ will return this afternoon.

1225 TK + AJ leave to find Lucky Strike

~~12~~ 1320 TK + AJ at Lucky Strike. There is 1 dry adit and 1 shaft. Shaft + adit are approx 80 feet apart from each other.



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Upper Columbia River 01-02-002

11/27/01

1305 GPS collected lat. 48°55'49.608"
long. 117°19'54.893" Alt. 2109.64 ft.
(LSØ1)

1310 No private property signs along FS road. Maps indicate this mine is on Forest Service property. TK + AJ will check with Sullivan Lake Ranger Station to verify the property lines.

1312 TK + AJ leave Lucky Strike en route to Sullivan Lake Ranger Station.

1314 TK + AJ arrive at Ranger Station. Mike, the person who is in charge of keys will be in tomorrow morning. TK will meet him at 7:30 am. Also, Jan McGravent(?) stated that Lucky Strike Mine is indeed on FS property.

1320 TK + ~~AJ~~ TK AJ leave Ranger Station en route to Z Canyon + Lead Queen.

1520 TK + AJ at Pend Oreille River - at end of road where a local citizen described Z Canyon Mine to be located. No signs of mine. It is possible that the former location is currently submerged by water. GPS + photo taken.
GPS (ZCØ1) lat: 48°58'51.058"
long: 117°20'31.422"
Alt. 2007.54 ft.

1550 TK + AJ hike back out to car.

1615 TK + AJ back at car. leave to find Lead Queen.

1615 ~~At~~ On road FS 328 where a local citizen said that Lead Queen existed. No signs of mine; house on topo map found. It is now collapsed.

TKarames

6/27/01 Upper Columbia River 01-07-0028

1650 GPS collected near collapsed house. AJ + TK, due to time constraints did not hike around area. It is unknown how much the mine produced or it's exact location (it does not appear on any map). GPS: LQØ1 Lat: 48°58'44.452" long: 117° 19'51.458" Alt: 2927.94ft.

1700 TK + AJ return to motel.

1720 TK + AJ arrive at motel

TKaanas 6/27/01

01-27-0028
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152"
ft.

6/28/01

0700 TK + Dan Weiss (DW) go to Sullivan Lake Ranger Station to get a permit + keys for the Slate Creek Road

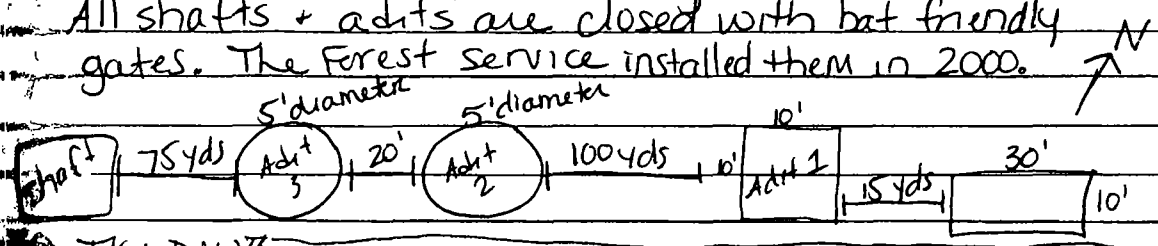
0715 TK + DW leave ranger station en route to Lead Hill mine

0810 TK + DW arrive at Lead Hill Mine.
3 adits, 1 shaft, waste rock present. None of the adits are flowing. The adits are spread out along the road with waste rock on hillside below the road. Concrete slabs present Wood ~~be~~ debris on hillside Appears to be an office (possibly) or wood building

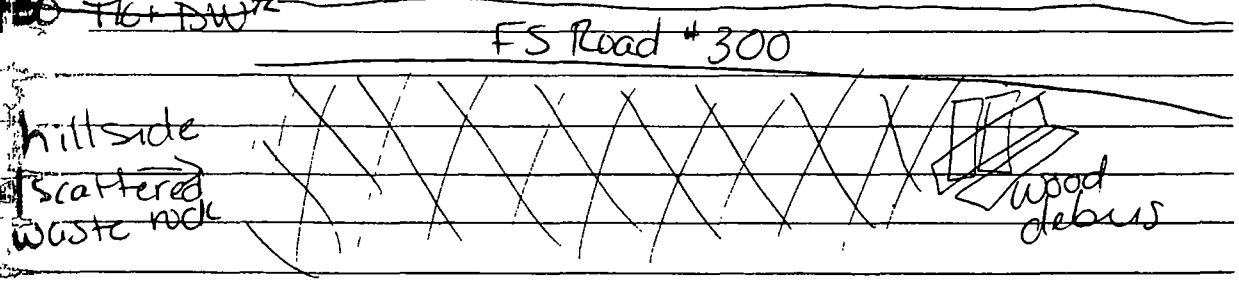
0845 GPS collected at adit #1 ~~LHH~~ Lead Hill.
lat. 48°58'14.25' long: 117°11'49.14"
Alt 4870 ft

0910 No samples of waste rock collected. Waste rock is spread thinly over natural soil. There isn't enough fine waste rock to sample. Layer under waste rock is soil

0915 From adit #1 to #2 = 100 yards. Distance between adit #2 + #3 is 20 feet Distance from adit #3 to shaft is approx 75 yards.
All shafts + adits are closed with bat friendly gates. The Forest service installed them in 2000.



~~0930 TK + DW~~



TKeranen
6/28/01

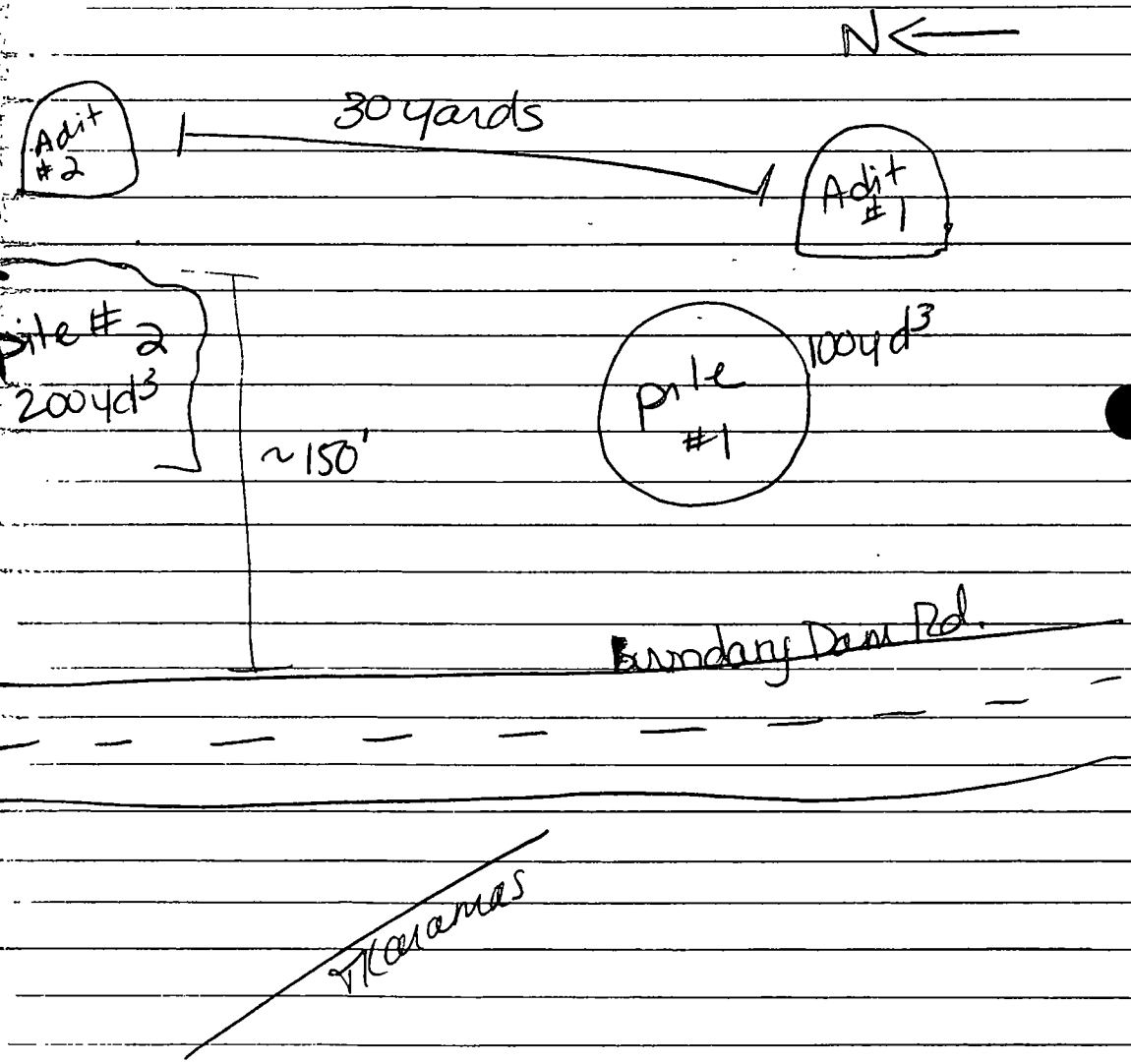
6/28/01 Upper Columbia River 01-02-0028

0930 TK + DW leave to locate ~~the~~ Red Top + King Tut.
King Tut is labelled as "prospect" on the topo map.
We assume that prospect is King Tut.
0950 GPS attempted on FS road 203. No signs of the prospect. FS road is overgrown. Sides of road are thickly forested.
Lat 48°59'21.47" long 117°11'17.92"
Alt. 4741 ft. Point = King Tut. Coordinates are close to those in inventory list. Picture taken on road.
1005 TK + DW leave King Tut to locate Red Top Mine which is thought to be another prospect.
1020 TK + DW at potential Red Top Mine location.
Trail which mine should be on is overgrown with many fallen ~~dd~~ TK trees laying across trail. FS road 200.
1030 GPS collected on trail lat: 48°59'40.13"
long: 117°10'52.96" Alt. 4452 ft.
(point in GPS = Red Top)
TK + DW hike back down to car.
1040 TK + DW leave en route to Sullivan Lake Ranger Station.
1200 After stopping for gas, TK + DW leave to locate Hoage mine.
1220 TK + DW at Hoage Mine. 1 waste rock pile and 1 shaft. Shaft is 6 ft across 8 feet wide. 15 feet down is water. Pile is 10 yds × 10 yds × 1 ~~yard~~ foot deep - approx 100 yd^3.
1225 GPS collected: lat: 48°56'15.41"
long: 117°21'16.60" Alt: 2627 ft
1232 TK + DW leave Hoage Mine en route to Lead King.

TKaramas
6/28/01

10 IK + DW Arrive at lead King Mine. 2 adits with ponded water - not flowing. Piles are approx 150 ft from road. 2 adits both with piles near them. Adit #2 has 1 pile 10 yds x 20 yds x 1 foot thick 200 yd³ approx. Adit #1 to #2 = 30 yards across, 10 yds down. Adit #1 has 1 pile approx 100 yds 10 yd x 10 yd x 1 foot thick.

GPS collected near 1st adit. Lat. 48°57'00.5" Long 117°21'34.54" Alt: 2620 ft.



6/28 Upper Columbia River 01-02-0028

1305 leave lead King - stop for lunch.

1335 TK + DW go to find access to Flume Creek.

1430 TK + DW arrive at location on Flume Creek to collect sample. PRTB SD.

Lat 48° 52' 31.855" Alt 2309 ft

Long 117° 22' 34.520

1515 TK + DW leave Flume Creek en route to Washington Mine - to attempt to locate from the top of Washington Hill. TK + DW recon upper area. It does not appear that there is any trail down the steep mountain side. A GPS was collected at the bottom of the hill.

1530 GPS (Washington) Lat: 48° 51' 58.06"

long: 117° 22' 27.85" Alt: 2073 ft. Collected at bottom of hill - near bridge - before crossing the Pend Oreille River.

Veranae 6/28/01

ecology and environment, inc.

International Specialists in the Environment

Job Number 01-02-0028

Upper Columbia River/Mines
Stevens and Pend Oreille Counties
Washington

Project Area Documentation Logbook # 62

Boat Team

E & E Job Number _____

Telephone Code Number 12810073

Site Name Upper Columbia River/Mines
Stevens and Pend Oreille counties

City/State Washington

TDD 01-02-0028

PAN 001281.0073.01.SR

SSID _____

Start / Finish Date 6/25/01 / _____

Book 12 of _____

E & E Emergency Response Center: (716) 684-8940
E & E Corporate Center: (716) 684-8060
MEDTOX Hotline: (501) 370-8263
E & E Safety Director (Home): (716) 655-1260

Upper Columbia River / Mines

6/24/01 01-02-0028

0905 CG arrives at Triple Valley Park + Ride to meet AJ.
0915 AJ arrives after getting slightly lost.
0920 AJ and CG leave P+R after greasing wheel bearings on Boat trailer. Vehicle: GSA Durango. Boat: EPA Research boat.
1600 AJ and CG arrive at the Circle Hotel in Metaline Falls. Discussed Project with others already here.

Charles I. Sugg 6/24/01

lumbia River/Mine

note AJ.

wheel Beams

Boat: EPA Research

1 in Metaline Falls.

6/24/01 01-02-0028 Upper Columbia River/Mine

1945 CG and Kevin Brown at Ray F Weston inspect samples. CG determines % fines as follows. % fines = % of material that is silt and clay sized.

Sample #	% fines
01254363	5-10%
01254364	10-20%
01254361	<5%

The purpose of this is for consistancy between Weston and E&E % fines determination. KB is in agreement with CGs % fine determinations on above samples.

1955 % fine completed.

2010 CG leaves message for Chuck Clawson (509-446-3030) with the City of Metaline Falls, WA. CG informs CC in message that we are starting river sediment + water sampling tomorrow. We will be at Pend Oreille mine tomorrow at 0800 for training and then go to Boundary Dam.

Chuck Ingley 6/24/01

6/25/01 01-02-0025 Upper Columbia River/Mining

0630 Team meets at restaurant for breakfast & H&S meeting held. discussed slip trip fall Hazards, boat safety etc. Also discussed sampling objectives for the day.

Approx 0730 Team leaves & goes to ~~Circle Motel Part~~ Circle Motel to get boat loads.

0755 Team arrives at Pend Oreille Mine for safety Class.

0825 Safety class completed. Al Stewart for Site Safety, Dave Gallewski, Environmental Manager for Cominco American Inc. and Mike _____ the Mine Manager were present. Use 911 in an emergency or 446-4516 to reach facility people.

0845 Dave Gallewski has escorted the team to the catfall. Sample # POPP01SW is collected.

0910 Boat team, Charlie Gregory (Geologist + documentation), Alan Jensen (Boat Captain) and Don Weiss (Sampler) CG, AJ and DW respectively, arrive at the Circle Motel to hook up boat trailer and do final check of gear on boat.

0930 Boat Team leaves convenience store after loading Boat + drivers and getting stress drinks.

1030 Boat team arrives at Boulder, Dam

1045 Boat is launched

Charles T. Gregory

6/25/01 01-02-00 28 Upper Columbia River/Mining

1105 GPS File name R0625 17A

1140 START members Alan Jensen, Charlie Gregory, and Dan Weiss at Pewee Creek tributary. The Creek enters Pend Oreille River dropping over a waterfall approximately 200' high. Tributary samples could not be collected from this approach.

1200 START Samples tributary ~~at~~ called Lime Creek, approximately 150' upstream from the Pend Oreille, ~~River~~ Tributary flow estimated at less than 5 GPM.

1230 START Samples ~~tributary~~ River sediment slightly upstream of Lime Creek.

1345 START Samples tributary called Everett Creek, approximately 200' upstream of the Pend Oreille, Tributary flow estimated at approximately 5GPM.

1415 START Samples tributary called Ledbetter Creek, approximately 200' upstream of the Pend Oreille, trib. flow approx. 5GPM.

1440 START Scouts location of Slate Creek trib.

1455 START Scouts Location of Upstream River sample.

1530 START Scouts Location for Beaver Creek and 3-mile Creek tributaries. Both are waterfalls >50' top to ~~river~~ water level. Review of ~~p~~ maps indicate that access roads could be used to get within ½ mile of Beaver Creek and within approx ⅛ mile of 3-Mile Creek.

1550 Scout location of upstream sample.

1610 Scout location of Flume Creek.

1650 Finish scouting location of Between Pend Oreille Mine and Grand View Mine.

1700 Leave for Boundary Dam

1735 Boat is loaded on trailer and Team Leaves for Circle Motel.

1800 Team ~~leaves at Circle Motel~~, arrives at Circle Motel.

1815 Team leaves Circle with LD and to go to dinner

1830 Arrive at dinner.

Charles T. Gregory 6/25/01

Chester 11-07-2025 [illegible]

1930 Tom ~~[illegible]~~ arrived Circle Hotel to do Sample Dec

2200 Bert Tom leave the Circle Hotel work only for the day

Chester Brown

01-00-0028 Upper Columbia River 6/26/01

6/26/01

0630 Boat team (CG, AJ, DW) meets Andy Hafferty outside the Washington Hotel. The 4 go to Cathy's Cafe for Breakfast.

0731 Left Restaurant.

0850 arrive at dam

0900 met with Gary Baird Dam Manager for Boundary Dam and Don _____ Dam Safety manager. They were concerned about our ~~presence~~ presence inside the buoy line yesterday morning. Don _____ ran into Alan Jensen in town last night and requested that we report to Gary Baird in the morning. Don also informed us that approximately 400 Problem Grizzly bears from Yellowstone have been relocated to the area. And if we encounter Cougars to raise our hands up back away slowly.

0930 Pass the dam Control room.

0950 Boat is loaded + launched.

1005 Team arrives at PRTB045D sample location Unnamed Trib.

1026 Immature Bald Eagle observed foraging on river location labled Bald Eagle on the map. Bald Eagles were observed atleast 10 times yesterday foraging throughout entire river corridor.

Log Entry: Unnamed Tributary where PRTB045D was collected flows at approximately 10 gpm. sample was collected approx 200' upstream of Pend Oreille River.

1045 Sample PRTB05SD collected from Slate Creek Trib. approximately 100 feet upstream of Pend Oreille River. Slate Creek flow rate estimated at 50-90 ~~GPM~~ GPM CFS. Slate Creek has a sign posted indicating that it is closed to Bull Trout fishing. Bull Trout is a threatened species. Sign is posted by Washington DOE. At Boat launch this morning two men were preparing to go fishing by boat, fishing for whatever will "hit a fly"

Christopher T Bryant 6/26/01

6/26/01 Upper Columbia River CH2M-HILL

1230 Team breaks for lunch
1300 Team done with lunch.
1400 Team at POPP01 attempting soil sample, No soil available.
Photo documented Poppe + Gathered GPS data
1435 Boat Team Pick up Team Kamma (TK) and Rene Nielsen (RN) at ~~Dalmas~~ Dead Horse Eddy, boat upstream to see Grand Union mine and then down stream to Josephine Mine. Samples and HRS information collected at Josephine Mine.
1535 Team leaves Josephine Mine
1540 Boat team leaves TK and RN at Ilwaco wharf.
1605 Boat team arrives at Boat Launch
1620 Boat team leaves Boat Launch for Circle Motel to pack samples.
1650 Boat team arrives at the Circle Motel to Pack Samples.
Leslie Dalhoff discusses ~~Bob~~ Boat Team's meeting with the Dam operators this morning. Meeting ended on good terms. LD returns to call EPA.

Charles T. Lemley 6/26/01

2-0028 01-02-0028 Upper Columbia River 01-02-0028

6/27/01

1145 Bart Finn collects PRRS04SD from beach area of Deadmans Eddy. Sample is located between Pend Oreille mine and Goodview mine. Sample has sulfur like odor.

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Charles Bugay 6/27/01

Charles Lynch

12/5/01

6/28/01 01-02-0028 Upper Columbia River

0800 Boat team Charlie Gregory (CG), Alan Jensen (AJ) and Renee Nordeen (RN) leave Circle Motel to fuel the Boat and start sampling.
0815 Team leaves Gas station/convenience store.
0820 Team passes road to Flume Creek. Decide to go to Josephine Mine first.
0835 Team arrives at Boundary Dam Boat Launch.
0850 Boat is loaded and launched.
0930 Boat team arrives at Josephine Mine after waiting out rain for 15 to 20 min on shore.
0940 Team leaves Josephine Mine.
0950 Team is at Flume Creek.
1050 Boat team arrives at Boundary Dam Boat Ramp after reviewing tributary locations along Pend Oreille river.
1100 Depart Boat Ramp.
1120 Team arrives at Metaline. AJ calls MB at office.
1240 CG and RN return to Boat after collecting PRTB0850 Sample collected ~~98° E~~ approximately 500' 98' E of boat and GPS location.
1300 Boat Team leaves the Pend Oreille River via the boat ramp in Metaline.
1330 Arrive at Circle Motel to do paperwork.

Charles T Gregory 6/28/01

Charles I Lugg

6/26/01

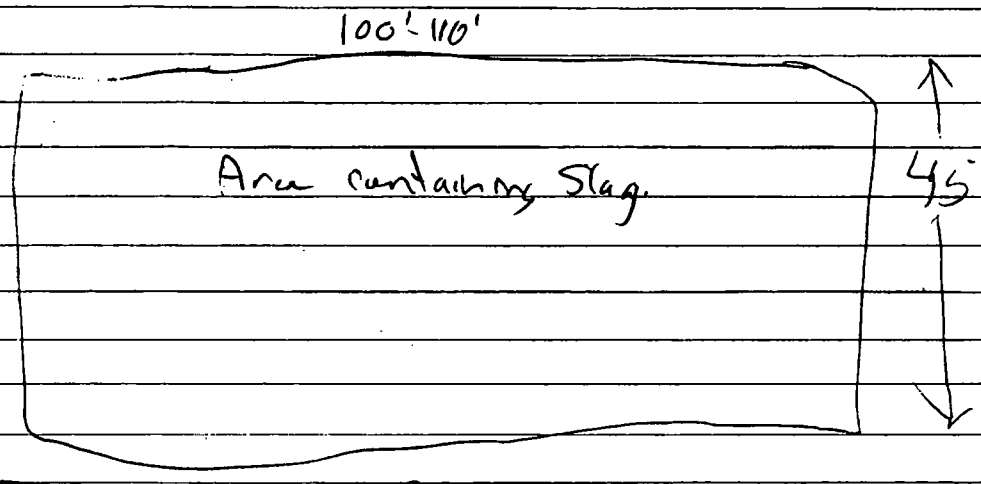
6/29/01 Upper Columbia River 01-02-00029

0120 CG and Monica Todd ~~as~~ (EPA TM) leave the circle Motel for ~~Newport. To Santa~~ CTG Northport. Will observe river bank in the area of Smelter Rock from the public Beach and possibly by wading into the water.

1130 CG and MT arrive at the North port park. Located NE of the Rt 25 bridge over the Columbia River.

1200 CG gets off phone with Patti Stone of the Colville Tribe. She says the sluice ways are visible from the boat dock. The area below the park building is the slag dumping area. From the smoke stack go east to walk along the first bench cut in the hill side that will give a fairly good idea of the facility. There is slag along the beach near but probably not at the boat launch. They moved seds in that area to fill up the boat launch. There is an area E of park building that served as runoff from springs. It is brick lined and she thinks there is slag under neath. The City Water Supply wells are locate E SE of the park building.

1215 photos of slag dump area



Charles T. Bruyere 6/29/01

Claudia T. Langley 6/29/01

6/29/01 Upper Columbia River Ø1-Ø2-ØØ28

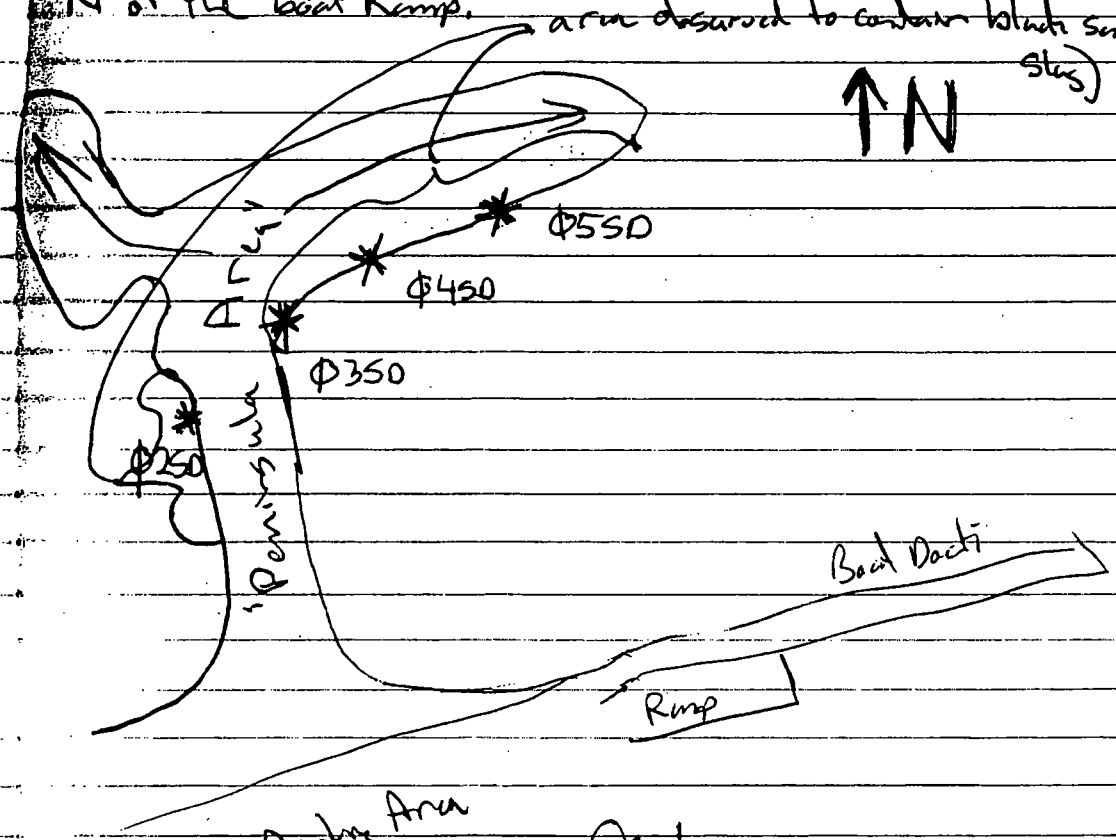
1240 at sluiceway CG estimates that they were 36' in diameter. Note: Rocks in this area on the bed are stained dark in places possibly associated with the slag.

1300 prep for sample collection. Identified 3-4 spots along River bed/sluiceway area.

1435 CG and MT out on peninsula of Boat Ramp. Pop bottles and cans are in ~~the~~ this area indicating recreational use. Boaters and vehicles with boat trailers are present.

Locating GPS File R06290120A setup.

1455 samples NSSLØ2SD, NSSLØ3SD, NSSLØ4SD and NSSLØ5SD collected from the "peninsula area" located N of the boat Ramp.



Charles T. Bryson 6/29/01

6/29/01 Upper Columbia River Ø1-Ø2-ØØ28

1605 GPS for Ø6, Ø7 and Ø8 SD collected

1615 CG paces the slag/shist pile it is 77 paces or approximately 230' long following the curve of the waterline and 10 to 15 paces or 30' to 45' wide from shore the upper section.

1700 CG and MT prepare to leave site. No other areas of slag have been observed only the one sketched on the bottom of page 13. and the possible areas of slag seen along the pinnacle as indicated on sketch on pg 15.

1930 CG and MT arrive at Metaline, WA.

Charles T Lemay 6/29/01

ecology and environment, inc.

International Specialists in the Environment

Job Number 01-02-0028

Upper Columbia River - Phase 2
Stevens and Pend Oreille Counties
Washington

Project Area Documentation Logbook #17
Team #1

E & E Job Number _____

Telephone Code Number 12810073

Site Name Upper Columbia River

City/State Washington

TDD 01-02-0028

PAN 001281.0073.01.SR

SSID _____

Start / Finish Date _____ / _____

Book 17 of _____

E & E Emergency Response Center: (716) 684-8940
E & E Corporate Center: (716) 684-8060
MEDTOX Hotline: (501) 370-8263
E & E Safety Director (Home): (716) 655-1260

9/9/01 Upper Columbia River 01 CO-0023

Howard + Jay 206-419-3419

Monica + Leatta 206-419-3421

Tara + Ralph 206-419-3420

Labs: Datachem Lab (DATAC) organics
960 West LeVoy Drive
Salt Lake City, UT 84123
(801) 266-7700
contact → Richard Wade

Sentinel Inc (Sentin) inorganics
116 Washington Street NE
Huntsville AL 35801
(256) 534-9800
contact → Kimberly Alexander

TOCs → # 01090401 - 01090425 E+E lab.

organic #s: JØKC1 - JØKG1
(pest/pcbs + svocs)

inorganics #s: MJØKC1 - MJØKG1
(TAL metals)
01374101 - 01374160 ≤ RTN's

[illegible] 9/9/01

01-02-0028 01-02-0028 Upper Columbia River 9/10/01

0800 Meet team in hotel

0920 Arrive at L-Bar (LB) • NW Magnesite (NM)

1917 Magnesite pile began to be utilized

1967 stopped adding material to Magnesite pile

main ditch - dam at N end in 1995

before there was an earthern dam which weeped liquid at 3 gpm. High concentration of ammonia ~~into~~ in this ditch → therefore the 1995 dam was built.

Stormwater from site enters Colville R @ NW end of site.

holding pond • evaporation pond HDPE single liner.

W. Ditch not flowing - has ponded water.

holding pond has water in it.

Evaporation pond has no outlet.

Ozzie Wilkinson - remediation mgr.

Charlie Lesler - water quality coordinator?) - M

Sampling every 2 wks until 1997

quarterly monitoring after 1997

July 1999 every 2 wks again.

currently 2 x mo. Colville R. upstream/downstream - BOD, phosphorus, TOC, chlorophyll a, nitrogen (TKN + nitrate/nitrite)

Reports to Ecology.

1991 started working on Colville R.

Chewelah, Mill Creek, Onion, Dingston, Jump of Joe Creek - mgmt plans in place

1 time sediments /year • 1 SW /year - EPA targets considered.

1992 watershed Planning began

Chuck Grunfeller (sp?) = CH2MHill - RI sample Metals also

State superfund site for Ecology - RI oversight by Ecology.

benthic macroinvert. study in Colville R. Travan 9/10/01

9/10/01 Upper Columbia River 01-02-0028

60,000 ton removal action on magnesite pile (flux bar / flux bar residue)
Ted Canalas - attorney for Dick Brunner fishing for brown trout on Colville R. for consumptive purposes - Brunner.
1020 Begin site tour
1997 - Summer 2000 removal concluded.
Sent to Arlington OR.
flux bar residue - screened for magnesium - once mag. taken out = flux bar residue.
Southern portion of ~~north~~ South ditch - filled in w/ material because it was not working properly.
Scrubber - flu dust.
Shallow water bearing unit - alluvial developed in native sediments + fill material.
fine sandy ~~fine~~ silt to silty clay (to River, coarser) (to South finer).
deeper zones of aquifer tend to move upward
60' clay - 2 aquifer w/ aquitard.
sewage lagoon - sampled '95 - dry.
Thermax shredded wood fiber material impregnated w/ magnesite to produce fire retardant insulation.
18 mi tramway from mountain to plant.
hydraulically slurried cell by cell = pile
fines left over from ore - would have been fly ash.
South ditch - wetlands 270' confluence w/ west ditch
West ditch (hanson lumber)
during wet season, water enters from far south - drain lines coming in from irrigation.
Note: wetlands

Taramas
9/10/01

01-02-0028 01-02-0028 Upper Columbia River 9/10/01

nesite raised potatos south on west ditch - used arsenic to treat potatos.

e Jim Kurst - Valley, ID agriculture application info

for alfalfa fields next to west ditch. (hay too.)

ner. 8th west ditch - wetlands along

1900' from Colville River to west ditch/south ditch

ed. confluence.

Coyote dens in magnesite pile.

esium - 1997 large flooding event.

residue. magnesite erodes into West ditch.

In Spring present under magnesite pile.

ring Coal, oil, natural gas - used to process magnesite.

difference in color of pile.

1650' Colville R. to area in w. ditch where cattails begin to grow.

erial wetlands on West ditch from confluence of

r, (coarser) south ditch = ~~300~~ 250'

1650' mark - less vegetation in ditch - possibly

pward higher ammonia + chloride

~1350' more vegetation again - patches along sides of ditch.

pregnated

lant Background of w. ditch = P12 on ~~ton~~ Logan Rd

somewhat upgradient of industrial area.

utilized Ecology trace metals paper.

pile main ditch never overflowed - there was a pumping

been unit that pumped water from ditch to evaporation pond. Main ditch is now dammed.

w/west ditch flooding causes water to flow up west ditch + ponds near main ditch.

from 1200-1300 break for lunch.

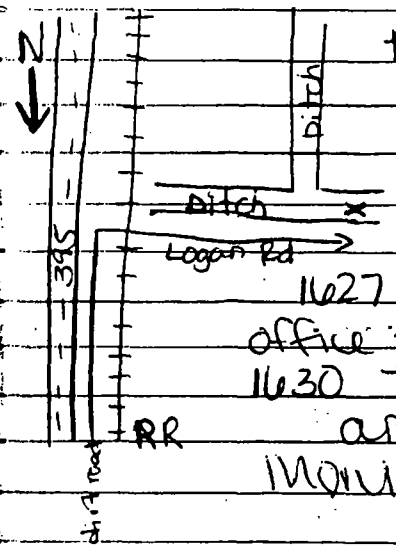
irrigation. 1300 Back at NW Magnesite + L-Bar site.

Tarancis 9/10/01

9/10/01 Upper Columbia River 01-00-0028
Logan Rd - west ditch background sample
contact → John + Cheryl Hanson
(509) 935-4515 ofc.
Cheryl Hanson gave us permission to
collect sample ~~in~~ in west ditch
** send a color copy of photos from NW Mag/L-Bar
site with data to Ozzie (owner notification Tables).
1100 TK (Tara Kalamas) + RL (Ralph ——)
mob to station LBØ1DT.
1115 TK + RL at station LBØ1DT in west ditch.
~510 feet from confluence of Colville River
and west ditch.
GPS lat: 48°15'27.66" N long: 117°43'15.19" W
alt: 1642 feet.
Station LBØ1DT is at the end of wetlands
in west ditch.
*Note station name should be LBDTØ1
in previous lines (above) + GPS.
1140 Took split sample for TAL metals + PCB/Pests.
owner's consultant - used own jar
1145 At station LBDTØ2. ~1600' from
confluence of Colville Riv.
Lat 48°15'16.81" N long: 117°43'15.36" W
alt. 1644'
Station LBDTØ2 at the north end of the
southern wetland. Wetland disappears
potentially due to increased ammonia
+ chloride.
1301 at station LBDT Ø3 - confluence of
south ditch + west ditch.
GPS: lat 48°15'13.71" N long 117°43'15.16" W
alt 1647'
TKalamas
9/10/01

01-02-0028 01-02-0028 Upper Columbia River 9/10/01

1600 mob to station location LBBKØ1SD.
Background location for West ditch.
off of Logan Road - near confluence of another
ditch. These ditches are full/flowing
in spring. Since ~~the~~ TK we do not have information
regarding what the other ditch drains, sample
was collected downstream of the confluence of
Logan Rd ditch + unnamed ditch.



~~1605~~ TK 1615 RL collected LBBKØ1SD.
GPS collected:
lat: 48°15'6.25" N
long: 117°43'6.03" W
alt: 1647'
1627 leave BL location en route to
office to drop off split sample.
1630 TK + RL leave LBar to NWAlloy
arrive @ NW Alloy - meet
Monica Tonel + Leatta Dahlhoff.

1700 at sample location NAPPØ1SD.
confluence of Colville R + ~~drainage ditch~~ Stenger Creek
which drains the site.
1715 RL collects sample NAPPØ1SD. Split
taken also.
GPS. Lat: 48°20'54.87" N alt. 1611'
long: 117°50'13.81" W
1730 At next location ~~NADTØ1SD~~ TK NACKØ1SD
down gradient of ditch which runs NW
across field to NW Alloys.
1745 sample ~~NADTØ1SD~~ TK collected - split also
collected. NACKØ1SD

TKarkins 9/10/01

01-02-02 Upper Columbia River 1600

GPS collected:
Lat: 48° 20' 55.36" N
Long. 117° 50' 33.70" W
alt: 1631'

1805 Move to location ~~NATDT0ISD~~ NADT0ISD
GPS collected:
lat 48° 20' 55.80" N
long: 117° 50' 34.52" W
Alt: ~~1622~~ 1623' NADT0ISD

1815 Sample ~~NATDT0ISD~~ collected
25' N of Creek, lvd. N of beginning of culvert

* Change Station names:
NABT0ISD to ~~EK~~ NACK0ISD
NADT02SD to NADT0ISD
Note – change GPS data

1820 At location NABK0ISD.

1830 Sample NABK0ISD collected
GPS. 48° 20' 55.29" N
117° 50' 35.66" W
Alt: 1632'

1900 Leave NW Alloys to mob to hotel.

1930 Arrive @ hotel

2000 Team mtg.

Tiara
2/10/02

9/10/01 — 9/11/01 — Upper Columbia River — 01-02-0028

0630 Team mtg in hotel.

0700 TK+RL leave for NW Alloys ~~en route to~~ TK stopped at grocery store for ice.

0712 en route to NW Alloys

DTOISD 0744 at NW Alloys for collection of Colville River background sample. Background sample location will be ~~at fen~~ TK just upstream of where Stensgar Creek enters the Colville R. (~25-30' upstream)

0845 Sample NVABK02SD collected. Pole with dedicated scoop on the bottom used to collect sample.

inrung Split sample collected for Ozzie.

GPS collected on the bank of river.

Lat: 48°20'54.42"N Long: 117°50'13.97"W

SD Alt. 1615'

0830 Leave NW Alloys en route to NW Magnesite/L-Bar. Will be collecting 2 sediment samples - 1 at PAE of west ditch + Colville Riv. + the other will be a background sample on the Colville River.

0850 TK, RL Arrive at NW mag/L-Bar. Checked in at office. Headed to sample location LBPP01. which is where the west ditch flows into the Colville River. A split sample will also be collected here.

0910 Sample LBPP01SD was collected using pole + dedicated scoop. ~~again~~ TK

GPS collected approx 5' SE from sample.

48°15'32.550"N 117°43'15.06" W

Alt: 1660 ft

0930 en route to location LBBK02

0935 Searching for location to collect sample LBBK02

0950 At location: between Hwy 395 + Burlington railroad. (RR is west of highway). Sample will be attempted approx 6 feet from overpass

TK 9/11

9/11/01 Upper Columbia River

of Hwy 395.
Sample LBBK02SD will be MS/MSD + MS/DUP
~~for this sample~~ 12
1100 Sample LBBK02SD collected.
Note - freshwater clams (1-1/2 in) present in sediments.
They are removed from sediment before
sediment is placed in the jar.
GPS: 48°15'37.91" N 117°42'55.79" W
alt 1645.78'
1030 Leave Chewelah en route to hotel.
Late entry - Charlie Kessler met TK + RL at
Station LBPP01SD. We talked about
Anderson Calhoun. Charlie said that a few 12
years ago cows from an adjacent farm
wandered to the Anderson Calhoun site
and licked some of the piles (benite :). Once
the owner of cattle rounded up his cows
& returned them to the farm, the cows
began to look ill. The next morning
9 cows were dead.
1100 Back at hotel to do sample doc.
1300 left for Anderson Mine with Leatta.

Terrance
9/11/01

[illegible] Spokane [illegible]

[illegible] Jessica Spiegel (JS) left hotel en route to [illegible] mine

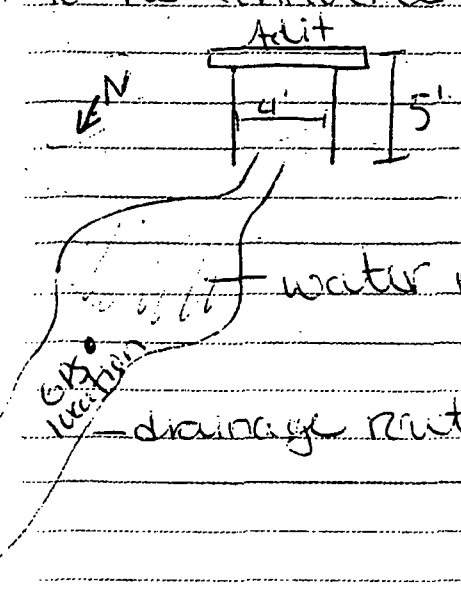
[illegible] JS arrive at gate (locked). Begin to hike [illegible]

[illegible] arrive at mine. Features: 1 mine adit. No evidence [illegible] tailings or waste rock. mine adit flows across dirt [illegible] down hillside + into intermittent creek.

[illegible] Adit water sample collected

[illegible] is a definite pathway = iron staining present [illegible] soil on road + soil and rocks on hillside. Sediment [illegible] present in creek is more like soil.

[illegible] drainage route is approx 120 feet from the [illegible] adit to the confluence w/ the creek.



[illegible] sample NPPPOISD collected where the adit drainage flows into intermittent creek.

[illegible] currently neither the adit nor the creek [illegible] flowing.

[illegible] ~~of adit~~ TL

TL 9/12/01

9/12/01 Upper Columbia River 01-02-0028

GPS of sample NPPPØ1SD:
Lat. 48°44'12.680"N long: 118°06'06.21"W
alt - 1932'
GPS reading could not be captured by the GPS unit due to lack of satelites. However, Unit was able to provide a GPS position which was recorded above.
1040: GPS attempted at adit. Too few SVs again.
lat: 48°44'11.99"N long 118°06'06.55"W
alt: 1933' → recorded GPS location.
At Northern edge of ponded area (see figure)
1045: Sample NPBK01SD collected in creek upstream / cross gradient of mine.
GPS attempted, too few SVs. GPS recorded as:
lat: 48°44'11.74" N long 118°06'05.21"W
Alt: 1938'; approx 5 feet from actual sample location.
~~1120~~ 1120 TK + JS leave locked gate en route to First Thought Mine
1200 TK, JS arrive at First Thought Mine
Did a walk around. Various waste rock piles found. ~~Remnants~~ Remains of shaft possible. It appears that the site has been surfically altered. Waste rock piles seem random.
One house is dilapidated. A creek is nearby (at southern edge) - however it is now ~~overgr~~ serving as part of cow pasture for several cows. The creek is still present but cows have stomped through it. ~~and~~
field = 200 ft. x 300 ft. House on one side (W) piles on the other (E); South side is a road w/ adjacent creek (distance to creek approx 30 feet from edge of field to creek) TK 9/12/01

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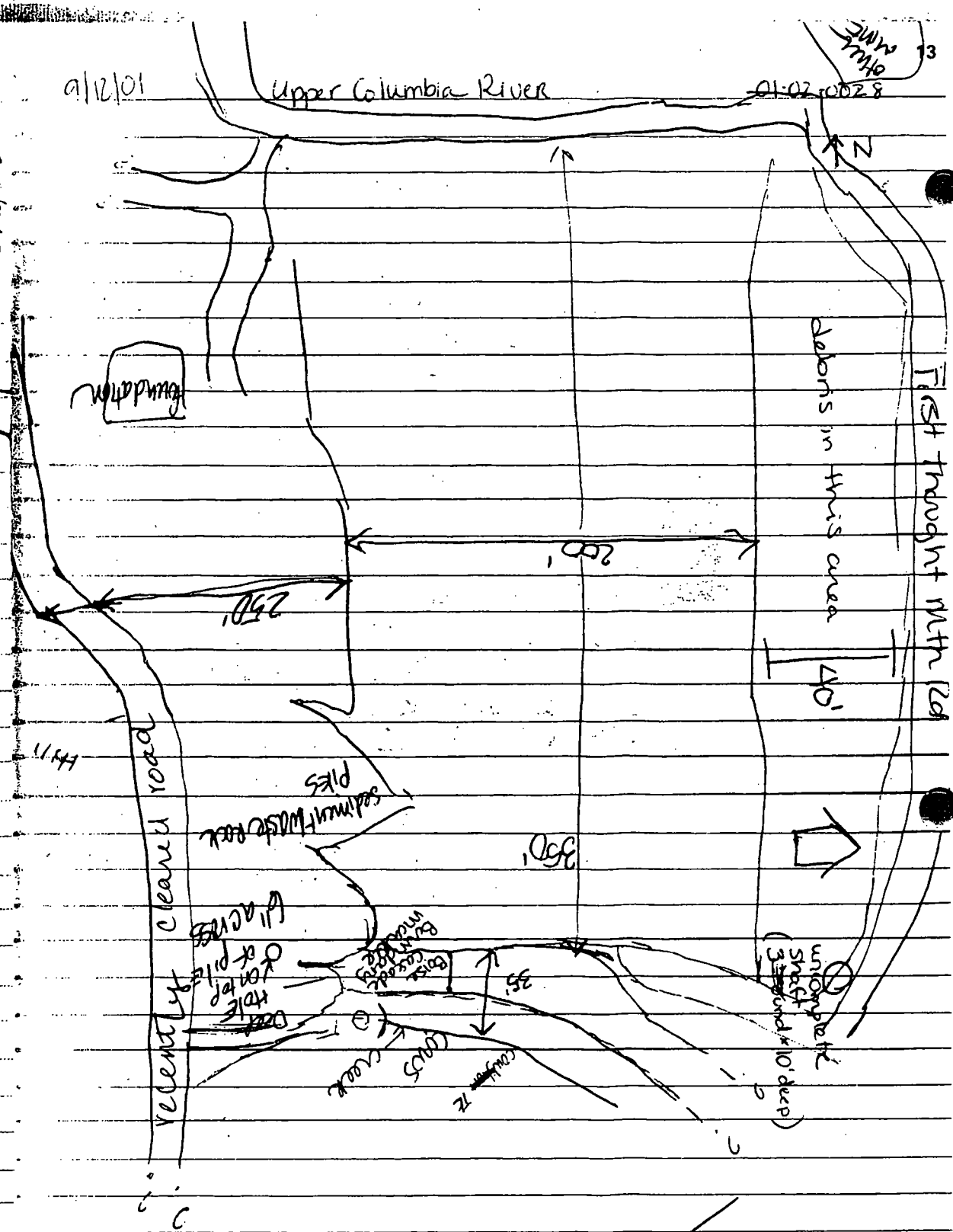
9/12/01 Upper Columbia River


N
First thought mth Rd
debris in this area
40'
Foundation
Filled in Shaft?
250'
200'
350'
recently cleaned road
sodium/basic rock
piles
350'
35'
Coal
Coal
Coal

9/12/01 Upper Columbia River 01-02-002

Note - drill boring samples found on-site in their original boxes.

Some markings (each box has the following):

Company: _____ property _____

Nchole no _____ box no _____

interval _____ to _____

Some companies were: Shell, F.T., PF, BC, Boise Cascade

all (of the ones visible) said property First Thought or acronyms thereof (FTm)

1340 TK & JS leave First Thought en route to hotel to do sample doc.

1435 Arrive back at hotel. Break for 30 mins.

1505 TK, JS do sample doc.

[illegible] 9/12/01

01-02-0028 9/13/01 Upper Columbia RUR 01-02-0028

0715 Teams leave hotel en route to Le Roi Smelter.
0700 Teams arrive on-site.
Meet with Dan Hirst + the site owner.
Site tour: 3 city wells are located on site. owner indicated that he would be taking down the buildings on site and trying to clean up the debris located on site.
0830 Still on site tour. Noticed slag on beach, around city park parking area, bricks were made of slag - bricks are just placed on top of ground surface.
0940 YL, LD, MT, JS left LeRoi en route to St. Crispin.
1030 Arrive at St. Crispin
MT spoke with Patti Stone (Colville Tribe) - the adit is 1/4 mi upstream - accessable only via the creek (sheep creek). Therefore a GPS was collected: Lat: 48°56 30.99 N
Long: 117°47 07.47 W Alt: 1,370'
Shaft is also underwater. GPS collected in open campground area - at end of dirt road.
Go back to LeRoi Smelter.

BC,
st
hotel

Marance 9/13/01

ecology and environment, inc.

International Specialists in the Environment

Job Number 01-02-0028

Upper Columbia River - Phase 2
Stevens and Pend Oreille Counties
Washington

Project Area Documentation Logbook #20
Team #2

E & E Job Number _____

Telephone Code Number 12810073

Site Name Upper Columbia River

City/State Washington

TDD 01-02-0028

PAN 001281.0073.01.SR

SSID _____

Start / Finish Date _____ / _____

Book 2D of _____

E & E Emergency Response Center: (716) 684-8940
E & E Corporate Center: (716) 684-8060
MEDTOX Hotline: (501) 370-8263
E & E Safety Director (Home): (716) 655-1260

9/10/01 Upper Columbia River 01-02-0028

ARRIVED on site @ 10:30 am START
members included Howard Zorzi and
Joy Marshall.

DAISY Mine

Lat - for Road in front of mine 48° 22' 21"
Long - for Road " " " " 118° 5' 4"
Took photo from Road ~~to~~ of tailing piles & identifying site. Mine is located sight off of Daisy Mine Road.

Base of tailing piles (3) base length about 150 ft. height is at least 25 - 30 ft slope of piles about 30 - 35%. width about 45'

Site dimensions ~~150~~ 25m * 65', site pretty clean in terms of debris, area only littered w/ logs. Trees are growing ontop of tailings. Minimal plant life growing in wet area near mine shaft. Standing water in mine / mine has a door but the lock has been broken. Grasses are growing around wet area not in it, algae is growing in it. Depth in adit is about 2" of standing water. Wet area extends about 25'.

Directly south of wet area is a depression which would ~~stand~~ pool any water that flowed into it. If water would discharge from the site, it would flow to the SW for about 25 additional feet then flow down the side of the tailings. however there is not a definite flowpath in the soil from the wet area to the observable crevice in the tailings.

If there was a lot of water it could

01-02-0028

START
anal

48° 22' 21"
118° 5' 4"
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Upper Columbia River
Logging Area
Logging Camp
Outhouse
Shop
Shaft
mine
pond
Logging Camp
Logging Camp
Logging Camp

9/10/01 Upper Columbia River 01-02-0023

flow west where there is a slight decline in topography. The distance from the storage shed (concrete) to adit is about 150'.

Left site @ 2:30 for lunch. Lunch ~~at~~ or from 2:45 - 3:15. Returned to Daisy Mine to collect samples. Took first sample at 3:55 at drainage ditch -

LAT: } GPS title is DTPP01SS
LONG: }

Soil - very dry, silty sand, some small rocks, slight brown

The metals sample was taken about 4" to the right of the organics sample.

Office Bldg dimension 17.5' * 23.5'
Cement storage " 4' * 4'

DTAD02SW - GPS
Collected adit water sample @ 4:30
Collected DTBK03SS @ 4:55.
Sample collected at about 60 ft. upgradient, up a hill from adit. Soil was brown silty sand more organic matter that at the drainage ditch sample. Few Rocks.

Two tailings pile samples were collected DTTP04 @ 5:10 and DTTP05 @ 5:25
Both samples were grayish fine sand with Rocks.

Left Daisy Mine @ 5:35
Mileage from mine to Route 25 = 6.2 miles.

Returned to Daisy Mine @ 6:15 to obtained a third tailing pile sample

01-02-0023 | 02-0028 Upper Columbia River 9/10/01

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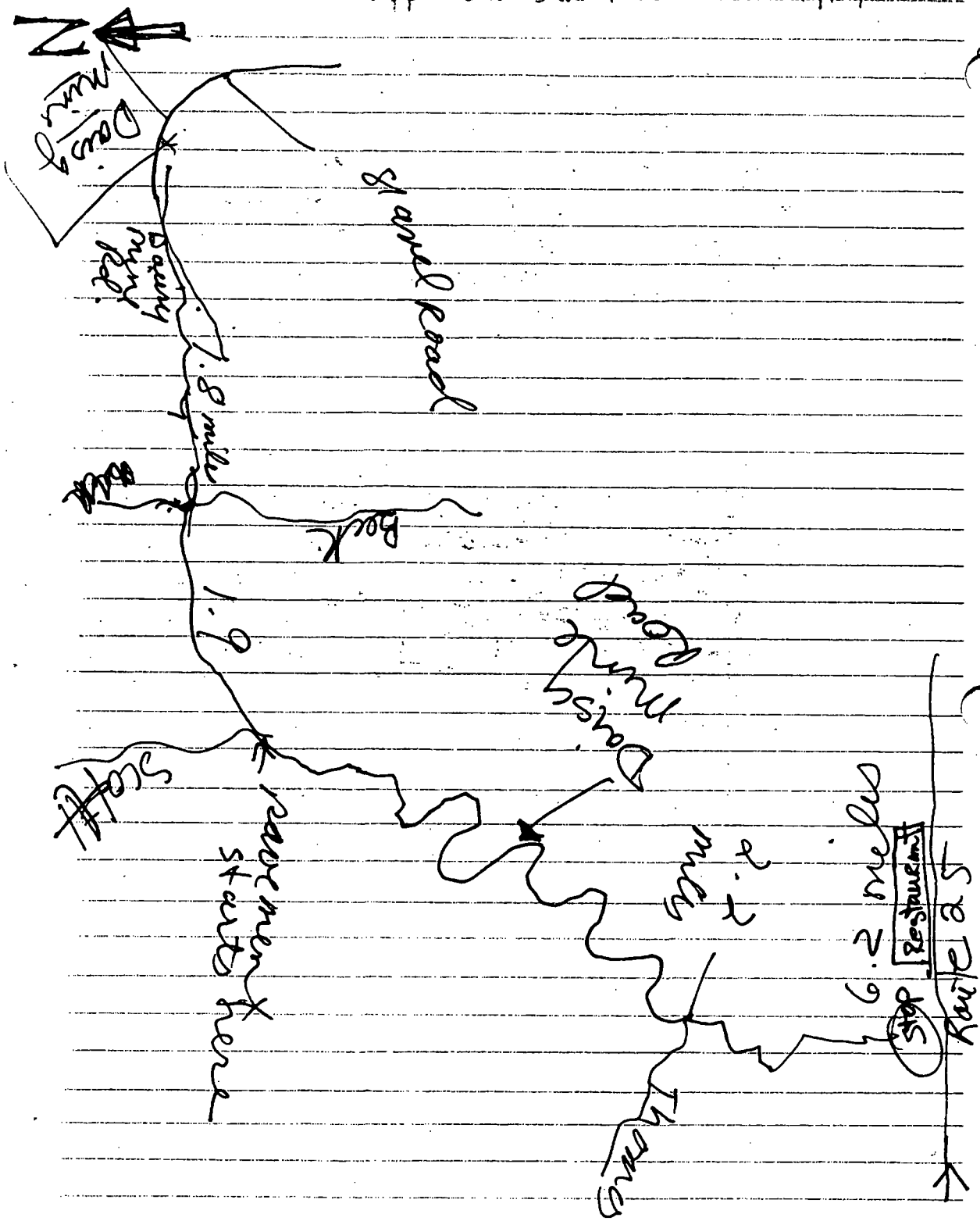


JSO 9/11/01

9/10/01 Upper Columbia River 01-02-0028 01-02-0

Sample DTTP03 was collected at 6:25. Very sandy, grayish sample few rocks.
Tailings pile on is made up of 3-4 sections that have formed one large tailingspile.
Left Daisy Mine @ 18:30. gr

01-02-0028 01-02-0028 Upper Columbia River 9/10/01

Late entries:

- Sample DTPP01SS is really a sediment sample. The flow through the ditch flows under Daisy Mine Rd. and discharges to a field sloping downward. Livestock were grazing in this field. This field sloped downward as did the entire valley which sloped towards the Columbia River about 6 miles away.
- Sample DTBK03SS was obtained from a location upgradient of the adit in an area where a GPS reading could be obtained, an open area, about 60 ft upgradient.

tool at sample

P of linked

o. gr

9/11/01

9/11/01 Upper Columbia River 01-02-008
Arrived @ Silver Queen mine at 9:45.
START Team members included Jay Marshall and Howard Zorzi. START obtained access from Dorene Gevora (509-738-4424) to cross her property to get to the mine.
Photographed entire site 14 photos taken on Roll #2, T2.
Site is located on the side of a mountain with a beautiful view of the Columbia River, looking west from the upper slope. The site is described here as having a major upper slope and lower slope. It also has an area near the former mill that ~~is~~ is being referred to as a middle slope. The GPS reading is identified as SQAD.
The upper slope has 4 bldgs on it, the adit, and a concrete square in the ground. The concrete ~~is~~ square is about
Two of the buildings are located to the North of the adit, and the other two are located to its east on a slope. There is also an old phone/power pole near the adit. There ~~are~~ is 4 inches or more of water standing in the adit shaft. Sand bags have been placed at its opening to mitigate flow out of the mine but is somewhat breached. The soil in front of the adit is wet w/ shallow

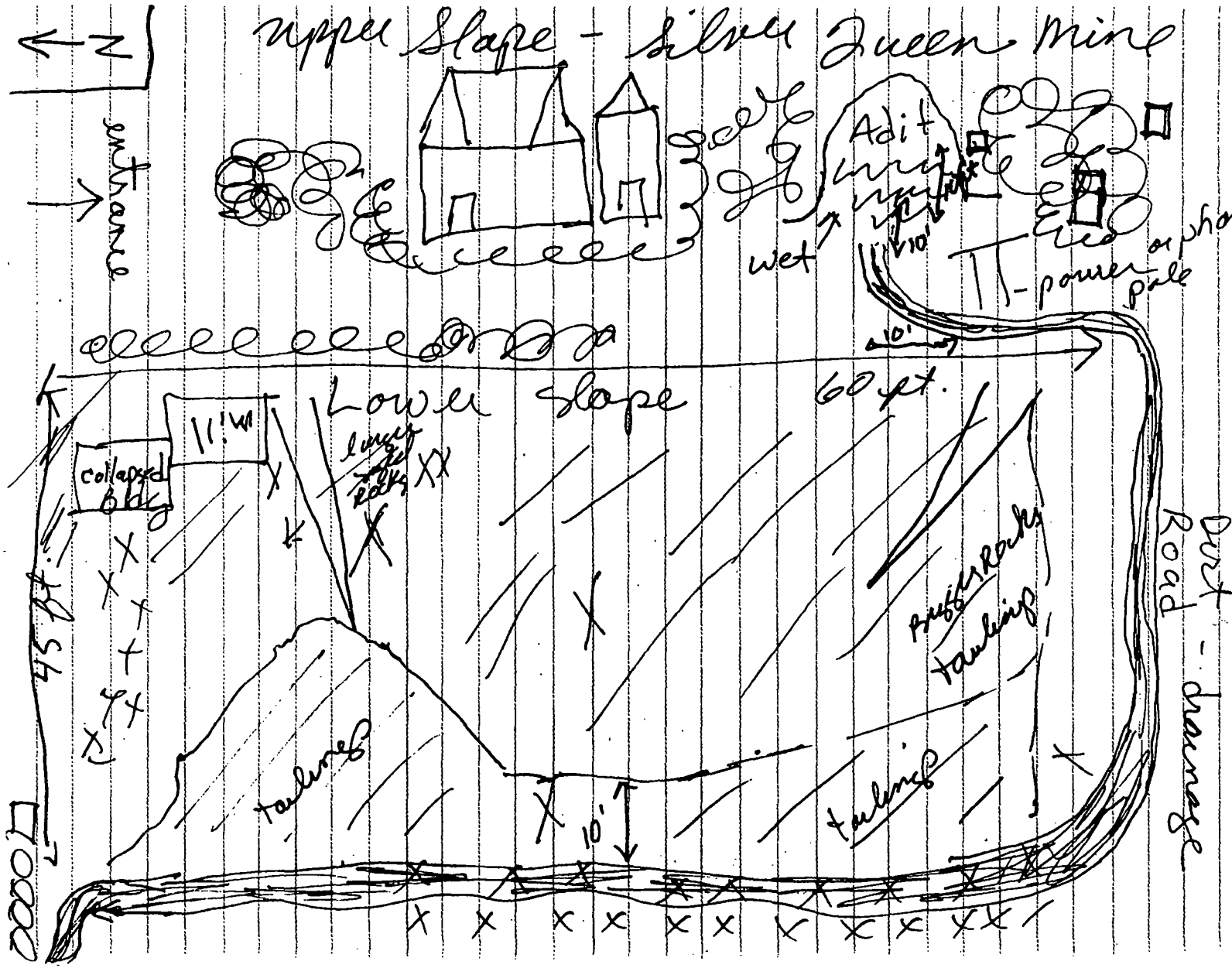
standing water for about 10 feet. If water flow were great from the adit it would follow the path of the dirt road that follows around the site to the bottom of the tailings / waste rock piles. Tailings are of a light gray color sandy various sizes of particles. Some of the tailings from the upper slope are darker, it is more shale like the entrance to the adit.

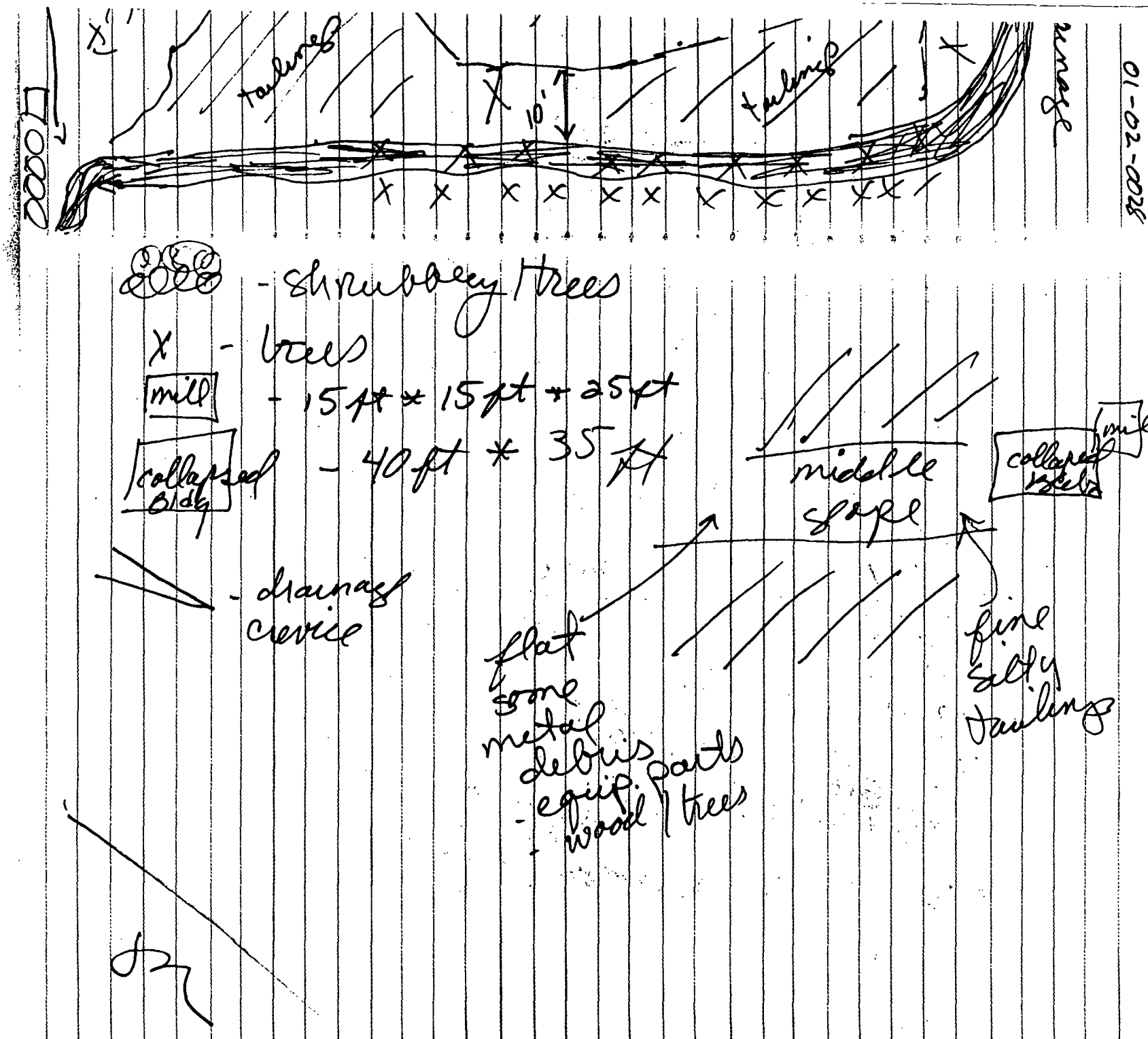
The lower slope is made of finer tailings. The middle slope is made up of very fine, silty tailings. The middle slope contains the mill building and a collapsed building, metal & wood debris. At the bottom of the lower slope the road slopes downward the lowest point where most run-off from the site would flow. At this point is a pump shed w/ four venting round concrete structures.

Left site at 12:30. Found an alternate route to site. Ricky Canyon Rd. For future reference on Rte. 25 (S) go past Tom Silver Queen Rd. for about 1/4 mile go left on Ricky Canyon. There is one road & it eventually reaches mine. Would probably need to get permission access from home owners on road.

No samples were collected at this mine because a distinguishable PPE could not be found where /fr

9/11/01 Upper Columbia River 01-02-0028




01-02-026
drainage
tailings
tailings
10'
- shrubbery / trees
X - trees
mill - 15 ft * 15 ft * 25 ft
collapsed bldg - 40 ft * 35 ft
middle slope
collapsed bldg
mill
- drainage device
flat some metal debris - equip. parts - wood / trees
fine silty tailings

12

9/11/01 upper Columbia River 01-02-0028

a surface water discharge from the adit drainage would flow to.

Adit lat: 48° 52' 56.9 N

long: 118° 06' 57.6 W.

Dan Marquall

01-02-0028 9/11/01 Upper Columbia River 01-02-0028

Hom
Flow To.

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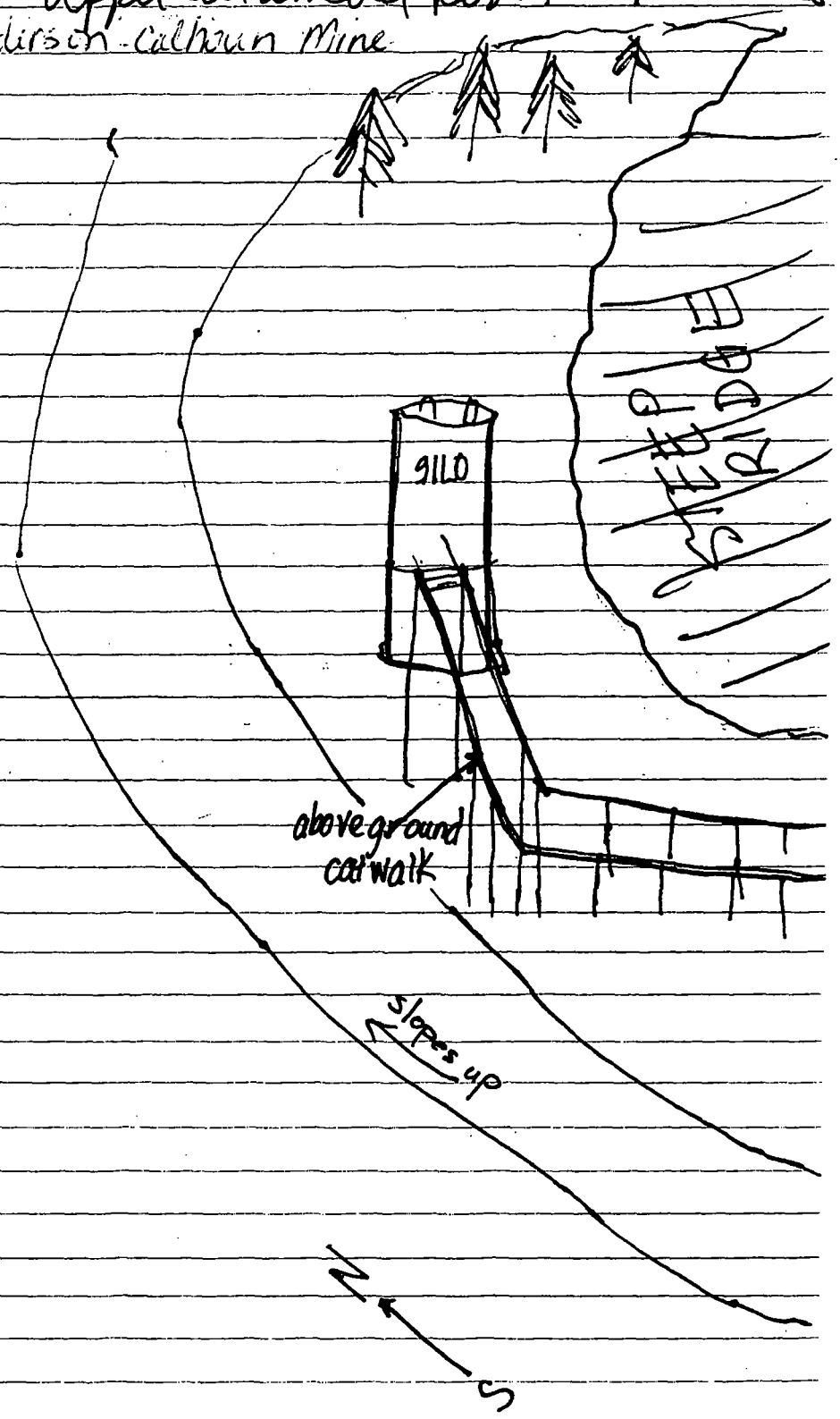
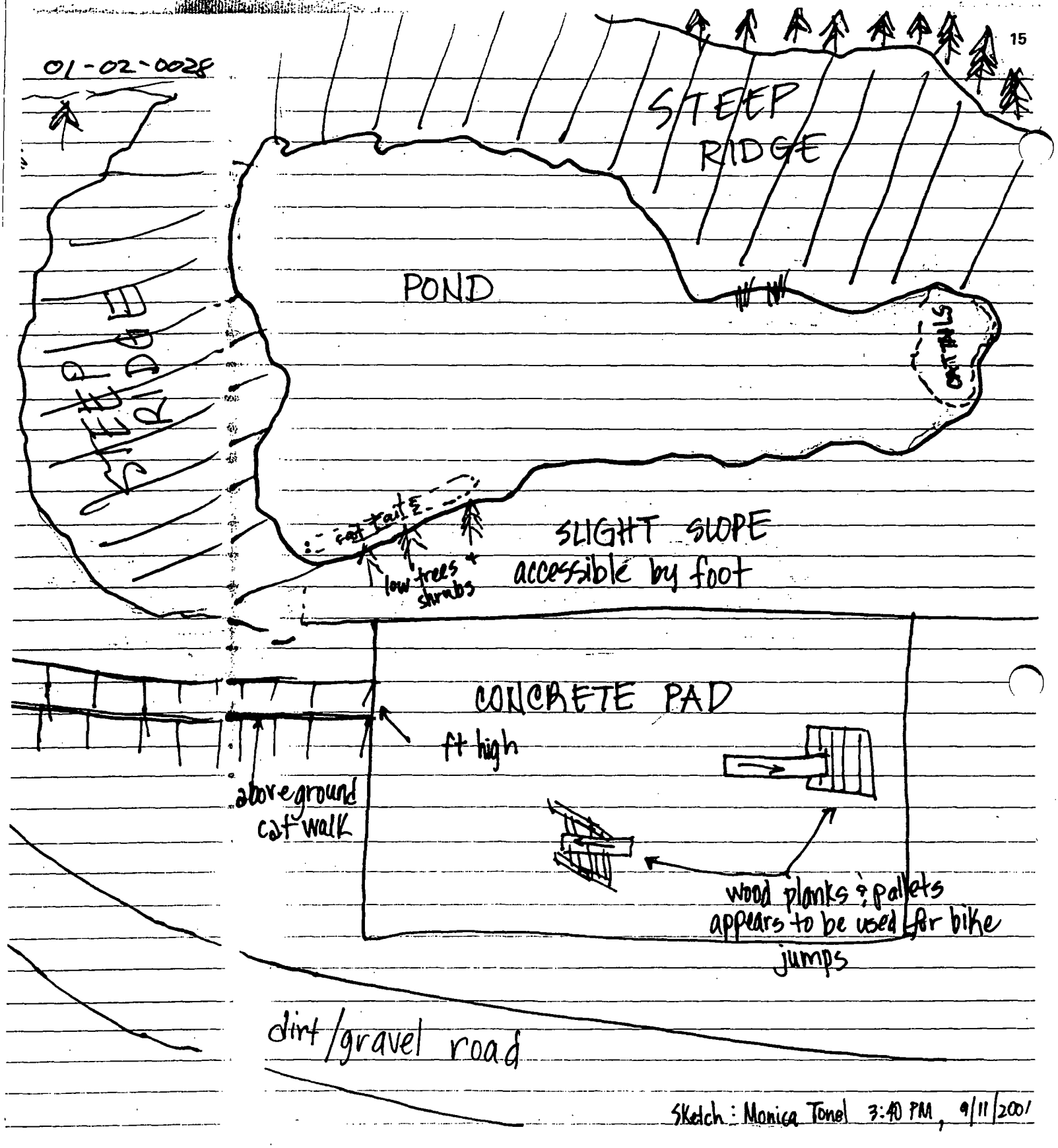
Jay Marshall

9/11/01 Upper Columbia Region 01-02-0028

Anderson-Calhoun Mine



01-02-0028



Sketch: Monica Tonel 3:40 PM, 9/11/2001

9/12/01 Upper Columbia River 01-03-0028

Late entry describing the ecology of the Daisy Mine site. Gold, silver, lead and zinc were likely mined at this site. The mine area is wooded w/ shrubbery and trees. The working area of the mine, in front of the adit is an open area. Cow droppings and deer droppings were observed at the site during the ESI as well as a variety of birds. Downgradient of the surface water flow path, from the adit to a drainage ditch, and across Daisy Mine Road is a pasture where many cattle were observed grazing. The drainage ditch discharges into this pasture.

01-02-0028 colapse of shaft mined at w/ ken area adit is and dan the site a variety the surface adit to a across tree where grazing. s into

9/12/01 Upper Columbia River 01-02-0028
Arrived at Anderson site at 09:10. START team members included Jay Mar Hall, Howard Zorzi, Leatta Dahlhoff. Leatta photographed the site and documented the photos. Jay and Howard collected samples. The first samples collected were 2 stained soil samples ANSS01SS and ANSS02SS. GPS readings were taken. Samples were photographed.

The Anderson site has many hazards associated with it. The superstructure of the site is still in place creating many physical hazards and there is indication that the site has been used for recreational purposes. The cement area located in front of the adit pond had ramps set up for use by skateboarders. The structures themselves could be inviting to trespassers to climb upon, being so high a fall could result in serious injury or even death. There is a lot of debris present at the site, scattered throughout the site. There is a lot of rusted and broken equipment pieces, as well as glass and general pieces of garbage. There are drums in primary areas. On the south side of the site, in the large steel structure there are over 100 drums some of the drums were marked as All other drums were

9/12/01 Upper Columbia River 01-02-0028

unmarked, some have leaked. There were also many broken bags of carbon black a white crystalline chemical. The dust of the chemical could become airborn by wind erosion then dispersion and deposition to neighbouring properties. There are residences to the east of the site and a pasture to the south of the site. To the north of the site a farmer was seen plowing the field during the EST. Another drum area to the south of the steel structure contained 15 plus drums that were rusted, uncontained, some bulging and some leaking. Two stained areas in particular had a strong oily odor and some product had seeped on the ground. These stained soil area were sampled. There was another area with stained soil to the north of the large steel structure. These 2 areas ~~wear~~ were also sampled. Near the processing mill there are several cement holding ponds that contained liquid, at some of the liquid was water. These ponds could also pose a physical hazard if trespassers would fall into them. Trespassers could also be exposed to the chemical hazards on site by ingestion, dermal contact and inhalation exposure routes. Many ~~out~~ oil based chemicals are known

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to be dermal irritants and gastro-intestinal irritants. Additionally, the entire site is basically a tailings pile. Wind erosion can deposit respirable particles containing lead and zinc the primary ores mined for at this mill.

Ecological receptors can also be stressed ~~affected~~ by the chemicals on-site. Animals have been identified on-site. ~~by~~ The carcass of a wolf or coyote, and other animal prints were seen on the tailings pile, including deer prints, cattle prints and droppings, other prints which could not be identified. Many flying insects were seen at the wetlands tailings pond as well as some water fowl in the pond. One fox was seen in the adit pond water which is a teal color, likely due to the zinc in the water. No aquatic life was observed in the water columns of the tailings pond, adit pond, or the creek that flows through the site.

Jay McGrell

9/13/01. Upper Columbia River 01-02-0028
Arrived at North Smelter at 7:10.
START members Jay Marshall
Howard Zorge, Jeatta Dallhoff, &
Jessica ; EPA members Monica
Tonel Tara Karamas. Also the tribes
consultant Dan Hurst from Fulcrum.
Also the site owner Murray McConnachie
(250-368-5222) was also on site.
All of us walked the facility to
identify potential sampling
locations and surface water
pathways. At about 0900 Jeatta
Monica, Tara & Jessica as well
as the owner left the site. Howard
& Jay began to take samples.
~~ough~~ stayed on-site to observe
our methods of sampling.
~~asked~~ m stated that he thought
Monica was having a hard time
making a decision as to whether or
not the slag at the site had a
connection w/ the slag at the
River ~~west~~ of the site. ~~He~~ asked me
what I ~~thought~~ last because I had told
him I was a risk assessor from
Dallas. I just confirmed what
Monica Jeatta had told him
earlier that there needs to be a
~~discrete~~ connection between the
~~con~~ slag at the site and the river.
Also I said we could theorize
that the two were connected
but theory was not concrete enough.

01-02-0028 9/13/01 Upper Columbia River 01-02-0028

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to score a site. He proceeded to discuss that other smelters on the river upstream, were contributing to the contamination of the river w/ slag. Other discussions w/ him were concerning different types of sites we had worked on in our careers. Howard took the first sample @ 0925. Samples were collected using EPA Region 10 protocol & photo documented and lat/long were obtained. The first 3 samples were from the area where slag bricks had been laid. A on NSSL #1SS was taken on the southwestern portion of the slag brick area. This sample was not under a slag brick. It was mostly Rocky soil but pieces of slag were in the soil. Sample NSSL #2SS was collected in the middle of slag brick area. Howard & Jay used a pickaxe to dig out the slag bricks. Normal sampling protocol was then re-instated. Before using the axe to dig out the bricks Howard called the Seattle E&E (because Seattle could not be reached by cell phone) to get OK for the sampling protocol to be changed to use the axe. Amy Hatfield gave Howard the OK indicating that wiping down the axe between locations would be sufficient and that decon of the axe was not necessary.

9/13/01 Upper Columbia River a-02-0028
Sample NSSL03SS was taken on the north side of the slag brick area. There were numerous piles of cedar mulch on top of the slag brick. Other than the mulch debris was minimal in the slag brick area. ——— JM

1255 - Left Fitzsay - @ Approx. 0930 Don Hunt questioned Howard Zorzi with regards to Background & Exposure by E & E. He also asked if (Howard Zorzi) was aware that sample NSSL03SS was not in an area where slag bricks were located. Howard Zorzi stated that we did not want to move the sample location. Howard Zorzi suggest that he consult with the EPA and E & E PM.

Arrived at the Andros on Site at 1400. Collected background soil sample west of the site 260 ft west of the western most boundary of the facility.

Sample ID	
ANBK025S	1435

Brown color, organic material, fine, light no cobble

Both sample jars were placed in a zip lock bag and carried to the vehicle. Upon placement of the jars (in the bag) in the ground and of the jars (for metals) broke around the base of the jar. The break was clean and soil did not fall out of the jar. Using gloves, Howard Zorzi transferred the soil into a new jar. JM

ecology and environment, inc.

International Specialists in the Environment

Job Number

Upper Columbia River

Expanded Site Investigation

E & E Job Number _____

Telephone Code Number _____

Site Name Upper Columbia River

_____

City/State _____

TDD _____

PAN _____

SSID _____

Start / Finish Date June 29, 2001 / June 29, 2001

Book 1 of 1

E & E Emergency Response Center: (716) 684-8940
E & E Corporate Center: (716) 684-8060
MEDTOX Hotline: (501) 370-8263
E & E Safety Director (Home): (716) 655-1260

Monica Tonel

6/29/2001 9:55 A Lv Circle Motel, Metaline, WA for Northport Smelter

Friday aka LeRoi Smelter

clear day

61°F

~~6/29/2001~~ 11:25 A Arr beach area near Northport park

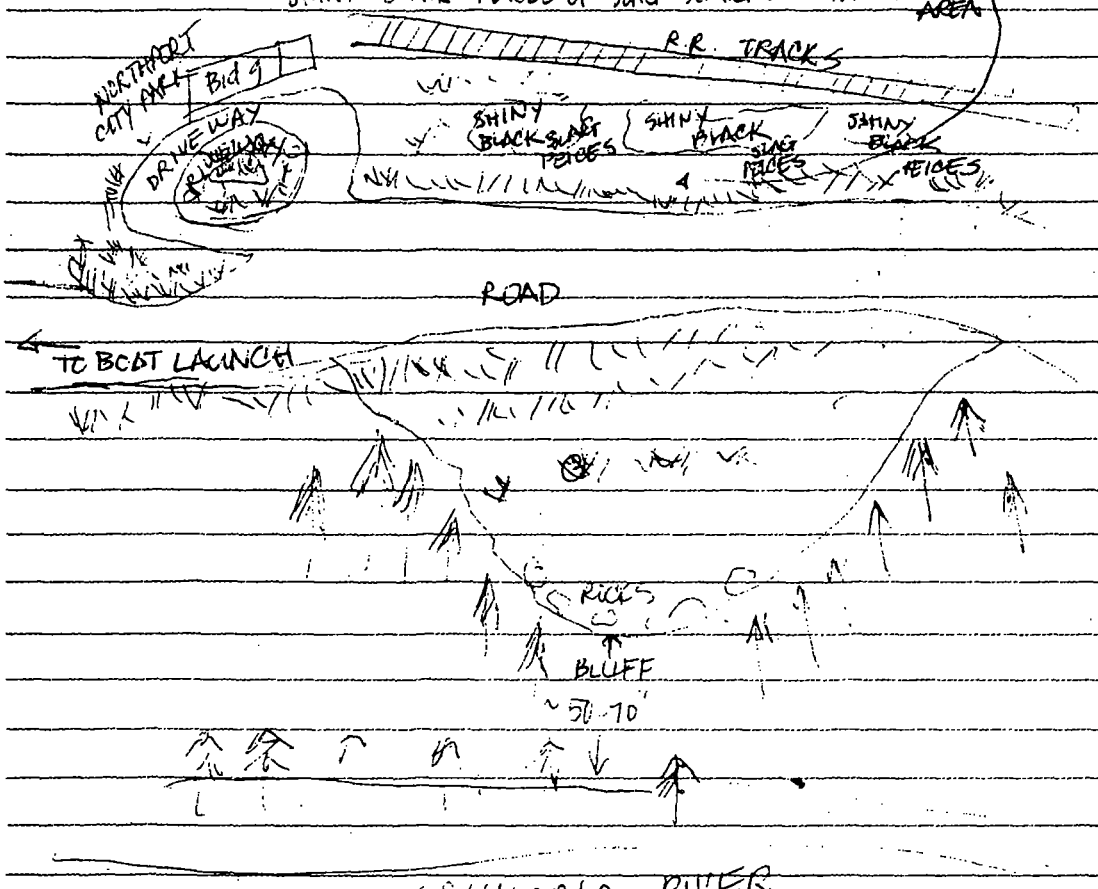
clear day others present: Charlie Gregory, E&E Geologist

upper 70's °F ~~walked down boat launch area to get up~~

low 80's °F ~~to bank MT~~

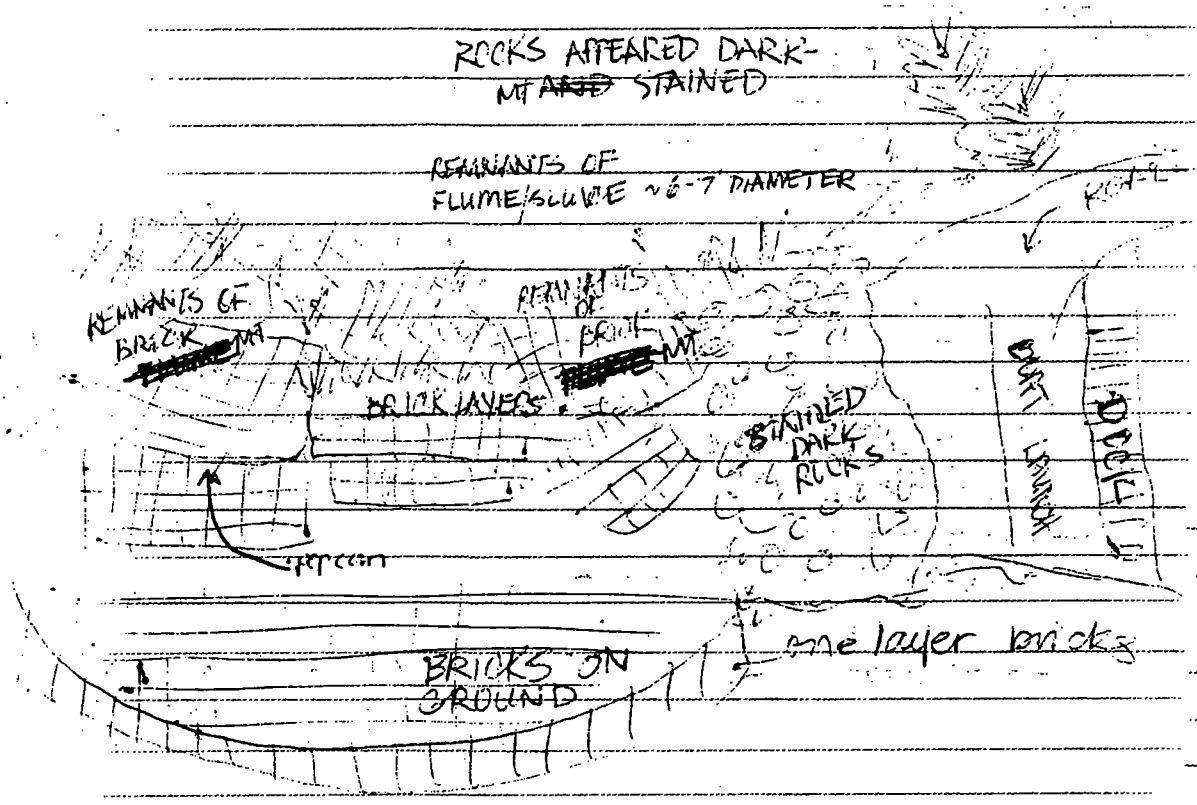
walked up to road that forks to City Park

SHINY BLACK PEICES OF SLAG SCATTERED THROUGHOUT GENERAL AREA



MT

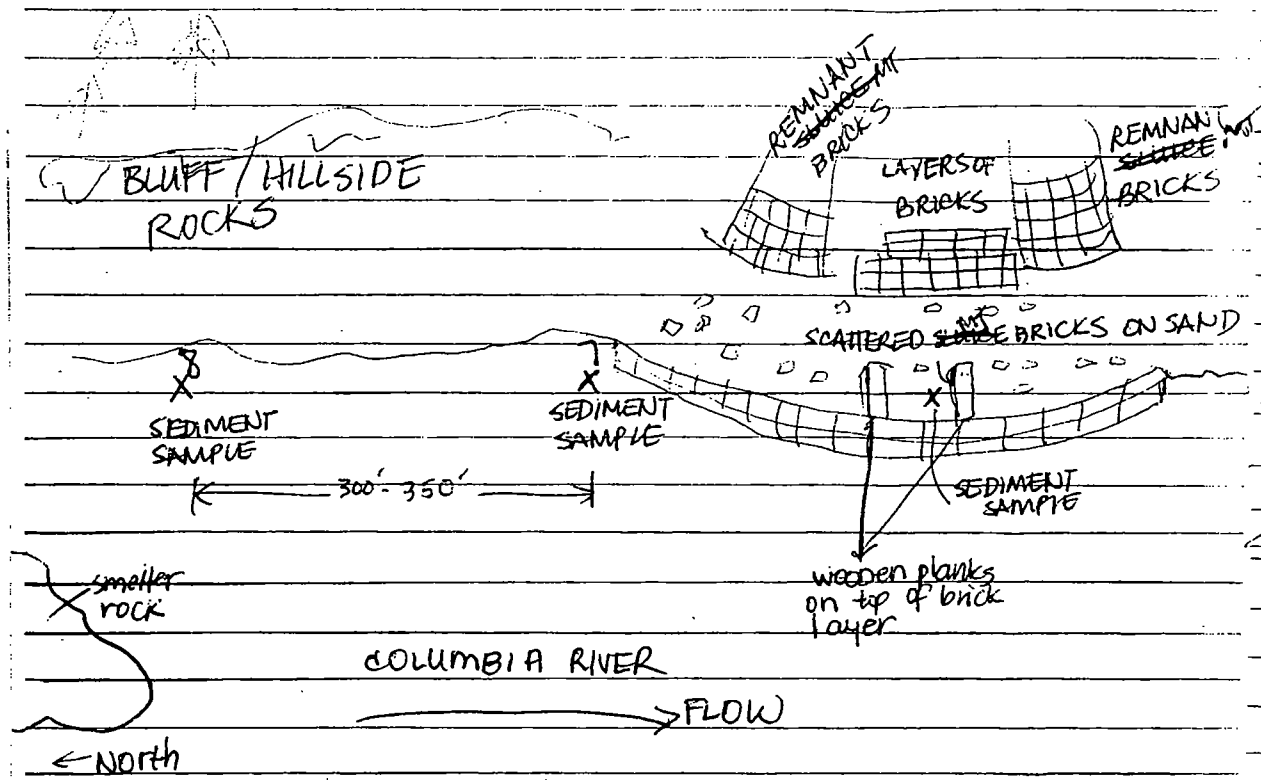
AT NEAR BOAT LAUNCH



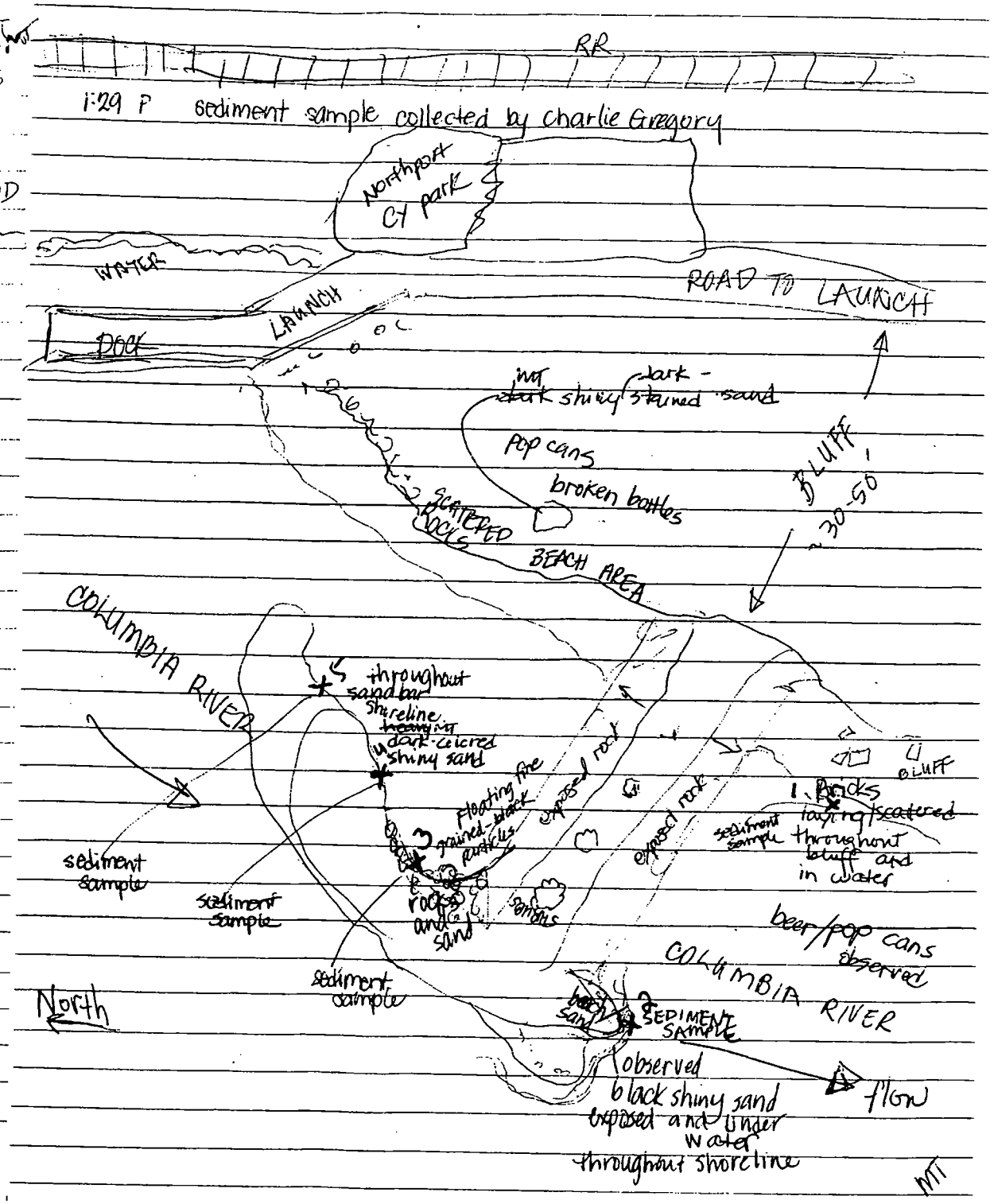
COLUMBIA RIVER → flow

← North

Observation: boat launch was being used numerous times


BLUFF / HILLSIDE ROCKS
REMNANT ~~SLURRY~~ BRICKS
LAYERS OF BRICKS
REMNANT ~~SLURRY~~ BRICKS
SCATTERED ~~SLURRY~~ BRICKS ON SAND
SEDIMENT SAMPLE
SEDIMENT SAMPLE
300'-350'
SEDIMENT SAMPLE
wooden planks on top of brick layer
smaller rock
COLUMBIA RIVER
FLOW
← North

4/29/2007


RR
1:29 P sediment sample collected by charlie Gregory
Northport City park
WATER
ROAD TO LAUNCH
DOCK
LAUNCH
~~dark~~ shiny dark-stained sand
pop cans
broken bottles
SCATTERED ROCKS
BEACH AREA
BLUFF
30-50'
COLUMBIA RIVER
throughout sandbar shoreline
~~heavy~~ dark-colored shiny sand
floating fine grained black particles
exposed rock
exposed rock
1. Rocks laying/~~scattered~~ throughout bluff and in water
sediment sample
sediment sample
sediment sample
rocks and sand
sediment sample
BLUFF
beer/pop cans observed
COLUMBIA RIVER
North
SEDIMENT SAMPLE
observed black shiny sand ~~exposed and~~ under water throughout shoreline
FLOW

[illegible]/[illegible]
[illegible] P

Spoke with Pat and Jim Smith of Evans, WA
in the process of getting boat out of launch
said goes fishing here all the time.
today caught one fish at Northport; border
stated concern about fish, i.e. sturgeon

Sheep Creek Mill site

a.k.a. Northport Mill

Site Visit

November 28, 2001

Monica Tonel, Site Assessment Manager
U.S. Environmental Protection Agency
1200 Sixth Ave (ECL-115)
Seattle, WA 98101
(206) 553-0323 ph

November 28, 2001
11:30 a.m.
Monica Tonel (EPA) and Cami Grandinetti (EPA) arrive at Northport / Sheep Creek Mill property. Temperature is about 28°F with 2 to 4 inches of snow on the ground.
We are met by Dan Dumaine (property representative) and Terry Pepper (property representative). Also present are Patti Stone (Colville Tribes) and Don Hurst (Colville Tribe consultant).
We proceed to the office where Mr. Dumaine and Mr. Pepper provide background information on mill operations.
According to Mr. Dumaine, Mountain Minerals bought the property in the late 1980s. The property occupies approximately 16 acres. They ran barite for barium sulfate. The process involved crushing and grinding at ball mills and flotation. The ore was taken to a plant where it was run through 2 grinding mills to a very fine sand. The barite was separated by flotation using flotation reagents. The material that did not float "process tailings" was discharged to the on site tailings pond via overhead piping. They stopped running the "barite process" in the early 1990s, most likely in 1991. Mountain Minerals purchased the property but was later

rolled into Highwood Resources. We walk to the adjacent property southward to Sheep Creek. The distance from the site to Sheep Creek is roughly 150 to 175 feet. Salvaged material/debris is observed scattered on the adjacent property. Two ASTs are observed on the adjacent property. Each about 20 feet in diameter and 20 feet long. Capacity of each tank is estimated at 8,000 to 10,000 gallons. Mr. Dumaine and Mr. Pepper believe both ASTs are empty. The two ASTs have no visible signs of corrosion, punctures, leaks or holes. We then walk back to Sheep Creek Mill property. Three 55-gal drums are observed at the Mill site. An opening is observed on the side of a drum. Soil-like material is observed through the opening. Mr. Dumaine said he sampled the drums in the Summer of 2001 for characterization purposes. The results are not yet available. A tailings pond is observed on the Mill site. A fence runs along the perimeter of the pond (fence is wire-type mesh). According to Terry Pepper, this pond is where tailings from the milling process were deposited via overhead piping. According to Terry Pepper, the pond is lined with a plastic liner and sandy material was placed in the pond to

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liner and sandy
in the pond to

hold down the plastic liner. Terry Pepper estimated the volume of solids at the bottom of the pond to be 150 feet x 80 feet x 2 feet. According to Dan Dumaine, he collected samples from the tailings pond in the Summer of 2001. Results are not yet available.

According to Terry Pepper, process water was also discharged into the tailings pond. Waste water underwent a recirculation system. An ore rock pile was observed in the vicinity of the tailings pond. The ore pile consists of large rocks that have not gone through the cbarite process.

In the warehouse / thickener room, several drums and containers were observed. Some containers were labelled caustic soda, promoter, pent float, potassium chloride, ammonium acetate, etc. The warehouse building has a roof and secured door.

We walk out of the warehouse/ thickener room to the west of the building. An unfinished pond was observed and does not appear to have been used.

We enter the process building where air flotation cells were observed. A chemical feeder is used for flotation process.

A dryer is also used in the process.
The product is pneumatically conveyed through an underground pipeline to a bag house.
We enter the assay lab where jars of chemicals were observed. Some oxidizers contained oxidizers, HCl acid, reagents and amperine.
No overland drainage routes were observed from the tailings pond to Sheep Creek.
No residents or potential targets/receptors were observed. No samples were collected during the site visit.
According to Terry Pepper and Dan Dumaine, the property owner plans to reclaim the site. The plant, including equipment will be dismantled. Barrels and chemical containers will be removed from the site. The property owner is seeking to reclaim the tailings pond.
I (Monica Tonel) agreed to provide Mr. Dumaine and Mr. Pepper with contacts at WA Dept of Ecology for follow-up of tailings pond abandonment and chemical container disposal/disposition.
1:45 pm EPA representatives and Tribal representatives leave the site.

Monica Tonel

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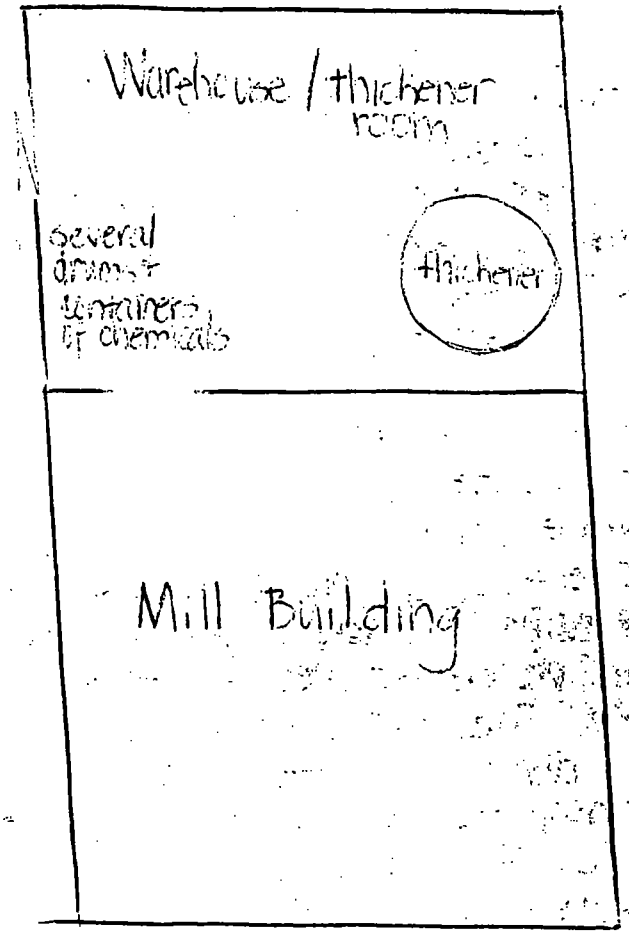
Monica Tonel



Monica Tonel

APPENDIX C

GLOBAL POSITIONING SYSTEM COORDINATES

Table C-1

GLOBAL POSITIONING SYSTEM DATA
UPPER COLUMBIA RIVER EXPANDED SITE INSPECTION
STEVENS COUNTY, WASHINGTON

ID	STATION	PDOP	DATE	TIME	HORZPREC	X-COORD	Y-COORD	LGDEG	LGMIN	LGSEC	LATDEG	LATMIN	LATSEC
3	BK04SS	4.4	20010628	10:32:31A	0.481	-117.539	48.882	-117	32	20.4	48	52	55.2
5	BK05SS	7.2	20010628	11:31:25A	0.995	-117.591	48.915	-117	35	27.6	48	54	54.0
6	MORNING M	8.4	20010628	12:26:34P	1.577	-118.018	48.865	-118	1	4.8	48	51	54.0
7	MAGMA MIN	7.2	20010628	01:15:35P	0.856	-117.715	48.864	-117	42	54.0	48	51	50.4
8	BK06SS	6.3	20010628	01:45:46P	0.649	-117.715	48.864	-117	42	54.0	48	51	50.4
10	LONE STAR	2.6	20010628	02:44:56P	0.411	-117.540	48.882	-117	32	24.0	48	52	55.2
11	BK07SS	3.6	20010628	03:05:17P	0.711	-117.704	48.864	-117	42	14.4	48	51	50.4
12	BK08SS	3.5	20010628	03:43:13P	0.624	-117.716	48.863	-117	42	57.6	48	51	46.8
14	IBEX	3	20010619	10:23:35A	0.410	-118.025	48.116	-118	1	30.0	48	6	57.6
15	IBEX	2.8	20010619	10:24:57A	0.383	-118.026	48.116	-118	1	33.6	48	6	57.6
16	BIGIRON	3	20010619	10:41:47A	0.428	-118.024	48.117	-118	1	26.4	48	7	1.2
17	HUBBARDD	4.1	20010619	01:04:06P	0.673	-117.546	48.964	-117	32	45.6	48	57	50.4
21	DCWP03SS	2.8	20010620	02:33:13P	0.362	-117.544	48.887	-117	32	38.4	48	53	13.2
23	DCTP01SS	4.3	20010620	02:36:54P	0.379	-117.351	48.888	-117	21	3.6	48	53	16.8
24	DCTP02SS	4.1	20010620	02:38:01P	0.365	-117.352	48.888	-117	21	7.2	48	53	16.8
25	DCTP03SS	3.3	20010620	02:38:44P	0.422	-117.544	48.888	-117	32	38.4	48	53	16.8
26	DCTP04SS	4.3	20010620	02:39:28P	0.467	-117.350	48.889	-117	21	0.0	48	53	20.4
27	DCTP05SS	4.1	20010620	02:39:56P	0.401	-117.544	48.887	-117	32	38.4	48	53	13.2
28	DCTP06SS	5.2	20010620	02:40:25P	0.582	-117.350	48.889	-117	21	0.0	48	53	20.4
29	DCTP07SS	3.8	20010620	02:41:22P	0.377	-117.350	48.889	-117	21	0.0	48	53	20.4
30	DCTP08SS	3.7	20010620	02:41:51P	0.468	-117.348	48.891	-117	20	52.8	48	53	27.6
31	DCTP09SS	3.3	20010620	02:42:26P	0.355	-117.352	48.892	-117	21	7.2	48	53	31.2
32	DCWP02	2.9	20010620	02:43:46P	0.342	-117.350	48.893	-117	21	0.0	48	53	34.8
33	DCWP05SS	2.9	20010620	02:45:57P	0.345	-117.350	48.895	-117	21	0.0	48	53	42.0
34	DCWP06SS	2.9	20010620	02:46:24P	0.348	-117.348	48.897	-117	20	52.8	48	53	49.2
35	DCWP07SS	2.9	20010620	02:46:56P	0.337	-117.373	48.901	-117	22	22.8	48	54	3.6
36	DCWP05SS	2.8	20010620	02:49:48P	0.353	-117.587	48.916	-117	35	13.2	48	54	57.6
37	DCWP06SS	3.2	20010620	02:50:26P	0.395	-117.589	48.916	-117	35	20.4	48	54	57.6
38	DCWP07SS	3.7	20010620	02:51:10P	0.753	-117.592	48.916	-117	35	31.2	48	54	57.6
39	DCTP14SS	3.7	20010620	02:52:41P	0.495	-117.592	48.916	-117	35	31.2	48	54	57.6
40	DCTP15SS	4.1	20010620	02:54:05P	0.546	-117.586	48.917	-117	35	9.6	48	55	1.2
41	DCTP16SS	3.7	20010620	02:55:32P	0.655	-117.586	48.917	-117	35	9.6	48	55	1.2
43	DCPP01SW	4.2	20010620	03:32:49P	0.567	-117.349	48.888	-117	20	56.4	48	53	16.8
47	SZTP03	2.2	20010621	11:39:55A	0.379	-117.699	48.868	-117	41	56.4	48	52	4.8
48	SZTP13SS	5.3	20010621	12:53:52P	0.652	-118.018	48.865	-118	1	4.8	48	51	54.0
49	SZTP14SS	5.3	20010621	12:54:20P	0.743	-118.022	48.865	-118	1	19.2	48	51	54.0

Table C-1

GLOBAL POSITIONING SYSTEM DATA
UPPER COLUMBIA RIVER EXPANDED SITE INSPECTION
STEVENS COUNTY, WASHINGTON

ID	STATION	PDOP	DATE	TIME	HORZPREC	X-COORD	Y-COORD	LGDEG	LGMIN	LGSEC	LATDEG	LATMIN	LATSEC
50	SZTP15SS	5.3	20010621	12:54:46P	0.698	-117.357	48.866	-117	21	25.2	48	51	57.6
51	SZTP16SS	5.3	20010621	12:55:10P	0.772	-117.374	48.866	-117	22	26.4	48	51	57.6
52	SZTP17SSS	5.3	20010621	12:55:34P	0.724	-118.020	48.868	-118	1	12.0	48	52	4.8
55	SZTP20SS	3.8	20010621	12:56:48P	0.676	-118.020	48.868	-118	1	12.0	48	52	4.8
56	SZTP21SS	3.4	20010621	12:57:04P	0.663	-117.368	48.868	-117	22	4.8	48	52	4.8
57	SDAD01	4.5	20010621	03:14:51P	0.883	-117.362	48.882	-117	21	43.2	48	52	55.2
58	SZWP01SS	4.7	20010621	03:18:36P	0.706	-118.022	48.869	-118	1	19.2	48	52	8.4
59	SZWP02SS	4.7	20010621	03:19:03P	0.709	-118.023	48.869	-118	1	22.8	48	52	8.4
60	SZWP03SS	3.2	20010621	03:19:31P	0.671	-118.023	48.869	-118	1	22.8	48	52	8.4
61	SZWP04SS	4.7	20010621	03:20:43P	0.701	-117.367	48.870	-117	22	1.2	48	52	12.0
62	SZWP05SS	3.2	20010621	03:21:07P	0.681	-117.367	48.870	-117	22	1.2	48	52	12.0
63	SZWP06SS	3.2	20010621	03:21:25P	0.681	-117.708	48.870	-117	42	28.8	48	52	12.0
64	SZWP07SS	5.2	20010621	03:21:47P	0.802	-117.708	48.870	-117	42	28.8	48	52	12.0
65	SZWP08SS	4.6	20010621	03:22:08P	0.669	-117.376	48.876	-117	22	33.6	48	52	33.6
66	SZWP09SS	4.6	20010621	03:22:34P	0.608	-117.371	48.877	-117	22	15.6	48	52	37.2
67	SZWP10SS	3.6	20010621	03:22:55P	0.528	-117.369	48.878	-117	22	8.4	48	52	40.8
68	SZWP11SS	3.9	20010621	03:23:15P	0.574	-117.370	48.878	-117	22	12.0	48	52	40.8
69	SZWP12SS	3.8	20010621	03:23:30P	0.511	-117.351	48.881	-117	21	3.6	48	52	51.6
70	SZMA01SS	4.6	20010621	03:25:24P	0.892	-117.350	48.882	-117	21	0.0	48	52	55.2
71	VSTP01SS	2	20010622	12:14:47P	0.339	-117.330	48.957	-117	19	48.0	48	57	25.2
72	VSPP01SD	4.1	20010622	12:46:59P	0.722	-117.549	48.955	-117	32	56.4	48	57	18.0
76	VSTP03SS	3	20010622	03:23:00P	0.349	-117.559	48.958	-117	33	32.4	48	57	28.8
81	VSTP08SS	3.5	20010622	04:03:50P	0.604	-117.570	48.959	-117	34	12.0	48	57	32.4
82	VSTP09SS	3.2	20010622	04:04:49P	0.565	-117.331	48.960	-117	19	51.6	48	57	36.0
83	VSSS01SS	3.2	20010623	09:41:01A	0.547	-117.771	48.921	-117	46	15.6	48	55	15.6
84	VSSS02SS	3.6	20010623	09:42:57A	0.509	-117.866	48.921	-117	51	57.6	48	55	15.6
85	VSS03SS	3.3	20010623	10:02:35A	0.485	-117.771	48.920	-117	46	15.6	48	55	12.0
86	VSSS04SS	2.1	20010623	10:39:13A	0.285	-117.770	48.922	-117	46	12.0	48	55	19.2
87	VSSS05SS	2.3	20010623	10:40:00A	0.342	-117.771	48.922	-117	46	15.6	48	55	19.2
88	VSSS06SS	3.9	20010623	11:02:12A	0.357	-117.590	48.920	-117	35	24.0	48	55	12.0
89	VSSS07SS	4.6	20010623	11:05:24A	0.402	-117.771	48.920	-117	46	15.6	48	55	12.0
90	VSTP10SS	5.5	20010623	02:35:08P	0.984	-117.557	48.947	-117	33	25.2	48	56	49.2
91	VSTP11SS	3.1	20010623	02:35:55P	0.358	-117.564	48.949	-117	33	50.4	48	56	56.4
92	VSTP12SS	3.2	20010623	02:36:41P	0.350	-117.360	48.950	-117	21	36.0	48	57	0.0
93	VSTP15SS	3.8	20010623	02:38:01P	0.467	-117.541	48.952	-117	32	27.6	48	57	7.2
94	VSTP18SS	3.5	20010623	02:39:38P	0.382	-117.555	48.950	-117	33	18.0	48	57	0.0

Table C-1

GLOBAL POSITIONING SYSTEM DATA
UPPER COLUMBIA RIVER EXPANDED SITE INSPECTION
STEVENS COUNTY, WASHINGTON

ID	STATION	PDOP	DATE	TIME	HORZPREC	X-COORD	Y-COORD	LGDEG	LGMIN	LGSEC	LATDEG	LATMIN	LATSEC
99	BG01SS	4.8	20010624	08:03:27A	0.471	-117.446	48.993	-117	26	45.6	48	59	34.8
100	ANTELOPE	4.2	20010624	09:58:24A	0.566	-118.029	48.117	-118	1	44.4	48	7	1.2
102	HOMESTAKE	5.5	20010624	11:00:55A	0.459	-117.721	48.255	-117	43	15.6	48	15	18.0
103	HOMESTAKE	3.2	20010624	11:07:19A	0.413	-118.023	48.118	-118	1	22.8	48	7	4.8
104	LOTTIE2	2.3	20010624	11:40:50A	0.370	-117.718	48.252	-117	43	4.8	48	15	7.2
105	MINORCA	5.8	20010624	12:53:30P	0.845	-117.843	48.349	-117	50	34.8	48	20	56.4
106	HOPE TWIN	3.6	20010624	03:20:08P	0.474	-117.837	48.348	-117	50	13.2	48	20	52.8
107	HUBBARD	4.2	20010624	04:57:45P	0.563	-117.188	48.989	-117	11	16.8	48	59	20.4
1	JM01	3.4	20010625	03:12:55P	0.619	-117.704	48.864	-117	42	14.4	48	51	50.4
22	CMTP01	2.3	20010618	12:09:42P	0.400	-117.721	48.259	-117	43	15.6	48	15	32.4
25	CMWP01	5.7	20010618	01:47:58P	0.704	-117.837	48.349	-117	50	13.2	48	20	56.4
28	UN01	3.3	20010619	02:52:14P	0.376	-117.407	48.847	-117	24	25.2	48	50	49.2
30	LA01	5.6	20010619	05:18:04P	0.424	-117.716	48.861	-117	42	57.6	48	51	39.6
31	AC01	7	20010620	09:25:36A	0.167	-117.344	48.986	-117	20	38.4	48	59	9.6
35	RJ01	3.6	20010620	04:03:40P	0.625	-117.453	48.990	-117	27	10.8	48	59	24.0
38	LU01	3.2	20010622	11:28:54A	0.462	-117.716	48.863	-117	42	57.6	48	51	46.8
42	AD01	6.9	20010622	12:12:48P	1.369	-117.704	48.864	-117	42	14.4	48	51	50.4
44	ARAD02SW	4.2	20010622	02:24:34P	0.471	-117.420	48.854	-117	25	12.0	48	51	14.4
45	IRWP01SS	3.5	20010622	02:40:55P	0.442	-117.624	48.850	-117	37	26.4	48	51	0.0
46	IRWP01SS	3	20010622	02:53:26P	0.516	-117.621	48.858	-117	37	15.6	48	51	28.8
47	VSSP01SW	4.5	20010623	10:47:40A	0.373	-117.771	48.920	-117	46	15.6	48	55	12.0
52	VSPP06SD	6.5	20010623	01:51:28P	0.561	-117.540	48.952	-117	32	24.0	48	57	7.2
53	VSPPBC01	3.5	20010623	03:02:05P	0.587	-117.773	48.922	-117	46	22.8	48	55	19.2
21	CMBK01	2.8	20010618	11:45:42A	0.420	-117.721	48.258	-117	43	15.6	48	15	28.8
23	CMTP02	2	20010618	12:22:53P	0.341	-117.715	48.261	-117	42	54.0	48	15	39.6
24	CMTP03	3.4	20010618	01:08:43P	0.677	-118.083	48.328	-118	4	58.8	48	19	40.8
26	FSWP01	3.3	20010619	12:10:41P	0.398	-117.406	48.847	-117	24	21.6	48	50	49.2
27	MYWP01	4.1	20010619	02:23:00P	0.486	-117.407	48.847	-117	24	25.2	48	50	49.2
1	TEST	4.6	20010618	07:50:33A	0.883	-117.181	48.994	-117	10	51.6	48	59	38.4
4	COPPER KI	2.8	20010618	02:32:49P	0.364	-117.716	48.863	-117	42	57.6	48	51	46.8
5	RDWR01SS	3.7	20010618	03:47:57P	0.531	-117.369	48.864	-117	22	8.4	48	51	50.4
6	RDWR02SS	2.3	20010618	03:54:31P	0.462	-117.701	48.864	-117	42	3.6	48	51	50.4
7	RDWR03SS	4.2	20010618	04:01:27P	0.489	-117.701	48.864	-117	42	3.6	48	51	50.4
8	FARMERS M	5.2	20010619	09:40:40A	0.813	-117.715	48.864	-117	42	54.0	48	51	50.4
12	CKWR02SS	4.1	20010619	02:21:04P	0.732	-117.715	48.864	-117	42	54.0	48	51	50.4
15	CKPP04SD	3	20010619	03:04:54P	0.512	-117.716	48.864	-117	42	57.6	48	51	50.4

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UPPER COLUMBIA RIVER EXPANDED SITE INSPECTION
STEVENS COUNTY, WASHINGTON

ID	STATION	PDOP	DATE	TIME	HORZPREC	X-COORD	Y-COORD	LGDEG	LGMIN	LGSEC	LATDEG	LATMIN	LATSEC
16	BRWR01SS	4.6	20010619	05:14:52P	0.548	-117.349	48.887	-117	20	56.4	48	53	13.2
18	BRWR03SS	6.2	20010619	05:28:19P	0.583	-117.544	48.887	-117	32	38.4	48	53	13.2
22	LCMS01SS	5.2	20010620	10:01:48A	0.729	-118.028	48.886	-118	1	40.8	48	53	9.6
23	LCMS02SS	3.3	20010620	10:13:17A	0.518	-117.359	48.886	-117	21	32.4	48	53	9.6
25	LCPP04SD	3.9	20010620	10:35:06A	0.433	-117.909	48.886	-117	54	32.4	48	53	9.6
26	LCTP05SS	4.6	20010620	11:18:45A	0.817	-117.541	48.883	-117	32	27.6	48	52	58.8
27	LCTP06SS	9.8	20010620	11:20:19A	0.837	-117.541	48.883	-117	32	27.6	48	52	58.8
29	LCAD08SW	5.6	20010620	01:12:53P	0.868	-117.540	48.882	-117	32	24.0	48	52	55.2
30	LCPP09SD	7.7	20010620	01:23:42P	0.828	-117.351	48.883	-117	21	3.6	48	52	58.8
31	LCWR10SS	9.5	20010620	01:50:11P	0.493	-117.367	48.883	-117	22	1.2	48	52	58.8
32	LCWR11SS	3.2	20010620	02:01:32P	0.388	-117.368	48.883	-117	22	4.8	48	52	58.8
33	LCWR12SS	6	20010620	02:12:47P	1.182	-117.368	48.883	-117	22	4.8	48	52	58.8
34	GWWR01SS	9.9	20010621	11:15:52A	0.561	-117.540	48.882	-117	32	24.0	48	52	55.2
36	TYEE MINE	5.3	20010621	12:47:18P	0.639	-117.715	48.864	-117	42	54.0	48	51	50.4
37	GLTP02SS	3.5	20010621	04:11:17P	0.632	-117.413	48.860	-117	24	46.8	48	51	36.0
38	GLTP03SS	9.9	20010621	04:18:23P	0.923	-117.414	48.860	-117	24	50.4	48	51	36.0
39	GLMS04SS	4.3	20010621	04:28:13P	0.653	-117.416	48.860	-117	24	57.6	48	51	36.0
41	GLMS06SS	7	20010621	04:43:58P	0.634	-117.716	48.861	-117	42	57.6	48	51	39.6
43	EPWR01SS	9.6	20010622	12:38:02P	1.644	-118.034	48.859	-118	2	2.4	48	51	32.4
44	EPWR02SS	3.2	20010622	12:42:03P	0.608	-117.413	48.860	-117	24	46.8	48	51	36.0
46	EPMS04SS	5.5	20010622	12:56:53P	0.711	-117.417	48.852	-117	25	1.2	48	51	7.2
50	EPWR08SS	3.4	20010622	02:15:45P	0.384	-117.417	48.852	-117	25	1.2	48	51	7.2
51	EPTP09SS	5.1	20010622	02:25:22P	0.416	-117.386	48.853	-117	23	9.6	48	51	10.8
52	EPTP10SS	7.2	20010622	02:30:35P	0.381	-117.406	48.848	-117	24	21.6	48	50	52.8
55	VSWR01SS	3.4	20010623	10:28:19A	0.294	-117.592	48.919	-117	35	31.2	48	55	8.4
57	VSWR03SS	5	20010623	11:45:09A	0.365	-117.590	48.919	-117	35	24.0	48	55	8.4
62	VSWR08SS	3.2	20010623	02:13:44P	0.341	-117.770	48.921	-117	46	12.0	48	55	15.6
64	VSWR10SS	6.8	20010623	03:03:43P	0.353	-117.771	48.922	-117	46	15.6	48	55	19.2
65	VSWR11SS	2.5	20010623	03:23:45P	0.489	-117.772	48.922	-117	46	19.2	48	55	19.2
89	NSSL01SD	2.4	20010629	01:38:43P	0.299	-117.565	48.943	-117	33	54.0	48	56	34.8
90	NSSL02SD	1.9	20010629	02:37:00P	0.330	-117.565	48.943	-117	33	54.0	48	56	34.8
91	NSSL03SD	1.6	20010629	02:38:17P	0.269	-117.843	48.945	-117	50	34.8	48	56	42.0
92	NSSL04SD	1.6	20010629	02:38:58P	0.269	-117.785	48.942	-117	47	6.0	48	56	31.2
93	NSSL05SD	1.6	20010629	02:39:36P	0.270	-117.565	48.943	-117	33	54.0	48	56	34.8
94	NSSL06SD	4.2	20010629	03:55:45P	0.630	-117.772	48.923	-117	46	19.2	48	55	22.8
95	NSSL07SD	4.2	20010629	03:56:19P	0.633	-117.329	48.924	-117	19	44.4	48	55	26.4

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UPPER COLUMBIA RIVER EXPANDED SITE INSPECTION
STEVENS COUNTY, WASHINGTON

ID	STATION	PDOP	DATE	TIME	HORZPREC	X-COORD	Y-COORD	LGDEG	LGMIN	LGSEC	LATDEG	LATMIN	LATSEC
96	NSSL08SD	4.3	20010629	03:57:04P	0.633	-117.341	48.924	-117	20	27.6	48	55	26.4
97	NSSL09SD	4.1	20010629	04:27:10P	0.565	-117.773	48.922	-117	46	22.8	48	55	19.2
1	LB01DT	2.6	20010910	02:16:57P	0.408	-117.592	48.917	-117	35	31.2	48	55	1.2
2	LBDT02	2.9	20010910	02:53:54P	0.456	-117.592	48.917	-117	35	31.2	48	55	1.2
3	LBDT03	3.1	20010910	03:24:10P	0.502	-117.586	48.918	-117	35	9.6	48	55	4.8
4	LBBK01	2.4	20010910	04:23:41P	0.530	-117.589	48.917	-117	35	20.4	48	55	1.2
5	NAPP01	2	20010910	05:16:17P	0.322	-117.333	48.963	-117	19	58.8	48	57	46.8
6	NADT01SD2	2.1	20010910	05:45:27P	0.310	-117.197	48.971	-117	11	49.2	48	58	15.6
8	NABK01SD	1.9	20010910	06:39:55P	0.324	-117.331	48.979	-117	19	51.6	48	58	44.4
9	NABK02SD	2.6	20010911	08:08:24A	0.373	-117.369	48.963	-117	22	8.4	48	57	46.8
10	LBPP01SD	2.3	20010911	09:22:17A	0.352	-117.593	48.918	-117	35	34.8	48	55	4.8
11	LBBK02SD	3.7	20010911	10:04:46A	0.357	-117.670	48.901	-117	40	12.0	48	54	3.6
12	ST.CRISP1	4	20010913	10:53:14A	0.555	-117.541	48.952	-117	32	27.6	48	57	7.2
13	NSDT01SD	5	20010913	12:05:23P	0.475	-117.773	48.922	-117	46	22.8	48	55	19.2
14	NSPP01SD	2.5	20010913	12:27:39P	0.509	-117.577	48.925	-117	34	37.2	48	55	30.0
15	NSBK01SD	4.3	20010913	12:57:16P	0.615	-117.342	48.926	-117	20	31.2	48	55	33.6
1	DTPP01SS	4	20010910	03:49:41P	0.557	-118.085	48.373	-118	5	6.0	48	22	22.8
2	DTAD02SW	3	20010910	04:29:12P	0.435	-118.084	48.373	-118	5	2.4	48	22	22.8
3	DTBK03SS	9.7	20010910	04:46:38P	1.782	-118.084	48.373	-118	5	2.4	48	22	22.8
4	DTTP04	5.3	20010910	05:14:07P	0.978	-118.084	48.373	-118	5	2.4	48	22	22.8
5	DTTP05	3.3	20010910	05:15:32P	0.444	-118.084	48.373	-118	5	2.4	48	22	22.8
6	DTTP06	4.3	20010910	06:16:46P	0.599	-118.085	48.373	-118	5	6.0	48	22	22.8
8	SQAD	5.8	20010911	11:58:50A	0.594	-118.116	48.549	-118	6	57.6	48	32	56.4
9	ANAD01SW	4.4	20010911	03:30:21P	0.584	-117.715	48.864	-117	42	54.0	48	51	50.4
10	ANSS01SS	3	20010912	09:44:14A	0.611	-117.715	48.864	-117	42	54.0	48	51	50.4
11	ANSS02SS	4.1	20010912	09:54:17A	0.503	-117.715	48.864	-117	42	54.0	48	51	50.4
12	ANTP01SS	3.5	20010912	10:17:23A	0.530	-117.706	48.864	-117	42	21.6	48	51	50.4
13	ANTP02SS	2.8	20010912	10:25:10A	0.496	-117.706	48.864	-117	42	21.6	48	51	50.4
14	ANTP01SSB	3.6	20010912	10:46:22A	0.566	-117.707	48.864	-117	42	25.2	48	51	50.4
15	ANTP03SS	4	20010912	10:57:28A	0.564	-117.707	48.864	-117	42	25.2	48	51	50.4
16	ANTP04SD	4.2	20010912	11:09:27A	0.530	-117.707	48.864	-117	42	25.2	48	51	50.4
17	ANTP05SD	2.6	20010912	11:23:56A	0.455	-117.714	48.864	-117	42	50.4	48	51	50.4
19	ANBK01SD	4.6	20010912	12:12:35P	0.538	-117.714	48.864	-117	42	50.4	48	51	50.4
20	ANSS03SS	4.1	20010912	01:07:57P	0.658	-117.715	48.864	-117	42	54.0	48	51	50.4
21	ANSS04SS	3.9	20010912	01:10:34P	0.593	-117.715	48.864	-117	42	54.0	48	51	50.4
22	ANCK01SD	3.1	20010912	02:11:58P	0.510	-117.715	48.864	-117	42	54.0	48	51	50.4

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UPPER COLUMBIA RIVER EXPANDED SITE INSPECTION
STEVENS COUNTY, WASHINGTON

ID	STATION	PDOP	DATE	TIME	HORZPREC	X-COORD	Y-COORD	LGDEG	LGMIN	LGSEC	LATDEG	LATMIN	LATSEC
23	ANPP01SD	4.3	20010912	03:14:02P	0.606	-117.714	48.864	-117	42	50.4	48	51	50.4
25	NSSL02SS	4	20010913	10:55:14A	0.565	-117.332	48.930	-117	19	55.2	48	55	48.0
26	NSSL03SS	4	20010913	11:25:20A	0.399	-117.355	48.938	-117	21	18.0	48	56	16.8
27	ANBK02SS	3	20010913	02:54:22P	0.451	-117.715	48.864	-117	42	54.0	48	51	50.4
28	DT01	5.6	20010910	10:07:03A	0.371	-117.843	48.349	-117	50	34.8	48	20	56.4

APPENDIX D

DATA QUALITY ASSURANCE REVIEW MEMORANDUMS AND ANALYTICAL DATA FORMS

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: July 30, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt/Mines Sites. Case: 29440 SDG: MJ0EW6

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1113
TDN: 1048
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 20 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0EW6	MJ0EX1	MJ0EX7	MJ0EY2
MJ0EW7	MJ0EX3	MJ0EX8	MJ0EY3
MJ0EW8	MJ0EX4	MJ0EX9	MJ0EY4
MJ0EW9	MJ0EX5	MJ0EY0	MJ0EY5
MJ0EX0	MJ0EX6	MJ0EY1	MJ0EY6

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/22 and 6/23/01. The samples were analyzed for mercury within 20 days and all other metals within 22 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury with the exception of CCV4 which had a recovery of 115% for lead. The high recovery for lead was the result of carry-over from a high level sample analyzed just prior to CCV4. None of the sample results were affected. All other recoveries ranged from 92-109% for ICP-AES and from 88-109% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
arsenic	MJ0EW6, MJ0EW8, MJ0EX1, MJ0EX3, MJ0EX4, MJ0EX5, MJ0EX6, MJ0EX7, MJ0EY0, MJ0EY5, MJ0EY6
antimony	MJ0EW6, MJ0EW7, MJ0EW9, MJ0EX0, MJ0EX1, MJ0EX3
sodium	MJ0EW6

thallium	MJ0EW6

Lead in CCB4 was detected above the CRDL. The high recovery for lead was the result of carry-over from a high level sample analyzed prior to CCV4 and CCB4. None of the sample results were affected.

Antimony was further qualified on the basis of matrix spike analysis.

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met by all of the ICS analyzed. The recoveries ranged from 89-116%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0EX3 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of copper. Results for copper in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 61-120%. None of the data were qualified on this basis.

Duplicate Sample Analysis - Acceptable

Sample MJ0EX3 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria for all target analytes. None of the data were qualified on this basis.

Matrix Spike Analysis

Sample MJ0EX3 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of antimony (46%) and selenium (129%) in the spike sample MJ0EX3S. Due to possible bias, the detected and non-detected antimony results in all samples were qualified as estimated, "J/UJ". Due to possible bias, the detected selenium results in all samples were qualified as estimated, "J". The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. The recoveries for lead and zinc could not be accurately determined because the concentrations native to the sample were greater than 4 times the amount of spike added to the sample. All of the other spike recoveries were acceptable and ranged from 84-109%.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 460. Nineteen (4.1%) were qualified as non-detected due to blank contamination. Forty one (8.9%) were qualified as estimated due to ICP serial dilution and spike analyses.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

ICP ID Number: P3 Date: 07/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead	220.30		3	1.0	P
Magnesium			5000		NR
Manganese			15		NR
Mercury			0.2		NR
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc	206.20		20	3.6	P
Cyanide			10		NR

Comments:
P3: THERMO JARRELL ASH

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	07/06/01	1.00	200
MJ0EW6	07/06/01	1.00	200
MJ0EW7	07/06/01	1.00	200
MJ0EW8	07/06/01	1.00	200
MJ0EW9	07/06/01	1.00	200
MJ0EX0	07/06/01	1.00	200
MJ0EX1	07/06/01	1.00	200
MJ0EX3	07/06/01	1.00	200
MJ0EX3D	07/06/01	1.00	200
MJ0EX3S	07/06/01	1.00	200
MJ0EX4	07/06/01	1.00	200
MJ0EX5	07/06/01	1.01	200
MJ0EX6	07/06/01	1.02	200
MJ0EX7	07/06/01	1.00	200
MJ0EX8	07/06/01	1.01	200
MJ0EX9	07/06/01	1.00	200
MJ0EY0	07/06/01	1.00	200
MJ0EY1	07/06/01	1.01	200
MJ0EY2	07/06/01	1.02	200
MJ0EY3	07/06/01	1.02	200
MJ0EY4	07/06/01	1.02	200
MJ0EY5	07/06/01	1.01	200
MJ0EY6	07/06/01	1.00	200
PBS	07/06/01	1.00	200

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	07/12/01	0.20	100
MJ0EW6	07/12/01	0.20	100
MJ0EW7	07/12/01	0.20	100
MJ0EW8	07/12/01	0.20	100
MJ0EW9	07/12/01	0.20	100
MJ0EX0	07/12/01	0.20	100
MJ0EX1	07/12/01	0.20	100
MJ0EX3	07/12/01	0.20	100
MJ0EX3D	07/12/01	0.20	100
MJ0EX3S	07/12/01	0.20	100
MJ0EX4	07/12/01	0.20	100
MJ0EX5	07/12/01	0.20	100
MJ0EX6	07/12/01	0.20	100
MJ0EX7	07/12/01	0.20	100
MJ0EX8	07/12/01	0.20	100
MJ0EX9	07/12/01	0.20	100
MJ0EY0	07/12/01	0.22	100
MJ0EY1	07/12/01	0.21	100
MJ0EY2	07/12/01	0.20	100
MJ0EY3	07/12/01	0.21	100
MJ0EY4	07/12/01	0.20	100
MJ0EY5	07/12/01	0.21	100
MJ0EY6	07/12/01	0.21	100
PBS	07/12/01	0.20	100

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EW6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39192S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 92.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	148			P
7440-36-0	Antimony	1.2	B	~~N~~ UJK	P
7440-38-2	Arsenic	4.2		U	P
7440-39-3	Barium	73.1			P
7440-41-7	Beryllium	0.04	U		P
7440-43-9	Cadmium	8.6			P
7440-70-2	Calcium	134000			P
7440-47-3	Chromium	8.7			P
7440-48-4	Cobalt	0.24	U		P
7440-50-8	Copper	76.2		~~E~~ JL	P
7439-89-6	Iron	4950			P
7439-92-1	Lead	4710			P
7439-95-4	Magnesium	81600			P
7439-96-5	Manganese	135			P
7439-97-6	Mercury	0.09	B		CV
7440-02-0	Nickel	2.6	B		P
7440-09-7	Potassium	123	B		P
7782-49-2	Selenium	0.73	U	~~N~~	P
7440-22-4	Silver	0.36	B		P
7440-23-5	Sodium	186	B	U	P
7440-28-0	Thallium	0.91	B	U	P
7440-62-2	Vanadium	1.9	B		P
7440-66-6	Zinc	2430			P
	Cyanide				NR

CR 7-30-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EW7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39193S

Level (low/med): LOW Date Received: 06/29/01

% 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	1140			P
7440-36-0	Antimony	0.94	B	~~N~~UJK	P
7440-38-2	Arsenic	9.2			P
7440-39-3	Barium	41.0	B		P
7440-41-7	Beryllium	0.05	U		P
7440-43-9	Cadmium	6.0			P
7440-70-2	Calcium	99300			P
7440-47-3	Chromium	1.5	B		P
7440-48-4	Cobalt	0.30	U		P
7440-50-8	Copper	23.0		~~E~~JL	P
7439-89-6	Iron	4460			P
7439-92-1	Lead	466			P
7439-95-4	Magnesium	56100			P
7439-96-5	Manganese	95.7			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	1.7	B		P
7440-09-7	Potassium	265	B		P
7782-49-2	Selenium	0.93	U	~~N~~	P
7440-22-4	Silver	0.22	U		P
7440-23-5	Sodium	313	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	4.4	B		P
7440-66-6	Zinc	1960			P
	Cyanide				NR

CP 7-30-01

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EW8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39194S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 83.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2010			P
7440-36-0	Antimony	0.72	U	~~N~~UJK	P
7440-38-2	Arsenic	2.1	B	U	P
7440-39-3	Barium	27.8	B		P
7440-41-7	Beryllium	0.06	B		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	1030	B		P
7440-47-3	Chromium	1.7	B		P
7440-48-4	Cobalt	0.71	B		P
7440-50-8	Copper	1.5	B	~~E~~ JL	P
7439-89-6	Iron	3710			P
7439-92-1	Lead	2.2			P
7439-95-4	Magnesium	709	B		P
7439-96-5	Manganese	192			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	1.0	B		P
7440-09-7	Potassium	485	B		P
7782-49-2	Selenium	0.82	U	~~N~~	P
7440-22-4	Silver	0.19	U		P
7440-23-5	Sodium	249	B		P
7440-28-0	Thallium	0.94	U		P
7440-62-2	Vanadium	6.6	B		P
7440-66-6	Zinc	13.0			P
	Cyanide				NR

CP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EW9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39195S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 89.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3580			P
7440-36-0	Antimony	1.1	B	~~N~~UJK	P
7440-38-2	Arsenic	15.1			P
7440-39-3	Barium	71.0			P
7440-41-7	Beryllium	0.12	B		P
7440-43-9	Cadmium	7.3			P
7440-70-2	Calcium	72800			P
7440-47-3	Chromium	3.0			P
7440-48-4	Cobalt	1.0	B		P
7440-50-8	Copper	27.4		~~E~~JL	P
7439-89-6	Iron	8940			P
7439-92-1	Lead	283			P
7439-95-4	Magnesium	40100			P
7439-96-5	Manganese	210			P
7439-97-6	Mercury	0.07	B		CV
7440-02-0	Nickel	4.8	B		P
7440-09-7	Potassium	598	B		P
7782-49-2	Selenium	0.76	U	~~N~~	P
7440-22-4	Silver	0.32	B		P
7440-23-5	Sodium	286	B		P
7440-28-0	Thallium	0.87	U		P
7440-62-2	Vanadium	7.6	B		P
7440-66-6	Zinc	2770			P
	Cyanide				NR

CP 7-30-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EX0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39196S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 87.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11100			P
7440-36-0	Antimony	1.1	B	~~N~~UJK	P
7440-38-2	Arsenic	6.8			P
7440-39-3	Barium	158			P
7440-41-7	Beryllium	0.46	B		P
7440-43-9	Cadmium	1.9			P
7440-70-2	Calcium	16000			P
7440-47-3	Chromium	12.9			P
7440-48-4	Cobalt	5.0	B		P
7440-50-8	Copper	26.9		~~E~~JL	P
7439-89-6	Iron	16300			P
7439-92-1	Lead	81.7			P
7439-95-4	Magnesium	10500			P
7439-96-5	Manganese	315			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	17.1			P
7440-09-7	Potassium	2930			P
7782-49-2	Selenium	0.78	U	~~N~~	P
7440-22-4	Silver	0.51	B		P
7440-23-5	Sodium	282	B		P
7440-28-0	Thallium	0.89	U		P
7440-62-2	Vanadium	45.2			P
7440-66-6	Zinc	813			P
	Cyanide				NR

VP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EX1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39197S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 87.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8370			P
7440-36-0	Antimony	0.88	B	~~N~~UJK	P
7440-38-2	Arsenic	5.7		U	P
7440-39-3	Barium	127			P
7440-41-7	Beryllium	0.35	B		P
7440-43-9	Cadmium	2.4			P
7440-70-2	Calcium	10100			P
7440-47-3	Chromium	10.1			P
7440-48-4	Cobalt	5.4	B		P
7440-50-8	Copper	23.1		~~J~~JL	P
7439-89-6	Iron	12700			P
7439-92-1	Lead	74.3			P
7439-95-4	Magnesium	6800			P
7439-96-5	Manganese	318			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	13.6			P
7440-09-7	Potassium	2250			P
7782-49-2	Selenium	0.77	U	~~N~~	P
7440-22-4	Silver	0.51	B		P
7440-23-5	Sodium	261	B		P
7440-28-0	Thallium	0.89	U		P
7440-62-2	Vanadium	33.1			P
7440-66-6	Zinc	907			P
	Cyanide				NR

CP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EX3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39198S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 80.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12000			P
7440-36-0	Antimony	1.4	B	~~N~~ UJK	P
7440-38-2	Arsenic	6.3		U	P
7440-39-3	Barium	241			P
7440-41-7	Beryllium	0.39	B		P
7440-43-9	Cadmium	3.2			P
7440-70-2	Calcium	24200			P
7440-47-3	Chromium	6.8			P
7440-48-4	Cobalt	2.9	B		P
7440-50-8	Copper	22.6		~~E~~ JL	P
7439-89-6	Iron	11200			P
7439-92-1	Lead	119			P
7439-95-4	Magnesium	12900			P
7439-96-5	Manganese	476			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	10.5			P
7440-09-7	Potassium	1370			P
7782-49-2	Selenium	0.85	U	~~N~~	P
7440-22-4	Silver	0.40	B		P
7440-23-5	Sodium	341	B		P
7440-28-0	Thallium	0.97	U		P
7440-62-2	Vanadium	20.5			P
7440-66-6	Zinc	1100			P
	Cyanide				NR

7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EX4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39199S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 86.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12300			P
7440-36-0	Antimony	1.7	B	~~N~~ JL	P
7440-38-2	Arsenic	4.5		U	P
7440-39-3	Barium	321			P
7440-41-7	Beryllium	0.40	B		P
7440-43-9	Cadmium	1.0	B		P
7440-70-2	Calcium	4320			P
7440-47-3	Chromium	7.5			P
7440-48-4	Cobalt	3.3	B		P
7440-50-8	Copper	11.1		~~E~~ JL	P
7439-89-6	Iron	10400			P
7439-92-1	Lead	35.9			P
7439-95-4	Magnesium	2320			P
7439-96-5	Manganese	675			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	11.5			P
7440-09-7	Potassium	1520			P
7782-49-2	Selenium	0.79	U	~~N~~	P
7440-22-4	Silver	0.50	B		P
7440-23-5	Sodium	272	B		P
7440-28-0	Thallium	0.90	U		P
7440-62-2	Vanadium	22.3			P
7440-66-6	Zinc	150			P
	Cyanide				NR

CR 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EX5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39200S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 84.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11700			P
7440-36-0	Antimony	1.6	B	~~N~~ JL	P
7440-38-2	Arsenic	5.2		U	P
7440-39-3	Barium	244			P
7440-41-7	Beryllium	0.36	B		P
7440-43-9	Cadmium	3.0			P
7440-70-2	Calcium	21000			P
7440-47-3	Chromium	6.3			P
7440-48-4	Cobalt	2.6	B		P
7440-50-8	Copper	18.1		~~E~~ JL	P
7439-89-6	Iron	10900			P
7439-92-1	Lead	109			P
7439-95-4	Magnesium	11000			P
7439-96-5	Manganese	427			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	9.6			P
7440-09-7	Potassium	1170	B		P
7782-49-2	Selenium	0.80	U	~~N~~	P
7440-22-4	Silver	0.47	B		P
7440-23-5	Sodium	309	B		P
7440-28-0	Thallium	0.92	U		P
7440-62-2	Vanadium	19.7			P
7440-66-6	Zinc	1100			P
	Cyanide				NR

CP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EX6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39201S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 86.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12200			P
7440-36-0	Antimony	0.85	B	~~N~~ JL	P
7440-38-2	Arsenic	4.2		U	P
7440-39-3	Barium	241			P
7440-41-7	Beryllium	0.38	B		P
7440-43-9	Cadmium	1.5			P
7440-70-2	Calcium	7580			P
7440-47-3	Chromium	7.1			P
7440-48-4	Cobalt	2.8	B		P
7440-50-8	Copper	14.1		~~E~~ JL	P
7439-89-6	Iron	10500			P
7439-92-1	Lead	51.2			P
7439-95-4	Magnesium	4150			P
7439-96-5	Manganese	429			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	10.0			P
7440-09-7	Potassium	1510			P
7782-49-2	Selenium	0.78	U	~~N~~	P
7440-22-4	Silver	0.48	B		P
7440-23-5	Sodium	286	B		P
7440-28-0	Thallium	0.89	U		P
7440-62-2	Vanadium	23.1			P
7440-66-6	Zinc	565			P
	Cyanide				NR

CP 7-30 01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EX7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39202S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 78.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13500			P
7440-36-0	Antimony	0.76	U	~~N~~ UJK	P
7440-38-2	Arsenic	4.8		U	P
7440-39-3	Barium	261			P
7440-41-7	Beryllium	0.41	B		P
7440-43-9	Cadmium	0.59	B		P
7440-70-2	Calcium	3540			P
7440-47-3	Chromium	6.8			P
7440-48-4	Cobalt	3.2	B		P
7440-50-8	Copper	10.4		~~E~~ JL	P
7439-89-6	Iron	10400			P
7439-92-1	Lead	18.8			P
7439-95-4	Magnesium	1960			P
7439-96-5	Manganese	506			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	9.1	B		P
7440-09-7	Potassium	1420			P
7782-49-2	Selenium	0.87	U	~~N~~	P
7440-22-4	Silver	0.56	B		P
7440-23-5	Sodium	325	B		P
7440-28-0	Thallium	0.99	U		P
7440-62-2	Vanadium	20.3			P
7440-66-6	Zinc	121			P
	Cyanide				NR

7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EX8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39203S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 98.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	755			P
7440-36-0	Antimony	0.74	B	~~N~~ JL	P
7440-38-2	Arsenic	8.4			P
7440-39-3	Barium	27.7	B		P
7440-41-7	Beryllium	0.04	U		P
7440-43-9	Cadmium	7.6			P
7440-70-2	Calcium	81400			P
7440-47-3	Chromium	1.8	B		P
7440-48-4	Cobalt	0.31	B		P
7440-50-8	Copper	23.4		~~E~~ JL	P
7439-89-6	Iron	7340			P
7439-92-1	Lead	257			P
7439-95-4	Magnesium	45000			P
7439-96-5	Manganese	113			P
7439-97-6	Mercury	0.09	B		CV
7440-02-0	Nickel	3.4	B		P
7440-09-7	Potassium	250	B		P
7782-49-2	Selenium	0.68	U	~~N~~	P
7440-22-4	Silver	0.22	B		P
7440-23-5	Sodium	230	B		P
7440-28-0	Thallium	0.78	U		P
7440-62-2	Vanadium	4.1	B		P
7440-66-6	Zinc	2920			P
	Cyanide				NR

CP 7-30-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EX9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39204S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 77.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2740			P
7440-36-0	Antimony	2.4	B	~~N~~ JL	P
7440-38-2	Arsenic	9.7			P
7440-39-3	Barium	54.3			P
7440-41-7	Beryllium	0.13	B		P
7440-43-9	Cadmium	36.6			P
7440-70-2	Calcium	55100			P
7440-47-3	Chromium	3.7			P
7440-48-4	Cobalt	2.1	B		P
7440-50-8	Copper	461		~~E~~ JL	P
7439-89-6	Iron	15500			P
7439-92-1	Lead	11000			P
7439-95-4	Magnesium	32800			P
7439-96-5	Manganese	267			P
7439-97-6	Mercury	0.21			CV
7440-02-0	Nickel	4.8	B		P
7440-09-7	Potassium	1100	B		P
7782-49-2	Selenium	0.88	U	~~N~~	P
7440-22-4	Silver	1.9	B		P
7440-23-5	Sodium	296	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	11.5	B		P
7440-66-6	Zinc	12000			P
	Cyanide				NR

CP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EY0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39205S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 86.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3970			P
7440-36-0	Antimony	0.70	U	~~N~~UJK	P
7440-38-2	Arsenic	2.2	B	J	P
7440-39-3	Barium	41.2	B		P
7440-41-7	Beryllium	0.18	B		P
7440-43-9	Cadmium	1.9			P
7440-70-2	Calcium	12500			P
7440-47-3	Chromium	3.7			P
7440-48-4	Cobalt	1.6	B		P
7440-50-8	Copper	5.0	B	~~J~~JL	P
7439-89-6	Iron	7520			P
7439-92-1	Lead	114			P
7439-95-4	Magnesium	8570			P
7439-96-5	Manganese	160			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	2.5	B		P
7440-09-7	Potassium	1120	B		P
7782-49-2	Selenium	0.79	U	~~N~~	P
7440-22-4	Silver	0.22	B		P
7440-23-5	Sodium	251	B		P
7440-28-0	Thallium	0.91	U		P
7440-62-2	Vanadium	14.6			P
7440-66-6	Zinc	812			P
	Cyanide				NR

CP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EY1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39206S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 90.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	68.8			P
7440-36-0	Antimony	113		~~N~~ JL	P
7440-38-2	Arsenic	23.6			P
7440-39-3	Barium	1.5	B		P
7440-41-7	Beryllium	0.04	U		P
7440-43-9	Cadmium	510			P
7440-70-2	Calcium	1550			P
7440-47-3	Chromium	1.2	B		P
7440-48-4	Cobalt	0.61	B		P
7440-50-8	Copper	73.1		~~B~~ JL	P
7439-89-6	Iron	31400			P
7439-92-1	Lead	181000			P
7439-95-4	Magnesium	2080			P
7439-96-5	Manganese	266			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	6.0	B		P
7440-09-7	Potassium	60.0	B		P
7782-49-2	Selenium	2.0		~~N~~ JH	P
7440-22-4	Silver	27.1			P
7440-23-5	Sodium	4850			P
7440-28-0	Thallium	7.8			P
7440-62-2	Vanadium	0.49	B		P
7440-66-6	Zinc	164000			P
	Cyanide				NR

CP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EY2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39207S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 83.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	431			P
7440-36-0	Antimony	9.8	B	~~N~~ JL	P
7440-38-2	Arsenic	42.9			P
7440-39-3	Barium	7.2	B		P
7440-41-7	Beryllium	0.05	U		P
7440-43-9	Cadmium	940			P
7440-70-2	Calcium	6810			P
7440-47-3	Chromium	5.1			P
7440-48-4	Cobalt	0.89	B		P
7440-50-8	Copper	218		~~E~~ JL	P
7439-89-6	Iron	75300			P
7439-92-1	Lead	14700			P
7439-95-4	Magnesium	5100			P
7439-96-5	Manganese	659			P
7439-97-6	Mercury	6.0			CV
7440-02-0	Nickel	10.7			P
7440-09-7	Potassium	127	B		P
7782-49-2	Selenium	0.80	U	~~N~~	P
7440-22-4	Silver	6.8			P
7440-23-5	Sodium	13800			P
7440-28-0	Thallium	3.7			P
7440-62-2	Vanadium	2.1	B		P
7440-66-6	Zinc	431000			P
	Cyanide				NR

CP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EY3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39208S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 93.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M.
7429-90-5	Aluminum	4230			P
7440-36-0	Antimony	1.1	B	~~N~~ JL	P
7440-38-2	Arsenic	11.3			P
7440-39-3	Barium	135			P
7440-41-7	Beryllium	0.27	B		P
7440-43-9	Cadmium	24.7			P
7440-70-2	Calcium	99100			P
7440-47-3	Chromium	3.0			P
7440-48-4	Cobalt	1.7	B		P
7440-50-8	Copper	7.6		~~E~~ JL	P
7439-89-6	Iron	11000			P
7439-92-1	Lead	1040			P
7439-95-4	Magnesium	68600			P
7439-96-5	Manganese	260			P
7439-97-6	Mercury	0.15			CV
7440-02-0	Nickel	4.4	B		P
7440-09-7	Potassium	997	B		P
7782-49-2	Selenium	0.71	U	~~N~~	P
7440-22-4	Silver	0.41	B		P
7440-23-5	Sodium	295	B		P
7440-28-0	Thallium	0.82	U		P
7440-62-2	Vanadium	11.8			P
7440-66-6	Zinc	5770			P
	Cyanide				NR

CP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EY4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39209S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 67.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8810			P
7440-36-0	Antimony	2.0	B	~~N~~ JL	P
7440-38-2	Arsenic	19.0			P
7440-39-3	Barium	121			P
7440-41-7	Beryllium	0.46	B		P
7440-43-9	Cadmium	8.2			P
7440-70-2	Calcium	26400			P
7440-47-3	Chromium	4.7			P
7440-48-4	Cobalt	3.2	B		P
7440-50-8	Copper	10.8		~~N~~ JL	P
7439-89-6	Iron	16600			P
7439-92-1	Lead	771			P
7439-95-4	Magnesium	20800			P
7439-96-5	Manganese	294			P
7439-97-6	Mercury	0.60			CV
7440-02-0	Nickel	3.5	B		P
7440-09-7	Potassium	2720			P
7782-49-2	Selenium	0.99	U	~~N~~	P
7440-22-4	Silver	0.44	B		P
7440-23-5	Sodium	256	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	25.8			P
7440-66-6	Zinc	3560			P
	Cyanide				NR

AP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EY5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39210S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 96.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4640			P
7440-36-0	Antimony	0.62	U	~~N~~UJK	P
7440-38-2	Arsenic	3.3		J	P
7440-39-3	Barium	93.9			P
7440-41-7	Beryllium	0.19	B		P
7440-43-9	Cadmium	4.9			P
7440-70-2	Calcium	28100			P
7440-47-3	Chromium	2.4			P
7440-48-4	Cobalt	1.9	B		P
7440-50-8	Copper	25.3		~~E~~JL	P
7439-89-6	Iron	9150			P
7439-92-1	Lead	167			P
7439-95-4	Magnesium	18000			P
7439-96-5	Manganese	420			P
7439-97-6	Mercury	0.07	B		CV
7440-02-0	Nickel	2.4	B		P
7440-09-7	Potassium	1550			P
7782-49-2	Selenium	0.70	U	~~N~~	P
7440-22-4	Silver	0.26	B		P
7440-23-5	Sodium	203	B		P
7440-28-0	Thallium	0.80	U		P
7440-62-2	Vanadium	14.2			P
7440-66-6	Zinc	2100			P
	Cyanide				NR

CP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EY6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EW6

Matrix (soil/water): SOIL Lab Sample ID: 39211S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 88.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8870			P
7440-36-0	Antimony	1.1	B	~~N~~ JL	P
7440-38-2	Arsenic	3.0		U	P
7440-39-3	Barium	86.8			P
7440-41-7	Beryllium	0.26	B		P
7440-43-9	Cadmium	5.2			P
7440-70-2	Calcium	21000			P
7440-47-3	Chromium	3.7			P
7440-48-4	Cobalt	1.8	B		P
7440-50-8	Copper	23.6		~~E~~ JL	P
7439-89-6	Iron	10600			P
7439-92-1	Lead	143			P
7439-95-4	Magnesium	13300			P
7439-96-5	Manganese	287			P
7439-97-6	Mercury	0.06	B		CV
7440-02-0	Nickel	4.3	B		P
7440-09-7	Potassium	1030	B		P
7782-49-2	Selenium	0.77	U	~~N~~	P
7440-22-4	Silver	0.46	B		P
7440-23-5	Sodium	261	B		P
7440-28-0	Thallium	0.89	U		P
7440-62-2	Vanadium	15.6			P
7440-66-6	Zinc	2610			P
	Cyanide				NR

CP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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intentionally left blank.

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: July 30, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt/Mines Sites. Case: 29440 SDG: MJ0FJ0

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1114
TDN: 1048
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 19 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0EZ6	MJ0F01	MJ0F08	MJ0FJ1
MJ0EZ7	MJ0F02	MJ0F09	MJ0FJ2
MJ0EZ8	MJ0F03	MJ0F14	MJ0FJ3
MJ0EZ9	MJ0F04	MJ0F16	MJ0FJ4
MJ0F00	MJ0F05	MJ0FJ0	

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/18, 6/24, 6/25, 6/26 and 6/27/01. The samples were analyzed for mercury within 18 days and all other metals within 22 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 91-109% for ICP-AES and from 81-89% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
arsenic	MJ0EZ8, MJ0F08, MJ0F09, MJ0F14, MJ0F16
sodium	MJ0EZ7, MJ0EZ9, MJ0F00, MJ0F02, MJ0F03, MJ0F04, MJ0F05, MJ0F08, MJ0F09, MJ0F14, MJ0F16, MJ0J2, MJ0J3

Analytes which yielded a negative response in the preparation blank and/or continuing calibration blank(s) at concentrations comparable to or less than the absolute value of the blank(s) were qualified as estimated, "J/UJ", due to possible low bias. The following samples were qualified:

Analyte	Associated Samples
thallium	All except MJ0FJ2

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met by all of the ICS analyzed. The recoveries ranged from 86-116%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0EZ6 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of copper. Results for copper in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 70-154%. None of the data were qualified on this basis.

Duplicate Sample Analysis - Acceptable

Sample MJ0EZ6 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria (±20% RPD or ± CRDL) for all target analytes with the exception of lead. Lead did meet the suggested technical control limit criteria (±35% RPD or ± 2X CRDL) for soils. The "*" qualifiers applied by the laboratory were crossed-out by the reviewer. None of the data were qualified on this basis.

Matrix Spike Analysis

Sample MJ0EZ6 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of antimony (45%) and zinc (142%) in the spike sample MJ0EZ6S. Due to possible bias, the detected and non-detected antimony results in all samples were qualified as estimated, "J/UJ". Due to possible bias, the detected zinc results in all samples were qualified as estimated, "J". The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. The recoveries for lead and manganese could not be accurately determined because the concentrations native to the sample were greater than 4 times the amount of spike added to the sample. All of the other spike recoveries were acceptable and ranged from 77-105%.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 437. Eighteen (4.1%) were qualified as non-detected due to blank contamination. Seventy five (17%) were qualified as estimated due to negative blanks, ICP serial dilution and spike analyses.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FJ0

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FJ0

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FJ0

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	07/06/01	1.00	200
MJ0EZ6	07/06/01	1.00	200
MJ0EZ6D	07/06/01	1.00	200
MJ0EZ6S	07/06/01	1.00	200
MJ0EZ7	07/06/01	1.00	200
MJ0EZ8	07/06/01	1.02	200
MJ0EZ9	07/06/01	1.00	200
MJ0F00	07/06/01	1.01	200
MJ0F01	07/06/01	1.01	200
MJ0F02	07/06/01	1.00	200
MJ0F03	07/06/01	1.00	200
MJ0F04	07/06/01	1.01	200
MJ0F05	07/06/01	1.02	200
MJ0F08	07/06/01	1.01	200
MJ0F09	07/06/01	1.00	200
MJ0F14	07/06/01	1.01	200
MJ0F16	07/06/01	1.01	200
MJ0FJ0	07/06/01	1.00	200
MJ0FJ1	07/06/01	1.01	200
MJ0FJ2	07/06/01	1.00	200
MJ0FJ3	07/06/01	1.00	200
MJ0FJ4	07/06/01	1.00	200
PBS	07/06/01	1.00	200

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FJ0

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	07/03/01	0.20	100
MJ0EZ6	07/03/01	0.20	100
MJ0EZ6D	07/03/01	0.20	100
MJ0EZ6S	07/03/01	0.20	100
MJ0EZ7	07/03/01	0.20	100
MJ0EZ8	07/03/01	0.20	100
MJ0EZ9	07/03/01	0.21	100
MJ0F00	07/03/01	0.21	100
MJ0F01	07/03/01	0.21	100
MJ0F02	07/03/01	0.20	100
MJ0F03	07/03/01	0.21	100
MJ0F04	07/03/01	0.21	100
MJ0F05	07/03/01	0.20	100
MJ0F08	07/03/01	0.22	100
MJ0F09	07/03/01	0.20	100
MJ0F14	07/03/01	0.20	100
MJ0F16	07/03/01	0.22	100
MJ0FJ0	07/03/01	0.20	100
MJ0FJ1	07/03/01	0.20	100
MJ0FJ2	07/03/01	0.20	100
MJ0FJ3	07/03/01	0.20	100
MJ0FJ4	07/03/01	0.20	100
PBS	07/03/01	0.20	100

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EZ6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FJ0

Matrix (soil/water): SOIL Lab Sample ID: 39147S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 96.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14200			P
7440-36-0	Antimony	0.62	U	~~N~~UJK	P
7440-38-2	Arsenic	6.9			P
7440-39-3	Barium	265			P
7440-41-7	Beryllium	0.62	B		P
7440-43-9	Cadmium	0.06	U		P
7440-70-2	Calcium	24300			P
7440-47-3	Chromium	29.0			P
7440-48-4	Cobalt	10.1	B		P
7440-50-8	Copper	31.0		~~E~~JL	P
7439-89-6	Iron	24700			P
7439-92-1	Lead	17.4		~~*~~	P
7439-95-4	Magnesium	11700			P
7439-96-5	Manganese	597			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	33.8			P
7440-09-7	Potassium	2930			P
7782-49-2	Selenium	0.70	U		P
7440-22-4	Silver	0.91	B		P
7440-23-5	Sodium	216	B		P
7440-28-0	Thallium	0.80	U	UJK	P
7440-62-2	Vanadium	51.2			P
7440-66-6	Zinc	115		~~N~~JH	P
	Cyanide				NR

UP 7-30-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0FJ0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FJ0

Matrix (soil/water): SOIL Lab Sample ID: 39068S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 91.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	19600			P
7440-36-0	Antimony	0.77	B	~~N~~ JL	P
7440-38-2	Arsenic	10.3			P
7440-39-3	Barium	172			P
7440-41-7	Beryllium	0.63	B		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	3190			P
7440-47-3	Chromium	17.2			P
7440-48-4	Cobalt	16.0			P
7440-50-8	Copper	39.6		~~E~~ JL	P
7439-89-6	Iron	28800			P
7439-92-1	Lead	17.1		*	P
7439-95-4	Magnesium	4200			P
7439-96-5	Manganese	772			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	21.4			P
7440-09-7	Potassium	2170			P
7782-49-2	Selenium	0.74	U		P
7440-22-4	Silver	1.0	B		P
7440-23-5	Sodium	166	B		P
7440-28-0	Thallium	0.85	U	U JK	P
7440-62-2	Vanadium	38.1			P
7440-66-6	Zinc	75.6		~~N~~ JH	P
	Cyanide				NR

CP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0FJ1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FJ0

Matrix (soil/water): SOIL Lab Sample ID: 39069S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 66.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6470			P
7440-36-0	Antimony	912		~~N~~ JL	P
7440-38-2	Arsenic	3720			P
7440-39-3	Barium	759			P
7440-41-7	Beryllium	1.7			P
7440-43-9	Cadmium	41.6			P
7440-70-2	Calcium	4070			P
7440-47-3	Chromium	15.1			P
7440-48-4	Cobalt	32.9			P
7440-50-8	Copper	237		~~N~~ JL	P
7439-89-6	Iron	102000			P
7439-92-1	Lead	3410		~~N~~	P
7439-95-4	Magnesium	1960			P
7439-96-5	Manganese	25700			P
7439-97-6	Mercury	0.32			CV
7440-02-0	Nickel	217			P
7440-09-7	Potassium	820	B		P
7782-49-2	Selenium	1.0	U		P
7440-22-4	Silver	8.4			P
7440-23-5	Sodium	39.1	U		P
7440-28-0	Thallium	1.2	U	UJK	P
7440-62-2	Vanadium	93.1			P
7440-66-6	Zinc	3300		~~N~~ JH	P
	Cyanide				NR

MP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0FJ2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FJ0

Matrix (soil/water): SOIL Lab Sample ID: 39070S

Level (low/med): LOW Date Received: 06/28/01

% 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	15500			P
7440-36-0	Antimony	1440		~~N~~ JL	P
7440-38-2	Arsenic	7670			P
7440-39-3	Barium	163			P
7440-41-7	Beryllium	0.80	B		P
7440-43-9	Cadmium	326			P
7440-70-2	Calcium	1590			P
7440-47-3	Chromium	19.7			P
7440-48-4	Cobalt	36.2			P
7440-50-8	Copper	103		~~E~~ JL	P
7439-89-6	Iron	144000			P
7439-92-1	Lead	1350		~~*~~	P
7439-95-4	Magnesium	1800			P
7439-96-5	Manganese	5030			P
7439-97-6	Mercury	1.7			CV
7440-02-0	Nickel	36.5			P
7440-09-7	Potassium	1280			P
7782-49-2	Selenium	0.85	U		P
7440-22-4	Silver	16.9			P
7440-23-5	Sodium	59.4	B	U	P
7440-28-0	Thallium	60.1			P
7440-62-2	Vanadium	41.3			P
7440-66-6	Zinc	14200		~~N~~ JH	P
	Cyanide				NR

CP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0FJ3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FJ0

Matrix (soil/water): SOIL Lab Sample ID: 39071S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 74.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8860			P
7440-36-0	Antimony	2530		~~N~~ JL	P
7440-38-2	Arsenic	14300			P
7440-39-3	Barium	318			P
7440-41-7	Beryllium	0.42	B		P
7440-43-9	Cadmium	111			P
7440-70-2	Calcium	1950			P
7440-47-3	Chromium	15.4			P
7440-48-4	Cobalt	22.4			P
7440-50-8	Copper	293		~~E~~ JL	P
7439-89-6	Iron	75800			P
7439-92-1	Lead	21800		~~E~~	P
7439-95-4	Magnesium	4440			P
7439-96-5	Manganese	4500			P
7439-97-6	Mercury	0.96			CV
7440-02-0	Nickel	26.4			P
7440-09-7	Potassium	613	B		P
7782-49-2	Selenium	0.92	U		P
7440-22-4	Silver	40.5			P
7440-23-5	Sodium	60.2	B	U	P
7440-28-0	Thallium	1.5	B	JL	P
7440-62-2	Vanadium	31.8			P
7440-66-6	Zinc	6040		~~N~~ JH	P
	Cyanide				NR

CP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0FJ4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FJ0

Matrix (soil/water): SOIL Lab Sample ID: 39072S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 92.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	867			P
7440-36-0	Antimony	2080		~~N~~ JL	P
7440-38-2	Arsenic	14000			P
7440-39-3	Barium	184			P
7440-41-7	Beryllium	0.11	B		P
7440-43-9	Cadmium	391			P
7440-70-2	Calcium	69900			P
7440-47-3	Chromium	2.5			P
7440-48-4	Cobalt	18.2			P
7440-50-8	Copper	425		~~E~~ JL	P
7439-89-6	Iron	65700			P
7439-92-1	Lead	36000		~~+~~	P
7439-95-4	Magnesium	43300			P
7439-96-5	Manganese	7650			P
7439-97-6	Mercury	0.66			CV
7440-02-0	Nickel	9.5			P
7440-09-7	Potassium	153	B		P
7782-49-2	Selenium	0.73	U		P
7440-22-4	Silver	119			P
7440-23-5	Sodium	566	B		P
7440-28-0	Thallium	0.84	U	UJK	P
7440-62-2	Vanadium	7.7	B		P
7440-66-6	Zinc	43500		~~N~~ JH	P
	Cyanide				NR

CP 7-30-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: July 31, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt/Mines Sites. Case: 29440 SDG: MJ0EQ6

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1117
TDN: 1048
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 20 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0EQ6	MJ0FJ8	MJ0GG4	MJ0GK1
MJ0EQ7	MJ0FK0	MJ0GG5	MJ0GK2
MJ0EQ8	MJ0FK2	MJ0GJ8	MJ0GK3
MJ0EQ9	MJ0FK3	MJ0GJ9	MJ0GK4
MJ0FJ7	MJ0GG3	MJ0GK0	MJ0GK5

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/20, 6/22 and 6/23/01. The samples were analyzed for mercury within 12 days and all other metals within 15 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 91-109% for ICP-AES and from 83-115% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
arsenic	MJ0EQ6, MJ0EQ7, MJ0EQ8, MJ0EQ9, MJ0FK2, MJ0FK3, MJ0GJ9, MJ0GK5

Lead in CCB3 was detected above the CRDL. The high recovery for lead was the result of carry-over from high level sample analyzed prior to CCB3. None of the sample results were affected.

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met by all of the ICS analyzed. The recoveries ranged from 89-117%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0EQ6 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of copper. Results for copper in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 58-111%. None of the data were qualified on this basis.

Duplicate Sample Analysis - Acceptable

Sample MJ0EQ6 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria for all target analytes. None of the data were qualified on this basis.

Matrix Spike Analysis - Acceptable

Sample MJ0EQ6 was used for the spike analysis. The frequency of analysis and recovery criteria were met. The recoveries for cadmium, lead and zinc could not be accurately determined because the concentrations native to the sample were greater than 4 times the amount of spike added to the sample. All of the other spike recoveries were acceptable and ranged from 80-115%. None of the data were qualified on this basis.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 460. Eight (1.7%) were qualified as non-detected due to blank contamination. Twenty (4.3%) were qualified as estimated due to ICP serial dilution analysis.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:

C5: CETAC M6000

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/29/01	1.00	200
MJ0EQ6	06/29/01	1.00	200
MJ0EQ6D	06/29/01	1.00	200
MJ0EQ6S	06/29/01	1.00	200
MJ0EQ7	06/29/01	1.00	200
MJ0EQ8	06/29/01	1.01	200
MJ0EQ9	06/29/01	1.02	200
MJ0FJ7	06/29/01	1.01	200
MJ0FJ8	06/29/01	1.02	200
MJ0FK0	06/29/01	1.02	200
MJ0FK2	06/29/01	1.00	200
MJ0FK3	06/29/01	1.01	200
MJ0GG3	06/29/01	1.01	200
MJ0GG4	06/29/01	1.00	200
MJ0GG5	06/29/01	1.00	200
MJ0GJ8	06/29/01	1.00	200
MJ0GJ9	06/29/01	1.00	200
MJ0GK0	06/29/01	1.00	200
MJ0GK1	06/29/01	1.00	200
MJ0GK2	06/29/01	1.01	200
MJ0GK3	06/29/01	1.01	200
MJ0GK4	06/29/01	1.02	200
MJ0GK5	06/29/01	1.01	200
PBS	06/29/01	1.00	200

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/29/01	0.20	100
MJ0EQ6	06/29/01	0.20	100
MJ0EQ6D	06/29/01	0.20	100
MJ0EQ6S	06/29/01	0.20	100
MJ0EQ7	06/29/01	0.21	100
MJ0EQ8	06/29/01	0.22	100
MJ0EQ9	06/29/01	0.20	100
MJ0FJ7	06/29/01	0.21	100
MJ0FJ8	06/29/01	0.21	100
MJ0FK0	06/29/01	0.22	100
MJ0FK2	06/29/01	0.22	100
MJ0FK3	06/29/01	0.22	100
MJ0GG3	06/29/01	0.20	100
MJ0GG4	06/29/01	0.20	100
MJ0GG5	06/29/01	0.20	100
MJ0GJ8	06/29/01	0.22	100
MJ0GJ9	06/29/01	0.21	100
MJ0GK0	06/29/01	0.20	100
MJ0GK1	06/29/01	0.21	100
MJ0GK2	06/29/01	0.21	100
MJ0GK3	06/29/01	0.20	100
MJ0GK4	06/29/01	0.20	100
MJ0GK5	06/29/01	0.20	100
PBS	06/29/01	0.20	100

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EQ6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38893S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 16.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1500			P
7440-36-0	Antimony	8.7	B		P
7440-38-2	Arsenic	11.5	B	U	P
7440-39-3	Barium	125	B		P
7440-41-7	Beryllium	0.57	B		P
7440-43-9	Cadmium	261			P
7440-70-2	Calcium	155000			P
7440-47-3	Chromium	3.8	B		P
7440-48-4	Cobalt	1.3	U		P
7440-50-8	Copper	148		~~E~~ JL	P
7439-89-6	Iron	3460			P
7439-92-1	Lead	4240			P
7439-95-4	Magnesium	15700			P
7439-96-5	Manganese	54.8			P
7439-97-6	Mercury	0.58	B		CV
7440-02-0	Nickel	16.5	B		P
7440-09-7	Potassium	483	B		P
7782-49-2	Selenium	5.3	B		P
7440-22-4	Silver	1.2	B		P
7440-23-5	Sodium	665	B		P
7440-28-0	Thallium	4.8	U		P
7440-62-2	Vanadium	3.7	B		P
7440-66-6	Zinc	51500			P
	Cyanide				NR

7-31-01

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EQ7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38894S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 69.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2820			P
7440-36-0	Antimony	1.2	B		P
7440-38-2	Arsenic	1.5	B	U	P
7440-39-3	Barium	34.6	B		P
7440-41-7	Beryllium	0.16	B		P
7440-43-9	Cadmium	30.7			P
7440-70-2	Calcium	131000			P
7440-47-3	Chromium	3.5			P
7440-48-4	Cobalt	0.88	B		P
7440-50-8	Copper	19.9		~~E~~ JL	P
7439-89-6	Iron	5660			P
7439-92-1	Lead	632			P
7439-95-4	Magnesium	72000			P
7439-96-5	Manganese	153			P
7439-97-6	Mercury	0.17			CV
7440-02-0	Nickel	5.3	B		P
7440-09-7	Potassium	427	B		P
7782-49-2	Selenium	1.2	B		P
7440-22-4	Silver	0.23	U		P
7440-23-5	Sodium	166	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	6.9	B		P
7440-66-6	Zinc	4240			P
	Cyanide				NR

CF 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0EQ8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38895S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 80.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3730			P
7440-36-0	Antimony	0.80	B		P
7440-38-2	Arsenic	2.6		U	P
7440-39-3	Barium	32.1	B		P
7440-41-7	Beryllium	0.15	B		P
7440-43-9	Cadmium	18.3			P
7440-70-2	Calcium	142000			P
7440-47-3	Chromium	4.8			P
7440-48-4	Cobalt	1.3	B		P
7440-50-8	Copper	12.4		~~E~~ JL	P
7439-89-6	Iron	7270			P
7439-92-1	Lead	202			P
7439-95-4	Magnesium	90700			P
7439-96-5	Manganese	183			P
7439-97-6	Mercury	0.35			CV
7440-02-0	Nickel	7.7	B		P
7440-09-7	Potassium	577	B		P
7782-49-2	Selenium	0.84	U		P
7440-22-4	Silver	0.28	B		P
7440-23-5	Sodium	193	B		P
7440-28-0	Thallium	0.96	U		P
7440-62-2	Vanadium	10.3	B		P
7440-66-6	Zinc	6720			P
	Cyanide				NR

CP 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EQ9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38896S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 78.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4430			P
7440-36-0	Antimony	0.75	U		P
7440-38-2	Arsenic	1.3	B	U	P
7440-39-3	Barium	39.6	B		P
7440-41-7	Beryllium	0.18	B		P
7440-43-9	Cadmium	0.08	U		P
7440-70-2	Calcium	9860			P
7440-47-3	Chromium	7.1			P
7440-48-4	Cobalt	3.0	B		P
7440-50-8	Copper	2.5	B	~~E~~ SL	P
7439-89-6	Iron	8640			P
7439-92-1	Lead	5.5			P
7439-95-4	Magnesium	6100			P
7439-96-5	Manganese	117			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	6.1	B		P
7440-09-7	Potassium	818	B		P
7782-49-2	Selenium	0.85	U		P
7440-22-4	Silver	0.20	U		P
7440-23-5	Sodium	146	B		P
7440-28-0	Thallium	0.98	U		P
7440-62-2	Vanadium	11.0	B		P
7440-66-6	Zinc	33.2			P
	Cyanide				NR

CP 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0FJ7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38904S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 93.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2300			P
7440-36-0	Antimony	1.3	B		P
7440-38-2	Arsenic	10.8			P
7440-39-3	Barium	37.5	B		P
7440-41-7	Beryllium	0.22	B		P
7440-43-9	Cadmium	39.1			P
7440-70-2	Calcium	161000			P
7440-47-3	Chromium	3.6			P
7440-48-4	Cobalt	1.5	B		P
7440-50-8	Copper	7.4		#JL	P
7439-89-6	Iron	7140			P
7439-92-1	Lead	277			P
7439-95-4	Magnesium	107000			P
7439-96-5	Manganese	277			P
7439-97-6	Mercury	0.49			CV
7440-02-0	Nickel	5.6	B		P
7440-09-7	Potassium	360	B		P
7782-49-2	Selenium	0.72	U		P
7440-22-4	Silver	0.40	B		P
7440-23-5	Sodium	228	B		P
7440-28-0	Thallium	0.83	U		P
7440-62-2	Vanadium	12.9			P
7440-66-6	Zinc	12300			P
	Cyanide				NR

CP 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0FJ8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38905S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 96.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1080			P
7440-36-0	Antimony	1.3	B		P
7440-38-2	Arsenic	10.5			P
7440-39-3	Barium	13.1	B		P
7440-41-7	Beryllium	0.13	B		P
7440-43-9	Cadmium	33.2			P
7440-70-2	Calcium	155000			P
7440-47-3	Chromium	2.1			P
7440-48-4	Cobalt	0.62	B		P
7440-50-8	Copper	5.2		~~E~~ JL	P
7439-89-6	Iron	7930			P
7439-92-1	Lead	358			P
7439-95-4	Magnesium	104000			P
7439-96-5	Manganese	232			P
7439-97-6	Mercury	0.25			CV
7440-02-0	Nickel	4.7	B		P
7440-09-7	Potassium	145	B		P
7782-49-2	Selenium	1.4			P
7440-22-4	Silver	0.55	B		P
7440-23-5	Sodium	202	B		P
7440-28-0	Thallium	0.79	U		P
7440-62-2	Vanadium	12.6			P
7440-66-6	Zinc	10000			P
	Cyanide				NR

CP 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0FK0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38906S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 83.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1970			P
7440-36-0	Antimony	2.6	B		P
7440-38-2	Arsenic	13.8			P
7440-39-3	Barium	20.7	B		P
7440-41-7	Beryllium	0.19	B		P
7440-43-9	Cadmium	11.9			P
7440-70-2	Calcium	28200			P
7440-47-3	Chromium	2.0	B		P
7440-48-4	Cobalt	1.1	B		P
7440-50-8	Copper	2.3	B	~~E~~ JL	P
7439-89-6	Iron	6300			P
7439-92-1	Lead	124			P
7439-95-4	Magnesium	14400			P
7439-96-5	Manganese	162			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	2.9	B		P
7440-09-7	Potassium	515	B		P
7782-49-2	Selenium	0.80	U		P
7440-22-4	Silver	0.19	U		P
7440-23-5	Sodium	116	B		P
7440-28-0	Thallium	0.91	U		P
7440-62-2	Vanadium	10.0	B		P
7440-66-6	Zinc	3670			P
	Cyanide				NR

CP 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0FK2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38907S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 81.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2070			P
7440-36-0	Antimony	0.74	U		P
7440-38-2	Arsenic	3.2		U	P
7440-39-3	Barium	48.6	B		P
7440-41-7	Beryllium	0.19	B		P
7440-43-9	Cadmium	1.2	B		P
7440-70-2	Calcium	32000			P
7440-47-3	Chromium	2.4	B		P
7440-48-4	Cobalt	0.88	B		P
7440-50-8	Copper	2.1	B	~~E~~ JL	P
7439-89-6	Iron	3730			P
7439-92-1	Lead	50.4			P
7439-95-4	Magnesium	17000			P
7439-96-5	Manganese	120			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	2.2	B		P
7440-09-7	Potassium	508	B		P
7782-49-2	Selenium	0.94	B		P
7440-22-4	Silver	0.20	U		P
7440-23-5	Sodium	146	B		P
7440-28-0	Thallium	0.96	U		P
7440-62-2	Vanadium	6.2	B		P
7440-66-6	Zinc	526			P
	Cyanide				NR

CP 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

10

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0FK3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38908S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 62.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5440			P
7440-36-0	Antimony	0.96	U		P
7440-38-2	Arsenic	1.4	B	U	P
7440-39-3	Barium	86.0			P
7440-41-7	Beryllium	0.26	B		P
7440-43-9	Cadmium	0.17	B		P
7440-70-2	Calcium	2800			P
7440-47-3	Chromium	2.9	B		P
7440-48-4	Cobalt	1.5	B		P
7440-50-8	Copper	3.3	B	~~E~~ JL	P
7439-89-6	Iron	7560			P
7439-92-1	Lead	8.1			P
7439-95-4	Magnesium	1410	B		P
7439-96-5	Manganese	386			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	2.6	B		P
7440-09-7	Potassium	847	B		P
7782-49-2	Selenium	1.1	U		P
7440-22-4	Silver	0.26	U		P
7440-23-5	Sodium	162	B		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	12.7	B		P
7440-66-6	Zinc	112			P
	Cyanide				NR

CP 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GG3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38897S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 89.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2980			P
7440-36-0	Antimony	4.4	B		P
7440-38-2	Arsenic	101			P
7440-39-3	Barium	26.0	B		P
7440-41-7	Beryllium	0.06	B		P
7440-43-9	Cadmium	285			P
7440-70-2	Calcium	44400			P
7440-47-3	Chromium	12.1			P
7440-48-4	Cobalt	0.24	U		P
7440-50-8	Copper	48.1		~~E~~ JL	P
7439-89-6	Iron	156000			P
7439-92-1	Lead	113000			P
7439-95-4	Magnesium	28300			P
7439-96-5	Manganese	200			P
7439-97-6	Mercury	1.5			CV
7440-02-0	Nickel	13.1			P
7440-09-7	Potassium	366	B		P
7782-49-2	Selenium	0.75	U		P
7440-22-4	Silver	9.9			P
7440-23-5	Sodium	1000	B		P
7440-28-0	Thallium	6.5			P
7440-62-2	Vanadium	12.0			P
7440-66-6	Zinc	67700			P
	Cyanide				NR

CP 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0GG4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38898S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 91.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3480			P
7440-36-0	Antimony	5.0	B		P
7440-38-2	Arsenic	105			P
7440-39-3	Barium	25.8	B		P
7440-41-7	Beryllium	0.09	B		P
7440-43-9	Cadmium	349			P
7440-70-2	Calcium	34700			P
7440-47-3	Chromium	11.3			P
7440-48-4	Cobalt	0.24	U		P
7440-50-8	Copper	51.6		~~B~~ JL	P
7439-89-6	Iron	161000			P
7439-92-1	Lead	125000			P
7439-95-4	Magnesium	22500			P
7439-96-5	Manganese	198			P
7439-97-6	Mercury	2.0			CV
7440-02-0	Nickel	13.3			P
7440-09-7	Potassium	444	B		P
7782-49-2	Selenium	0.75	U		P
7440-22-4	Silver	10.0			P
7440-23-5	Sodium	1520			P
7440-28-0	Thallium	6.9			P
7440-62-2	Vanadium	12.9			P
7440-66-6	Zinc	89800			P
	Cyanide				NR

CP 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GG5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38899S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 85.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1890			P
7440-36-0	Antimony	7.8	B		P
7440-38-2	Arsenic	135			P
7440-39-3	Barium	18.4	B		P
7440-41-7	Beryllium	0.05	B		P
7440-43-9	Cadmium	326			P
7440-70-2	Calcium	38800			P
7440-47-3	Chromium	12.8			P
7440-48-4	Cobalt	0.26	U		P
7440-50-8	Copper	56.0		~~E~~ JL	P
7439-89-6	Iron	167000			P
7439-92-1	Lead	170000			P
7439-95-4	Magnesium	24200			P
7439-96-5	Manganese	216			P
7439-97-6	Mercury	2.7			CV
7440-02-0	Nickel	12.5			P
7440-09-7	Potassium	261	B		P
7782-49-2	Selenium	0.80	U		P
7440-22-4	Silver	12.1			P
7440-23-5	Sodium	1500			P
7440-28-0	Thallium	8.3			P
7440-62-2	Vanadium	14.8			P
7440-66-6	Zinc	89300			P
	Cyanide				NR

CP 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GJ8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38909S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 96.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2900			P
7440-36-0	Antimony	2.1	B		P
7440-38-2	Arsenic	43.8			P
7440-39-3	Barium	50.0			P
7440-41-7	Beryllium	0.27	B		P
7440-43-9	Cadmium	38.8			P
7440-70-2	Calcium	55300			P
7440-47-3	Chromium	1.7	B		P
7440-48-4	Cobalt	1.2	B		P
7440-50-8	Copper	6.2		EJ	P
7439-89-6	Iron	17100			P
7439-92-1	Lead	2080			P
7439-95-4	Magnesium	34100			P
7439-96-5	Manganese	278			P
7439-97-6	Mercury	1.5			CV
7440-02-0	Nickel	3.8	B		P
7440-09-7	Potassium	1240			P
7782-49-2	Selenium	0.70	U		P
7440-22-4	Silver	0.83	B		P
7440-23-5	Sodium	153	B		P
7440-28-0	Thallium	0.81	U		P
7440-62-2	Vanadium	11.1			P
7440-66-6	Zinc	10800			P
	Cyanide				NR

CB 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0GJ9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38910S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 97.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1230			P
7440-36-0	Antimony	2.2	B		P
7440-38-2	Arsenic	3.7		U	P
7440-39-3	Barium	113			P
7440-41-7	Beryllium	0.15	B		P
7440-43-9	Cadmium	69.7			P
7440-70-2	Calcium	125000			P
7440-47-3	Chromium	1.0	B		P
7440-48-4	Cobalt	0.52	B		P
7440-50-8	Copper	1.9	B	~~E~~ JL	P
7439-89-6	Iron	7450			P
7439-92-1	Lead	12100			P
7439-95-4	Magnesium	74200			P
7439-96-5	Manganese	207			P
7439-97-6	Mercury	0.38			CV
7440-02-0	Nickel	2.3	B		P
7440-09-7	Potassium	477	B		P
7782-49-2	Selenium	0.70	U		P
7440-22-4	Silver	0.88	B		P
7440-23-5	Sodium	332	B		P
7440-28-0	Thallium	0.80	U		P
7440-62-2	Vanadium	5.0	B		P
7440-66-6	Zinc	19500			P
	Cyanide				NR

7-31-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GK0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38911S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 95.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1150			P
7440-36-0	Antimony	3.0	B		P
7440-38-2	Arsenic	14.9			P
7440-39-3	Barium	21.3	B		P
7440-41-7	Beryllium	0.08	B		P
7440-43-9	Cadmium	124			P
7440-70-2	Calcium	85000			P
7440-47-3	Chromium	0.87	B		P
7440-48-4	Cobalt	1.5	B		P
7440-50-8	Copper	7.8		~~E~~ JL	P
7439-89-6	Iron	15300			P
7439-92-1	Lead	6090			P
7439-95-4	Magnesium	46200			P
7439-96-5	Manganese	202			P
7439-97-6	Mercury	0.84			CV
7440-02-0	Nickel	3.8	B		P
7440-09-7	Potassium	270	B		P
7782-49-2	Selenium	0.71	U		P
7440-22-4	Silver	1.9	B		P
7440-23-5	Sodium	690	B		P
7440-28-0	Thallium	0.82	U		P
7440-62-2	Vanadium	4.0	B		P
7440-66-6	Zinc	45800			P
	Cyanide				NR

CP 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GK1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38912S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 98.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	406			P
7440-36-0	Antimony	14.5			P
7440-38-2	Arsenic	5.9			P
7440-39-3	Barium	62.0			P
7440-41-7	Beryllium	0.07	B		P
7440-43-9	Cadmium	234			P
7440-70-2	Calcium	127000			P
7440-47-3	Chromium	0.46	B		P
7440-48-4	Cobalt	0.25	B		P
7440-50-8	Copper	2.5	B	~~E~~ JL	P
7439-89-6	Iron	12000			P
7439-92-1	Lead	76500			P
7439-95-4	Magnesium	68400			P
7439-96-5	Manganese	227			P
7439-97-6	Mercury	0.29			CV
7440-02-0	Nickel	2.1	B		P
7440-09-7	Potassium	162	B		P
7782-49-2	Selenium	0.69	U		P
7440-22-4	Silver	4.4			P
7440-23-5	Sodium	1190			P
7440-28-0	Thallium	0.79	U		P
7440-62-2	Vanadium	2.3	B		P
7440-66-6	Zinc	68000			P
	Cyanide				NR

CP 7-31-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GK2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38913S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 98.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1150			P
7440-36-0	Antimony	1.3	B		P
7440-38-2	Arsenic	12.7			P
7440-39-3	Barium	16.4	B		P
7440-41-7	Beryllium	0.15	B		P
7440-43-9	Cadmium	33.7			P
7440-70-2	Calcium	144000			P
7440-47-3	Chromium	1.1	B		P
7440-48-4	Cobalt	0.28	B		P
7440-50-8	Copper	5.4		~~E~~ JL	P
7439-89-6	Iron	13600			P
7439-92-1	Lead	359			P
7439-95-4	Magnesium	107000			P
7439-96-5	Manganese	302			P
7439-97-6	Mercury	0.26			CV
7440-02-0	Nickel	5.6	B		P
7440-09-7	Potassium	198	B		P
7782-49-2	Selenium	0.69	U		P
7440-22-4	Silver	0.50	B		P
7440-23-5	Sodium	124	B		P
7440-28-0	Thallium	0.79	U		P
7440-62-2	Vanadium	7.8	B		P
7440-66-6	Zinc	5960			P
	Cyanide				NR

CP 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GK3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38914S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 95.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2970			P
7440-36-0	Antimony	1.3	B		P
7440-38-2	Arsenic	11.6			P
7440-39-3	Barium	24.2	B		P
7440-41-7	Beryllium	0.51	B		P
7440-43-9	Cadmium	27.9			P
7440-70-2	Calcium	114000			P
7440-47-3	Chromium	2.1	B		P
7440-48-4	Cobalt	1.4	B		P
7440-50-8	Copper	4.3	B	~~E~~ JL	P
7439-89-6	Iron	7180			P
7439-92-1	Lead	47.4			P
7439-95-4	Magnesium	76100			P
7439-96-5	Manganese	472			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	7.1	B		P
7440-09-7	Potassium	537	B		P
7782-49-2	Selenium	0.71	U		P
7440-22-4	Silver	0.17	U		P
7440-23-5	Sodium	111	B		P
7440-28-0	Thallium	1.1	B		P
7440-62-2	Vanadium	7.0	B		P
7440-66-6	Zinc	3660			P
	Cyanide				NR

CP 7.31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GK4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38915S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 96.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3610			P
7440-36-0	Antimony	0.91	B		P
7440-38-2	Arsenic	5.2			P
7440-39-3	Barium	97.4			P
7440-41-7	Beryllium	0.33	B		P
7440-43-9	Cadmium	10.1			P
7440-70-2	Calcium	45800			P
7440-47-3	Chromium	3.6			P
7440-48-4	Cobalt	2.0	B		P
7440-50-8	Copper	4.8	B	~~E~~ JL	P
7439-89-6	Iron	8720			P
7439-92-1	Lead	1610			P
7439-95-4	Magnesium	26700			P
7439-96-5	Manganese	290			P
7439-97-6	Mercury	0.52			CV
7440-02-0	Nickel	3.8	B		P
7440-09-7	Potassium	891	B		P
7782-49-2	Selenium	0.69	U		P
7440-22-4	Silver	0.25	B		P
7440-23-5	Sodium	121	B		P
7440-28-0	Thallium	0.79	U		P
7440-62-2	Vanadium	13.9			P
7440-66-6	Zinc	3450			P
	Cyanide				NR

CR 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GK5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ6

Matrix (soil/water): SOIL Lab Sample ID: 38916S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 92.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12100			P
7440-36-0	Antimony	0.64	U		P
7440-38-2	Arsenic	4.3		U	P
7440-39-3	Barium	130			P
7440-41-7	Beryllium	1.6			P
7440-43-9	Cadmium	5.5			P
7440-70-2	Calcium	7580			P
7440-47-3	Chromium	1.3	B		P
7440-48-4	Cobalt	3.9	B		P
7440-50-8	Copper	8.5		~~E~~ JL	P
7439-89-6	Iron	14300			P
7439-92-1	Lead	7.4			P
7439-95-4	Magnesium	8730			P
7439-96-5	Manganese	410			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	5.9	B		P
7440-09-7	Potassium	2380			P
7782-49-2	Selenium	0.73	U		P
7440-22-4	Silver	0.28	B		P
7440-23-5	Sodium	54.0	B		P
7440-28-0	Thallium	0.84	U		P
7440-62-2	Vanadium	20.6			P
7440-66-6	Zinc	4950			P
	Cyanide				NR

CR 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: July 31, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt/Mines Sites. Case: 29440 SDG: MJ0GM7

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1116
TDN: 1048
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 20 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0F18	MJ0F25	MJ0GM7	MJ0GN3
MJ0F19	MJ0F26	MJ0GM9	MJ0GN4
MJ0F20	MJ0F27	MJ0GN0	MJ0GN5
MJ0F21	MJ0FK4	MJ0GN1	MJ0GN6
MJ0F22	MJ0FK5	MJ0GN2	MJ0GN7

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/26, 6/27 and 6/28/01. The samples were analyzed for mercury within 20 days and all other metals within 20 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 90-107% for ICP-AES and from 84-95% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
antimony	All except MJ0F19, MJ0GN2
cadmium	MJ0GN5
chromium	MJ0GN2
cobalt	MJ0GN2
selenium	MJ0F21, MJ0GN1, MJ0GN2

silver	MJ0F22, MJ0GM7, MJ0GM9 MJ0GN0, MJ0GN1, MJ0GN3, MJ0GN4, MJ0GN5, MJ0GN6, MJ0GN7

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met by all of the ICS analyzed. The recoveries ranged from 94-119%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0GN5 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of copper. Results for copper in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 63-132%. None of the data were qualified on this basis.

Duplicate Sample Analysis - Acceptable

Sample MJ0GN5 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria for all target analytes. None of the data were qualified on this basis.

Matrix Spike Analysis - Acceptable

Sample MJ0GN5 was used for the spike analysis. The frequency of analysis and recovery criteria were met. All of the spike recoveries were acceptable and ranged from 76-107%. None of the data were qualified on this basis.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 460. Thirty four (7.4%) were qualified as non-detected due to blank contamination. Twenty (4.3%) were qualified as estimated due to ICP serial dilution analysis.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GM7

ICP ID Number: P3 Date: 07/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium	317.90		5000	73.1	P
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead	220.30		3	1.0	P
Magnesium			5000		NR
Manganese			15		NR
Mercury			0.2		NR
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
P3: THERMO JARRELL ASH

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GM7

ICP ID Number: P4 Date: 07/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	17.7	P
Antimony	206.80		60	2.9	P
Arsenic	189.00		10	4.6	P
Barium	493.40		200	0.7	P
Beryllium	313.00		5	0.1	P
Cadmium	226.50		5	0.2	P
Calcium	317.90		5000	40.4	P
Chromium	267.70		10	0.4	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.9	P
Iron	271.40		100	9.8	P
Lead	220.30		3	1.8	P
Magnesium	279.00		5000	13.5	P
Manganese	257.60		15	0.3	P
Mercury			0.2		NR
Nickel	231.60		40	1.6	P
Potassium	766.40		5000	9.7	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.3	P
Sodium	330.20		5000	114.2	P
Thallium	190.80		10	5.1	P
Vanadium	292.40		50	0.7	P
Zinc	206.20		20	0.9	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GM7

ICP ID Number: Date: 07/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

MH 7-17-01 47

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GM7

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	07/12/01	1.00	200
MJ0F18	07/12/01	1.02	200
MJ0F19	07/12/01	1.00	200
MJ0F20	07/12/01	1.00	200
MJ0F21	07/12/01	1.01	200
MJ0F22	07/12/01	1.00	200
MJ0F25	07/12/01	1.01	200
MJ0F26	07/12/01	1.01	200
MJ0F27	07/12/01	1.00	200
MJ0FK4	07/12/01	1.02	200
MJ0FK5	07/12/01	1.01	200
MJ0GM7	07/12/01	1.00	200
MJ0GM9	07/12/01	1.00	200
MJ0GN0	07/12/01	1.01	200
MJ0GN1	07/12/01	1.00	200
MJ0GN2	07/12/01	1.01	200
MJ0GN3	07/12/01	1.00	200
MJ0GN4	07/12/01	1.00	200
MJ0GN5	07/12/01	1.00	200
MJ0GN5D	07/12/01	1.00	200
MJ0GN5S	07/12/01	1.00	200
MJ0GN6	07/12/01	1.01	200
MJ0GN7	07/12/01	1.00	200
PBS	07/12/01	1.00	200

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GM7

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	07/13/01	0.20	100
MJ0F18	07/13/01	0.20	100
MJ0F19	07/13/01	0.20	100
MJ0F20	07/13/01	0.20	100
MJ0F21	07/13/01	0.20	100
MJ0F22	07/13/01	0.20	100
MJ0F25	07/13/01	0.22	100
MJ0F26	07/13/01	0.20	100
MJ0F27	07/13/01	0.20	100
MJ0FK4	07/13/01	0.20	100
MJ0FK5	07/13/01	0.22	100
MJ0GM7	07/13/01	0.22	100
MJ0GM9	07/13/01	0.21	100
MJ0GN0	07/13/01	0.20	100
MJ0GN1	07/13/01	0.20	100
MJ0GN2	07/13/01	0.20	100
MJ0GN3	07/13/01	0.21	100
MJ0GN4	07/13/01	0.20	100
MJ0GN5	07/13/01	0.20	100
MJ0GN5D	07/13/01	0.20	100
MJ0GN5S	07/13/01	0.20	100
MJ0GN6	07/13/01	0.21	100
MJ0GN7	07/13/01	0.22	100
PBS	07/13/01	0.20	100

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0F21

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GM7

Matrix (soil/water): SOIL Lab Sample ID: 39286S

Level (low/med): LOW Date Received: 06/30/01

% Solids: 70.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11100			P
7440-36-0	Antimony	3.4	B	U	P
7440-38-2	Arsenic	7.3			P
7440-39-3	Barium	548			P
7440-41-7	Beryllium	0.38	B		P
7440-43-9	Cadmium	7.8			P
7440-70-2	Calcium	4500			P
7440-47-3	Chromium	20.9			P
7440-48-4	Cobalt	9.3	B		P
7440-50-8	Copper	47.4		~~E~~ JL	P
7439-89-6	Iron	23400			P
7439-92-1	Lead	27.5			P
7439-95-4	Magnesium	5470			P
7439-96-5	Manganese	370			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	58.4			P
7440-09-7	Potassium	2610			P
7782-49-2	Selenium	2.4		U	P
7440-22-4	Silver	1.6	B		P
7440-23-5	Sodium	318	B		P
7440-28-0	Thallium	1.4	U		P
7440-62-2	Vanadium	50.8			P
7440-66-6	Zinc	502			P
	Cyanide				NR

CP 7-31-01

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0F22

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GM7

Matrix (soil/water): SOIL Lab Sample ID: 39287S

Level (low/med): LOW Date Received: 06/30/01

% Solids: 79.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13500			P
7440-36-0	Antimony	1.3	B	U	P
7440-38-2	Arsenic	2.4	B		P
7440-39-3	Barium	273			P
7440-41-7	Beryllium	0.48	B		P
7440-43-9	Cadmium	0.47	B		P
7440-70-2	Calcium	3290			P
7440-47-3	Chromium	16.1			P
7440-48-4	Cobalt	8.6	B		P
7440-50-8	Copper	9.4		#JL	P
7439-89-6	Iron	17800			P
7439-92-1	Lead	27.8			P
7439-95-4	Magnesium	4020			P
7439-96-5	Manganese	1370			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	14.3			P
7440-09-7	Potassium	2770			P
7782-49-2	Selenium	0.86	U		P
7440-22-4	Silver	0.75	B	U	P
7440-23-5	Sodium	369	B		P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	22.9			P
7440-66-6	Zinc	110			P
	Cyanide				NR

CP 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0F25

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GM7

Matrix (soil/water): SOIL Lab Sample ID: 39288S

Level (low/med): LOW Date Received: 06/30/01

% Solids: 84.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9330			P
7440-36-0	Antimony	1.2	B	U	P
7440-38-2	Arsenic	1.1	B		P
7440-39-3	Barium	93.4			P
7440-41-7	Beryllium	0.32	B		P
7440-43-9	Cadmium	0.05	U		P
7440-70-2	Calcium	1140	B		P
7440-47-3	Chromium	5.6			P
7440-48-4	Cobalt	3.0	B		P
7440-50-8	Copper	7.5		JL	P
7439-89-6	Iron	9490			P
7439-92-1	Lead	6.8			P
7439-95-4	Magnesium	1540			P
7439-96-5	Manganese	151			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	4.9	B		P
7440-09-7	Potassium	1000	B		P
7782-49-2	Selenium	0.79	U		P
7440-22-4	Silver	0.46	B		P
7440-23-5	Sodium	269	B		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	18.2			P
7440-66-6	Zinc	30.1			P
	Cyanide				NR

CP 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0F26

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GM7

Matrix (soil/water): SOIL Lab Sample ID: 39289S

Level (low/med): LOW Date Received: 06/30/01

% Solids: 81.4

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	1.3	B	U	P
7440-38-2	Arsenic	4.9			P
7440-39-3	Barium	108			P
7440-41-7	Beryllium	0.34	B		P
7440-43-9	Cadmium	0.48	B		P
7440-70-2	Calcium	91600			P
7440-47-3	Chromium	13.8			P
7440-48-4	Cobalt	6.9	B		P
7440-50-8	Copper	20.0		~~B~~ JL	P
7439-89-6	Iron	18000			P
7439-92-1	Lead	24.6			P
7439-95-4	Magnesium	17900			P
7439-96-5	Manganese	354			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	21.1			P
7440-09-7	Potassium	1690			P
7782-49-2	Selenium	0.83	U		P
7440-22-4	Silver	0.63	B		P
7440-23-5	Sodium	377	B		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	26.4			P
7440-66-6	Zinc	81.8			P
	Cyanide				NR

CP 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0F27

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GM7

Matrix (soil/water): SOIL Lab Sample ID: 39290S

Level (low/med): LOW Date Received: 06/30/01

% Solids: 87.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11500			P
7440-36-0	Antimony	2.1	B	U	P
7440-38-2	Arsenic	7.1			P
7440-39-3	Barium	109			P
7440-41-7	Beryllium	0.45	B		P
7440-43-9	Cadmium	0.61	B		P
7440-70-2	Calcium	118000			P
7440-47-3	Chromium	13.0			P
7440-48-4	Cobalt	7.4	B		P
7440-50-8	Copper	22.1		~~E~~ JL	P
7439-89-6	Iron	16800			P
7439-92-1	Lead	28.0			P
7439-95-4	Magnesium	8060			P
7439-96-5	Manganese	1160			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	16.4			P
7440-09-7	Potassium	1900			P
7782-49-2	Selenium	0.78	U		P
7440-22-4	Silver	0.54	B		P
7440-23-5	Sodium	308	B		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	16.6			P
7440-66-6	Zinc	75.5			P
	Cyanide				NR

CP 7-31-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: August 1, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt/Mines Sites. Case: 29440 SDG: MJ0GE0

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1118
TDN: 1048
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 20 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0GE0	MJ0GE6	MJ0GF2	MJ0GF7
MJ0GE2	MJ0GE8	MJ0GF3	MJ0GF8
MJ0GE3	MJ0GE9	MJ0GF4	MJ0GF9
MJ0GE4	MJ0GF0	MJ0GF5	MJ0GG0
MJ0GE5	MJ0GF1	MJ0GF6	MJ0GG2

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/18, 6/19 and 6/20/01. The samples were analyzed for mercury within 8 days and all other metals within 21 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury with the exception of CCV4 which had recoveries for iron, lead and zinc of 113%, 116% and 113%, respectively. The high recoveries were the result of carry-over from high level samples analyzed prior to CCV4. None of the sample results were affected. All other recoveries ranged from 93-110% for ICP-AES and from 81-95% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
thallium	MJ0GF7

Lead in CCB2 and CCB4 and zinc in CCB4 were detected above the CRDL. The high recoveries for lead and zinc were the result of carry-over from high level samples analyzed prior to CCB2 and CCB4. None of the sample results were affected.

Analytes which yielded a negative response in the preparation blank and/or continuing calibration blank(s) at concentrations comparable to or less than the absolute value of the blank(s) were qualified as estimated, "J/UJ", due to possible low bias. The following samples were qualified:

Analyte	Associated Samples
arsenic	MJ0GE6

Arsenic was further qualified on the basis of duplicate and spike analyses.

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met by all of the ICS analyzed. The recoveries ranged from 88-119%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis - Acceptable

Sample MJ0GF7 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference. None of the data were qualified on this basis.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 61-122%. None of the data were qualified on this basis.

Duplicate Sample Analysis

Sample MJ0GF7 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria (±20% RPD or ± CRDL) for all target analytes with the exception of arsenic, iron and zinc. Iron and zinc did meet the suggested technical control limit criteria (±35% RPD or ± 2X CRDL) for soils while arsenic did not. Results for arsenic in all samples were qualified as estimated, "J". The "*" qualifiers applied by the laboratory were crossed-out by the reviewer.

Matrix Spike Analysis

Sample MJ0GF7 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of arsenic (35%) and cadmium (157%) in the spike sample MJ0GF7S. Due to possible bias, the detected and non-detected arsenic results in all samples were qualified as estimated, "J/UJ". Due to possible bias, the detected cadmium results in all samples were qualified as estimated, "J". The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. The recoveries for lead and zinc could not be accurately determined because the concentrations native to the sample were greater than 4 times the amount of spike added to the sample All of the other spike recoveries were acceptable and ranged from 78-104%.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 460. One (0.22%) was qualified as non-detected due to blank contamination. Thirty eight (8.3%) were qualified as estimated due to negative blanks, duplicate and spike analyses.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/27/01	1.00	200
MJ0GE0	06/27/01	1.00	200
MJ0GE2	06/27/01	1.02	200
MJ0GE3	06/27/01	1.01	200
MJ0GE4	06/27/01	1.02	200
MJ0GE5	06/27/01	1.00	200
MJ0GE6	06/27/01	1.00	200
MJ0GE8	06/27/01	1.01	200
MJ0GE9	06/27/01	1.01	200
MJ0GF0	06/27/01	1.02	200
MJ0GF1	06/27/01	1.01	200
MJ0GF2	06/27/01	1.02	200
MJ0GF3	06/27/01	1.00	200
MJ0GF4	06/27/01	1.01	200
MJ0GF5	06/27/01	1.02	200
MJ0GF6	06/27/01	1.00	200
MJ0GF7	06/27/01	1.00	200
MJ0GF7D	06/27/01	1.00	200
MJ0GF7S	06/27/01	1.00	200
MJ0GF8	06/27/01	1.02	200
MJ0GF9	06/27/01	1.00	200
MJ0GG0	06/27/01	1.00	200
MJ0GG2	06/27/01	1.00	200
PBS	06/27/01	1.00	200

U.S. EPA - CLP

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/27/01	0.20	100
MJ0GE0	06/27/01	0.20	100
MJ0GE2	06/27/01	0.20	100
MJ0GE3	06/27/01	0.20	100
MJ0GE4	06/27/01	0.21	100
MJ0GE5	06/27/01	0.21	100
MJ0GE6	06/27/01	0.20	100
MJ0GE8	06/27/01	0.21	100
MJ0GE9	06/27/01	0.21	100
MJ0GF0	06/27/01	0.22	100
MJ0GF1	06/27/01	0.20	100
MJ0GF2	06/27/01	0.22	100
MJ0GF3	06/27/01	0.22	100
MJ0GF4	06/27/01	0.21	100
MJ0GF5	06/27/01	0.22	100
MJ0GF6	06/27/01	0.20	100
MJ0GF7	06/27/01	0.20	100
MJ0GF7D	06/27/01	0.20	100
MJ0GF7S	06/27/01	0.20	100
MJ0GF8	06/27/01	0.21	100
MJ0GF9	06/27/01	0.21	100
MJ0GG0	06/27/01	0.21	100
MJ0GG2	06/27/01	0.22	100
PBS	06/27/01	0.20	100

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0GE0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38848S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 59.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4690			P
7440-36-0	Antimony	2.8	B		P
7440-38-2	Arsenic	25.5		~~N~~ JL	P
7440-39-3	Barium	142			P
7440-41-7	Beryllium	0.21	B		P
7440-43-9	Cadmium	22.8		~~N~~ JH	P
7440-70-2	Calcium	81300			P
7440-47-3	Chromium	16.1			P
7440-48-4	Cobalt	4.4	B		P
7440-50-8	Copper	38.2			P
7439-89-6	Iron	11900		*	P
7439-92-1	Lead	25.8			P
7439-95-4	Magnesium	4340			P
7439-96-5	Manganese	216			P
7439-97-6	Mercury	0.09	U		CV
7440-02-0	Nickel	77.2			P
7440-09-7	Potassium	606	B		P
7782-49-2	Selenium	1.3	B		P
7440-22-4	Silver	0.56	B		P
7440-23-5	Sodium	186	B		P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	32.0			P
7440-66-6	Zinc	1650		*	P
	Cyanide				NR

UP 9-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GE2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38849S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 91.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	947			P
7440-36-0	Antimony	1930			P
7440-38-2	Arsenic	142		N* JL	P
7440-39-3	Barium	41.0	B		P
7440-41-7	Beryllium	0.10	B		P
7440-43-9	Cadmium	177		N JH	P
7440-70-2	Calcium	239000			P
7440-47-3	Chromium	4.4			P
7440-48-4	Cobalt	4.3	B		P
7440-50-8	Copper	1080			P
7439-89-6	Iron	15000		*	P
7439-92-1	Lead	28900			P
7439-95-4	Magnesium	10700			P
7439-96-5	Manganese	9700			P
7439-97-6	Mercury	1.1			CV
7440-02-0	Nickel	7.6	B		P
7440-09-7	Potassium	363	B		P
7782-49-2	Selenium	0.73	U		P
7440-22-4	Silver	58.4			P
7440-23-5	Sodium	233	B		P
7440-28-0	Thallium	0.84	U		P
7440-62-2	Vanadium	2.1	B		P
7440-66-6	Zinc	15600		*	P
	Cyanide				NR

AP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GE3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38850S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 91.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1920			P
7440-36-0	Antimony	81.7			P
7440-38-2	Arsenic	155		N* JL	P
7440-39-3	Barium	41.7	B		P
7440-41-7	Beryllium	0.16	B		P
7440-43-9	Cadmium	111		N JH	P
7440-70-2	Calcium	128000			P
7440-47-3	Chromium	8.3			P
7440-48-4	Cobalt	2.4	B		P
7440-50-8	Copper	145			P
7439-89-6	Iron	55900		*	P
7439-92-1	Lead	14600			P
7439-95-4	Magnesium	14600			P
7439-96-5	Manganese	14000			P
7439-97-6	Mercury	0.81			CV
7440-02-0	Nickel	11.1			P
7440-09-7	Potassium	478	B		P
7782-49-2	Selenium	1.9			P
7440-22-4	Silver	30.4			P
7440-23-5	Sodium	194	B		P
7440-28-0	Thallium	0.84	U		P
7440-62-2	Vanadium	7.0	B		P
7440-66-6	Zinc	15700		*	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

U.S. EPA - CLP
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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0GE4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38851S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 94.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6780			P
7440-36-0	Antimony	183			P
7440-38-2	Arsenic	69.6		*JL	P
7440-39-3	Barium	201			P
7440-41-7	Beryllium	0.51	B		P
7440-43-9	Cadmium	124		*JH	P
7440-70-2	Calcium	176000			P
7440-47-3	Chromium	42.2			P
7440-48-4	Cobalt	9.0	B		P
7440-50-8	Copper	225			P
7439-89-6	Iron	21800		*	P
7439-92-1	Lead	14700			P
7439-95-4	Magnesium	21300			P
7439-96-5	Manganese	14800			P
7439-97-6	Mercury	0.40			CV
7440-02-0	Nickel	43.4			P
7440-09-7	Potassium	2890			P
7782-49-2	Selenium	0.71	U		P
7440-22-4	Silver	20.2			P
7440-23-5	Sodium	134	B		P
7440-28-0	Thallium	0.81	U		P
7440-62-2	Vanadium	22.8			P
7440-66-6	Zinc	10700		*	P
	Cyanide				NR

CR 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GE5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38852S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 83.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	308			P
7440-36-0	Antimony	2.8	B		P
7440-38-2	Arsenic	4.3		N+ JL	P
7440-39-3	Barium	12.3	B		P
7440-41-7	Beryllium	0.05	U		P
7440-43-9	Cadmium	0.07	U	N	P
7440-70-2	Calcium	16000			P
7440-47-3	Chromium	1.1	B		P
7440-48-4	Cobalt	0.26	U		P
7440-50-8	Copper	559			P
7439-89-6	Iron	367000		+	P
7439-92-1	Lead	24.3			P
7439-95-4	Magnesium	4360			P
7439-96-5	Manganese	282			P
7439-97-6	Mercury	0.12			CV
7440-02-0	Nickel	0.36	U		P
7440-09-7	Potassium	377	B		P
7782-49-2	Selenium	15.1			P
7440-22-4	Silver	6.2			P
7440-23-5	Sodium	31.3	U		P
7440-28-0	Thallium	2.4			P
7440-62-2	Vanadium	3.0	B		P
7440-66-6	Zinc	668		+	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GE6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38853S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 85.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	476			P
7440-36-0	Antimony	2.2	B		P
7440-38-2	Arsenic	2.2	B	~~N~~ JL	P
7440-39-3	Barium	34.0	B		P
7440-41-7	Beryllium	0.08	B		P
7440-43-9	Cadmium	0.07	U	~~N~~	P
7440-70-2	Calcium	958	B		P
7440-47-3	Chromium	2.6			P
7440-48-4	Cobalt	0.26	U		P
7440-50-8	Copper	1700			P
7439-89-6	Iron	262000		~~N~~	P
7439-92-1	Lead	27.6			P
7439-95-4	Magnesium	334	B		P
7439-96-5	Manganese	276			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	0.58	B		P
7440-09-7	Potassium	336	B		P
7782-49-2	Selenium	18.9			P
7440-22-4	Silver	8.5			P
7440-23-5	Sodium	30.8	U		P
7440-28-0	Thallium	3.7			P
7440-62-2	Vanadium	5.5	B		P
7440-66-6	Zinc	31.0		~~N~~	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0GE8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38854S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 94.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5750			P
7440-36-0	Antimony	0.63	U		P
7440-38-2	Arsenic	4.9		~~N~~ JL	P
7440-39-3	Barium	1320			P
7440-41-7	Beryllium	0.34	B		P
7440-43-9	Cadmium	0.88	B	~~N~~ JH	P
7440-70-2	Calcium	149000			P
7440-47-3	Chromium	6.5			P
7440-48-4	Cobalt	1.5	B		P
7440-50-8	Copper	6.3			P
7439-89-6	Iron	17700		~~*~~	P
7439-92-1	Lead	33.0			P
7439-95-4	Magnesium	86900			P
7439-96-5	Manganese	456			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	5.9	B		P
7440-09-7	Potassium	858	B		P
7782-49-2	Selenium	0.71	U		P
7440-22-4	Silver	0.17	U		P
7440-23-5	Sodium	188	B		P
7440-28-0	Thallium	0.82	U		P
7440-62-2	Vanadium	7.3	B		P
7440-66-6	Zinc	318		~~*~~	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GE9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38855S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 92.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6030			P
7440-36-0	Antimony	15.5			P
7440-38-2	Arsenic	62.1		~~N~~ JL	P
7440-39-3	Barium	3870			P
7440-41-7	Beryllium	0.30	B		P
7440-43-9	Cadmium	851		~~N~~ JH	P
7440-70-2	Calcium	99000			P
7440-47-3	Chromium	2.5			P
7440-48-4	Cobalt	4.0	B		P
7440-50-8	Copper	389			P
7439-89-6	Iron	15800		✓	P
7439-92-1	Lead	6520			P
7439-95-4	Magnesium	29100			P
7439-96-5	Manganese	99.8			P
7439-97-6	Mercury	26.4			CV
7440-02-0	Nickel	6.4	B		P
7440-09-7	Potassium	674	B		P
7782-49-2	Selenium	3.7			P
7440-22-4	Silver	4.2			P
7440-23-5	Sodium	6810			P
7440-28-0	Thallium	0.84	U		P
7440-62-2	Vanadium	5.3	B		P
7440-66-6	Zinc	180000		✓	P
	Cyanide				NR

DP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GF0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38856S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 95.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3590			P
7440-36-0	Antimony	5.7	B		P
7440-38-2	Arsenic	15.8		~~N~~ JL	P
7440-39-3	Barium	2300			P
7440-41-7	Beryllium	0.19	B		P
7440-43-9	Cadmium	688		~~N~~ JH	P
7440-70-2	Calcium	148000			P
7440-47-3	Chromium	2.6			P
7440-48-4	Cobalt	2.5	B		P
7440-50-8	Copper	228			P
7439-89-6	Iron	6850		+	P
7439-92-1	Lead	555			P
7439-95-4	Magnesium	49200			P
7439-96-5	Manganese	171			P
7439-97-6	Mercury	10			CV
7440-02-0	Nickel	5.1	B		P
7440-09-7	Potassium	211	B		P
7782-49-2	Selenium	2.1			P
7440-22-4	Silver	1.6	B		P
7440-23-5	Sodium	5060			P
7440-28-0	Thallium	0.80	U		P
7440-62-2	Vanadium	5.7	B		P
7440-66-6	Zinc	141000		+	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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U.S. EPA - CLP
1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0GF1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38857S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 94.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4470			P
7440-36-0	Antimony	11.4	B		P
7440-38-2	Arsenic	15.4		~~N~~ JL	P
7440-39-3	Barium	2890			P
7440-41-7	Beryllium	0.24	B		P
7440-43-9	Cadmium	1090		~~N~~ JH	P
7440-70-2	Calcium	113000			P
7440-47-3	Chromium	1.9	B		P
7440-48-4	Cobalt	2.6	B		P
7440-50-8	Copper	398			P
7439-89-6	Iron	6390		~~N~~	P
7439-92-1	Lead	1040			P
7439-95-4	Magnesium	26800			P
7439-96-5	Manganese	129			P
7439-97-6	Mercury	18.8			CV
7440-02-0	Nickel	3.2	B		P
7440-09-7	Potassium	142	B		P
7782-49-2	Selenium	2.3			P
7440-22-4	Silver	3.8			P
7440-23-5	Sodium	8780			P
7440-28-0	Thallium	0.81	U		P
7440-62-2	Vanadium	7.0	B		P
7440-66-6	Zinc	207000		~~N~~	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GF2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38858S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 90.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7700			P
7440-36-0	Antimony	0.67	B		P
7440-38-2	Arsenic	5.3		~~N~~ JL	P
7440-39-3	Barium	593			P
7440-41-7	Beryllium	0.34	B		P
7440-43-9	Cadmium	27.3		~~N~~ JH	P
7440-70-2	Calcium	67200			P
7440-47-3	Chromium	14.0			P
7440-48-4	Cobalt	4.8	B		P
7440-50-8	Copper	22.5			P
7439-89-6	Iron	12600		*	P
7439-92-1	Lead	1800			P
7439-95-4	Magnesium	21400			P
7439-96-5	Manganese	268			P
7439-97-6	Mercury	0.19			CV
7440-02-0	Nickel	14.6			P
7440-09-7	Potassium	1160			P
7782-49-2	Selenium	0.74	U		P
7440-22-4	Silver	0.72	B		P
7440-23-5	Sodium	290	B		P
7440-28-0	Thallium	0.85	U		P
7440-62-2	Vanadium	19.8			P
7440-66-6	Zinc	7550		*	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GF3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38859S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 92.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2000			P
7440-36-0	Antimony	10.3	B		P
7440-38-2	Arsenic	3.0		~~N~~ JL	P
7440-39-3	Barium	252			P
7440-41-7	Beryllium	0.06	B		P
7440-43-9	Cadmium	1630		~~N~~ JH	P
7440-70-2	Calcium	42400			P
7440-47-3	Chromium	2.5			P
7440-48-4	Cobalt	3.1	B		P
7440-50-8	Copper	192			P
7439-89-6	Iron	5170		✓	P
7439-92-1	Lead	318			P
7439-95-4	Magnesium	11200			P
7439-96-5	Manganese	96.0			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	3.8	B		P
7440-09-7	Potassium	213	B		P
7782-49-2	Selenium	1.6			P
7440-22-4	Silver	4.9			P
7440-23-5	Sodium	16400			P
7440-28-0	Thallium	0.85	U		P
7440-62-2	Vanadium	2.8	B		P
7440-66-6	Zinc	402000		✓	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0GF4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38860S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 83.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2440			P
7440-36-0	Antimony	2.8	B		P
7440-38-2	Arsenic	71.0		~~N~~ JL	P
7440-39-3	Barium	84.2			P
7440-41-7	Beryllium	0.06	B		P
7440-43-9	Cadmium	165		~~N~~ JH	P
7440-70-2	Calcium	162000			P
7440-47-3	Chromium	8.0			P
7440-48-4	Cobalt	0.26	U		P
7440-50-8	Copper	50.2			P
7439-89-6	Iron	103000		~~*~~	P
7439-92-1	Lead	29000			P
7439-95-4	Magnesium	15300			P
7439-96-5	Manganese	107			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	8.8	B		P
7440-09-7	Potassium	241	B		P
7782-49-2	Selenium	0.81	U		P
7440-22-4	Silver	3.0			P
7440-23-5	Sodium	588	B		P
7440-28-0	Thallium	0.93	U		P
7440-62-2	Vanadium	8.4	B		P
7440-66-6	Zinc	36900		~~*~~	P
	Cyanide				NR

CP 9-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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U.S. EPA - CLP
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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0GF5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38861S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 77.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3560			P
7440-36-0	Antimony	4.4	B		P
7440-38-2	Arsenic	36.0		~~N~~ JL	P
7440-39-3	Barium	267			P
7440-41-7	Beryllium	0.10	B		P
7440-43-9	Cadmium	136		~~N~~ JH	P
7440-70-2	Calcium	241000			P
7440-47-3	Chromium	7.7			P
7440-48-4	Cobalt	1.5	B		P
7440-50-8	Copper	2790			P
7439-89-6	Iron	37000		~~N~~	P
7439-92-1	Lead	18000			P
7439-95-4	Magnesium	10700			P
7439-96-5	Manganese	185			P
7439-97-6	Mercury	1.3			CV
7440-02-0	Nickel	9.5	B		P
7440-09-7	Potassium	346	B		P
7782-49-2	Selenium	0.86	U		P
7440-22-4	Silver	9.2			P
7440-23-5	Sodium	385	B		P
7440-28-0	Thallium	0.99	U		P
7440-62-2	Vanadium	5.8	B		P
7440-66-6	Zinc	18600		~~N~~	P
	Cyanide				NR

OK 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0GF6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38862S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 93.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	437			P
7440-36-0	Antimony	7.4	B		P
7440-38-2	Arsenic	143		~~N~~ JL	P
7440-39-3	Barium	13.4	B		P
7440-41-7	Beryllium	0.04	U		P
7440-43-9	Cadmium	471		~~N~~ JH	P
7440-70-2	Calcium	51200			P
7440-47-3	Chromium	11.5			P
7440-48-4	Cobalt	0.24	U		P
7440-50-8	Copper	61.1			P
7439-89-6	Iron	200000		~~*~~	P
7439-92-1	Lead	86200			P
7439-95-4	Magnesium	31200			P
7439-96-5	Manganese	107			P
7439-97-6	Mercury	2.6			CV
7440-02-0	Nickel	11.6			P
7440-09-7	Potassium	81.7	B		P
7782-49-2	Selenium	0.73	U		P
7440-22-4	Silver	7.3			P
7440-23-5	Sodium	2640			P
7440-28-0	Thallium	0.84	U		P
7440-62-2	Vanadium	14.6			P
7440-66-6	Zinc	107000		~~*~~	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GF7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38863S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 65.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5800			P
7440-36-0	Antimony	3.2	B		P
7440-38-2	Arsenic	30.5		~~N~~ JL	P
7440-39-3	Barium	112			P
7440-41-7	Beryllium	0.21	B		P
7440-43-9	Cadmium	56.9		~~N~~ JH	P
7440-70-2	Calcium	191000			P
7440-47-3	Chromium	9.5			P
7440-48-4	Cobalt	1.2	B		P
7440-50-8	Copper	75.1			P
7439-89-6	Iron	39000		*	P
7439-92-1	Lead	14600			P
7439-95-4	Magnesium	14500			P
7439-96-5	Manganese	170			P
7439-97-6	Mercury	0.46			CV
7440-02-0	Nickel	8.6	B		P
7440-09-7	Potassium	623	B		P
7782-49-2	Selenium	1.0	B		P
7440-22-4	Silver	1.7	B		P
7440-23-5	Sodium	252	B		P
7440-28-0	Thallium	1.5	B	U	P
7440-62-2	Vanadium	9.6	B		P
7440-66-6	Zinc	13400		*	P
	Cyanide				NR

CF 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GF8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38864S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 89.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	585			P
7440-36-0	Antimony	6.3	B		P
7440-38-2	Arsenic	112		~~N~~ JL	P
7440-39-3	Barium	18.1	B		P
7440-41-7	Beryllium	0.04	U		P
7440-43-9	Cadmium	301		~~N~~ JH	P
7440-70-2	Calcium	68200			P
7440-47-3	Chromium	10.7			P
7440-48-4	Cobalt	0.24	U		P
7440-50-8	Copper	53.2			P
7439-89-6	Iron	181000		~~*~~	P
7439-92-1	Lead	110000			P
7439-95-4	Magnesium	39500			P
7439-96-5	Manganese	129			P
7439-97-6	Mercury	2.3			CV
7440-02-0	Nickel	10.5			P
7440-09-7	Potassium	83.0	B		P
7782-49-2	Selenium	0.74	U		P
7440-22-4	Silver	8.7			P
7440-23-5	Sodium	1490			P
7440-28-0	Thallium	0.85	U		P
7440-62-2	Vanadium	9.5	B		P
7440-66-6	Zinc	72600		~~*~~	P
	Cyanide				NR

CF 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GF9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38865S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 91.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	418			P
7440-36-0	Antimony	4.4	B		P
7440-38-2	Arsenic	120		~~N~~ JL	P
7440-39-3	Barium	14.1	B		P
7440-41-7	Beryllium	0.04	U		P
7440-43-9	Cadmium	269		~~N~~ JH	P
7440-70-2	Calcium	74800			P
7440-47-3	Chromium	10.3			P
7440-48-4	Cobalt	0.24	U		P
7440-50-8	Copper	49.2			P
7439-89-6	Iron	166000		*	P
7439-92-1	Lead	72900			P
7439-95-4	Magnesium	46700			P
7439-96-5	Manganese	108			P
7439-97-6	Mercury	1.4			CV
7440-02-0	Nickel	9.7			P
7440-09-7	Potassium	69.2	B		P
7782-49-2	Selenium	0.74	U		P
7440-22-4	Silver	6.2			P
7440-23-5	Sodium	1160			P
7440-28-0	Thallium	0.85	U		P
7440-62-2	Vanadium	11.2			P
7440-66-6	Zinc	63900		*	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

04

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GG0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38866S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 95.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	649			P
7440-36-0	Antimony	4.0	B		P
7440-38-2	Arsenic	82.9		~~N~~ JL	P
7440-39-3	Barium	18.2	B		P
7440-41-7	Beryllium	0.04	U		P
7440-43-9	Cadmium	518		~~N~~ JH	P
7440-70-2	Calcium	67000			P
7440-47-3	Chromium	9.2			P
7440-48-4	Cobalt	0.23	U		P
7440-50-8	Copper	39.1			P
7439-89-6	Iron	113000		~~N~~	P
7439-92-1	Lead	110000			P
7439-95-4	Magnesium	32300			P
7439-96-5	Manganese	98.2			P
7439-97-6	Mercury	1.3			CV
7440-02-0	Nickel	8.8			P
7440-09-7	Potassium	118	B		P
7782-49-2	Selenium	0.71	U		P
7440-22-4	Silver	7.5			P
7440-23-5	Sodium	2960			P
7440-28-0	Thallium	0.82	U		P
7440-62-2	Vanadium	8.5	B		P
7440-66-6	Zinc	112000		~~N~~	P
	Cyanide				NR

CF 8-1-01

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GG2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GE0

Matrix (soil/water): SOIL Lab Sample ID: 38867S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 43.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1280			P
7440-36-0	Antimony	1.4	U		P
7440-38-2	Arsenic	1.9	U	~~N~~ UJK	P
7440-39-3	Barium	70.5	B		P
7440-41-7	Beryllium	0.09	U		P
7440-43-9	Cadmium	3.2		~~N~~ JH	P
7440-70-2	Calcium	197000			P
7440-47-3	Chromium	1.9	B		P
7440-48-4	Cobalt	0.51	U		P
7440-50-8	Copper	3.9	B		P
7439-89-6	Iron	4940		~~J~~	P
7439-92-1	Lead	385			P
7439-95-4	Magnesium	7540			P
7439-96-5	Manganese	58.5			P
7439-97-6	Mercury	1.2			CV
7440-02-0	Nickel	2.5	B		P
7440-09-7	Potassium	315	B		P
7782-49-2	Selenium	1.6	U		P
7440-22-4	Silver	0.37	U		P
7440-23-5	Sodium	385	B		P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	3.1	B		P
7440-66-6	Zinc	1100		~~J~~	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: August 1, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt/Mines Sites. Case: 29440 SDG: MJ0GJ5

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1119
TDN: 1048
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 20 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0ER1	MJ0ER6	MJ0ES1	MJ0ES6
MJ0ER2	MJ0ER7	MJ0ES2	MJ0GJ5
MJ0ER3	MJ0ER8	MJ0ES3	MJ0GJ6
MJ0ER4	MJ0ER9	MJ0ES4	MJ0GJ7
MJ0ER5	MJ0ES0	MJ0ES5	MJ0GK6

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/21 and 6/23/01. The samples were analyzed for mercury within 11 days and all other metals within 14 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 94-110% for ICP-AES and from 83-108% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
antimony	MJ0ES3, MJ0ES6
sodium	MJ0ER3, MJ0ER7, MJ0ER8, MJ0GK6

Lead and iron were detected above the CRDL in the preparation blank. None of the sample results were affected.

Antimony was further qualified on the basis of spike analysis.

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met by all of the ICS analyzed. The recoveries ranged from 94-118%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0GK6 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of potassium. Results for potassium in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 58-110%. None of the data were qualified on this basis.

Duplicate Sample Analysis

Sample MJ0GK6 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria (±20% RPD or ± CRDL) for all target analytes with the exception of arsenic, cadmium, iron, lead and zinc. Arsenic, cadmium and lead did meet the suggested technical control limit criteria (±35% RPD or ± 2X CRDL) for soils while iron and zinc did not. Results for iron and zinc in all samples were qualified as estimated, "J". The "*" qualifiers applied by the laboratory were crossed-out by the reviewer.

Matrix Spike Analysis

Sample MJ0GK6 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of antimony (45%) and mercury (17%) in the spike sample MJ0GK6S. Due to possible bias, the detected and non-detected antimony results in all samples were qualified as estimated, "J/UJ". Due to possible bias, the detected mercury results in all samples were qualified as estimated, "J". All mercury samples were detects. The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. The recoveries for lead and zinc could not be accurately determined because the concentrations native to the sample were greater than 4 times the amount of spike added to the sample. All of the other spike recoveries were acceptable and ranged from 88-114%.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 460. Six (1.3%) was qualified as non-detected due to blank contamination. One hundred (22%) were qualified as estimated due to ICP serial dilution, duplicate and spike analyses.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

U.S. EPA - CLP

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/29/01	1.00	200
MJ0ER1	06/29/01	1.00	200
MJ0ER2	06/29/01	1.00	200
MJ0ER3	06/29/01	1.00	200
MJ0ER4	06/29/01	1.00	200
MJ0ER5	06/29/01	1.00	200
MJ0ER6	06/29/01	1.00	200
MJ0ER7	06/29/01	1.00	200
MJ0ER8	06/29/01	1.00	200
MJ0ER9	06/29/01	1.00	200
MJ0ES0	06/29/01	1.00	200
MJ0ES1	06/29/01	1.00	200
MJ0ES2	06/29/01	1.00	200
MJ0ES3	06/29/01	1.00	200
MJ0ES4	06/29/01	1.00	200
MJ0ES5	06/29/01	1.00	200
MJ0ES6	06/29/01	1.00	200
MJ0GJ5	06/29/01	1.00	200
MJ0GJ6	06/29/01	1.00	200
MJ0GJ7	06/29/01	1.00	200
MJ0GK6	06/29/01	1.00	200
MJ0GK6D	06/29/01	1.00	200
MJ0GK6S	06/29/01	1.00	200
PBS	06/29/01	1.00	200

U.S. EPA - CLP

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/29/01	0.20	100
MJ0ER1	06/29/01	0.20	100
MJ0ER2	06/29/01	0.20	100
MJ0ER3	06/29/01	0.20	100
MJ0ER4	06/29/01	0.20	100
MJ0ER5	06/29/01	0.20	100
MJ0ER6	06/29/01	0.20	100
MJ0ER7	06/29/01	0.20	100
MJ0ER8	06/29/01	0.20	100
MJ0ER9	06/29/01	0.20	100
MJ0ES0	06/29/01	0.20	100
MJ0ES1	06/29/01	0.20	100
MJ0ES2	06/29/01	0.20	100
MJ0ES3	06/29/01	0.20	100
MJ0ES4	06/29/01	0.20	100
MJ0ES5	06/29/01	0.20	100
MJ0ES6	06/29/01	0.20	100
MJ0GJ5	06/29/01	0.20	100
MJ0GJ6	06/29/01	0.20	100
MJ0GJ7	06/29/01	0.20	100
MJ0GK6	06/29/01	0.20	100
MJ0GK6D	06/29/01	0.20	100
MJ0GK6S	06/29/01	0.20	100
PBS	06/29/01	0.20	100

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0ER1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 39034S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 81.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2650			P
7440-36-0	Antimony	0.74	U	~~N~~ UJK	P
7440-38-2	Arsenic	7.0		~~*~~	P
7440-39-3	Barium	195			P
7440-41-7	Beryllium	0.18	B		P
7440-43-9	Cadmium	68.1		~~*~~	P
7440-70-2	Calcium	134000			P
7440-47-3	Chromium	9.7			P
7440-48-4	Cobalt	1.6	B		P
7440-50-8	Copper	370			P
7439-89-6	Iron	15700		~~*~~ JK	P
7439-92-1	Lead	2830		~~*~~	P
7439-95-4	Magnesium	77000			P
7439-96-5	Manganese	414			P
7439-97-6	Mercury	1.7		~~N~~ JL	CV
7440-02-0	Nickel	18.7			P
7440-09-7	Potassium	943	B	~~E~~ JL	P
7782-49-2	Selenium	0.84	U		P
7440-22-4	Silver	9.3			P
7440-23-5	Sodium	350	B		P
7440-28-0	Thallium	0.96	U		P
7440-62-2	Vanadium	24.0			P
7440-66-6	Zinc	17600		~~*~~ JK	P
	Cyanide				NR

CP 8-1-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0ER2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 39035S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 95.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	173			P
7440-36-0	Antimony	0.63	U	~~N~~ UJK	P
7440-38-2	Arsenic	6.4		~~*~~	P
7440-39-3	Barium	5.4	B		P
7440-41-7	Beryllium	0.04	U		P
7440-43-9	Cadmium	23.4		~~*~~	P
7440-70-2	Calcium	168000			P
7440-47-3	Chromium	0.84	B		P
7440-48-4	Cobalt	0.23	U		P
7440-50-8	Copper	28.8			P
7439-89-6	Iron	17900		~~*~~ JK	P
7439-92-1	Lead	488		~~*~~	P
7439-95-4	Magnesium	105000			P
7439-96-5	Manganese	255			P
7439-97-6	Mercury	0.10	B	~~N~~ JL	CV
7440-02-0	Nickel	4.8	B		P
7440-09-7	Potassium	64.9	B	~~N~~ JL	P
7782-49-2	Selenium	0.71	U		P
7440-22-4	Silver	0.63	B		P
7440-23-5	Sodium	198	B		P
7440-28-0	Thallium	0.82	U		P
7440-62-2	Vanadium	6.2	B		P
7440-66-6	Zinc	6860		~~*~~ JK	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ER3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 39036S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 77.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	298			P
7440-36-0	Antimony	1.1	B	~~N~~ JL	P
7440-38-2	Arsenic	5.6		~~N~~	P
7440-39-3	Barium	7.8	B		P
7440-41-7	Beryllium	0.05	U		P
7440-43-9	Cadmium	14.4		~~N~~	P
7440-70-2	Calcium	178000			P
7440-47-3	Chromium	1.3	B		P
7440-48-4	Cobalt	0.28	U		P
7440-50-8	Copper	33.4			P
7439-89-6	Iron	10600		~~N~~ JK	P
7439-92-1	Lead	2110		~~N~~	P
7439-95-4	Magnesium	105000			P
7439-96-5	Manganese	265			P
7439-97-6	Mercury	0.24		~~N~~ JL	CV
7440-02-0	Nickel	3.5	B		P
7440-09-7	Potassium	91.3	B	~~N~~ JL	P
7782-49-2	Selenium	0.88	U		P
7440-22-4	Silver	0.34	B		P
7440-23-5	Sodium	211	B	U	P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	8.5	B		P
7440-66-6	Zinc	3560		~~N~~ JK	P
	Cyanide				NR

DR 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ER4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 39037S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 86.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1700			P
7440-36-0	Antimony	0.69	U	~~N~~ uJK	P
7440-38-2	Arsenic	6.6		~~*~~	P
7440-39-3	Barium	156			P
7440-41-7	Beryllium	0.12	B		P
7440-43-9	Cadmium	130		~~*~~	P
7440-70-2	Calcium	121000			P
7440-47-3	Chromium	6.4			P
7440-48-4	Cobalt	2.3	B		P
7440-50-8	Copper	123			P
7439-89-6	Iron	18400		~~*~~ JK	P
7439-92-1	Lead	1680		~~*~~	P
7439-95-4	Magnesium	70700			P
7439-96-5	Manganese	443			P
7439-97-6	Mercury	2.7		~~N~~ JL	CV
7440-02-0	Nickel	17.5			P
7440-09-7	Potassium	884	B	~~E~~ JL	P
7782-49-2	Selenium	1.3			P
7440-22-4	Silver	17.0			P
7440-23-5	Sodium	606	B		P
7440-28-0	Thallium	0.90	U		P
7440-62-2	Vanadium	24.9			P
7440-66-6	Zinc	33400		~~*~~ JK	P
	Cyanide				NR

CP 8-1-01

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0ER5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 39038S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 72.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2580			P
7440-36-0	Antimony	0.83	U	~~N~~ UJK	P
7440-38-2	Arsenic	6.6		~~*~~	P
7440-39-3	Barium	300			P
7440-41-7	Beryllium	0.18	B		P
7440-43-9	Cadmium	126		~~*~~	P
7440-70-2	Calcium	119000			P
7440-47-3	Chromium	9.7			P
7440-48-4	Cobalt	2.4	B		P
7440-50-8	Copper	251			P
7439-89-6	Iron	18100		~~*~~ JK	P
7439-92-1	Lead	2290		~~*~~	P
7439-95-4	Magnesium	70000			P
7439-96-5	Manganese	450			P
7439-97-6	Mercury	2.2		~~N~~ JL	CV
7440-02-0	Nickel	21.1			P
7440-09-7	Potassium	1170	B	~~*~~ JL	P
7782-49-2	Selenium	0.94	U		P
7440-22-4	Silver	16.4			P
7440-23-5	Sodium	491	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	30.7			P
7440-66-6	Zinc	29500		~~*~~ JK	P
	Cyanide				NR

CP 8-1-01

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ER6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 39039S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 79.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3230			P
7440-36-0	Antimony	0.76	U	~~N~~ U JK	P
7440-38-2	Arsenic	6.4		~~*~~	P
7440-39-3	Barium	317			P
7440-41-7	Beryllium	0.22	B		P
7440-43-9	Cadmium	111		~~*~~	P
7440-70-2	Calcium	122000			P
7440-47-3	Chromium	11.2			P
7440-48-4	Cobalt	3.0	B		P
7440-50-8	Copper	293			P
7439-89-6	Iron	17000		~~*~~ JK	P
7439-92-1	Lead	3120		~~*~~	P
7439-95-4	Magnesium	72800			P
7439-96-5	Manganese	487			P
7439-97-6	Mercury	2.1		~~N~~ JL	CV
7440-02-0	Nickel	21.1			P
7440-09-7	Potassium	1260	B	~~E~~ JL	P
7782-49-2	Selenium	0.86	U		P
7440-22-4	Silver	13.4			P
7440-23-5	Sodium	445	B		P
7440-28-0	Thallium	1.8	B		P
7440-62-2	Vanadium	31.2			P
7440-66-6	Zinc	26100		~~*~~ JK	P
	Cyanide				NR

CP 8-1-01

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ER7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 39040S

Level (low/med): LOW Date Received: 06/28/01

% 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	214			P
7440-36-0	Antimony	0.73	U	~~N~~ U JK	P
7440-38-2	Arsenic	6.5		~~*~~	P
7440-39-3	Barium	6.8	B		P
7440-41-7	Beryllium	0.05	U		P
7440-43-9	Cadmium	23.2		~~*~~	P
7440-70-2	Calcium	161000			P
7440-47-3	Chromium	1.5	B		P
7440-48-4	Cobalt	0.27	U		P
7440-50-8	Copper	50.7			P
7439-89-6	Iron	13000		~~*~~ JK	P
7439-92-1	Lead	1670		~~*~~	P
7439-95-4	Magnesium	83100			P
7439-96-5	Manganese	202			P
7439-97-6	Mercury	0.36		~~N~~ JL	CV
7440-02-0	Nickel	5.7	B		P
7440-09-7	Potassium	59.3	B	~~E~~ JL	P
7782-49-2	Selenium	0.82	U		P
7440-22-4	Silver	0.62	B		P
7440-23-5	Sodium	201	B	U	P
7440-28-0	Thallium	0.94	U		P
7440-62-2	Vanadium	5.3	B		P
7440-66-6	Zinc	7220		~~*~~ JK	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ER8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 39041S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 80.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	365			P
7440-36-0	Antimony	0.88	B	~~N~~ JL	P
7440-38-2	Arsenic	6.2		~~*~~	P
7440-39-3	Barium	6.0	B		P
7440-41-7	Beryllium	0.05	U		P
7440-43-9	Cadmium	23.6		~~*~~	P
7440-70-2	Calcium	160000			P
7440-47-3	Chromium	1.6	B		P
7440-48-4	Cobalt	0.28	U		P
7440-50-8	Copper	69.5			P
7439-89-6	Iron	12300		~~*~~ JK	P
7439-92-1	Lead	1830		~~*~~	P
7439-95-4	Magnesium	81000			P
7439-96-5	Manganese	191			P
7439-97-6	Mercury	0.33		~~N~~ JL	CV
7440-02-0	Nickel	5.0	B		P
7440-09-7	Potassium	65.7	B	~~*~~ JL	P
7782-49-2	Selenium	0.85	U		P
7440-22-4	Silver	0.71	B		P
7440-23-5	Sodium	187	B	U	P
7440-28-0	Thallium	0.98	U		P
7440-62-2	Vanadium	5.9	B		P
7440-66-6	Zinc	5340		~~*~~ JK	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ER9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 39042S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 79.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1120			P
7440-36-0	Antimony	1.6	B	~~N~~ JL	P
7440-38-2	Arsenic	8.2		~~*~~	P
7440-39-3	Barium	37.4	B		P
7440-41-7	Beryllium	0.09	B		P
7440-43-9	Cadmium	45.8		~~*~~	P
7440-70-2	Calcium	153000			P
7440-47-3	Chromium	4.5			P
7440-48-4	Cobalt	0.38	B		P
7440-50-8	Copper	146			P
7439-89-6	Iron	15400		~~*~~ JK	P
7439-92-1	Lead	3210		~~*~~	P
7439-95-4	Magnesium	87200			P
7439-96-5	Manganese	320			P
7439-97-6	Mercury	0.57		~~N~~ JL	CV
7440-02-0	Nickel	8.0	B		P
7440-09-7	Potassium	174	B	~~E~~ JL	P
7782-49-2	Selenium	0.86	U		P
7440-22-4	Silver	1.6	B		P
7440-23-5	Sodium	232	B		P
7440-28-0	Thallium	0.98	U		P
7440-62-2	Vanadium	10.5	B		P
7440-66-6	Zinc	10100		~~*~~ JK	P
	Cyanide				NR

VP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ES0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 39043S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 78.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14500			P
7440-36-0	Antimony	0.82	B	~~N~~ JL	P
7440-38-2	Arsenic	5.8		*	P
7440-39-3	Barium	206			P
7440-41-7	Beryllium	0.60	B		P
7440-43-9	Cadmium	18.3		*	P
7440-70-2	Calcium	53100			P
7440-47-3	Chromium	8.7			P
7440-48-4	Cobalt	3.2	B		P
7440-50-8	Copper	97.7			P
7439-89-6	Iron	14500		* JK	P
7439-92-1	Lead	1110		*	P
7439-95-4	Magnesium	28700			P
7439-96-5	Manganese	478			P
7439-97-6	Mercury	0.26		~~N~~ JL	CV
7440-02-0	Nickel	11.0			P
7440-09-7	Potassium	800	B	~~E~~ JL	P
7782-49-2	Selenium	0.87	U		P
7440-22-4	Silver	1.8	B		P
7440-23-5	Sodium	328	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	22.5			P
7440-66-6	Zinc	4410		* JK	P
	Cyanide				NR

CF 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ES1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 39044S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 84.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5650			P
7440-36-0	Antimony	0.71	U	~~N~~ u JK	P
7440-38-2	Arsenic	4.5		~~*~~	P
7440-39-3	Barium	73.3			P
7440-41-7	Beryllium	0.29	B		P
7440-43-9	Cadmium	14.6		~~*~~	P
7440-70-2	Calcium	82100			P
7440-47-3	Chromium	5.6			P
7440-48-4	Cobalt	2.0	B		P
7440-50-8	Copper	63.4			P
7439-89-6	Iron	12100		~~*~~ JK	P
7439-92-1	Lead	1020		~~*~~	P
7439-95-4	Magnesium	47900			P
7439-96-5	Manganese	264			P
7439-97-6	Mercury	0.21		~~N~~ JL	CV
7440-02-0	Nickel	7.6	B		P
7440-09-7	Potassium	699	B	~~E~~ JL	P
7782-49-2	Selenium	0.80	U		P
7440-22-4	Silver	0.92	B		P
7440-23-5	Sodium	257	B		P
7440-28-0	Thallium	0.92	U		P
7440-62-2	Vanadium	15.7			P
7440-66-6	Zinc	3730		~~*~~ JK	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0ES2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 39045S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 68.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8960			P
7440-36-0	Antimony	1.0	B	~~N~~ JL	P
7440-38-2	Arsenic	3.4		~~*~~	P
7440-39-3	Barium	137			P
7440-41-7	Beryllium	0.44	B		P
7440-43-9	Cadmium	18.8		~~*~~	P
7440-70-2	Calcium	39500			P
7440-47-3	Chromium	9.2			P
7440-48-4	Cobalt	3.6	B		P
7440-50-8	Copper	104			P
7439-89-6	Iron	12500		~~*~~ JK	P
7439-92-1	Lead	917		~~*~~	P
7439-95-4	Magnesium	21500			P
7439-96-5	Manganese	328			P
7439-97-6	Mercury	0.14	B	~~N~~ JL	CV
7440-02-0	Nickel	12.2			P
7440-09-7	Potassium	1060	B	~~*~~ JL	P
7782-49-2	Selenium	1.0	U		P
7440-22-4	Silver	2.1	B		P
7440-23-5	Sodium	325	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	21.5			P
7440-66-6	Zinc	4880		~~*~~ JK	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0ES3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 39046S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 75.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1560			P
7440-36-0	Antimony	1.4	B	~~N~~UJK	P
7440-38-2	Arsenic	9.8		~~J~~	P
7440-39-3	Barium	52.5	B		P
7440-41-7	Beryllium	0.13	B		P
7440-43-9	Cadmium	65.6		~~J~~	P
7440-70-2	Calcium	148000			P
7440-47-3	Chromium	6.2			P
7440-48-4	Cobalt	0.74	B		P
7440-50-8	Copper	236			P
7439-89-6	Iron	16500		~~J~~ JK	P
7439-92-1	Lead	3470		~~J~~	P
7439-95-4	Magnesium	81600			P
7439-96-5	Manganese	381			P
7439-97-6	Mercury	0.70		~~N~~ JL	CV
7440-02-0	Nickel	11.7			P
7440-09-7	Potassium	483	B	~~E~~ JL	P
7782-49-2	Selenium	0.90	U		P
7440-22-4	Silver	6.3			P
7440-23-5	Sodium	316	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	15.5			P
7440-66-6	Zinc	15600		~~J~~ JK	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ES4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 39047S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 76.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1010			P
7440-36-0	Antimony	0.79	U	~~J~~ UJK	P
7440-38-2	Arsenic	8.7		~~J~~	P
7440-39-3	Barium	38.3	B		P
7440-41-7	Beryllium	0.10	B		P
7440-43-9	Cadmium	58.6		~~J~~	P
7440-70-2	Calcium	154000			P
7440-47-3	Chromium	5.2			P
7440-48-4	Cobalt	0.60	B		P
7440-50-8	Copper	185			P
7439-89-6	Iron	15700		~~J~~ JK	P
7439-92-1	Lead	3620		~~J~~	P
7439-95-4	Magnesium	84500			P
7439-96-5	Manganese	372			P
7439-97-6	Mercury	0.80		~~J~~ JL	CV
7440-02-0	Nickel	10.5	B		P
7440-09-7	Potassium	280	B	~~J~~ JL	P
7782-49-2	Selenium	0.89	U		P
7440-22-4	Silver	4.1			P
7440-23-5	Sodium	269	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	12.4	B		P
7440-66-6	Zinc	12000		~~J~~ JK	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0ES5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 39048S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 78.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	913			P
7440-36-0	Antimony	0.76	U	~~N~~uJK	P
7440-38-2	Arsenic	9.5		~~*~~	P
7440-39-3	Barium	62.4			P
7440-41-7	Beryllium	0.08	B		P
7440-43-9	Cadmium	54.4		~~*~~	P
7440-70-2	Calcium	153000			P
7440-47-3	Chromium	4.6			P
7440-48-4	Cobalt	0.60	B		P
7440-50-8	Copper	163			P
7439-89-6	Iron	16100		~~*~~JK	P
7439-92-1	Lead	3450		~~*~~	P
7439-95-4	Magnesium	85000			P
7439-96-5	Manganese	349			P
7439-97-6	Mercury	0.84		~~N~~ JL	CV
7440-02-0	Nickel	9.8	B		P
7440-09-7	Potassium	263	B	~~E~~ JL	P
7782-49-2	Selenium	0.87	U		P
7440-22-4	Silver	4.2			P
7440-23-5	Sodium	261	B		P
7440-28-0	Thallium	0.99	U		P
7440-62-2	Vanadium	11.7	B		P
7440-66-6	Zinc	11500		~~*~~JK	P
	Cyanide				NR

MP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ES6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 39049S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 80.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	383			P
7440-36-0	Antimony	1.4	B	~~N~~ UJK	P
7440-38-2	Arsenic	6.5		~~*~~	P
7440-39-3	Barium	9.2	B		P
7440-41-7	Beryllium	0.06	B		P
7440-43-9	Cadmium	44.7		~~*~~	P
7440-70-2	Calcium	159000			P
7440-47-3	Chromium	2.9			P
7440-48-4	Cobalt	0.28	U		P
7440-50-8	Copper	162			P
7439-89-6	Iron	10900		~~*~~ JK	P
7439-92-1	Lead	3370		~~*~~	P
7439-95-4	Magnesium	90200			P
7439-96-5	Manganese	301			P
7439-97-6	Mercury	0.60		~~N~~ JL	CV
7440-02-0	Nickel	6.0	B		P
7440-09-7	Potassium	96.6	B	~~E~~ JL	P
7782-49-2	Selenium	0.85	U		P
7440-22-4	Silver	1.5	B		P
7440-23-5	Sodium	248	B		P
7440-28-0	Thallium	0.98	U		P
7440-62-2	Vanadium	7.2	B		P
7440-66-6	Zinc	10800		~~*~~ JK	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GJ5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 38937S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 96.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5640			P
7440-36-0	Antimony	2.0	B	~~N~~ JL	P
7440-38-2	Arsenic	42.3		~~*~~	P
7440-39-3	Barium	47.6			P
7440-41-7	Beryllium	0.98	B		P
7440-43-9	Cadmium	41.4		~~*~~	P
7440-70-2	Calcium	90300			P
7440-47-3	Chromium	7.1			P
7440-48-4	Cobalt	2.3	B		P
7440-50-8	Copper	12.5			P
7439-89-6	Iron	22600		~~*~~ JK	P
7439-92-1	Lead	1830		~~*~~	P
7439-95-4	Magnesium	68200			P
7439-96-5	Manganese	822			P
7439-97-6	Mercury	1.3		~~N~~ JL	CV
7440-02-0	Nickel	13.7			P
7440-09-7	Potassium	942	B	~~*~~ JL	P
7782-49-2	Selenium	0.71	U		P
7440-22-4	Silver	0.94	B		P
7440-23-5	Sodium	377	B		P
7440-28-0	Thallium	0.81	U		P
7440-62-2	Vanadium	21.1			P
7440-66-6	Zinc	20600		~~*~~ JK	P
	Cyanide				NR

VR 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GJ6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 38938S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 98.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3670			P
7440-36-0	Antimony	0.61	U	~~N~~ UJK	P
7440-38-2	Arsenic	5.4		~~*~~	P
7440-39-3	Barium	31.4	B		P
7440-41-7	Beryllium	0.25	B		P
7440-43-9	Cadmium	15.4		~~*~~	P
7440-70-2	Calcium	44800			P
7440-47-3	Chromium	2.4			P
7440-48-4	Cobalt	1.5	B		P
7440-50-8	Copper	4.9	B		P
7439-89-6	Iron	8710		~~*~~ JK	P
7439-92-1	Lead	286		~~*~~	P
7439-95-4	Magnesium	33500			P
7439-96-5	Manganese	236			P
7439-97-6	Mercury	0.08	B	~~N~~ JL	CV
7440-02-0	Nickel	4.5	B		P
7440-09-7	Potassium	806	B	~~E~~ JL	P
7782-49-2	Selenium	0.69	U		P
7440-22-4	Silver	0.44	B		P
7440-23-5	Sodium	314	B		P
7440-28-0	Thallium	0.79	U		P
7440-62-2	Vanadium	12.2			P
7440-66-6	Zinc	15000		~~*~~ JK	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0GJ7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 38939S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 98.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1600			P
7440-36-0	Antimony	1.1	B	~~N~~ JL	P
7440-38-2	Arsenic	17.5		~~*~~	P
7440-39-3	Barium	17.5	B		P
7440-41-7	Beryllium	0.40	B		P
7440-43-9	Cadmium	10.5		~~*~~	P
7440-70-2	Calcium	146000			P
7440-47-3	Chromium	1.7	B		P
7440-48-4	Cobalt	0.54	B		P
7440-50-8	Copper	7.3			P
7439-89-6	Iron	10800		~~*~~ JK	P
7439-92-1	Lead	204		~~*~~	P
7439-95-4	Magnesium	102000			P
7439-96-5	Manganese	407			P
7439-97-6	Mercury	0.32		~~N~~ JL	CV
7440-02-0	Nickel	3.8	B		P
7440-09-7	Potassium	278	B	~~E~~ JL	P
7782-49-2	Selenium	0.79	B		P
7440-22-4	Silver	0.53	B		P
7440-23-5	Sodium	202	B		P
7440-28-0	Thallium	0.79	U		P
7440-62-2	Vanadium	6.9	B		P
7440-66-6	Zinc	5920		~~*~~ JK	P
	Cyanide				NR

JP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GK6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GJ5

Matrix (soil/water): SOIL Lab Sample ID: 38940S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 100.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	796			P
7440-36-0	Antimony	1.4	B	~~N~~ JL	P
7440-38-2	Arsenic	10.8		~~*~~	P
7440-39-3	Barium	26.4	B		P
7440-41-7	Beryllium	0.07	B		P
7440-43-9	Cadmium	15.0		~~*~~	P
7440-70-2	Calcium	155000			P
7440-47-3	Chromium	0.86	B		P
7440-48-4	Cobalt	0.22	U		P
7440-50-8	Copper	5.7			P
7439-89-6	Iron	34000		~~*~~ JK	P
7439-92-1	Lead	1520		~~*~~	P
7439-95-4	Magnesium	96700			P
7439-96-5	Manganese	226			P
7439-97-6	Mercury	0.08	B	~~N~~ JL	CV
7440-02-0	Nickel	10.7			P
7440-09-7	Potassium	267	B	~~E~~ JL	P
7782-49-2	Selenium	0.68	U		P
7440-22-4	Silver	0.27	B		P
7440-23-5	Sodium	157	B	U	P
7440-28-0	Thallium	0.78	U		P
7440-62-2	Vanadium	5.2	B		P
7440-66-6	Zinc	6340		~~*~~ JK	P
	Cyanide				NR

CP 8-1-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: August 2, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt/Mines Sites. Case: 29440 SDG: MJ0GG6

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1120
TDN: 1048
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 19 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0GG6	MJ0GH1	MJ0GH6	MJ0GJ1
MJ0GG7	MJ0GH2	MJ0GH7	MJ0GJ2
MJ0GG8	MJ0GH3	MJ0GH8	MJ0GJ3
MJ0GG9	MJ0GH4	MJ0GH9	MJ0GJ4
MJ0GH0	MJ0GH5	MJ0GJ0	

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/21 and 6/22/01. The samples were analyzed for mercury within 14 days and all other metals within 16 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 93-109% for ICP-AES and from 81-98% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U": None.

Iron were detected above the CRDL in the preparation blank. Lead was detected above the CRDL in CCB4. The high recovery for lead was the result of carry-over from high level samples analyzed prior to CCB4. None of the sample results were affected.

Analytes which yielded a negative response in the preparation blank and/or continuing calibration blank(s) at concentrations comparable to or less than the absolute value of the blank(s) were qualified as estimated, "J/UJ", due to possible low bias. The following samples were qualified:

Analyte	Associated Samples
thallium	MJ0GH4, MJ0GH5

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met by all of the ICS analyzed with the exception of lead in ICSAB2 which had a recovery of 126%. The high recovery for lead was the result of carry-over from high level samples analyzed prior to ICSAB2. None of the sample results were affected. All other recoveries ranged from 91-120%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0GJ0 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of Al, Ca, Cr, Cu, Fe, Mg, Mn, Ni and V. Results for Al, Ca, Cr, Cu, Fe, Mg, Mn, Ni and V in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 49-106%. None of the data were qualified on this basis.

Duplicate Sample Analysis

Sample MJ0GJ0 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria (±20% RPD or ± CRDL) for all target analytes with the exception of Ca, Fe, Tl, Mg, Mn and Zn. Ca, Fe and Tl did meet the suggested technical control limit criteria (±35% RPD or ± 2X CRDL) for soils while Mg, Mn and Zn did not. Results for Mg, Mn and Zn in all samples were qualified as estimated, "J". The "*" qualifiers applied by the laboratory were crossed-out by the reviewer.

Matrix Spike Analysis

Sample MJ0GJ0 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of antimony (43%), arsenic (201%), cadmium (72%) and selenium (0%) in the spike sample MJ0GJ0S. Due to possible bias, the detected and non-detected antimony and cadmium results in all samples were qualified as estimated, "J/UJ". Due to possible bias, the detected arsenic results in all samples were qualified as estimated, "J". Due to possible bias, the detected selenium results in all samples were qualified as estimated, "J", and non-detected results were qualified as unusable, "R". The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. The recoveries for lead, manganese and zinc could not be accurately determined because the concentrations native to the sample were greater than 4 times the amount of spike added to the sample. All of the other spike recoveries were acceptable and ranged from 80-95%.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 437. Two hundred sixty two (60%) were qualified as estimated due to negative blanks, ICP serial dilution, duplicate and spike analyses. Twenty (4.3%) were qualified as estimated due to spike analysis.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

U.S. EPA - CLP

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	07/03/01	1.00	200
MJ0GG6	07/03/01	1.00	200
MJ0GG7	07/03/01	1.00	200
MJ0GG8	07/03/01	1.00	200
MJ0GG9	07/03/01	1.00	200
MJ0GH0	07/03/01	1.00	200
MJ0GH1	07/03/01	1.00	200
MJ0GH2	07/03/01	1.00	200
MJ0GH3	07/03/01	1.00	200
MJ0GH4	07/03/01	1.00	200
MJ0GH5	07/03/01	1.00	200
MJ0GH6	07/03/01	1.00	200
MJ0GH7	07/03/01	1.00	200
MJ0GH8	07/03/01	1.00	200
MJ0GH9	07/03/01	1.00	200
MJ0GJ0	07/03/01	1.00	200
MJ0GJ0D	07/03/01	1.00	200
MJ0GJ0S	07/03/01	1.00	200
MJ0GJ1	07/03/01	1.00	200
MJ0GJ2	07/03/01	1.00	200
MJ0GJ3	07/03/01	1.00	200
MJ0GJ4	07/03/01	1.00	200
PBS	07/03/01	1.00	200

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	07/03/01	0.20	100
MJ0GG6	07/03/01	0.20	100
MJ0GG7	07/03/01	0.20	100
MJ0GG8	07/03/01	0.20	100
MJ0GG9	07/03/01	0.20	100
MJ0GH0	07/03/01	0.20	100
MJ0GH1	07/03/01	0.20	100
MJ0GH2	07/03/01	0.20	100
MJ0GH3	07/03/01	0.20	100
MJ0GH4	07/03/01	0.20	100
MJ0GH5	07/03/01	0.20	100
MJ0GH6	07/03/01	0.20	100
MJ0GH7	07/03/01	0.20	100
MJ0GH8	07/03/01	0.20	100
MJ0GH9	07/03/01	0.20	100
MJ0GJ0	07/03/01	0.20	100
MJ0GJ0D	07/03/01	0.20	100
MJ0GJ0S	07/03/01	0.20	100
MJ0GJ1	07/03/01	0.20	100
MJ0GJ2	07/03/01	0.20	100
MJ0GJ3	07/03/01	0.20	100
MJ0GJ4	07/03/01	0.20	100
PBS	07/03/01	0.20	100

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1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0GG6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38918S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 84.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7470		~~E~~ JL	P
7440-36-0	Antimony	2.7	B	~~N~~ JL	P
7440-38-2	Arsenic	68.4		~~N~~ JH	P
7440-39-3	Barium	68.8			P
7440-41-7	Beryllium	0.25	B		P
7440-43-9	Cadmium	166		~~N~~ JL	P
7440-70-2	Calcium	78900		~~*~~ ~~E~~ JL	P
7440-47-3	Chromium	21.6		~~E~~ JL	P
7440-48-4	Cobalt	1.3	B		P
7440-50-8	Copper	57.7		~~E~~ JL	P
7439-89-6	Iron	83600		~~*~~ ~~E~~ JL	P
7439-92-1	Lead	6200			P
7439-95-4	Magnesium	49900		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	413		~~*~~ ~~E~~ JL	P
7439-97-6	Mercury	2.5			CV
7440-02-0	Nickel	15.4		~~E~~ JL	P
7440-09-7	Potassium	766	B		P
7782-49-2	Selenium	0.81	U	~~N~~ R	P
7440-22-4	Silver	5.3			P
7440-23-5	Sodium	732	B		P
7440-28-0	Thallium	4.5		~~*~~	P
7440-62-2	Vanadium	48.5		~~E~~ JL	P
7440-66-6	Zinc	52700		~~*~~ JK	P
	Cyanide				NR

CP 8-2-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

3

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GG7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38919S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 92.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1970		E JL	P
7440-36-0	Antimony	4.0	B	N JL	P
7440-38-2	Arsenic	61.5		N JH	P
7440-39-3	Barium	19.6	B		P
7440-41-7	Beryllium	0.10	B		P
7440-43-9	Cadmium	490		N JL	P
7440-70-2	Calcium	97300		*E JL	P
7440-47-3	Chromium	14.2		E JL	P
7440-48-4	Cobalt	0.33	B		P
7440-50-8	Copper	46.7		E JL	P
7439-89-6	Iron	57300		*E JL	P
7439-92-1	Lead	24000			P
7439-95-4	Magnesium	61400		*E JL	P
7439-96-5	Manganese	572		*E JL	P
7439-97-6	Mercury	4.3			CV
7440-02-0	Nickel	17.7		E JL	P
7440-09-7	Potassium	232	B		P
7782-49-2	Selenium	0.74	U	N R	P
7440-22-4	Silver	7.5			P
7440-23-5	Sodium	2830			P
7440-28-0	Thallium	2.3		*	P
7440-62-2	Vanadium	33.8		E JL	P
7440-66-6	Zinc	118000		* JK	P
	Cyanide				NR

CP 8-2-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GG8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38920S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 77.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2370		~~E~~ JL	P
7440-36-0	Antimony	17.7		~~N~~ JL	P
7440-38-2	Arsenic	65.4		~~N~~ JH	P
7440-39-3	Barium	9.7	B		P
7440-41-7	Beryllium	2.1			P
7440-43-9	Cadmium	14.9		~~N~~ JL	P
7440-70-2	Calcium	2250		~~*~~ ~~E~~ JL	P
7440-47-3	Chromium	11.8		~~E~~ JL	P
7440-48-4	Cobalt	0.29	U		P
7440-50-8	Copper	47.2		~~E~~ JL	P
7439-89-6	Iron	367000		~~*~~ ~~E~~ JL	P
7439-92-1	Lead	94000			P
7439-95-4	Magnesium	1150	B	~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	2510		~~*~~ ~~E~~ JL	P
7439-97-6	Mercury	0.28			CV
7440-02-0	Nickel	28.6		~~E~~ JL	P
7440-09-7	Potassium	75.9	B		P
7782-49-2	Selenium	0.88	U	~~N~~ R	P
7440-22-4	Silver	6.2			P
7440-23-5	Sodium	34.0	U		P
7440-28-0	Thallium	23.5		~~*~~	P
7440-62-2	Vanadium	78.7		~~E~~ JL	P
7440-66-6	Zinc	10500		~~*~~ JK	P
	Cyanide				NR

CP 8-2-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GG9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38921S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 79.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2660		~~E~~ JL	P
7440-36-0	Antimony	8.7	B	~~N~~ JL	P
7440-38-2	Arsenic	55.9		~~N~~ JH	P
7440-39-3	Barium	14.0	B		P
7440-41-7	Beryllium	2.7			P
7440-43-9	Cadmium	9.2		~~N~~ JL	P
7440-70-2	Calcium	2920		~~*~~ ~~E~~ JL	P
7440-47-3	Chromium	11.3		~~E~~ JL	P
7440-48-4	Cobalt	0.28	U		P
7440-50-8	Copper	38.6		~~E~~ JL	P
7439-89-6	Iron	247000		~~*~~ ~~E~~ JL	P
7439-92-1	Lead	90400			P
7439-95-4	Magnesium	1600		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	3180		~~*~~ ~~E~~ JL	P
7439-97-6	Mercury	0.30			CV
7440-02-0	Nickel	28.3		~~E~~ JL	P
7440-09-7	Potassium	124	B		P
7782-49-2	Selenium	0.85	U	~~N~~ R	P
7440-22-4	Silver	5.3			P
7440-23-5	Sodium	32.8	U		P
7440-28-0	Thallium	21.2		~~*~~	P
7440-62-2	Vanadium	73.5		~~E~~ JL	P
7440-66-6	Zinc	9880		~~*~~ JK	P
	Cyanide				NR

DP 8-2-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GH0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38922S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 83.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4270		~~E~~ JL	P
7440-36-0	Antimony	3.9	B	~~N~~ JL	P
7440-38-2	Arsenic	41.3		~~N~~ JH	P
7440-39-3	Barium	33.9	B		P
7440-41-7	Beryllium	1.7			P
7440-43-9	Cadmium	7.7		~~N~~ JL	P
7440-70-2	Calcium	60300		~~*~~ ~~E~~ JL	P
7440-47-3	Chromium	8.5		~~E~~ JL	P
7440-48-4	Cobalt	1.0	B		P
7440-50-8	Copper	23.9		~~E~~ JL	P
7439-89-6	Iron	153000		~~*~~ ~~E~~ JL	P
7439-92-1	Lead	27100			P
7439-95-4	Magnesium	36400		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	2210		~~*~~ ~~E~~ JL	P
7439-97-6	Mercury	0.19			CV
7440-02-0	Nickel	22.5		~~E~~ JL	P
7440-09-7	Potassium	221	B		P
7782-49-2	Selenium	0.81	U	~~N~~ R	P
7440-22-4	Silver	1.9	B		P
7440-23-5	Sodium	31.2	U		P
7440-28-0	Thallium	11.3		~~*~~	P
7440-62-2	Vanadium	57.2		~~E~~ JL	P
7440-66-6	Zinc	6560		~~*~~ JK	P
	Cyanide				NR

CP 8-2-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GH1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38923S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 87.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4410		~~E~~ JL	P
7440-36-0	Antimony	1.3	B	~~N~~ JL	P
7440-38-2	Arsenic	21.6		~~N~~ JH	P
7440-39-3	Barium	29.3	B		P
7440-41-7	Beryllium	1.2			P
7440-43-9	Cadmium	6.4		~~N~~ JL	P
7440-70-2	Calcium	55800		~~*~~ ~~E~~ JL	P
7440-47-3	Chromium	7.5		~~E~~ JL	P
7440-48-4	Cobalt	1.9	B		P
7440-50-8	Copper	15.6		~~E~~ JL	P
7439-89-6	Iron	86300		~~*~~ ~~E~~ JL	P
7439-92-1	Lead	35200			P
7439-95-4	Magnesium	33700		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	2050		~~*~~ ~~E~~ JL	P
7439-97-6	Mercury	0.25			CV
7440-02-0	Nickel	18.6		~~E~~ JL	P
7440-09-7	Potassium	215	B		P
7782-49-2	Selenium	0.77	U	~~N~~ R	P
7440-22-4	Silver	1.6	B		P
7440-23-5	Sodium	89.7	B		P
7440-28-0	Thallium	6.0		~~*~~	P
7440-62-2	Vanadium	48.3		~~E~~ JL	P
7440-66-6	Zinc	6370		~~*~~ JK	P
	Cyanide				NR

CP 8-2-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GH2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38924S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 78.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3600		~~E~~ JL	P
7440-36-0	Antimony	2.1	B	~~N~~ JL	P
7440-38-2	Arsenic	19.8		~~N~~ JH	P
7440-39-3	Barium	20.3	B		P
7440-41-7	Beryllium	1.2	B		P
7440-43-9	Cadmium	7.9		~~N~~ JL	P
7440-70-2	Calcium	48200		~~*~~ ~~E~~ JL	P
7440-47-3	Chromium	8.1		~~E~~ JL	P
7440-48-4	Cobalt	1.5	B		P
7440-50-8	Copper	16.1		~~E~~ JL	P
7439-89-6	Iron	84800		~~*~~ ~~E~~ JL	P
7439-92-1	Lead	20300			P
7439-95-4	Magnesium	29000		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	1910		~~*~~ ~~E~~ JL	P
7439-97-6	Mercury	0.20			CV
7440-02-0	Nickel	18.4		~~E~~ JL	P
7440-09-7	Potassium	305	B		P
7782-49-2	Selenium	0.86	U	~~N~~ R	P
7440-22-4	Silver	1.6	B		P
7440-23-5	Sodium	88.0	B		P
7440-28-0	Thallium	7.4		~~*~~	P
7440-62-2	Vanadium	46.6		~~E~~ JL	P
7440-66-6	Zinc	6790		~~*~~ JK	P
	Cyanide				NR

DP 8-2-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GH3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38925S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 94.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5950		~~E~~ JL	P
7440-36-0	Antimony	1.2	B	~~N~~ JL	P
7440-38-2	Arsenic	22.4		~~N~~ JH	P
7440-39-3	Barium	45.9			P
7440-41-7	Beryllium	1.4			P
7440-43-9	Cadmium	5.4		~~N~~ JL	P
7440-70-2	Calcium	52900		~~*~~ ~~E~~ JL	P
7440-47-3	Chromium	7.6		~~E~~ JL	P
7440-48-4	Cobalt	2.4	B		P
7440-50-8	Copper	17.0		~~E~~ JL	P
7439-89-6	Iron	82600		~~*~~ ~~E~~ JL	P
7439-92-1	Lead	22600			P
7439-95-4	Magnesium	32500		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	1880		~~*~~ ~~E~~ JL	P
7439-97-6	Mercury	0.11	B		CV
7440-02-0	Nickel	19.2		~~E~~ JL	P
7440-09-7	Potassium	491	B		P
7782-49-2	Selenium	0.72	U	~~N~~ R	P
7440-22-4	Silver	1.5	B		P
7440-23-5	Sodium	88.4	B		P
7440-28-0	Thallium	4.6		~~*~~	P
7440-62-2	Vanadium	48.0		~~E~~ JL	P
7440-66-6	Zinc	6020		~~*~~ JK	P
	Cyanide				NR

CP 8-2-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GH4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38926S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 96.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1740		~~E~~ JL	P
7440-36-0	Antimony	1.1	B	~~N~~ JL	P
7440-38-2	Arsenic	9.4		~~N~~ JH	P
7440-39-3	Barium	12.9	B		P
7440-41-7	Beryllium	0.29	B		P
7440-43-9	Cadmium	7.6		~~N~~ JL	P
7440-70-2	Calcium	144000		~~*~~ ~~E~~ JL	P
7440-47-3	Chromium	5.0		~~E~~ JL	P
7440-48-4	Cobalt	1.3	B		P
7440-50-8	Copper	7.3		~~E~~ JL	P
7439-89-6	Iron	26500		~~*~~ ~~E~~ JL	P
7439-92-1	Lead	8110			P
7439-95-4	Magnesium	94900		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	753		~~*~~ ~~E~~ JL	P
7439-97-6	Mercury	0.28			CV
7440-02-0	Nickel	8.6		~~E~~ JL	P
7440-09-7	Potassium	101	B		P
7782-49-2	Selenium	0.70	U	~~N~~ R	P
7440-22-4	Silver	0.32	B		P
7440-23-5	Sodium	159	B		P
7440-28-0	Thallium	1.7	B	~~*~~ JL	P
7440-62-2	Vanadium	19.4		~~E~~ JL	P
7440-66-6	Zinc	2000		~~*~~ JK	P
	Cyanide				NR

CP 8-2-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GH5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38927S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 97.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1680		~~E~~ JL	P
7440-36-0	Antimony	0.71	B	~~N~~ JL	P
7440-38-2	Arsenic	9.4		~~N~~ JH	P
7440-39-3	Barium	14.2	B		P
7440-41-7	Beryllium	0.30	B		P
7440-43-9	Cadmium	8.0		~~N~~ JL	P
7440-70-2	Calcium	146000		~~*~~ ~~E~~ JL	P
7440-47-3	Chromium	4.9		~~E~~ JL	P
7440-48-4	Cobalt	1.4	B		P
7440-50-8	Copper	8.3		~~E~~ JL	P
7439-89-6	Iron	28000		~~*~~ ~~E~~ JL	P
7439-92-1	Lead	14000			P
7439-95-4	Magnesium	95800		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	794		~~*~~ ~~E~~ JL	P
7439-97-6	Mercury	0.42			CV
7440-02-0	Nickel	8.9		~~E~~ JL	P
7440-09-7	Potassium	91.7	B		P
7782-49-2	Selenium	0.70	U	~~N~~ R	P
7440-22-4	Silver	0.24	B		P
7440-23-5	Sodium	158	B		P
7440-28-0	Thallium	1.1	B	~~*~~ JL	P
7440-62-2	Vanadium	17.6		~~E~~ JL	P
7440-66-6	Zinc	2360		~~*~~ JK	P
	Cyanide				NR

MP 8-2-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GH6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38928S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 96.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	978		~~E~~ JL	P
7440-36-0	Antimony	0.62	U	~~N~~ UJK	P
7440-38-2	Arsenic	9.0		~~N~~ JH	P
7440-39-3	Barium	11.7	B		P
7440-41-7	Beryllium	0.36	B		P
7440-43-9	Cadmium	6.5		~~N~~ JL	P
7440-70-2	Calcium	143000		~~E~~ JL	P
7440-47-3	Chromium	8.2		~~E~~ JL	P
7440-48-4	Cobalt	1.5	B		P
7440-50-8	Copper	7.5		~~E~~ JL	P
7439-89-6	Iron	30700		~~E~~ JL	P
7439-92-1	Lead	4490			P
7439-95-4	Magnesium	94300		~~E~~ JL	P
7439-96-5	Manganese	871		~~E~~ JL	P
7439-97-6	Mercury	0.45			CV
7440-02-0	Nickel	14.0		~~E~~ JL	P
7440-09-7	Potassium	53.9	B		P
7782-49-2	Selenium	0.71	U	~~N~~ R	P
7440-22-4	Silver	0.31	B		P
7440-23-5	Sodium	143	B		P
7440-28-0	Thallium	1.9	B	~~N~~	P
7440-62-2	Vanadium	23.1		~~E~~ JL	P
7440-66-6	Zinc	1180		~~N~~ JK	P
	Cyanide				NR

CP 8.2.01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GH7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38929S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 88.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2940		~~E~~ JL	P
7440-36-0	Antimony	2.1	B	~~N~~ JL	P
7440-38-2	Arsenic	26.1		~~N~~ JH	P
7440-39-3	Barium	19.6	B		P
7440-41-7	Beryllium	1.1			P
7440-43-9	Cadmium	6.8		~~N~~ JL	P
7440-70-2	Calcium	45900		~~*~~ ~~E~~ JL	P
7440-47-3	Chromium	11.3		~~E~~ JL	P
7440-48-4	Cobalt	1.5	B		P
7440-50-8	Copper	17.1		~~E~~ JL	P
7439-89-6	Iron	113000		~~*~~ ~~E~~ JL	P
7439-92-1	Lead	94500			P
7439-95-4	Magnesium	28400		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	1510		~~*~~ ~~E~~ JL	P
7439-97-6	Mercury	0.27			CV
7440-02-0	Nickel	18.9		~~E~~ JL	P
7440-09-7	Potassium	113	B		P
7782-49-2	Selenium	0.77	U	~~N~~ R	P
7440-22-4	Silver	2.2	B		P
7440-23-5	Sodium	36.9	B		P
7440-28-0	Thallium	7.5		~~*~~	P
7440-62-2	Vanadium	50.2		~~E~~ JL	P
7440-66-6	Zinc	5850		~~*~~ JK	P
	Cyanide				NR

CP 8-2-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GH8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38930S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 88.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2590		~~E~~ JL	P
7440-36-0	Antimony	1.7	B	~~N~~ JL	P
7440-38-2	Arsenic	21.7		~~N~~ JH	P
7440-39-3	Barium	18.5	B		P
7440-41-7	Beryllium	1.1	B		P
7440-43-9	Cadmium	5.4		~~N~~ JL	P
7440-70-2	Calcium	62000		~~*~~ ~~E~~ JL	P
7440-47-3	Chromium	5.4		~~E~~ JL	P
7440-48-4	Cobalt	0.75	B		P
7440-50-8	Copper	13.7		~~E~~ JL	P
7439-89-6	Iron	88400		~~*~~ ~~E~~ JL	P
7439-92-1	Lead	11200			P
7439-95-4	Magnesium	38500		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	1430		~~*~~ ~~E~~ JL	P
7439-97-6	Mercury	0.16			CV
7440-02-0	Nickel	15.5		~~E~~ JL	P
7440-09-7	Potassium	92.0	B		P
7782-49-2	Selenium	0.77	U	~~N~~ R	P
7440-22-4	Silver	1.5	B		P
7440-23-5	Sodium	93.3	B		P
7440-28-0	Thallium	6.3		~~*~~	P
7440-62-2	Vanadium	39.3		~~E~~ JL	P
7440-66-6	Zinc	10600		~~*~~ JK	P
	Cyanide				NR

CP 8/2/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GH9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38931S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 93.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2920		~~E~~ JL	P
7440-36-0	Antimony	1.3	B	~~N~~ JL	P
7440-38-2	Arsenic	13.7		~~N~~ JH	P
7440-39-3	Barium	17.4	B		P
7440-41-7	Beryllium	0.56	B		P
7440-43-9	Cadmium	6.4		~~N~~ JL	P
7440-70-2	Calcium	86800		~~N~~ ~~E~~ JL	P
7440-47-3	Chromium	11.2		~~E~~ JL	P
7440-48-4	Cobalt	2.7	B		P
7440-50-8	Copper	10.5		~~E~~ JL	P
7439-89-6	Iron	61700		~~N~~ ~~E~~ JL	P
7439-92-1	Lead	97800			P
7439-95-4	Magnesium	51500		~~N~~ ~~E~~ JL	P
7439-96-5	Manganese	1170		~~N~~ ~~E~~ JL	P
7439-97-6	Mercury	0.16			CV
7440-02-0	Nickel	14.7		~~E~~ JL	P
7440-09-7	Potassium	154	B		P
7782-49-2	Selenium	0.73	U	~~N~~ R	P
7440-22-4	Silver	1.5	B		P
7440-23-5	Sodium	123	B		P
7440-28-0	Thallium	3.3		~~N~~	P
7440-62-2	Vanadium	26.6		~~E~~ JL	P
7440-66-6	Zinc	5080		~~N~~ JK	P
	Cyanide				NR

VP 8-2-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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U.S. EPA - CLP
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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0GJ0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38932S

Level (low/med): LOW Date Received: 06/27/01

% 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	4180		~~E~~ JL	P
7440-36-0	Antimony	1.9	B	~~N~~ JL	P
7440-38-2	Arsenic	27.7		~~N~~ JH	P
7440-39-3	Barium	12.3	B		P
7440-41-7	Beryllium	1.1			P
7440-43-9	Cadmium	17.2		~~N~~ JL	P
7440-70-2	Calcium	42400		~~*~~ ~~E~~ JL	P
7440-47-3	Chromium	12.9		~~E~~ JL	P
7440-48-4	Cobalt	2.3	B		P
7440-50-8	Copper	18.0		~~E~~ JL	P
7439-89-6	Iron	140000		~~*~~ ~~E~~ JL	P
7439-92-1	Lead	50100			P
7439-95-4	Magnesium	26700		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	1540		~~*~~ ~~E~~ JL	P
7439-97-6	Mercury	0.31			CV
7440-02-0	Nickel	34.0		~~E~~ JL	P
7440-09-7	Potassium	88.9	B		P
7782-49-2	Selenium	0.73	U	~~N~~ R	P
7440-22-4	Silver	2.3			P
7440-23-5	Sodium	236	B		P
7440-28-0	Thallium	10.1		~~*~~	P
7440-62-2	Vanadium	30.6		~~E~~ JL	P
7440-66-6	Zinc	33800		~~*~~ JK	P
	Cyanide				NR

CP 8-2-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GJ1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38933S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 95.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2520		~~E~~ JL	P
7440-36-0	Antimony	0.88	B	~~N~~ JL	P
7440-38-2	Arsenic	12.6		~~N~~ JH	P
7440-39-3	Barium	12.1	B		P
7440-41-7	Beryllium	0.51	B		P
7440-43-9	Cadmium	10.5		~~N~~ JL	P
7440-70-2	Calcium	77100		~~E~~ JL	P
7440-47-3	Chromium	7.8		~~E~~ JL	P
7440-48-4	Cobalt	2.5	B		P
7440-50-8	Copper	9.8		~~E~~ JL	P
7439-89-6	Iron	57600		~~E~~ JL	P
7439-92-1	Lead	29300			P
7439-95-4	Magnesium	49000		~~E~~ JL	P
7439-96-5	Manganese	857		~~E~~ JL	P
7439-97-6	Mercury	0.20			CV
7440-02-0	Nickel	19.0		~~E~~ JL	P
7440-09-7	Potassium	83.0	B		P
7782-49-2	Selenium	0.71	U	~~N~~ R	P
7440-22-4	Silver	1.3	B		P
7440-23-5	Sodium	164	B		P
7440-28-0	Thallium	3.7		~~E~~	P
7440-62-2	Vanadium	17.5		~~E~~ JL	P
7440-66-6	Zinc	13300		~~E~~ JK	P
	Cyanide				NR

CP 8.2.01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GJ2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38934S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 93.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3150		~~E~~ JL	P
7440-36-0	Antimony	1.7	B	~~N~~ JL	P
7440-38-2	Arsenic	19.6		~~N~~ JH	P
7440-39-3	Barium	11.1	B		P
7440-41-7	Beryllium	0.81	B		P
7440-43-9	Cadmium	13.0		~~N~~ JL	P
7440-70-2	Calcium	67600		~~E~~ JL	P
7440-47-3	Chromium	10.4		~~E~~ JL	P
7440-48-4	Cobalt	2.1	B		P
7440-50-8	Copper	14.4		~~E~~ JL	P
7439-89-6	Iron	111000		~~E~~ JL	P
7439-92-1	Lead	26000			P
7439-95-4	Magnesium	42300		~~E~~ JL	P
7439-96-5	Manganese	853		~~E~~ JL	P
7439-97-6	Mercury	0.28			CV
7440-02-0	Nickel	25.0		~~E~~ JL	P
7440-09-7	Potassium	85.1	B		P
7782-49-2	Selenium	0.73	U	~~N~~ R	P
7440-22-4	Silver	1.7	B		P
7440-23-5	Sodium	104	B		P
7440-28-0	Thallium	7.4		~~E~~	P
7440-62-2	Vanadium	25.7		~~E~~ JL	P
7440-66-6	Zinc	12000		~~E~~ JK	P
	Cyanide				NR

VP 8-2-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GJ3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38935S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 78.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7240		~~E~~ JL	P
7440-36-0	Antimony	2.0	B	~~N~~ JL	P
7440-38-2	Arsenic	36.6		~~N~~ JH	P
7440-39-3	Barium	38.7	B		P
7440-41-7	Beryllium	1.5			P
7440-43-9	Cadmium	25.0		~~N~~ JL	P
7440-70-2	Calcium	22400		~~E~~ JL	P
7440-47-3	Chromium	15.7		~~E~~ JL	P
7440-48-4	Cobalt	7.8	B		P
7440-50-8	Copper	26.3		~~E~~ JL	P
7439-89-6	Iron	161000		~~E~~ JL	P
7439-92-1	Lead	23700			P
7439-95-4	Magnesium	13300		~~E~~ JL	P
7439-96-5	Manganese	4810		~~E~~ JL	P
7439-97-6	Mercury	0.69			CV
7440-02-0	Nickel	48.6		~~E~~ JL	P
7440-09-7	Potassium	238	B		P
7782-49-2	Selenium	0.87	U	~~N~~ R	P
7440-22-4	Silver	3.7			P
7440-23-5	Sodium	182	B		P
7440-28-0	Thallium	17.6		~~N~~	P
7440-62-2	Vanadium	57.3		~~E~~ JL	P
7440-66-6	Zinc	22000		~~N~~ JK	P
	Cyanide				NR

MP 8-2-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GJ4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0GG6

Matrix (soil/water): SOIL Lab Sample ID: 38936S

Level (low/med): LOW Date Received: 06/27/01

% Solids: 86.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5140		~~E~~ JL	P
7440-36-0	Antimony	1.6	B	~~N~~ JL	P
7440-38-2	Arsenic	14.6		~~N~~ JH	P
7440-39-3	Barium	28.2	B		P
7440-41-7	Beryllium	0.79	B		P
7440-43-9	Cadmium	8.7		~~N~~ JL	P
7440-70-2	Calcium	72900		~~*~~ ~~E~~ JL	P
7440-47-3	Chromium	15.4		~~E~~ JL	P
7440-48-4	Cobalt	4.5	B		P
7440-50-8	Copper	13.6		~~E~~ JL	P
7439-89-6	Iron	63900		~~*~~ ~~E~~ JL	P
7439-92-1	Lead	15800			P
7439-95-4	Magnesium	44900		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	1530		~~*~~ ~~E~~ JL	P
7439-97-6	Mercury	0.14			CV
7440-02-0	Nickel	28.6		~~E~~ JL	P
7440-09-7	Potassium	307	B		P
7782-49-2	Selenium	0.79	U	~~N~~ R	P
7440-22-4	Silver	1.3	B		P
7440-23-5	Sodium	129	B		P
7440-28-0	Thallium	5.6		~~*~~	P
7440-62-2	Vanadium	33.2		~~E~~ JL	P
7440-66-6	Zinc	6030		~~*~~ JK	P
	Cyanide				NR

CP 8-2-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: August 6, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 Ellen for D.D.

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt/Mines Sites. Case: 29440 SDG: MJ0ES7

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1124
TDN: 1048
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 18 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0ES7	MJ0ET3	MJ0ET8	MJ0EW3
MJ0ES8	MJ0ET4	MJ0ET9	MJ0EW4
MJ0ES9	MJ0ET5	MJ0EW0	MJ0EW5
MJ0ET0	MJ0ET6	MJ0EW1	
MJ0ET1	MJ0ET7	MJ0EW2	

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04 1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/21/01. The samples were analyzed for mercury within 15 days and all other metals within 19 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 92-109% for ICP-AES and from 82-93% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
sodium	MJ0ET6, MJ0ET9, MJ0EW0, MJ0EW2
thallium	MJ0ES9, MJ0ET0, MJ0ET1, MJ0ET3, MJ0ET4, MJ0ET6, MJ0ET7, MJ0ET8, MJ0EW0, MJ0EW2, MJ0EW5

Zinc was detected above the CRDL in the preparation blank None of the sample results were affected.

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met. The recoveries ranged from 93-114%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0ET9 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of potassium. Results for potassium in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 59-108%. None of the data were qualified on this basis.

Duplicate Sample Analysis - Acceptable

Sample MJ0ET9 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria (±20% RPD or ± CRDL) for all target analytes with the exception of copper. Copper did meet the suggested technical control limit criteria (±35% RPD or ± 2X CRDL) for soils. The "*" qualifiers applied by the laboratory were crossed-out by the reviewer. None of the data were qualified on this basis.

Matrix Spike Analysis

Sample MJ0ET9 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of antimony (68%), arsenic (171%), copper (243%), mercury (-61%) and selenium (64%) in the spike sample MJ0ET9S. Due to possible bias, the detected and non-detected antimony and selenium results in all samples were qualified as estimated, "J/UJ". Due to possible bias, the detected arsenic and copper results in all samples were qualified as estimated, "J". Due to possible bias, the detected mercury results in all samples were qualified as estimated, "J". Mercury was detected in all samples. The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. The recoveries for lead and zinc could not be accurately determined because the concentrations native to the sample were greater than 4 times the amount of spike added to the sample. All of the other spike recoveries were acceptable and ranged from 94-119%.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 414. Fifteen (3.6%) were qualified as non-detected due to blank contamination. One hundred eight (26%) were qualified as estimated due to ICP serial dilution and spike analyses.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	07/03/01	1.00	200
MJ0ES7	07/03/01	1.00	200
MJ0ES8	07/03/01	1.00	200
MJ0ES9	07/03/01	1.00	200
MJ0ET0	07/03/01	1.00	200
MJ0ET1	07/03/01	1.00	200
MJ0ET3	07/03/01	1.00	200
MJ0ET4	07/03/01	1.00	200
MJ0ET5	07/03/01	1.00	200
MJ0ET6	07/03/01	1.00	200
MJ0ET7	07/03/01	1.00	200
MJ0ET8	07/03/01	1.00	200
MJ0ET9	07/03/01	1.00	200
MJ0ET9D	07/03/01	1.00	200
MJ0ET9S	07/03/01	1.00	200
MJ0EW0	07/03/01	1.00	200
MJ0EW1	07/03/01	1.00	200
MJ0EW2	07/03/01	1.00	200
MJ0EW3	07/03/01	1.00	200
MJ0EW4	07/03/01	1.00	200
MJ0EW5	07/03/01	1.00	200
PBS	07/03/01	1.00	200

13
PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	07/06/01	1.00	200
MJ0ES7	07/06/01	1.00	200
MJ0ES8	07/06/01	1.00	200
MJ0ES9	07/06/01	1.00	200
MJ0ET0	07/06/01	1.00	200
MJ0ET1	07/06/01	1.00	200
MJ0ET3	07/06/01	1.00	200
MJ0ET4	07/06/01	1.00	200
MJ0ET5	07/06/01	1.00	200
MJ0ET6	07/06/01	1.00	200
MJ0ET7	07/06/01	1.00	200
MJ0ET8	07/06/01	1.00	200
MJ0ET9	07/06/01	1.00	200
MJ0ET9D	07/06/01	1.00	200
MJ0ET9S	07/06/01	1.00	200
MJ0EW0	07/06/01	1.00	200
MJ0EW1	07/06/01	1.00	200
MJ0EW2	07/06/01	1.00	200
MJ0EW3	07/06/01	1.00	200
MJ0EW4	07/06/01	1.00	200
MJ0EW5	07/06/01	1.00	200
PBS	07/06/01	1.00	200

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13
PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	07/03/01	0.20	100
MJ0ES7	07/03/01	0.20	100
MJ0ES8	07/03/01	0.20	100
MJ0ES9	07/03/01	0.20	100
MJ0ET0	07/03/01	0.20	100
MJ0ET1	07/03/01	0.20	100
MJ0ET3	07/03/01	0.20	100
MJ0ET4	07/03/01	0.20	100
MJ0ET5	07/03/01	0.20	100
MJ0ET6	07/03/01	0.20	100
MJ0ET7	07/03/01	0.20	100
MJ0ET8	07/03/01	0.20	100
MJ0ET9	07/03/01	0.20	100
MJ0ET9D	07/03/01	0.20	100
MJ0ET9S	07/03/01	0.20	100
MJ0EW0	07/03/01	0.20	100
MJ0EW1	07/03/01	0.20	100
MJ0EW2	07/03/01	0.20	100
MJ0EW3	07/03/01	0.20	100
MJ0EW4	07/03/01	0.20	100
MJ0EW5	07/03/01	0.20	100
PBS	07/03/01	0.20	100

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ES7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39050S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 77.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	494			P
7440-36-0	Antimony	0.77	U	~~N~~ UJK	P
7440-38-2	Arsenic	6.7		~~N~~ JH	P
7440-39-3	Barium	11.1	B		P
7440-41-7	Beryllium	0.06	B		P
7440-43-9	Cadmium	44.9			P
7440-70-2	Calcium	156000			P
7440-47-3	Chromium	2.9			P
7440-48-4	Cobalt	0.28	U		P
7440-50-8	Copper	163		~~N~~ JH	P
7439-89-6	Iron	10600			P
7439-92-1	Lead	3280			P
7439-95-4	Magnesium	87800			P
7439-96-5	Manganese	284			P
7439-97-6	Mercury	0.65		~~N~~ JL	CV
7440-02-0	Nickel	5.5	B		P
7440-09-7	Potassium	108	B	~~E~~ JL	P
7782-49-2	Selenium	0.87	U	~~N~~ UJK	P
7440-22-4	Silver	1.8	B		P
7440-23-5	Sodium	212	B		P
7440-28-0	Thallium	1.4	B		P
7440-62-2	Vanadium	7.6	B		P
7440-66-6	Zinc	9700			P
	Cyanide				NR

PS-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ES8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39051S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 80.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	408			P
7440-36-0	Antimony	1.9	B	~~N~~ JL	P
7440-38-2	Arsenic	6.6		~~N~~ JH	P
7440-39-3	Barium	14.6	B		P
7440-41-7	Beryllium	0.06	B		P
7440-43-9	Cadmium	46.0			P
7440-70-2	Calcium	154000			P
7440-47-3	Chromium	2.9			P
7440-48-4	Cobalt	0.30	B		P
7440-50-8	Copper	180		~~N~~ JH	P
7439-89-6	Iron	11800			P
7439-92-1	Lead	3980			P
7439-95-4	Magnesium	89300			P
7439-96-5	Manganese	258			P
7439-97-6	Mercury	0.62		~~N~~ JL	CV
7440-02-0	Nickel	6.0	B		P
7440-09-7	Potassium	107	B	~~E~~ JL	P
7782-49-2	Selenium	0.85	U	~~N~~ UJK	P
7440-22-4	Silver	1.8	B		P
7440-23-5	Sodium	223	B		P
7440-28-0	Thallium	0.97	U		P
7440-62-2	Vanadium	7.7	B		P
7440-66-6	Zinc	9930			P
	Cyanide				NR

CP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ES9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39052S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 75.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	714			P
7440-36-0	Antimony	1.2	B	~~N~~ JL	P
7440-38-2	Arsenic	7.2		~~N~~ JH	P
7440-39-3	Barium	17.0	B		P
7440-41-7	Beryllium	0.11	B		P
7440-43-9	Cadmium	54.7			P
7440-70-2	Calcium	149000			P
7440-47-3	Chromium	4.4			P
7440-48-4	Cobalt	0.42	B		P
7440-50-8	Copper	222		~~N~~ JH	P
7439-89-6	Iron	14600			P
7439-92-1	Lead	4050			P
7439-95-4	Magnesium	77600			P
7439-96-5	Manganese	569			P
7439-97-6	Mercury	0.68		~~N~~ JL	CV
7440-02-0	Nickel	8.2	B		P
7440-09-7	Potassium	216	B	~~E~~ JL	P
7782-49-2	Selenium	0.90	U	~~N~~ UJK	P
7440-22-4	Silver	3.1			P
7440-23-5	Sodium	266	B		P
7440-28-0	Thallium	2.0	B	U	P
7440-62-2	Vanadium	10.5	B		P
7440-66-6	Zinc	12300			P
	Cyanide				NR

8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ET0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39053S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 77.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	319			P
7440-36-0	Antimony	1.1	B	~~N~~ JL	P
7440-38-2	Arsenic	7.0		~~N~~ JH	P
7440-39-3	Barium	5.2	B		P
7440-41-7	Beryllium	0.05	U		P
7440-43-9	Cadmium	46.1			P
7440-70-2	Calcium	158000			P
7440-47-3	Chromium	2.6			P
7440-48-4	Cobalt	0.28	U		P
7440-50-8	Copper	147		~~N~~ JH	P
7439-89-6	Iron	10200			P
7439-92-1	Lead	2940			P
7439-95-4	Magnesium	89300			P
7439-96-5	Manganese	236			P
7439-97-6	Mercury	0.76		~~N~~ JL	CV
7440-02-0	Nickel	5.5	B		P
7440-09-7	Potassium	79.8	B	~~E~~ JL	P
7782-49-2	Selenium	0.87	U	~~N~~ UJK	P
7440-22-4	Silver	1.3	B		P
7440-23-5	Sodium	197	B		P
7440-28-0	Thallium	1.4	B	U	P
7440-62-2	Vanadium	7.6	B		P
7440-66-6	Zinc	10300			P
	Cyanide				NR

CP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ET1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39054S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 73.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	743			P
7440-36-0	Antimony	0.81	U	~~N~~UJK	P
7440-38-2	Arsenic	5.8		~~N~~JH	P
7440-39-3	Barium	11.0	B		P
7440-41-7	Beryllium	0.12	B		P
7440-43-9	Cadmium	70.0			P
7440-70-2	Calcium	143000			P
7440-47-3	Chromium	4.9			P
7440-48-4	Cobalt	0.30	U		P
7440-50-8	Copper	297		~~N~~JH	P
7439-89-6	Iron	13500			P
7439-92-1	Lead	5110			P
7439-95-4	Magnesium	69500			P
7439-96-5	Manganese	629			P
7439-97-6	Mercury	0.77		~~N~~JL	CV
7440-02-0	Nickel	7.8	B		P
7440-09-7	Potassium	208	B	~~E~~JL	P
7782-49-2	Selenium	0.92	U	~~N~~UJK	P
7440-22-4	Silver	2.8			P
7440-23-5	Sodium	260	B		P
7440-28-0	Thallium	1.5	B	U	P
7440-62-2	Vanadium	12.6	B		P
7440-66-6	Zinc	14700			P
	Cyanide				NR

DP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ET3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39055S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 95.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5260			P
7440-36-0	Antimony	0.78	B	~~N~~ JL	P
7440-38-2	Arsenic	6.4		~~N~~ JH	P
7440-39-3	Barium	32.0	B		P
7440-41-7	Beryllium	0.31	B		P
7440-43-9	Cadmium	21.7			P
7440-70-2	Calcium	17300			P
7440-47-3	Chromium	7.2			P
7440-48-4	Cobalt	3.0	B		P
7440-50-8	Copper	55.7		~~N~~ JH	P
7439-89-6	Iron	14200			P
7439-92-1	Lead	1460			P
7439-95-4	Magnesium	5810			P
7439-96-5	Manganese	1150			P
7439-97-6	Mercury	0.10	B	~~N~~ JL	CV
7440-02-0	Nickel	6.1	B		P
7440-09-7	Potassium	1110		~~E~~ JL	P
7782-49-2	Selenium	0.71	U	~~N~~ UJK	P
7440-22-4	Silver	2.2			P
7440-23-5	Sodium	171	B		P
7440-28-0	Thallium	0.92	B	U	P
7440-62-2	Vanadium	12.7			P
7440-66-6	Zinc	4980			P
	Cyanide				NR

AH 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ET4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39056S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 91.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6570			P
7440-36-0	Antimony	2.0	B	~~N~~ JL	P
7440-38-2	Arsenic	53.7		~~N~~ JH	P
7440-39-3	Barium	64.7			P
7440-41-7	Beryllium	0.38	B		P
7440-43-9	Cadmium	65.1			P
7440-70-2	Calcium	53000			P
7440-47-3	Chromium	8.1			P
7440-48-4	Cobalt	2.9	B		P
7440-50-8	Copper	130		~~N~~ JH	P
7439-89-6	Iron	35400			P
7439-92-1	Lead	6570			P
7439-95-4	Magnesium	26000			P
7439-96-5	Manganese	2730			P
7439-97-6	Mercury	1.6		~~N~~ JL	CV
7440-02-0	Nickel	10			P
7440-09-7	Potassium	845	B	~~E~~ JL	P
7782-49-2	Selenium	0.74	U	~~N~~ UJK	P
7440-22-4	Silver	5.8			P
7440-23-5	Sodium	252	B		P
7440-28-0	Thallium	2.4		U	P
7440-62-2	Vanadium	12.4			P
7440-66-6	Zinc	14600			P
	Cyanide				NR

CP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0ET5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39057S

Level (low/med): LOW Date Received: 06/28/01

% 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	4040			P
7440-36-0	Antimony	2.1	B	~~N~~ JL	P
7440-38-2	Arsenic	12.5		~~N~~ JH	P
7440-39-3	Barium	27.0	B		P
7440-41-7	Beryllium	0.25	B		P
7440-43-9	Cadmium	121			P
7440-70-2	Calcium	72900			P
7440-47-3	Chromium	5.5			P
7440-48-4	Cobalt	3.1	B		P
7440-50-8	Copper	181		~~N~~ JH	P
7439-89-6	Iron	28300			P
7439-92-1	Lead	15800			P
7439-95-4	Magnesium	38900			P
7439-96-5	Manganese	1850			P
7439-97-6	Mercury	0.68		~~N~~ JL	CV
7440-02-0	Nickel	9.9			P
7440-09-7	Potassium	768	B	~~E~~ JL	P
7782-49-2	Selenium	0.73	U	~~N~~ UJK	P
7440-22-4	Silver	5.8			P
7440-23-5	Sodium	424	B		P
7440-28-0	Thallium	0.84	U		P
7440-62-2	Vanadium	10.4	B		P
7440-66-6	Zinc	32200			P
	Cyanide				NR

CP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ET6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39058S

Level (low/med): LOW Date Received: 06/28/01

% 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	788			P
7440-36-0	Antimony	0.64	U	~~N~~UJK	P
7440-38-2	Arsenic	9.6		~~N~~JH	P
7440-39-3	Barium	13.9	B		P
7440-41-7	Beryllium	0.07	B		P
7440-43-9	Cadmium	15.8			P
7440-70-2	Calcium	152000			P
7440-47-3	Chromium	1.9	B		P
7440-48-4	Cobalt	0.57	B		P
7440-50-8	Copper	53.9		~~N~~ JH	P
7439-89-6	Iron	17500			P
7439-92-1	Lead	918			P
7439-95-4	Magnesium	95100			P
7439-96-5	Manganese	441			P
7439-97-6	Mercury	0.18		~~N~~ JL	CV
7440-02-0	Nickel	6.3	B		P
7440-09-7	Potassium	349	B	~~E~~ JL	P
7782-49-2	Selenium	0.73	U	~~N~~UJK	P
7440-22-4	Silver	0.61	B		P
7440-23-5	Sodium	150	B	U	P
7440-28-0	Thallium	0.91	B	U	P
7440-62-2	Vanadium	6.5	B		P
7440-66-6	Zinc	4100			P
	Cyanide				NR

CP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ET7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39059S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 91.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	846			P
7440-36-0	Antimony	0.80	B	~~N~~ JL	P
7440-38-2	Arsenic	9.2		~~N~~ JH	P
7440-39-3	Barium	8.0	B		P
7440-41-7	Beryllium	0.04	U		P
7440-43-9	Cadmium	15.9			P
7440-70-2	Calcium	156000			P
7440-47-3	Chromium	2.2			P
7440-48-4	Cobalt	0.24	U		P
7440-50-8	Copper	40.1		~~N~~ JH	P
7439-89-6	Iron	19600			P
7439-92-1	Lead	1380			P
7439-95-4	Magnesium	98900			P
7439-96-5	Manganese	437			P
7439-97-6	Mercury	0.23		~~N~~ JL	CV
7440-02-0	Nickel	7.0	B		P
7440-09-7	Potassium	117	B	~~E~~ JL	P
7782-49-2	Selenium	0.75	U	~~N~~ UJK	P
7440-22-4	Silver	0.58	B		P
7440-23-5	Sodium	180	B		P
7440-28-0	Thallium	1.3	B	U	P
7440-62-2	Vanadium	5.8	B		P
7440-66-6	Zinc	4330			P
	Cyanide				NR

VP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ET8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39060S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 92.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	495			P
7440-36-0	Antimony	0.65	U	~~N~~UJK	P
7440-38-2	Arsenic	5.0		~~N~~JH	P
7440-39-3	Barium	6.3	B		P
7440-41-7	Beryllium	0.04	U		P
7440-43-9	Cadmium	13.9			P
7440-70-2	Calcium	157000			P
7440-47-3	Chromium	3.1			P
7440-48-4	Cobalt	0.28	B		P
7440-50-8	Copper	61.6		~~N~~*JH	P
7439-89-6	Iron	9820			P
7439-92-1	Lead	871			P
7439-95-4	Magnesium	100000			P
7439-96-5	Manganese	462			P
7439-97-6	Mercury	0.10	B	~~N~~JL	CV
7440-02-0	Nickel	4.6	B		P
7440-09-7	Potassium	108	B	~~E~~JL	P
7782-49-2	Selenium	0.74	U	~~N~~UJK	P
7440-22-4	Silver	0.28	B		P
7440-23-5	Sodium	169	B		P
7440-28-0	Thallium	1.9	B	U	P
7440-62-2	Vanadium	5.6	B		P
7440-66-6	Zinc	3990			P
	Cyanide				NR

CP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ET9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39061S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 92.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1940			P
7440-36-0	Antimony	0.93	B	~~N~~ JL	P
7440-38-2	Arsenic	12.6		~~N~~ JH	P
7440-39-3	Barium	24.2	B		P
7440-41-7	Beryllium	0.11	B		P
7440-43-9	Cadmium	22.7			P
7440-70-2	Calcium	85900			P
7440-47-3	Chromium	2.5			P
7440-48-4	Cobalt	1.2	B		P
7440-50-8	Copper	104		~~N~~ JH	P
7439-89-6	Iron	30100			P
7439-92-1	Lead	2230			P
7439-95-4	Magnesium	52700			P
7439-96-5	Manganese	272			P
7439-97-6	Mercury	0.33		~~N~~ JL	CV
7440-02-0	Nickel	11.0			P
7440-09-7	Potassium	402	B	~~E~~ JL	P
7782-49-2	Selenium	0.74	U	~~N~~ UJK	P
7440-22-4	Silver	0.95	B		P
7440-23-5	Sodium	140	B	U	P
7440-28-0	Thallium	0.89	B		P
7440-62-2	Vanadium	8.0	B		P
7440-66-6	Zinc	5900			P
	Cyanide				NR

CP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EW0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39062S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 92.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2990			P
7440-36-0	Antimony	0.65	U	~~N~~UJK	P
7440-38-2	Arsenic	7.3		~~N~~JH	P
7440-39-3	Barium	35.7	B		P
7440-41-7	Beryllium	0.15	B		P
7440-43-9	Cadmium	15.3			P
7440-70-2	Calcium	71600			P
7440-47-3	Chromium	3.3			P
7440-48-4	Cobalt	1.5	B		P
7440-50-8	Copper	46.2		~~N~~+JH	P
7439-89-6	Iron	16500			P
7439-92-1	Lead	1180			P
7439-95-4	Magnesium	43100			P
7439-96-5	Manganese	257			P
7439-97-6	Mercury	0.17		~~N~~JL	CV
7440-02-0	Nickel	6.8	B		P
7440-09-7	Potassium	843	B	~~E~~JL	P
7782-49-2	Selenium	0.73	U	~~N~~UJK	P
7440-22-4	Silver	0.50	B		P
7440-23-5	Sodium	141	B	U	P
7440-28-0	Thallium	1.8	B	U	P
7440-62-2	Vanadium	11.2			P
7440-66-6	Zinc	3820			P
	Cyanide				NR

8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EW1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39063S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 89.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2560			P
7440-36-0	Antimony	1.0	B	~~N~~ JL	P
7440-38-2	Arsenic	9.7		~~N~~ JH	P
7440-39-3	Barium	24.4	B		P
7440-41-7	Beryllium	0.11	B		P
7440-43-9	Cadmium	22.7			P
7440-70-2	Calcium	106000			P
7440-47-3	Chromium	2.9			P
7440-48-4	Cobalt	0.95	B		P
7440-50-8	Copper	54.4		~~N~~ JH	P
7439-89-6	Iron	21700			P
7439-92-1	Lead	1990			P
7439-95-4	Magnesium	63800			P
7439-96-5	Manganese	245			P
7439-97-6	Mercury	0.25		~~N~~ JL	CV
7440-02-0	Nickel	8.7	B		P
7440-09-7	Potassium	429	B	~~E~~ JL	P
7782-49-2	Selenium	0.76	U	~~N~~ UJK	P
7440-22-4	Silver	0.75	B		P
7440-23-5	Sodium	176	B		P
7440-28-0	Thallium	0.87	U		P
7440-62-2	Vanadium	7.7	B		P
7440-66-6	Zinc	5880			P
	Cyanide				NR

CP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EW2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39064S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 86.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	814			P
7440-36-0	Antimony	0.69	U	~~N~~ UJK	P
7440-38-2	Arsenic	9.7		~~N~~ JH	P
7440-39-3	Barium	46.5			P
7440-41-7	Beryllium	0.07	B		P
7440-43-9	Cadmium	30.5			P
7440-70-2	Calcium	139000			P
7440-47-3	Chromium	3.3			P
7440-48-4	Cobalt	0.63	B		P
7440-50-8	Copper	74.5		~~N~~ JH	P
7439-89-6	Iron	21000			P
7439-92-1	Lead	1960			P
7439-95-4	Magnesium	86700			P
7439-96-5	Manganese	527			P
7439-97-6	Mercury	0.57		~~N~~ JL	CV
7440-02-0	Nickel	8.7	B		P
7440-09-7	Potassium	250	B	~~E~~ JL	P
7782-49-2	Selenium	0.78	U	~~N~~ UJK	P
7440-22-4	Silver	3.2			P
7440-23-5	Sodium	164	B	U	P
7440-28-0	Thallium	1.6	B	U	P
7440-62-2	Vanadium	8.2	B		P
7440-66-6	Zinc	7030			P
	Cyanide				NR

AP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EW3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39065S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 87.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1240			P
7440-36-0	Antimony	0.69	U	~~N~~UJK	P
7440-38-2	Arsenic	7.0		~~N~~JH	P
7440-39-3	Barium	32.8	B		P
7440-41-7	Beryllium	0.07	B		P
7440-43-9	Cadmium	29.6			P
7440-70-2	Calcium	148000			P
7440-47-3	Chromium	3.8			P
7440-48-4	Cobalt	0.67	B		P
7440-50-8	Copper	144		~~N~~JH	P
7439-89-6	Iron	15200			P
7439-92-1	Lead	1710			P
7439-95-4	Magnesium	91200			P
7439-96-5	Manganese	548			P
7439-97-6	Mercury	0.40		~~N~~JL	CV
7440-02-0	Nickel	7.1	B		P
7440-09-7	Potassium	232	B	~~E~~JL	P
7782-49-2	Selenium	0.78	U	~~N~~UJK	P
7440-22-4	Silver	2.3	B		P
7440-23-5	Sodium	184	B		P
7440-28-0	Thallium	0.89	U		P
7440-62-2	Vanadium	8.4	B		P
7440-66-6	Zinc	7530			P
	Cyanide				NR

CP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EW4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39066S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 86.8

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	0.76	B	~~N~~ JL	P
7440-38-2	Arsenic	8.7		~~N~~ JH	P
7440-39-3	Barium	53.2			P
7440-41-7	Beryllium	0.17	B		P
7440-43-9	Cadmium	27.2			P
7440-70-2	Calcium	98600			P
7440-47-3	Chromium	4.8			P
7440-48-4	Cobalt	1.7	B		P
7440-50-8	Copper	72.6		~~N~~ JH	P
7439-89-6	Iron	18200			P
7439-92-1	Lead	1970			P
7439-95-4	Magnesium	60400			P
7439-96-5	Manganese	483			P
7439-97-6	Mercury	0.38		~~N~~ JL	CV
7440-02-0	Nickel	8.7	B		P
7440-09-7	Potassium	529	B	~~E~~ JL	P
7782-49-2	Selenium	0.78	U	~~N~~ UJK	P
7440-22-4	Silver	2.6			P
7440-23-5	Sodium	175	B		P
7440-28-0	Thallium	0.90	U		P
7440-62-2	Vanadium	10	B		P
7440-66-6	Zinc	6770			P
	Cyanide				NR

CP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EW5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0ES7

Matrix (soil/water): SOIL Lab Sample ID: 39067S

Level (low/med): LOW Date Received: 06/28/01

% Solids: 76.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1940			P
7440-36-0	Antimony	1.7	B	~~N~~ JL	P
7440-38-2	Arsenic	8.4		~~N~~ JH	P
7440-39-3	Barium	127			P
7440-41-7	Beryllium	0.08	B		P
7440-43-9	Cadmium	78.2			P
7440-70-2	Calcium	130000			P
7440-47-3	Chromium	27.3			P
7440-48-4	Cobalt	6.1	B		P
7440-50-8	Copper	443		~~N~~ JH	P
7439-89-6	Iron	33700			P
7439-92-1	Lead	4850			P
7439-95-4	Magnesium	63900			P
7439-96-5	Manganese	520			P
7439-97-6	Mercury	0.97		~~N~~ JL	CV
7440-02-0	Nickel	47.0			P
7440-09-7	Potassium	367	B	~~E~~ JL	P
7782-49-2	Selenium	0.89	U	~~N~~ UJK	P
7440-22-4	Silver	8.7			P
7440-23-5	Sodium	293	B		P
7440-28-0	Thallium	2.2	B	U	P
7440-62-2	Vanadium	15.0			P
7440-66-6	Zinc	17500			P
	Cyanide				NR

VP 8-6-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: August 6, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 CMC for DD.

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt/Mines Sites. Case: 29440 SDG: MJ0EY7

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1127
TDN: 1048
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 20 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0EY7	MJ0EZ2	MJ0GL3	MJ0GL8
MJ0EY8	MJ0EZ3	MJ0GL4	MJ0GM0
MJ0EY9	MJ0F12	MJ0GL5	MJ0GM2
MJ0EZ0	MJ0GL1	MJ0GL6	MJ0GM3
MJ0EZ1	MJ0GL2	MJ0GL7	MJ0GM5

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/23, 6/25, 6/26 and 6/27/01. The samples were analyzed for mercury within 19 days and all other metals within 24 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 92-107% for ICP-AES and from 85-97% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
cadmium	MJ0EY9, MJ0GL3, MJ0GL8, MJ0GM2, MJ0GM5
sodium	MJ0EY8
silver	MJ0EY7, MJ0EY8, MJ0EY9, MJ0EZ0, MJ0EZ1, MJ0EZ2, MJ0EZ3, MJ0GL8, MJ0GM0, MJ0GM2, MJ0GM3, MJ0GM5

Analytes which yielded a negative response in the preparation blank and/or continuing calibration blank(s) at concentrations comparable to or less than the absolute value of the blank(s) were qualified as estimated, "J/UJ", due to possible low bias. The following samples were qualified:

Analyte	Associated Samples
selenium	All

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met. The recoveries ranged from 91-118%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0EY9 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of calcium and magnesium. Results for calcium and magnesium in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 64-172%. None of the data were qualified on this basis.

Duplicate Sample Analysis - Acceptable

Sample MJ0EY9 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria (±20% RPD or ± CRDL) for all target analytes with the exception of zinc. Zinc did meet the suggested technical control limit criteria (±35% RPD or ± 2X CRDL) for soils. The "*" qualifiers applied by the laboratory were crossed-out by the reviewer. None of the data were qualified on this basis.

Matrix Spike Analysis

Sample MJ0EY9 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of manganese (126%) and selenium (67%) in the spike sample MJ0EY9S. Due to possible bias, the detected and non-detected selenium results in all samples were qualified as estimated, "J/UJ". Due to possible bias, the detected manganese results in all samples were qualified as estimated, "J". The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. All of the other spike recoveries were acceptable and ranged from 80-104%.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 460. Eighteen (3.9%) were qualified as non-detected due to blank contamination. Eighty (17%) were qualified as estimated due to negative blanks, ICP serial dilution and spike analyses.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

U.S. EPA - CLP

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EY7

ICP ID Number: P3 Date: 07/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese	257.60		15	0.7	P
Mercury			0.2		NR
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc	206.20		20	3.6	P
Cyanide			10		NR

Comments:

P3: THERMO JARRELL ASH

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EY7

ICP ID Number: P4 Date: 07/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	17.7	P
Antimony	206.80		60	2.9	P
Arsenic	189.00		10	4.6	P
Barium	493.40		200	0.7	P
Beryllium	313.00		5	0.1	P
Cadmium	226.50		5	0.2	P
Calcium	317.90		5000	40.4	P
Chromium	267.70		10	0.4	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.9	P
Iron	271.40		100	9.8	P
Lead	220.30		3	1.8	P
Magnesium	279.00		5000	13.5	P
Manganese	257.60		15	0.3	P
Mercury			0.2		NR
Nickel	231.60		40	1.6	P
Potassium	766.40		5000	9.7	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.3	P
Sodium	330.20		5000	114.2	P
Thallium	190.80		10	5.1	P
Vanadium	292.40		50	0.7	P
Zinc	206.20		20	0.9	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EY7

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EY7

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	07/11/01	1.00	200
MJ0EY7	07/11/01	1.01	200
MJ0EY8	07/11/01	1.02	200
MJ0EY9	07/11/01	1.00	200
MJ0EY9D	07/11/01	1.00	200
MJ0EY9S	07/11/01	1.00	200
MJ0EZ0	07/11/01	1.01	200
MJ0EZ1	07/11/01	1.01	200
MJ0EZ2	07/11/01	1.01	200
MJ0EZ3	07/11/01	1.02	200
MJ0F12	07/11/01	1.00	200
MJ0GL1	07/11/01	1.00	200
MJ0GL2	07/11/01	1.00	200
MJ0GL3	07/11/01	1.01	200
MJ0GL4	07/11/01	1.02	200
MJ0GL5	07/11/01	1.01	200
MJ0GL6	07/11/01	1.00	200
MJ0GL7	07/11/01	1.02	200
MJ0GL8	07/11/01	1.00	200
MJ0GM0	07/11/01	1.01	200
MJ0GM2	07/11/01	1.00	200
MJ0GM3	07/11/01	1.01	200
MJ0GM5	07/11/01	1.01	200
PBS	07/11/01	1.00	200

13
PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EY7

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	07/12/01	0.20	100
MJ0EY7	07/12/01	0.21	100
MJ0EY8	07/12/01	0.21	100
MJ0EY9	07/12/01	0.20	100
MJ0EY9D	07/12/01	0.20	100
MJ0EY9S	07/12/01	0.20	100
MJ0EZ0	07/12/01	0.21	100
MJ0EZ1	07/12/01	0.21	100
MJ0EZ2	07/12/01	0.21	100
MJ0EZ3	07/12/01	0.20	100
MJ0F12	07/12/01	0.21	100
MJ0GL1	07/12/01	0.20	100
MJ0GL2	07/12/01	0.21	100
MJ0GL3	07/12/01	0.22	100
MJ0GL4	07/12/01	0.20	100
MJ0GL5	07/12/01	0.21	100
MJ0GL6	07/12/01	0.20	100
MJ0GL7	07/12/01	0.22	100
MJ0GL8	07/12/01	0.22	100
MJ0GM0	07/12/01	0.22	100
MJ0GM2	07/12/01	0.22	100
MJ0GM3	07/12/01	0.21	100
MJ0GM5	07/12/01	0.21	100
PBS	07/12/01	0.20	100

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EY7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EY7

Matrix (soil/water): SOIL Lab Sample ID: 39212S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 96.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3760			P
7440-36-0	Antimony	0.86	B		P
7440-38-2	Arsenic	0.96	B		P
7440-39-3	Barium	54.3			P
7440-41-7	Beryllium	0.15	B		P
7440-43-9	Cadmium	0.67	B		P
7440-70-2	Calcium	4750		~~E~~ JL	P
7440-47-3	Chromium	2.5			P
7440-48-4	Cobalt	1.4	B		P
7440-50-8	Copper	5.4			P
7439-89-6	Iron	5200			P
7439-92-1	Lead	32.7			P
7439-95-4	Magnesium	3200		~~E~~ JL	P
7439-96-5	Manganese	260		~~N~~ JH	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	2.4	B		P
7440-09-7	Potassium	734	B		P
7782-49-2	Selenium	0.70	U	~~N~~ U JK	P
7440-22-4	Silver	0.14	B	U	P
7440-23-5	Sodium	193	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	8.8	B		P
7440-66-6	Zinc	341		~~E~~	P
	Cyanide				NR

CP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EY8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EY7

Matrix (soil/water): SOIL Lab Sample ID: 39213S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 94.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1610			P
7440-36-0	Antimony	0.62	B		P
7440-38-2	Arsenic	2.6			P
7440-39-3	Barium	18.6	B		P
7440-41-7	Beryllium	0.08	B		P
7440-43-9	Cadmium	5.2			P
7440-70-2	Calcium	33200		~~E~~ JL	P
7440-47-3	Chromium	1.9	B		P
7440-48-4	Cobalt	0.52	B		P
7440-50-8	Copper	11.2			P
7439-89-6	Iron	5090			P
7439-92-1	Lead	87.3			P
7439-95-4	Magnesium	18000		~~E~~ JL	P
7439-96-5	Manganese	97.8		~~N~~ JH	P
7439-97-6	Mercury	0.08	B		CV
7440-02-0	Nickel	1.9	B		P
7440-09-7	Potassium	454	B		P
7782-49-2	Selenium	0.70	U	~~N~~ UJK	P
7440-22-4	Silver	0.23	B	U	P
7440-23-5	Sodium	164	B	U	P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	5.5	B		P
7440-66-6	Zinc	2260		*	P
	Cyanide				NR

CP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EY9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EY7

Matrix (soil/water): SOIL Lab Sample ID: 39214S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 98.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2220			P
7440-36-0	Antimony	0.59	U		P
7440-38-2	Arsenic	0.96	B		P
7440-39-3	Barium	26.2	B		P
7440-41-7	Beryllium	0.10	B		P
7440-43-9	Cadmium	0.24	B	U	P
7440-70-2	Calcium	1470		~~E~~ JL	P
7440-47-3	Chromium	2.0	B		P
7440-48-4	Cobalt	1.8	B		P
7440-50-8	Copper	3.0	B		P
7439-89-6	Iron	4060			P
7439-92-1	Lead	10.7			P
7439-95-4	Magnesium	1230		~~E~~ JL	P
7439-96-5	Manganese	94.3		~~N~~ JH	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	1.6	B		P
7440-09-7	Potassium	649	B		P
7782-49-2	Selenium	0.69	U	~~N~~ UJK	P
7440-22-4	Silver	0.10	B	U	P
7440-23-5	Sodium	184	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	8.4	B		P
7440-66-6	Zinc	106		✓	P
	Cyanide				NR

CL 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EZ0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EY7

Matrix (soil/water): SOIL Lab Sample ID: 39215S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 96.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3710			P
7440-36-0	Antimony	0.60	U		P
7440-38-2	Arsenic	1.2	B		P
7440-39-3	Barium	38.9	B		P
7440-41-7	Beryllium	0.15	B		P
7440-43-9	Cadmium	0.36	B		P
7440-70-2	Calcium	2110		~~E~~ JL	P
7440-47-3	Chromium	2.9			P
7440-48-4	Cobalt	1.2	B		P
7440-50-8	Copper	3.6	B		P
7439-89-6	Iron	5070			P
7439-92-1	Lead	16.3			P
7439-95-4	Magnesium	1630		~~E~~ JL	P
7439-96-5	Manganese	131		~~N~~ JH	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	2.6	B		P
7440-09-7	Potassium	815	B		P
7782-49-2	Selenium	0.70	U	~~N~~ UJK	P
7440-22-4	Silver	0.13	B	U	P
7440-23-5	Sodium	279	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	9.0	B		P
7440-66-6	Zinc	171		~~J~~	P
	Cyanide				NR

CP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EZ1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EY7

Matrix (soil/water): SOIL Lab Sample ID: 39216S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 92.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	146			P
7440-36-0	Antimony	1.0	B		P
7440-38-2	Arsenic	9.6			P
7440-39-3	Barium	5.2	B		P
7440-41-7	Beryllium	0.02	U		P
7440-43-9	Cadmium	14.3			P
7440-70-2	Calcium	84300		~~E~~ JL	P
7440-47-3	Chromium	1.3	B		P
7440-48-4	Cobalt	0.24	U		P
7440-50-8	Copper	28.7			P
7439-89-6	Iron	6380			P
7439-92-1	Lead	270			P
7439-95-4	Magnesium	44000		~~E~~ JL	P
7439-96-5	Manganese	110		~~N~~ JH	P
7439-97-6	Mercury	0.17			CV
7440-02-0	Nickel	2.5	B		P
7440-09-7	Potassium	122	B		P
7782-49-2	Selenium	0.73	U	~~N~~ UJK	P
7440-22-4	Silver	0.29	B	U	P
7440-23-5	Sodium	286	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	1.6	B		P
7440-66-6	Zinc	5870		✓	P
	Cyanide				NR

CP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EZ2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EY7

Matrix (soil/water): SOIL Lab Sample ID: 39217S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 94.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7560			P
7440-36-0	Antimony	0.61	U		P
7440-38-2	Arsenic	2.7			P
7440-39-3	Barium	128			P
7440-41-7	Beryllium	0.37	B		P
7440-43-9	Cadmium	0.86	B		P
7440-70-2	Calcium	5150		~~E~~ JL	P
7440-47-3	Chromium	3.9			P
7440-48-4	Cobalt	3.5	B		P
7440-50-8	Copper	5.9			P
7439-89-6	Iron	12200			P
7439-92-1	Lead	25.2			P
7439-95-4	Magnesium	5500		~~E~~ JL	P
7439-96-5	Manganese	388		~~N~~ JH	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	2.9	B		P
7440-09-7	Potassium	3090			P
7782-49-2	Selenium	0.71	U	~~N~~ UJK	P
7440-22-4	Silver	0.28	B	U	P
7440-23-5	Sodium	290	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	24.6			P
7440-66-6	Zinc	432		~~N~~	P
	Cyanide				NR

JP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EZ3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EY7

Matrix (soil/water): SOIL Lab Sample ID: 39218S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 93.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4950			P
7440-36-0	Antimony	0.67	B		P
7440-38-2	Arsenic	0.96	U		P
7440-39-3	Barium	82.5			P
7440-41-7	Beryllium	0.18	B		P
7440-43-9	Cadmium	0.74	B		P
7440-70-2	Calcium	8150		~~E~~ JL	P
7440-47-3	Chromium	2.7			P
7440-48-4	Cobalt	1.5	B		P
7440-50-8	Copper	5.9			P
7439-89-6	Iron	7000			P
7439-92-1	Lead	33.8			P
7439-95-4	Magnesium	5420		~~E~~ JL	P
7439-96-5	Manganese	211		~~N~~ JH	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	2.5	B		P
7440-09-7	Potassium	1180			P
7782-49-2	Selenium	0.71	U	~~N~~ U JK	P
7440-22-4	Silver	0.23	B	U	P
7440-23-5	Sodium	286	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	11.1			P
7440-66-6	Zinc	312		~~J~~	P
	Cyanide				NR

CP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0F12

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EY7

Matrix (soil/water): SOIL Lab Sample ID: 39219S

Level (low/med): LOW Date Received: 06/29/01

% Solids: 73.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1480			P
7440-36-0	Antimony	5.5	B		P
7440-38-2	Arsenic	16.5			P
7440-39-3	Barium	37.0	B		P
7440-41-7	Beryllium	0.07	B		P
7440-43-9	Cadmium	702			P
7440-70-2	Calcium	37200		~~E~~ JL	P
7440-47-3	Chromium	2.2	B		P
7440-48-4	Cobalt	1.0	B		P
7440-50-8	Copper	202			P
7439-89-6	Iron	32400			P
7439-92-1	Lead	10900			P
7439-95-4	Magnesium	22600		~~E~~ JL	P
7439-96-5	Manganese	412		~~E~~ JH	P
7439-97-6	Mercury	3.2			CV
7440-02-0	Nickel	5.1	B		P
7440-09-7	Potassium	499	B		P
7782-49-2	Selenium	0.92	U	~~E~~ UJK	P
7440-22-4	Silver	3.3			P
7440-23-5	Sodium	6080			P
7440-28-0	Thallium	1.4	B		P
7440-62-2	Vanadium	4.5	B		P
7440-66-6	Zinc	189000		~~E~~	P
	Cyanide				NR

CP 8-6-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: August 7, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt/Mines Sites. Case: 29440 SDG: MJ0EN5

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1129
TDN: 1052
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 20 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0EN5	MJ0EP0	MJ0EP5	MJ0EQ0
MJ0EN6	MJ0EP1	MJ0EP6	MJ0EQ1
MJ0EN7	MJ0EP2	MJ0EP7	MJ0EQ2
MJ0EN8	MJ0EP3	MJ0EP8	MJ0EQ3
MJ0EN9	MJ0EP4	MJ0EP9	MJ0EQ4

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/20/01. The samples were analyzed for mercury within 7 days and all other metals within 9 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 96-110% for ICP-AES and from 82-98% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
barium	MJ0EN5, MJ0EQ1
chromium	MJ0EN5, MJ0EQ1, MJ0EQ3
nickel	MJ0EN5

Analytes which yielded a negative response in the preparation blank and/or continuing calibration blank(s) at concentrations comparable to or less than the absolute value of the blank(s) were qualified as estimated, "J/UJ", due to possible low bias. The following samples were qualified:

Analyte	Associated Samples
thallium	All

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met. The recoveries ranged from 89-117%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0EP5 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of copper. Results for copper in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 65-117%. None of the data were qualified on this basis.

Duplicate Sample Analysis - Acceptable

Sample MJ0EP5 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria for all target analytes. None of the data were qualified on this basis.

Matrix Spike Analysis

Sample MJ0EP5 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of antimony (46%) in the spike sample MJ0EP5S. Due to possible bias, the detected and non-detected antimony results in all samples were qualified as estimated, "J/UJ". The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. The recoveries for lead and zinc could not be accurately determined because the concentrations native to the sample were greater than 4 times the amount of spike added to the sample. All of the other spike recoveries were acceptable and ranged from 93-120%.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 460. Six (1.3%) were qualified as non-detected due to blank contamination. Sixty (17%) were qualified as estimated due to negative blanks, ICP serial dilution and spike analyses.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/26/01	1.00	200
MJ0EN5	06/26/01	1.00	200
MJ0EN6	06/26/01	1.02	200
MJ0EN7	06/26/01	1.01	200
MJ0EN8	06/26/01	1.01	200
MJ0EN9	06/26/01	1.01	200
MJ0EP0	06/26/01	1.01	200
MJ0EP1	06/26/01	1.00	200
MJ0EP2	06/26/01	1.02	200
MJ0EP3	06/26/01	1.01	200
MJ0EP4	06/26/01	1.01	200
MJ0EP5	06/26/01	1.00	200
MJ0EP5D	06/26/01	1.00	200
MJ0EP5S	06/26/01	1.00	200
MJ0EP6	06/26/01	1.01	200
MJ0EP7	06/26/01	1.02	200
MJ0EP8	06/26/01	1.00	200
MJ0EP9	06/26/01	1.01	200
MJ0EQ0	06/26/01	1.00	200
MJ0EQ1	06/26/01	1.00	200
MJ0EQ2	06/26/01	1.01	200
MJ0EQ3	06/26/01	1.00	200
MJ0EQ4	06/26/01	1.02	200
PBS	06/26/01	1.00	200

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/26/01	0.20	100
MJ0EN5	06/26/01	0.20	100
MJ0EN6	06/26/01	0.20	100
MJ0EN7	06/26/01	0.20	100
MJ0EN8	06/26/01	0.20	100
MJ0EN9	06/26/01	0.21	100
MJ0EP0	06/26/01	0.22	100
MJ0EP1	06/26/01	0.22	100
MJ0EP2	06/26/01	0.20	100
MJ0EP3	06/26/01	0.21	100
MJ0EP4	06/26/01	0.22	100
MJ0EP5	06/26/01	0.20	100
MJ0EP5D	06/26/01	0.20	100
MJ0EP5S	06/26/01	0.20	100
MJ0EP6	06/26/01	0.20	100
MJ0EP7	06/26/01	0.21	100
MJ0EP8	06/26/01	0.20	100
MJ0EP9	06/26/01	0.21	100
MJ0EQ0	06/26/01	0.20	100
MJ0EQ1	06/26/01	0.20	100
MJ0EQ2	06/26/01	0.21	100
MJ0EQ3	06/26/01	0.21	100
MJ0EQ4	06/26/01	0.21	100
PBS	06/26/01	0.20	100

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EN5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38868S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 98.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	133			P
7440-36-0	Antimony	8.9	B	~~N~~ JL	P
7440-38-2	Arsenic	4.5			P
7440-39-3	Barium	1.4	B	U	P
7440-41-7	Beryllium	0.04	U		P
7440-43-9	Cadmium	8.1			P
7440-70-2	Calcium	187000			P
7440-47-3	Chromium	0.41	B	U	P
7440-48-4	Cobalt	0.22	U		P
7440-50-8	Copper	13.1		~~E~~ JL	P
7439-89-6	Iron	2120			P
7439-92-1	Lead	476			P
7439-95-4	Magnesium	125000			P
7439-96-5	Manganese	172			P
7439-97-6	Mercury	0.06	B		CV
7440-02-0	Nickel	0.67	B	U	P
7440-09-7	Potassium	45.5	B		P
7782-49-2	Selenium	0.69	U		P
7440-22-4	Silver	0.16	U		P
7440-23-5	Sodium	186	B		P
7440-28-0	Thallium	0.80	U	UJK	P
7440-62-2	Vanadium	1.6	B		P
7440-66-6	Zinc	2030			P
	Cyanide				NR

CP 8-7-01

Color Before: WHITE Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0EN6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38869S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 97.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1350			P
7440-36-0	Antimony	1.6	B	~~N~~ JL	P
7440-38-2	Arsenic	5.4			P
7440-39-3	Barium	23.5	B		P
7440-41-7	Beryllium	0.08	B		P
7440-43-9	Cadmium	16.3			P
7440-70-2	Calcium	173000			P
7440-47-3	Chromium	2.3			P
7440-48-4	Cobalt	0.58	B		P
7440-50-8	Copper	10.4		~~E~~ JL	P
7439-89-6	Iron	7160			P
7439-92-1	Lead	799			P
7439-95-4	Magnesium	105000			P
7439-96-5	Manganese	184			P
7439-97-6	Mercury	0.25			CV
7440-02-0	Nickel	3.2	B		P
7440-09-7	Potassium	224	B		P
7782-49-2	Selenium	0.69	U		P
7440-22-4	Silver	0.42	B		P
7440-23-5	Sodium	213	B		P
7440-28-0	Thallium	0.79	U	uJK	P
7440-62-2	Vanadium	11.4			P
7440-66-6	Zinc	4220			P
	Cyanide				NR

CP 8-7-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EN7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38870S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 89.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2070			P
7440-36-0	Antimony	1.1	B	~~J~~ JL	P
7440-38-2	Arsenic	4.4			P
7440-39-3	Barium	57.6			P
7440-41-7	Beryllium	0.09	B		P
7440-43-9	Cadmium	24.9			P
7440-70-2	Calcium	132000			P
7440-47-3	Chromium	3.4			P
7440-48-4	Cobalt	1.4	B		P
7440-50-8	Copper	10.2		~~J~~ JL	P
7439-89-6	Iron	7210			P
7439-92-1	Lead	558			P
7439-95-4	Magnesium	67000			P
7439-96-5	Manganese	175			P
7439-97-6	Mercury	0.14			CV
7440-02-0	Nickel	4.1	B		P
7440-09-7	Potassium	449	B		P
7782-49-2	Selenium	0.76	U		P
7440-22-4	Silver	0.18	B		P
7440-23-5	Sodium	230	B		P
7440-28-0	Thallium	0.87	U	UJK	P
7440-62-2	Vanadium	7.2	B		P
7440-66-6	Zinc	6770			P
	Cyanide				NR

CPg. 7-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EN8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38871S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 89.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1750			P
7440-36-0	Antimony	0.66	U	~~N~~UJK	P
7440-38-2	Arsenic	2.8			P
7440-39-3	Barium	30.2	B		P
7440-41-7	Beryllium	0.08	B		P
7440-43-9	Cadmium	25.2			P
7440-70-2	Calcium	153000			P
7440-47-3	Chromium	3.2			P
7440-48-4	Cobalt	1.4	B		P
7440-50-8	Copper	8.6		~~J~~ JL	P
7439-89-6	Iron	6090			P
7439-92-1	Lead	416			P
7439-95-4	Magnesium	93900			P
7439-96-5	Manganese	206			P
7439-97-6	Mercury	0.21			CV
7440-02-0	Nickel	3.6	B		P
7440-09-7	Potassium	413	B		P
7782-49-2	Selenium	0.75	U		P
7440-22-4	Silver	0.18	U		P
7440-23-5	Sodium	230	B		P
7440-28-0	Thallium	0.86	U	UJK	P
7440-62-2	Vanadium	6.4	B		P
7440-66-6	Zinc	7780			P
	Cyanide				NR

CP 8-7-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EN9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38872S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 75.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	761			P
7440-36-0	Antimony	5.1	B	~~N~~ JL	P
7440-38-2	Arsenic	12.3			P
7440-39-3	Barium	10.6	B		P
7440-41-7	Beryllium	0.10	B		P
7440-43-9	Cadmium	147			P
7440-70-2	Calcium	137000			P
7440-47-3	Chromium	2.7			P
7440-48-4	Cobalt	0.29	U		P
7440-50-8	Copper	52.0		~~E~~ JL	P
7439-89-6	Iron	11600			P
7439-92-1	Lead	6110			P
7439-95-4	Magnesium	75500			P
7439-96-5	Manganese	186			P
7439-97-6	Mercury	2.7			CV
7440-02-0	Nickel	4.2	B		P
7440-09-7	Potassium	95.6	B		P
7782-49-2	Selenium	0.89	U		P
7440-22-4	Silver	2.4	B		P
7440-23-5	Sodium	604	B		P
7440-28-0	Thallium	1.0	U	UJK	P
7440-62-2	Vanadium	14.8			P
7440-66-6	Zinc	37500			P
	Cyanide				NR

CP 8-7-01

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EP0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38873S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 74.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	656			P
7440-36-0	Antimony	6.9	B	~~N~~ JL	P
7440-38-2	Arsenic	14.0			P
7440-39-3	Barium	11.3	B		P
7440-41-7	Beryllium	0.10	B		P
7440-43-9	Cadmium	160			P
7440-70-2	Calcium	141000			P
7440-47-3	Chromium	2.5	B		P
7440-48-4	Cobalt	0.33	B		P
7440-50-8	Copper	46.5		~~E~~ JL	P
7439-89-6	Iron	13500			P
7439-92-1	Lead	5990			P
7439-95-4	Magnesium	78800			P
7439-96-5	Manganese	197			P
7439-97-6	Mercury	2.1			CV
7440-02-0	Nickel	4.9	B		P
7440-09-7	Potassium	98.5	B		P
7782-49-2	Selenium	0.90	U		P
7440-22-4	Silver	2.4	B		P
7440-23-5	Sodium	731	B		P
7440-28-0	Thallium	1.0	U	uJK	P
7440-62-2	Vanadium	18.2			P
7440-66-6	Zinc	41300			P
	Cyanide				NR

CP 8-7-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0EP1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38874S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 78.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	439			P
7440-36-0	Antimony	3.2	B	~~N~~ JL	P
7440-38-2	Arsenic	8.8			P
7440-39-3	Barium	6.8	B		P
7440-41-7	Beryllium	0.06	B		P
7440-43-9	Cadmium	124			P
7440-70-2	Calcium	162000			P
7440-47-3	Chromium	1.9	B		P
7440-48-4	Cobalt	0.28	U		P
7440-50-8	Copper	29.7		~~N~~ JL	P
7439-89-6	Iron	10900			P
7439-92-1	Lead	3350			P
7439-95-4	Magnesium	87800			P
7439-96-5	Manganese	183			P
7439-97-6	Mercury	1.4			CV
7440-02-0	Nickel	3.6	B		P
7440-09-7	Potassium	56.1	B		P
7782-49-2	Selenium	0.87	U		P
7440-22-4	Silver	1.5	B		P
7440-23-5	Sodium	573	B		P
7440-28-0	Thallium	1.0	U	UJK	P
7440-62-2	Vanadium	14.6			P
7440-66-6	Zinc	34400			P
	Cyanide				NR

CP 8-7-01

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0EP2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38875S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 77.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	497			P
7440-36-0	Antimony	4.4	B	~~N~~ JL	P
7440-38-2	Arsenic	11.6			P
7440-39-3	Barium	9.6	B		P
7440-41-7	Beryllium	0.07	B		P
7440-43-9	Cadmium	138			P
7440-70-2	Calcium	155000			P
7440-47-3	Chromium	1.8	B		P
7440-48-4	Cobalt	0.28	U		P
7440-50-8	Copper	30.5		~~N~~ JL	P
7439-89-6	Iron	12200			P
7439-92-1	Lead	5230			P
7439-95-4	Magnesium	86300			P
7439-96-5	Manganese	192			P
7439-97-6	Mercury	1.6			CV
7440-02-0	Nickel	3.8	B		P
7440-09-7	Potassium	67.3	B		P
7782-49-2	Selenium	0.86	U		P
7440-22-4	Silver	1.9	B		P
7440-23-5	Sodium	585	B		P
7440-28-0	Thallium	0.98	U	u JK	P
7440-62-2	Vanadium	14.9			P
7440-66-6	Zinc	34500			P
	Cyanide				NR

CP 8-7-01

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EP3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38876S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 80.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	819			P
7440-36-0	Antimony	3.9	B	~~N~~ JL	P
7440-38-2	Arsenic	12.0			P
7440-39-3	Barium	13.2	B		P
7440-41-7	Beryllium	0.07	B		P
7440-43-9	Cadmium	169			P
7440-70-2	Calcium	147000			P
7440-47-3	Chromium	2.2	B		P
7440-48-4	Cobalt	0.37	B		P
7440-50-8	Copper	32.0		~~E~~ JL	P
7439-89-6	Iron	18500			P
7439-92-1	Lead	5410			P
7439-95-4	Magnesium	85000			P
7439-96-5	Manganese	194			P
7439-97-6	Mercury	1.7			CV
7440-02-0	Nickel	6.4	B		P
7440-09-7	Potassium	153	B		P
7782-49-2	Selenium	0.84	U		P
7440-22-4	Silver	2.1	B		P
7440-23-5	Sodium	847	B		P
7440-28-0	Thallium	0.97	U	UJK	P
7440-62-2	Vanadium	11.7	B		P
7440-66-6	Zinc	48300			P
	Cyanide				NR

CP 8-7-01

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EP4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38877S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 78.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	617			P
7440-36-0	Antimony	6.3	B	~~N~~ JL	P
7440-38-2	Arsenic	15.6			P
7440-39-3	Barium	11.3	B		P
7440-41-7	Beryllium	0.05	B		P
7440-43-9	Cadmium	232			P
7440-70-2	Calcium	154000			P
7440-47-3	Chromium	2.2	B		P
7440-48-4	Cobalt	0.28	U		P
7440-50-8	Copper	43.7		~~N~~ JL	P
7439-89-6	Iron	18300			P
7439-92-1	Lead	13300			P
7439-95-4	Magnesium	92200			P
7439-96-5	Manganese	186			P
7439-97-6	Mercury	3.2			CV
7440-02-0	Nickel	6.8	B		P
7440-09-7	Potassium	78.4	B		P
7782-49-2	Selenium	0.85	U		P
7440-22-4	Silver	3.0			P
7440-23-5	Sodium	1130	B		P
7440-28-0	Thallium	0.98	U	UJK	P
7440-62-2	Vanadium	10.5	B		P
7440-66-6	Zinc	58000			P
	Cyanide				NR

CP 8-7-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0EP5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38878S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 76.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	455			P
7440-36-0	Antimony	4.8	B	~~N~~ JL	P
7440-38-2	Arsenic	11.4			P
7440-39-3	Barium	5.9	B		P
7440-41-7	Beryllium	0.08	B		P
7440-43-9	Cadmium	142			P
7440-70-2	Calcium	147000			P
7440-47-3	Chromium	1.9	B		P
7440-48-4	Cobalt	0.29	U		P
7440-50-8	Copper	41.0		~~N~~ JL	P
7439-89-6	Iron	11200			P
7439-92-1	Lead	4900			P
7439-95-4	Magnesium	85100			P
7439-96-5	Manganese	199			P
7439-97-6	Mercury	1.6			CV
7440-02-0	Nickel	3.7	B		P
7440-09-7	Potassium	43.6	B		P
7782-49-2	Selenium	0.89	U		P
7440-22-4	Silver	2.1	B		P
7440-23-5	Sodium	531	B		P
7440-28-0	Thallium	1.0	U	uJK	P
7440-62-2	Vanadium	14.4			P
7440-66-6	Zinc	33300			P
	Cyanide				NR

CP 8-7-01

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0EP6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38879S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 74.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	593			P
7440-36-0	Antimony	4.8	B	~~N~~ JL	P
7440-38-2	Arsenic	14.6			P
7440-39-3	Barium	9.1	B		P
7440-41-7	Beryllium	0.09	B		P
7440-43-9	Cadmium	162			P
7440-70-2	Calcium	144000			P
7440-47-3	Chromium	2.5	B		P
7440-48-4	Cobalt	0.29	U		P
7440-50-8	Copper	53.2		~~E~~ JL	P
7439-89-6	Iron	13700			P
7439-92-1	Lead	6290			P
7439-95-4	Magnesium	83900			P
7439-96-5	Manganese	202			P
7439-97-6	Mercury	2.4			CV
7440-02-0	Nickel	4.8	B		P
7440-09-7	Potassium	74.4	B		P
7782-49-2	Selenium	0.91	U		P
7440-22-4	Silver	2.7	B		P
7440-23-5	Sodium	814	B		P
7440-28-0	Thallium	1.0	U	UJK	P
7440-62-2	Vanadium	20.5			P
7440-66-6	Zinc	46000			P
	Cyanide				NR

CP 8-7-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EP7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38880S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 72.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	750			P
7440-36-0	Antimony	11.4	B	~~N~~ JL	P
7440-38-2	Arsenic	22.6			P
7440-39-3	Barium	29.0	B		P
7440-41-7	Beryllium	0.13	B		P
7440-43-9	Cadmium	192			P
7440-70-2	Calcium	147000			P
7440-47-3	Chromium	2.8			P
7440-48-4	Cobalt	0.35	B		P
7440-50-8	Copper	35.5		~~E~~ JL	P
7439-89-6	Iron	15300			P
7439-92-1	Lead	8250			P
7439-95-4	Magnesium	80600			P
7439-96-5	Manganese	186			P
7439-97-6	Mercury	2.3			CV
7440-02-0	Nickel	5.9	B		P
7440-09-7	Potassium	78.3	B		P
7782-49-2	Selenium	0.92	U		P
7440-22-4	Silver	2.4	B		P
7440-23-5	Sodium	767	B		P
7440-28-0	Thallium	1.1	U	uJK	P
7440-62-2	Vanadium	29.5			P
7440-66-6	Zinc	44300			P
	Cyanide				NR

CP 8-7-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EP8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38881S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 72.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	405			P
7440-36-0	Antimony	4.6	B	~~N~~ JL	P
7440-38-2	Arsenic	9.7			P
7440-39-3	Barium	7.3	B		P
7440-41-7	Beryllium	0.06	U		P
7440-43-9	Cadmium	122			P
7440-70-2	Calcium	149000			P
7440-47-3	Chromium	1.6	B		P
7440-48-4	Cobalt	0.30	U		P
7440-50-8	Copper	31.2		~~N~~ JL	P
7439-89-6	Iron	10700			P
7439-92-1	Lead	5200			P
7439-95-4	Magnesium	85000			P
7439-96-5	Manganese	170			P
7439-97-6	Mercury	0.97			CV
7440-02-0	Nickel	3.3	B		P
7440-09-7	Potassium	55.3	B		P
7782-49-2	Selenium	0.94	U		P
7440-22-4	Silver	1.6	B		P
7440-23-5	Sodium	559	B		P
7440-28-0	Thallium	1.1	U	UJK	P
7440-62-2	Vanadium	11.4	B		P
7440-66-6	Zinc	33100			P
	Cyanide				NR

CP 8-7-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EP9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38882S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 78.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	354			P
7440-36-0	Antimony	5.1	B	~~N~~ JL	P
7440-38-2	Arsenic	9.8			P
7440-39-3	Barium	7.8	B		P
7440-41-7	Beryllium	0.06	B		P
7440-43-9	Cadmium	151			P
7440-70-2	Calcium	157000			P
7440-47-3	Chromium	1.5	B		P
7440-48-4	Cobalt	0.28	U		P
7440-50-8	Copper	33.3		~~E~~ JL	P
7439-89-6	Iron	11900			P
7439-92-1	Lead	5660			P
7439-95-4	Magnesium	94300			P
7439-96-5	Manganese	208			P
7439-97-6	Mercury	2.1			CV
7440-02-0	Nickel	4.0	B		P
7440-09-7	Potassium	27.4	B		P
7782-49-2	Selenium	0.86	U		P
7440-22-4	Silver	1.6	B		P
7440-23-5	Sodium	682	B		P
7440-28-0	Thallium	0.99	U	UJK	P
7440-62-2	Vanadium	12.3	B		P
7440-66-6	Zinc	39800			P
	Cyanide				NR

CR 8-7-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EQ0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38883S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 80.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	344			P
7440-36-0	Antimony	5.9	B	~~N~~ JL	P
7440-38-2	Arsenic	12.7			P
7440-39-3	Barium	10.5	B		P
7440-41-7	Beryllium	0.05	U		P
7440-43-9	Cadmium	170			P
7440-70-2	Calcium	155000			P
7440-47-3	Chromium	1.6	B		P
7440-48-4	Cobalt	0.27	U		P
7440-50-8	Copper	35.5		~~N~~ JL	P
7439-89-6	Iron	16600			P
7439-92-1	Lead	6700			P
7439-95-4	Magnesium	94900			P
7439-96-5	Manganese	198			P
7439-97-6	Mercury	1.9			CV
7440-02-0	Nickel	5.2	B		P
7440-09-7	Potassium	42.5	B		P
7782-49-2	Selenium	0.84	U		P
7440-22-4	Silver	2.1	B		P
7440-23-5	Sodium	809	B		P
7440-28-0	Thallium	0.97	U	UJK	P
7440-62-2	Vanadium	12.9			P
7440-66-6	Zinc	46300			P
	Cyanide				NR

CP 8-7-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EQ1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38884S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 86.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	75.7			P
7440-36-0	Antimony	0.70	U	~~N~~UJK	P
7440-38-2	Arsenic	1.9	B		P
7440-39-3	Barium	1.4	B	U	P
7440-41-7	Beryllium	0.05	U		P
7440-43-9	Cadmium	15.1			P
7440-70-2	Calcium	180000			P
7440-47-3	Chromium	0.62	B	U	P
7440-48-4	Cobalt	0.26	U		P
7440-50-8	Copper	10.0		~~E~~ JL	P
7439-89-6	Iron	2310			P
7439-92-1	Lead	324			P
7439-95-4	Magnesium	117000			P
7439-96-5	Manganese	167			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	0.74	B		P
7440-09-7	Potassium	33.2	B		P
7782-49-2	Selenium	0.79	U		P
7440-22-4	Silver	0.19	U		P
7440-23-5	Sodium	192	B		P
7440-28-0	Thallium	0.91	U	UJK	P
7440-62-2	Vanadium	5.2	B		P
7440-66-6	Zinc	4680			P
	Cyanide				NR

CP 8-7-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0EQ2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38885S

Level (low/med): LOW Date Received: 06/22/01

% 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	795			P
7440-36-0	Antimony	1.6	B	~~N~~ JL	P
7440-38-2	Arsenic	8.0			P
7440-39-3	Barium	9.2	B		P
7440-41-7	Beryllium	0.04	U		P
7440-43-9	Cadmium	425			P
7440-70-2	Calcium	132000			P
7440-47-3	Chromium	1.9	B		P
7440-48-4	Cobalt	0.49	B		P
7440-50-8	Copper	60.2		~~E~~ JL	P
7439-89-6	Iron	17800			P
7439-92-1	Lead	1860			P
7439-95-4	Magnesium	82600			P
7439-96-5	Manganese	226			P
7439-97-6	Mercury	1.2			CV
7440-02-0	Nickel	4.4	B		P
7440-09-7	Potassium	101	B		P
7782-49-2	Selenium	0.72	U		P
7440-22-4	Silver	1.3	B		P
7440-23-5	Sodium	3340			P
7440-28-0	Thallium	0.83	U	u JK	P
7440-62-2	Vanadium	8.8	B		P
7440-66-6	Zinc	123000			P
	Cyanide				NR

JP 8-7-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EQ3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38886S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 96.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	189			P
7440-36-0	Antimony	0.94	B	~~N~~ JL	P
7440-38-2	Arsenic	4.7			P
7440-39-3	Barium	2.6	B		P
7440-41-7	Beryllium	0.04	U		P
7440-43-9	Cadmium	23.8			P
7440-70-2	Calcium	175000			P
7440-47-3	Chromium	0.66	B	U	P
7440-48-4	Cobalt	0.23	U		P
7440-50-8	Copper	4.4	B	~~E~~ JL	P
7439-89-6	Iron	11900			P
7439-92-1	Lead	280			P
7439-95-4	Magnesium	116000			P
7439-96-5	Manganese	193			P
7439-97-6	Mercury	0.48			CV
7440-02-0	Nickel	2.8	B		P
7440-09-7	Potassium	28.3	B		P
7782-49-2	Selenium	0.70	U		P
7440-22-4	Silver	0.24	B		P
7440-23-5	Sodium	229	B		P
7440-28-0	Thallium	0.80	U	U JK	P
7440-62-2	Vanadium	10.4			P
7440-66-6	Zinc	10800			P
	Cyanide				NR

CP 8-7-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0EQ4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EN5

Matrix (soil/water): SOIL Lab Sample ID: 38887S

Level (low/med): LOW Date Received: 06/22/01

% Solids: 93.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	913			P
7440-36-0	Antimony	2.1	B	~~N~~ JL	P
7440-38-2	Arsenic	9.1			P
7440-39-3	Barium	17.6	B		P
7440-41-7	Beryllium	0.05	B		P
7440-43-9	Cadmium	96.2			P
7440-70-2	Calcium	136000			P
7440-47-3	Chromium	6.7			P
7440-48-4	Cobalt	0.53	B		P
7440-50-8	Copper	21.1		~~B~~ JL	P
7439-89-6	Iron	17800			P
7439-92-1	Lead	4360			P
7439-95-4	Magnesium	83400			P
7439-96-5	Manganese	184			P
7439-97-6	Mercury	0.51			CV
7440-02-0	Nickel	10			P
7440-09-7	Potassium	155	B		P
7782-49-2	Selenium	0.71	U		P
7440-22-4	Silver	1.1	B		P
7440-23-5	Sodium	561	B		P
7440-28-0	Thallium	0.81	U	uJK	P
7440-62-2	Vanadium	9.7	B		P
7440-66-6	Zinc	31300			P
	Cyanide				NR

CR 8-7-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

22

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: August 7, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt/Mines Sites. Case: 29440 SDG: MJ0EQ5

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1130
TDN: 1052
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 14 water samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0EQ5	MJ0F13	MJ0FK1
MJ0ER0	MJ0F15	MJ0GE1
MJ0ET2	MJ0FJ5	MJ0GE7
MJ0F10	MJ0FJ6	MJ0GG1
MJ0F11	MJ0FJ9	

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/18, 6/19, 6/20, 6/21, 6/22, 6/23, 6/25 and 6/26/01. The samples were analyzed for mercury within 14 days and all other metals within 14 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 92-108% for ICP-AES and from 84-105% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
arsenic	MJ0FJ6, MJ0FK1, MJ0GE7, MJ0GG1
chromium	MJ0FJ6, MJ0FJ9, MJ0GE7
lead	MJ0ET2, MJ0F11, MJ0F15, MJ0FJ5, MJ0FJ6, MJ0FK1
zinc	MJ0F10

Zinc was further qualified on the basis of matrix spike analysis.

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met. The recoveries ranged from 88-112%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis - Acceptable

Sample MJ0EQ5 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference. None of the data were qualified on this basis.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 87-108%. None of the data were qualified on this basis.

Duplicate Sample Analysis - Acceptable

Sample MJ0EQ5 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria for all target analytes. None of the data were qualified on this basis.

Matrix Spike Analysis

Sample MJ0EQ5 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of selenium (67%) and zinc (74%) in the spike sample MJ0EQ5S. Due to possible bias, the detected and non-detected selenium and zinc results in all samples were qualified as estimated, "J/UJ". The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. All of the other spike recoveries were acceptable and ranged from 79-110%.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 322. Fourteen (4.3%) were qualified as non-detected due to blank contamination. Twenty eight (8.7%) were qualified as estimated due to spike analysis.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ5

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ5

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

U.S. EPA - CLP

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ5

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSW	07/02/01		50
MJ0EQ5	07/02/01		50
MJ0EQ5D	07/02/01		50
MJ0EQ5S	07/02/01		50
MJ0ER0	07/02/01		50
MJ0ET2	07/02/01		50
MJ0F10	07/02/01		50
MJ0F11	07/02/01		50
MJ0F13	07/02/01		50
MJ0F15	07/02/01		50
MJ0FJ5	07/02/01		50
MJ0FJ6	07/02/01		50
MJ0FJ9	07/02/01		50
MJ0FK1	07/02/01		50
MJ0GE1	07/02/01		50
MJ0GE7	07/02/01		50
MJ0GG1	07/02/01		50
PBW	07/02/01		50

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ5

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
MJ0EQ5	07/02/01		100
MJ0EQ5D	07/02/01		100
MJ0EQ5S	07/02/01		100
MJ0ER0	07/02/01		100
MJ0ET2	07/02/01		100
MJ0F10	07/02/01		100
MJ0F11	07/02/01		100
MJ0F13	07/02/01		100
MJ0F15	07/02/01		100
MJ0FJ5	07/02/01		100
MJ0FJ6	07/02/01		100
MJ0FJ9	07/02/01		100
MJ0FK1	07/02/01		100
MJ0GE1	07/02/01		100
MJ0GE7	07/02/01		100
MJ0GG1	07/02/01		100
PBW	07/02/01		100

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0EQ5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ5

Matrix (soil/water): WATER Lab Sample ID: 38888S

Level (low/med): LOW Date Received: 06/22/01

% 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	168	U		P
7440-36-0	Antimony	3.0	U		P
7440-38-2	Arsenic	4.0	U		P
7440-39-3	Barium	60.5	B		P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	0.67	B		P
7440-70-2	Calcium	68700			P
7440-47-3	Chromium	0.70	U		P
7440-48-4	Cobalt	1.1	U		P
7440-50-8	Copper	0.70	U		P
7439-89-6	Iron	64.2	B		P
7439-92-1	Lead	12.9			P
7439-95-4	Magnesium	27000			P
7439-96-5	Manganese	3.8	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.5	U		P
7440-09-7	Potassium	2700	B		P
7782-49-2	Selenium	3.4	U	~~N~~UJK	P
7440-22-4	Silver	0.80	U		P
7440-23-5	Sodium	3620	B		P
7440-28-0	Thallium	3.9	U		P
7440-62-2	Vanadium	0.90	U		P
7440-66-6	Zinc	558		~~N~~ JL	P
	Cyanide				NR

LP 8-7-01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ER0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ5

Matrix (soil/water): WATER Lab Sample ID: 38889S

Level (low/med): LOW Date Received: 06/22/01

% 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	168	U		P
7440-36-0	Antimony	3.0	U		P
7440-38-2	Arsenic	4.0	U		P
7440-39-3	Barium	39.8	B		P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	0.30	U		P
7440-70-2	Calcium	48800			P
7440-47-3	Chromium	0.70	U		P
7440-48-4	Cobalt	1.1	U		P
7440-50-8	Copper	0.70	U		P
7439-89-6	Iron	109			P
7439-92-1	Lead	1.5	U		P
7439-95-4	Magnesium	11500			P
7439-96-5	Manganese	8.6	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.5	U		P
7440-09-7	Potassium	1580	B		P
7782-49-2	Selenium	3.4	U	UJK	P
7440-22-4	Silver	0.80	U		P
7440-23-5	Sodium	3060	B		P
7440-28-0	Thallium	3.9	U		P
7440-62-2	Vanadium	1.2	B		P
7440-66-6	Zinc	5.3	B	JL	P
	Cyanide				NR

CP 8-7-01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0ET2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ5

Matrix (soil/water): WATER Lab Sample ID: 39033S

Level (low/med): LOW Date Received: 06/28/01

% 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	168	U		P
7440-36-0	Antimony	3.0	U		P
7440-38-2	Arsenic	4.0	U		P
7440-39-3	Barium	31.6	B		P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	2.4	B		P
7440-70-2	Calcium	78400			P
7440-47-3	Chromium	0.70	U		P
7440-48-4	Cobalt	1.1	U		P
7440-50-8	Copper	0.94	B		P
7439-89-6	Iron	54.6	U		P
7439-92-1	Lead	8.9		U	P
7439-95-4	Magnesium	20900			P
7439-96-5	Manganese	0.51	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.5	U		P
7440-09-7	Potassium	3020	B		P
7782-49-2	Selenium	3.4	U	UJK	P
7440-22-4	Silver	0.80	U		P
7440-23-5	Sodium	8340			P
7440-28-0	Thallium	3.9	U		P
7440-62-2	Vanadium	0.90	U		P
7440-66-6	Zinc	292		JL	P
	Cyanide				NR

CB 8-7-01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0FJ5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ5

Matrix (soil/water): WATER Lab Sample ID: 38900S

Level (low/med): LOW Date Received: 06/27/01

% 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	168	U		P
7440-36-0	Antimony	3.0	U		P
7440-38-2	Arsenic	4.0	U		P
7440-39-3	Barium	41.0	B		P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	0.30	U		P
7440-70-2	Calcium	65600			P
7440-47-3	Chromium	0.70	U		P
7440-48-4	Cobalt	1.1	U		P
7440-50-8	Copper	0.70	U		P
7439-89-6	Iron	54.6	U		P
7439-92-1	Lead	2.9	B	U	P
7439-95-4	Magnesium	35700			P
7439-96-5	Manganese	0.40	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.6	B		P
7440-09-7	Potassium	1790	B		P
7782-49-2	Selenium	3.4	U	~~N~~UJK	P
7440-22-4	Silver	0.80	U		P
7440-23-5	Sodium	1890	B		P
7440-28-0	Thallium	3.9	U		P
7440-62-2	Vanadium	0.90	U		P
7440-66-6	Zinc	575		~~N~~ JL	P
	Cyanide				NR

CP 8-7-01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0FJ6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ5

Matrix (soil/water): WATER Lab Sample ID: 38901S

Level (low/med): LOW Date Received: 06/27/01

% 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	168	U		P
7440-36-0	Antimony	3.0	U		P
7440-38-2	Arsenic	5.7	B	U	P
7440-39-3	Barium	42.0	B		P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	0.30	U		P
7440-70-2	Calcium	67300			P
7440-47-3	Chromium	1.3	B	U	P
7440-48-4	Cobalt	1.1	U		P
7440-50-8	Copper	0.70	U		P
7439-89-6	Iron	54.6	U		P
7439-92-1	Lead	3.6		U	P
7439-95-4	Magnesium	36700			P
7439-96-5	Manganese	0.40	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.2	B		P
7440-09-7	Potassium	1820	B		P
7782-49-2	Selenium	3.4	U	~~N~~UJK	P
7440-22-4	Silver	0.80	U		P
7440-23-5	Sodium	1940	B		P
7440-28-0	Thallium	3.9	U		P
7440-62-2	Vanadium	0.90	U		P
7440-66-6	Zinc	583		~~N~~ JL	P
	Cyanide				NR

CP 8-7-01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0FJ9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ5

Matrix (soil/water): WATER Lab Sample ID: 38902S

Level (low/med): LOW Date Received: 06/27/01

% 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	219			P
7440-36-0	Antimony	3.0	U		P
7440-38-2	Arsenic	4.0	U		P
7440-39-3	Barium	54.7	B		P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	13.4			P
7440-70-2	Calcium	120000			P
7440-47-3	Chromium	0.72	B	U	P
7440-48-4	Cobalt	1.1	U		P
7440-50-8	Copper	1.1	B		P
7439-89-6	Iron	1020			P
7439-92-1	Lead	105			P
7439-95-4	Magnesium	42700			P
7439-96-5	Manganese	3040			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.1	B		P
7440-09-7	Potassium	4050	B		P
7782-49-2	Selenium	3.4	U	~~N~~U JK	P
7440-22-4	Silver	0.80	U		P
7440-23-5	Sodium	3400	B		P
7440-28-0	Thallium	3.9	U		P
7440-62-2	Vanadium	0.90	U		P
7440-66-6	Zinc	4520		~~N~~ JL	P
	Cyanide				NR

CP 8-7-01

Color Before: COLORLESS Clarity Before: CLOUDY Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0FK1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ5

Matrix (soil/water): WATER Lab Sample ID: 38903S

Level (low/med): LOW Date Received: 06/27/01

% 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	168	U		P
7440-36-0	Antimony	3.0	U		P
7440-38-2	Arsenic	4.3	B	U	P
7440-39-3	Barium	42.8	B		P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	0.30	U		P
7440-70-2	Calcium	66300			P
7440-47-3	Chromium	0.70	U		P
7440-48-4	Cobalt	1.1	U		P
7440-50-8	Copper	0.70	U		P
7439-89-6	Iron	54.6	U		P
7439-92-1	Lead	2.0	B	U	P
7439-95-4	Magnesium	37000			P
7439-96-5	Manganese	8.2	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.5	U		P
7440-09-7	Potassium	1700	B		P
7782-49-2	Selenium	3.4	U	NUJL	P
7440-22-4	Silver	0.80	U		P
7440-23-5	Sodium	3110	B		P
7440-28-0	Thallium	3.9	U		P
7440-62-2	Vanadium	0.90	U		P
7440-66-6	Zinc	112		NJL	P
	Cyanide				NR

CP 8-7-01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0GE1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ5

Matrix (soil/water): WATER Lab Sample ID: 38890S

Level (low/med): LOW Date Received: 06/22/01

% 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	168	U		P
7440-36-0	Antimony	49.5	B		P
7440-38-2	Arsenic	4.0	U		P
7440-39-3	Barium	26.5	B		P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	1.7	B		P
7440-70-2	Calcium	133000			P
7440-47-3	Chromium	0.70	U		P
7440-48-4	Cobalt	1.1	U		P
7440-50-8	Copper	5.5	B		P
7439-89-6	Iron	54.6	U		P
7439-92-1	Lead	1.5	U		P
7439-95-4	Magnesium	49800			P
7439-96-5	Manganese	4.6	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	50.3			P
7440-09-7	Potassium	2130	B		P
7782-49-2	Selenium	5.9		N JL	P
7440-22-4	Silver	0.80	U		P
7440-23-5	Sodium	3600	B		P
7440-28-0	Thallium	3.9	U		P
7440-62-2	Vanadium	0.90	U		P
7440-66-6	Zinc	433		N JL	P
	Cyanide				NR

CP 8-7-01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GE7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ5

Matrix (soil/water): WATER Lab Sample ID: 38891S

Level (low/med): LOW Date Received: 06/22/01

% 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	1880			P
7440-36-0	Antimony	3.0	U		P
7440-38-2	Arsenic	4.8	B	U	P
7440-39-3	Barium	742			P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	0.30	U		P
7440-70-2	Calcium	111000			P
7440-47-3	Chromium	2.5	B	U	P
7440-48-4	Cobalt	1.1	U		P
7440-50-8	Copper	2.6	B		P
7439-89-6	Iron	4000			P
7439-92-1	Lead	17.9			P
7439-95-4	Magnesium	50700			P
7439-96-5	Manganese	214			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.9	B		P
7440-09-7	Potassium	3590	B		P
7782-49-2	Selenium	3.4	U	~~N~~UJK	P
7440-22-4	Silver	0.80	U		P
7440-23-5	Sodium	24200			P
7440-28-0	Thallium	3.9	U		P
7440-62-2	Vanadium	2.0	B		P
7440-66-6	Zinc	180		~~N~~JL	P
	Cyanide				NR

CP 8-7-01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GG1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0EQ5

Matrix (soil/water): WATER Lab Sample ID: 38892S

Level (low/med): LOW Date Received: 06/22/01

% 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	168	U		P
7440-36-0	Antimony	3.0	U		P
7440-38-2	Arsenic	4.3	B	U	P
7440-39-3	Barium	38.1	B		P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	0.66	B		P
7440-70-2	Calcium	78100			P
7440-47-3	Chromium	0.70	U		P
7440-48-4	Cobalt	1.1	U		P
7440-50-8	Copper	0.70	U		P
7439-89-6	Iron	54.6	U		P
7439-92-1	Lead	37.7			P
7439-95-4	Magnesium	29000			P
7439-96-5	Manganese	0.40	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.5	U		P
7440-09-7	Potassium	1280	B		P
7782-49-2	Selenium	3.4	U	~~N~~ U JK	P
7440-22-4	Silver	0.80	U		P
7440-23-5	Sodium	2010	B		P
7440-28-0	Thallium	3.9	U		P
7440-62-2	Vanadium	0.90	U		P
7440-66-6	Zinc	459		~~N~~ JL	P
	Cyanide				NR

MP 8-7-01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: August 8, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt/Mines Sites. Case: 29440 SDG: MJ0FK6

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1131
TDN: 1052
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 15 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0FK6	MJ0FL2	MJ0GP4
MJ0FK7	MJ0GP0	MJ0GP5
MJ0FK8	MJ0GP1	MJ0GP6
MJ0FL0	MJ0GP2	MJ0GP7
MJ0FL1	MJ0GP3	MJ0GP8

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/26, 6/27, 6/28, 6/29/01. The samples were analyzed for mercury within 18 days and all other metals within 21days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 96-107% for ICP-AES and from 82-104% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
sodium	MJ0FL2
thallium	MJ0FK7, MJ0FK8, MJ0FL0

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met. The recoveries ranged from 93-119%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0FK6 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of calcium, copper and zinc. Zinc only slightly exceeded the 10% difference criteria and therefore, was not qualified on this basis. Results for calcium and copper in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 63-148%. None of the data were qualified on this basis.

Duplicate Sample Analysis

Sample MJ0FK6 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria (±20% RPD or ± CRDL) for all target analytes with the exception of cadmium, lead, magnesium and zinc. Cadmium and zinc did meet the suggested technical control limit criteria (±35% RPD or ± 2X CRDL) for soils while lead and magnesium did not. Results for lead and magnesium in all samples were qualified as estimated, "J". The "*" qualifiers applied by the laboratory were crossed-out by the reviewer.

Matrix Spike Analysis

Sample MJ0FK6 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of antimony (71%) in the spike sample MJ0FK6S. Due to possible bias, the detected and non-detected antimony results in all samples were qualified as estimated, "J/UJ". The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. The recoveries for lead and zinc could not be accurately determined because the concentrations native to the sample were greater than 4 times the amount of spike added to the sample. All of the other spike recoveries were acceptable and ranged from 83-118%.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 345. Four (1.2%) were qualified as non-detected due to blank contamination. Seventy five (22%) were qualified as estimated due to ICP serial dilution, duplicate and spike analyses.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FK6

ICP ID Number: P3 Date: 07/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium	317.90		5000	73.1	P
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury			0.2		NR
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
P3: THERMO JARRELL ASH

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FK6

ICP ID Number: P4 Date: 07/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	17.7	P
Antimony	206.80		60	2.9	P
Arsenic	189.00		10	4.6	P
Barium	493.40		200	0.7	P
Beryllium	313.00		5	0.1	P
Cadmium	226.50		5	0.2	P
Calcium	317.90		5000	40.4	P
Chromium	267.70		10	0.4	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.9	P
Iron	271.40		100	9.8	P
Lead	220.30		3	1.8	P
Magnesium	279.00		5000	13.5	P
Manganese	257.60		15	0.3	P
Mercury			0.2		NR
Nickel	231.60		40	1.6	P
Potassium	766.40		5000	9.7	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.3	P
Sodium	330.20		5000	114.2	P
Thallium	190.80		10	5.1	P
Vanadium	292.40		50	0.7	P
Zinc	206.20		20	0.9	P
Cyanide			10		NR

Comments:

P4: THERMO JARRELL ASH

10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FK6

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FK6

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	07/12/01	1.00	200
MJ0FK6	07/12/01	1.00	200
MJ0FK6D	07/12/01	1.00	200
MJ0FK6S	07/12/01	1.00	200
MJ0FK7	07/12/01	1.00	200
MJ0FK8	07/12/01	1.00	200
MJ0FL0	07/12/01	1.00	200
MJ0FL1	07/12/01	1.02	200
MJ0FL2	07/12/01	1.02	200
MJ0GP0	07/12/01	1.00	200
MJ0GP1	07/12/01	1.00	200
MJ0GP2	07/12/01	1.01	200
MJ0GP3	07/12/01	1.02	200
MJ0GP4	07/12/01	1.01	200
MJ0GP5	07/12/01	1.02	200
MJ0GP6	07/12/01	1.02	200
MJ0GP7	07/12/01	1.00	200
MJ0GP8	07/12/01	1.01	200
PBS	07/12/01	1.00	200

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FK6

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	07/12/01	0.20	100
MJ0FK6	07/12/01	0.20	100
MJ0FK6D	07/12/01	0.20	100
MJ0FK6S	07/12/01	0.20	100
MJ0FK7	07/12/01	0.22	100
MJ0FK8	07/12/01	0.22	100
MJ0FL0	07/12/01	0.20	100
MJ0FL1	07/12/01	0.22	100
MJ0FL2	07/12/01	0.22	100
MJ0GP0	07/12/01	0.21	100
MJ0GP1	07/12/01	0.22	100
MJ0GP2	07/12/01	0.20	100
MJ0GP3	07/12/01	0.21	100
MJ0GP4	07/12/01	0.22	100
MJ0GP5	07/12/01	0.20	100
MJ0GP6	07/12/01	0.21	100
MJ0GP7	07/12/01	0.21	100
MJ0GP8	07/12/01	0.21	100
PBS	07/12/01	0.20	100

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0FL0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FK6

Matrix (soil/water): SOIL Lab Sample ID: 39298S

Level (low/med): LOW Date Received: 06/30/01

% Solids: 78.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	235			P
7440-36-0	Antimony	2.0	B	~~N~~ JL	P
7440-38-2	Arsenic	4.1			P
7440-39-3	Barium	26.0	B		P
7440-41-7	Beryllium	0.03	U		P
7440-43-9	Cadmium	7.9		*	P
7440-70-2	Calcium	292000		~~E~~ JL	P
7440-47-3	Chromium	0.72	B		P
7440-48-4	Cobalt	0.28	U		P
7440-50-8	Copper	533		~~E~~ JL	P
7439-89-6	Iron	896			P
7439-92-1	Lead	7690		* JK	P
7439-95-4	Magnesium	17000		* JK	P
7439-96-5	Manganese	118			P
7439-97-6	Mercury	0.12	B		CV
7440-02-0	Nickel	4.2	B		P
7440-09-7	Potassium	117	B		P
7782-49-2	Selenium	0.87	U		P
7440-22-4	Silver	1.4	B		P
7440-23-5	Sodium	337	B		P
7440-28-0	Thallium	1.3	B	U	P
7440-62-2	Vanadium	9.4	B		P
7440-66-6	Zinc	2010		*~~E~~	P
	Cyanide				NR

CR 8-8-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0FL2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FK6

Matrix (soil/water): SOIL Lab Sample ID: 39300S

Level (low/med): LOW Date Received: 06/30/01

% Solids: 74.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9280			P
7440-36-0	Antimony	0.76	U	~~N~~ U JK	P
7440-38-2	Arsenic	4.5			P
7440-39-3	Barium	24.9	B		P
7440-41-7	Beryllium	0.07	B		P
7440-43-9	Cadmium	0.66	B	~~*~~	P
7440-70-2	Calcium	6400		~~E~~ JL	P
7440-47-3	Chromium	16.8			P
7440-48-4	Cobalt	15.0			P
7440-50-8	Copper	9.9		~~E~~ JL	P
7439-89-6	Iron	25400			P
7439-92-1	Lead	51.8		~~*~~ JK	P
7439-95-4	Magnesium	7110		~~*~~ JK	P
7439-96-5	Manganese	293			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	24.7			P
7440-09-7	Potassium	367	B		P
7782-49-2	Selenium	0.89	U		P
7440-22-4	Silver	0.81	B		P
7440-23-5	Sodium	279	B	U	P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	10.1	B		P
7440-66-6	Zinc	240		~~*~~ ~~E~~	P
	Cyanide				NR

CP 8-8-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GP0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FK6

Matrix (soil/water): SOIL Lab Sample ID: 39477S

Level (low/med): LOW Date Received: 07/06/01

% Solids: 80.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6170			P
7440-36-0	Antimony	18.8		~~N~~ JL	P
7440-38-2	Arsenic	7.5			P
7440-39-3	Barium	255			P
7440-41-7	Beryllium	0.23	B		P
7440-43-9	Cadmium	1.6		~~E~~	P
7440-70-2	Calcium	29100		~~E~~ JL	P
7440-47-3	Chromium	18.0			P
7440-48-4	Cobalt	7.4	B		P
7440-50-8	Copper	238		~~E~~ JL	P
7439-89-6	Iron	25000			P
7439-92-1	Lead	230		~~E~~ JK	P
7439-95-4	Magnesium	12300		~~E~~ JK	P
7439-96-5	Manganese	477			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	8.4	B		P
7440-09-7	Potassium	1170	B		P
7782-49-2	Selenium	0.85	U		P
7440-22-4	Silver	1.9	B		P
7440-23-5	Sodium	463	B		P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	20.8			P
7440-66-6	Zinc	1520		~~E~~	P
	Cyanide				NR

CP 8-8-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GP1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FK6

Matrix (soil/water): SOIL Lab Sample ID: 39478S

Level (low/med): LOW Date Received: 07/06/01

% Solids: 75.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13400			P
7440-36-0	Antimony	40.1		~~N~~ JL	P
7440-38-2	Arsenic	15.0			P
7440-39-3	Barium	1270			P
7440-41-7	Beryllium	0.54	B		P
7440-43-9	Cadmium	0.81	B	~~*~~	P
7440-70-2	Calcium	47600		~~E~~ JL	P
7440-47-3	Chromium	85.0			P
7440-48-4	Cobalt	34.6			P
7440-50-8	Copper	1540		~~E~~ JL	P
7439-89-6	Iron	134000			P
7439-92-1	Lead	246		~~*~~ JK	P
7439-95-4	Magnesium	6900		~~*~~ JK	P
7439-96-5	Manganese	2540			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	13.1			P
7440-09-7	Potassium	2800			P
7782-49-2	Selenium	0.91	U		P
7440-22-4	Silver	7.8			P
7440-23-5	Sodium	1430			P
7440-28-0	Thallium	1.4	U		P
7440-62-2	Vanadium	31.7			P
7440-66-6	Zinc	10500		~~*E~~	P
	Cyanide				NR

CP 8-8-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GP2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FK6

Matrix (soil/water): SOIL Lab Sample ID: 39479S

Level (low/med): LOW Date Received: 07/06/01

% 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	15700			P
7440-36-0	Antimony	49.1		~~N~~ JL	P
7440-38-2	Arsenic	19.3			P
7440-39-3	Barium	1610			P
7440-41-7	Beryllium	0.62	B		P
7440-43-9	Cadmium	0.74	B	~~*~~	P
7440-70-2	Calcium	56000		~~E~~ JL	P
7440-47-3	Chromium	103			P
7440-48-4	Cobalt	41.1			P
7440-50-8	Copper	2070		~~E~~ JL	P
7439-89-6	Iron	167000			P
7439-92-1	Lead	292		~~*~~ JK	P
7439-95-4	Magnesium	5960		~~*~~ JK	P
7439-96-5	Manganese	3140			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	14.7			P
7440-09-7	Potassium	3340			P
7782-49-2	Selenium	0.91	U		P
7440-22-4	Silver	7.8			P
7440-23-5	Sodium	1760			P
7440-28-0	Thallium	1.4	U		P
7440-62-2	Vanadium	33.4			P
7440-66-6	Zinc	13000		~~*E~~	P
	Cyanide				NR

CP 8-8-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GP3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FK6

Matrix (soil/water): SOIL Lab Sample ID: 39480S

Level (low/med): LOW Date Received: 07/06/01

% 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	17800			P
7440-36-0	Antimony	44.9		~~N~~ JL	P
7440-38-2	Arsenic	23.9			P
7440-39-3	Barium	1910			P
7440-41-7	Beryllium	0.71	B		P
7440-43-9	Cadmium	1.5		~~*~~	P
7440-70-2	Calcium	63900		~~E~~ JL	P
7440-47-3	Chromium	121			P
7440-48-4	Cobalt	45.9			P
7440-50-8	Copper	2530		~~E~~ JL	P
7439-89-6	Iron	193000			P
7439-92-1	Lead	388		~~*~~ JK	P
7439-95-4	Magnesium	5800		~~*~~ JK	P
7439-96-5	Manganese	3630			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	15.8			P
7440-09-7	Potassium	3870			P
7782-49-2	Selenium	0.89	U		P
7440-22-4	Silver	8.2			P
7440-23-5	Sodium	1960			P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	36.5			P
7440-66-6	Zinc	15100		~~*E~~	P
	Cyanide				NR

CP 8-8-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GP4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FK6

Matrix (soil/water): SOIL Lab Sample ID: 39481S

Level (low/med): LOW Date Received: 07/06/01

% Solids: 78.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	19200			P
7440-36-0	Antimony	59.4		~~N~~ JL	P
7440-38-2	Arsenic	41.4			P
7440-39-3	Barium	2150			P
7440-41-7	Beryllium	0.79	B		P
7440-43-9	Cadmium	1.7		~~*~~	P
7440-70-2	Calcium	70200		~~*~~ JL	P
7440-47-3	Chromium	139			P
7440-48-4	Cobalt	54.2			P
7440-50-8	Copper	2960		~~*~~ JL	P
7439-89-6	Iron	212000			P
7439-92-1	Lead	507		~~*~~ JK	P
7439-95-4	Magnesium	5830		~~*~~ JK	P
7439-96-5	Manganese	4130			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	17.6			P
7440-09-7	Potassium	4260			P
7782-49-2	Selenium	0.86	U		P
7440-22-4	Silver	10.3			P
7440-23-5	Sodium	2400			P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	39.8			P
7440-66-6	Zinc	16900		~~*~~	P
	Cyanide				NR

DP 8-8-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GP5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FK6

Matrix (soil/water): SOIL Lab Sample ID: 39482S

Level (low/med): LOW Date Received: 07/06/01

% Solids: 67.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7170			P
7440-36-0	Antimony	10.9	B	~~N~~ JL	P
7440-38-2	Arsenic	10.9			P
7440-39-3	Barium	582			P
7440-41-7	Beryllium	0.29	B		P
7440-43-9	Cadmium	3.3		~~*~~	P
7440-70-2	Calcium	33300		~~E~~ JL	P
7440-47-3	Chromium	25.9			P
7440-48-4	Cobalt	9.8	B		P
7440-50-8	Copper	349		~~E~~ JL	P
7439-89-6	Iron	44900			P
7439-92-1	Lead	470		~~*~~ JK	P
7439-95-4	Magnesium	13900		~~*~~ JK	P
7439-96-5	Manganese	864			P
7439-97-6	Mercury	0.08	B		CV
7440-02-0	Nickel	10.5	B		P
7440-09-7	Potassium	1570			P
7782-49-2	Selenium	0.99	U		P
7440-22-4	Silver	2.8	B		P
7440-23-5	Sodium	807	B		P
7440-28-0	Thallium	1.5	U		P
7440-62-2	Vanadium	28.6			P
7440-66-6	Zinc	3920		~~*E~~	P
	Cyanide				NR

CP 9-8-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GP6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FK6

Matrix (soil/water): SOIL Lab Sample ID: 39483S

Level (low/med): LOW Date Received: 07/06/01

% Solids: 73.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7250			P
7440-36-0	Antimony	19.2		~~N~~ JL	P
7440-38-2	Arsenic	12.3			P
7440-39-3	Barium	762			P
7440-41-7	Beryllium	0.30	B		P
7440-43-9	Cadmium	4.9		~~E~~	P
7440-70-2	Calcium	40500		~~E~~ JL	P
7440-47-3	Chromium	22.4			P
7440-48-4	Cobalt	8.8	B		P
7440-50-8	Copper	257		~~E~~ JL	P
7439-89-6	Iron	35900			P
7439-92-1	Lead	548		~~E~~ JK	P
7439-95-4	Magnesium	18700		~~E~~ JK	P
7439-96-5	Manganese	617			P
7439-97-6	Mercury	0.11	B		CV
7440-02-0	Nickel	14.7			P
7440-09-7	Potassium	1520			P
7782-49-2	Selenium	0.91	U		P
7440-22-4	Silver	2.3	B		P
7440-23-5	Sodium	528	B		P
7440-28-0	Thallium	1.4	U		P
7440-62-2	Vanadium	28.4			P
7440-66-6	Zinc	2800		~~E~~	P
	Cyanide				NR

CR 8-8-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GP7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FK6

Matrix (soil/water): SOIL Lab Sample ID: 39484S

Level (low/med): LOW Date Received: 07/06/01

% Solids: 70.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7180			P
7440-36-0	Antimony	8.6	B	~~N~~ JL	P
7440-38-2	Arsenic	11.1			P
7440-39-3	Barium	8.04			P
7440-41-7	Beryllium	0.28	B		P
7440-43-9	Cadmium	3.0		~~*~~	P
7440-70-2	Calcium	38400		~~E~~ JL	P
7440-47-3	Chromium	24.8			P
7440-48-4	Cobalt	7.9	B		P
7440-50-8	Copper	347		~~E~~ JL	P
7439-89-6	Iron	54600			P
7439-92-1	Lead	597		~~*~~ JK	P
7439-95-4	Magnesium	15500		~~*~~ JK	P
7439-96-5	Manganese	1190			P
7439-97-6	Mercury	0.08	B		CV
7440-02-0	Nickel	9.2	B		P
7440-09-7	Potassium	1450			P
7782-49-2	Selenium	1.1	B		P
7440-22-4	Silver	2.8			P
7440-23-5	Sodium	695	B		P
7440-28-0	Thallium	1.4	U		P
7440-62-2	Vanadium	28.1			P
7440-66-6	Zinc	5430		~~*E~~	P
	Cyanide				NR

JP 8-8-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0GP8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29440 SAS No.: SDG No.: MJ0FK6

Matrix (soil/water): SOIL Lab Sample ID: 39485S

Level (low/med): LOW Date Received: 07/06/01

% Solids: 80.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7530			P
7440-36-0	Antimony	9.4	B	~~N~~ JL	P
7440-38-2	Arsenic	15.9			P
7440-39-3	Barium	411			P
7440-41-7	Beryllium	0.24	B		P
7440-43-9	Cadmium	3.2		~~*~~	P
7440-70-2	Calcium	21300		~~E~~ JL	P
7440-47-3	Chromium	20.0			P
7440-48-4	Cobalt	11.4	B		P
7440-50-8	Copper	357		~~E~~ JL	P
7439-89-6	Iron	54200			P
7439-92-1	Lead	845		~~*~~ JK	P
7439-95-4	Magnesium	6680		~~*~~ JK	P
7439-96-5	Manganese	1170			P
7439-97-6	Mercury	0.29			CV
7440-02-0	Nickel	12.8			P
7440-09-7	Potassium	1830			P
7782-49-2	Selenium	0.83	U		P
7440-22-4	Silver	3.1			P
7440-23-5	Sodium	870	B		P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	24.5			P
7440-66-6	Zinc	5280		~~*E~~	P
	Cyanide				NR

UP 8-8-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

MEMORANDUM

DATE	November 6, 2001
TO	Leatta Dahlhoff, Project Manager, E & E, Seattle, WA
FROM	Mark Woodke, Chemist, E & E, Seattle, WA
SUBJ	**Inorganic Data Summary Check, Upper Columbia River Mines/Mills ESI, Stevens and Pend Oreille Counties, Washington**
REF	TDD 01-02-0028 PAN: 001281 0073.01SR

The data quality summary check of 20 solid samples collected from the Upper Columbia River Mines/Mills ESI, Stevens and Pend Oreille Counties, Washington has been completed Target Analyte List metals analysis (EPA CLP SOW ILM04.1) was performed by Sentinel, Inc., Huntsville, Alabama.

The samples were numbered

MJ0KC1	MJ0KC2	MJ0KC3	MJ0KC4	MJ0KC5	MJ0KC6
MJ0KC7	MJ0KC8	MJ0KC9	MJ0KD1	MJ0KD2	MJ0KD4
MJ0KD5	MJ0KH0	MJ0KH2	MJ0KH3	MJ0KH4	MJ0KH5
MJ0KH7	MJ0KH8				

The following discrepancy was noted·

The ICS section of the memorandum indicated that cadmium in sample MJ0KD4 was to be qualified "UJK" but was not qualified The secondary reviewer applied the qualifier.

All sample results originally qualified "B" by the laboratory to indicate a result less than the CRDL were changed to "JBK" by the secondary reviewer to indicate an estimated quantity less than the CRDL with an unknown bias

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

IN REPLY REFER TO: OEA-095 November 1, 2001

MEMORANDUM

SUBJECT: Upper Columbia River/ESI Mines and Mills, CLP Metals Analysis, Data Validation
Case: 29730
SDG: MJ0KC1

FROM: Laura Castrilli, Chemist
Quality Assurance and Data Unit, OEA

TO: Monica Tonel, Site Assessment Manager
Office of Environmental Cleanup

CC: Bruce Woods, Region 10 CLP TPO
Mark Woodke, Ecology and Environment Inc.

The following is a validation of ICP-AES and mercury analyses of twenty soil/sediment samples from the Upper Columbia River/ESI Mines and Mills site. The analyses were performed following the USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis Multi-media, Multi-Concentration, ILM04.1. Analyses were conducted by Sentinel, Inc., Huntsville, Alabama. This validation was conducted for the following samples:

MJ0KC1	MJ0KC4	MJ0KC7	MJ0KD1	MJ0KD5	MJ0KH3	MJ0KH7
MJ0KC2	MJ0KC5	MJ0KC8	MJ0KD2	MJ0KH0	MJ0KH4	MJ0KH8
MJ0KC3	MJ0KC6	MJ0KC9	MJ0KD4	MJ0KH2	MJ0KH5	

Data Qualifications

The following comments refer to the Sentinel Laboratory's performance in meeting quality control specifications outlined in the *CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM04.1.* The comments presented herein are based on the information provided for the review.

1.0 Timeliness - Acceptable

The technical (40 CFR part 136) holding time from the date of collection for mercury in water is 28 days. The holding time for the remaining metals in water is 180 days. The samples were collected between 09/10/01 and 09/12/01. ICP-AES analyses were completed

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between 9/29/01 and 10/02/01. Mercury analyses were completed on 09/25/01.

All analyses were conducted within the technical water holding times, therefore no qualification was made based on holding time.

2.0 Sample Preparation - Acceptable

The samples were prepared for mercury analyses on 09/25/01. The samples were prepared for ICP-AES analyses on 09/26/01. No qualification was made based on sample preparation.

3.0 Calibrations/Calibration Verifications - Acceptable

The samples were analyzed for mercury by CVAAS on 09/25/01. The initial calibration included one blank and six standards. The curve was linear with a correlation coefficient greater than 0.995.

The samples were analyzed by ICP-AES on 09/29/01 (most analytes, with the analysis running into early 09/30/01) and 10/02/01 (dilution analyses for selected analytes). The instruments were standardized each day of analysis according to the analytical method using one blank and a single calibration standard for each element.

All ICP-AES and CVAAS (mercury) calibrations were performed as required and met the acceptance criteria; therefore, no qualification was made on this basis.

Calibration verification samples are required before and after sample analysis and after every 10 samples during analysis. Mercury recoveries must be within 80-120%. Other metal recoveries must be within 90-110%.

All ICP-AES and CVAAS (mercury) calibration verification (initial and continuing) samples bracketing reported sample results met the frequency and recovery criteria; therefore no qualification was made based on ICP-AES or CVAAS calibration verification.

4.0 Laboratory Control Samples - Acceptable

Laboratory Control samples (LCS) are digested and analyzed along with the samples to verify the efficiency of laboratory procedures. All recoveries associated with reported sample results met the acceptance criteria for control samples, therefore no qualification was made based on LCS results.

5.0 Blanks -

Procedural blanks were prepared with the samples to show potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were

qualified if the analyte concentration was less than five times the analytical value in the blank.

Aluminum, calcium, chromium, iron, manganese, silver, thallium, and zinc were detected in the preparation blank. Aluminum, barium, beryllium, cadmium, calcium, chromium, iron, magnesium, manganese, potassium, silver, thallium, vanadium, and zinc were detected in one or more continuing calibration blanks (CCBs). Arsenic in a CCB had a negative value with an absolute value greater than the detection limit.

Based on blank contamination, the following qualifications were made:

- arsenic in samples MJ0KC7 through MJ0KC9 and MJ0KD1 was qualified 'J', estimated or 'UJ' estimated detection limit
- beryllium in samples MJ0KC2, MJ0KC3, MJ0KC5, MJ0KC6, MJ0KC8, MJ0KD1, MJ0KD2, MJ0KH7, and MJ0KH8 was qualified 'U', undetected
- cadmium in sample MJ0KC3 was qualified 'U', undetected
- silver in samples MJ0KC2, MJ0KC3, MJ0KC6, and MJ0KC8 was qualified 'U', undetected
- thallium in sample MJ0KD4 was qualified 'U', undetected

The remaining sample results were greater than five times the associated blank levels (or were already undetected) and were not qualified on this basis.

6.0 ICP-AES Interference Check Sample -

The interference check sample (ICS) is analyzed by ICP-AES to verify interelement and background correction factors. Analysis is required at the beginning and end of each sample analysis run and recoveries must be between 80% and 120%. All ICS recoveries associated with reported sample results were within the recovery criterion; with the exception of copper in the ICS-A analyses (121.4% recovery in all three of the ICS-A analyses). Copper in the ICS-A has a true value of 28 ug/L. The copper recoveries for the ICS-AB were all acceptable. Copper in the ICS-AB has a true value of 507 ug/L. When considering copper for qualification, copper was only qualified if the copper level in the sample with interference was closer to the ICS-A copper level.

The raw data for a number of samples had interfering levels of calcium, magnesium, and/or iron. Analytes for which iron is an interferent were qualified as follows:

- Cadmium in samples MJ0KC9, MJ0KD4, and MJ0KD5 was qualified 'UJ' estimated detection limit (possible false negatives).

- Copper in sample MJ0KC9 was qualified 'J' estimated.

7.0 Duplicate Analysis - Acceptable

Duplicate analysis was done on soil/sediment sample MJ0KD2. Soil/sediment duplicate results were within the ±35% Relative Percent Difference (RPD) or ±2xCRDL criteria for soil/sediment results < 5 times the CRDL criteria; therefore no qualification was made on this basis.

8.0 Matrix Spike Analysis -

Matrix spike sample analyses are done to provide information about the effect of the sample matrix on digestion and measurement methods. Matrix spike recovery must be within the limits of 75 - 125%.

Matrix spike analysis was done on soil/sediment sample MJ0KD2. All soil/sediment matrix spike recoveries were within the required QC limits; with the exception of manganese (74.4%R) and selenium (57.8%R). All selenium results were qualified 'J', estimated (low bias suspected for samples not qualified for other reasons).

Since the manganese recovery was so close to the acceptance criteria, manganese was not qualified based on matrix spike recovery and laboratory 'N' qualifiers were removed from the manganese results.

9.0 ICP-AES Serial Dilution -

Sample MJ0KD2 was analyzed by ICP-AES serial dilution to check for potential interferences. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) were within the 10%D criteria; with the exception of potassium (15.5%D). All potassium results were qualified 'J', estimated (unknown bias).

10.0 Detection Limits - Acceptable

Sample results which fall below the instrument detection limit (IDL) are assigned the value of the instrument detection limit and the 'U' qualifier is attached.

Contract Required Detection Limit (CRDL) standards are required for most analytes to demonstrate a linear calibration curve near the CRDL. CRDL standards were run at the required frequency.

11.0 Overall Assessment of the Data

This validation of the data is based on the criteria outlined in the *National Functional Guidelines for Inorganic Data Review (02/94)*.

The sample cooler(s) had a temperature upon receipt of 9°C. In the reviewer's judgement, it is unlikely that the elevated temperature for

soil/sediment would cause appreciable loss of metals, therefore no action was taken based on the elevated cooler temperature.

Soil/sediment samples MJ0KC2 and MJ0KC3 had very low percent solids - 16.6% and 18.4%, respectively. The raw data was checked to make sure there wasn't a calculation error. There was no calculation error.

For soil/sediment the amount of each sample analyzed for mercury is 0.2 g, wet weight, while the amount of each sample analyzed for other metals is 1.0 gram, wet weight. With 16.6% and 18.4% solids, this means only approximately 0.033 g and 0.037 g, respectively, of solid material was analyzed for mercury and approximately 0.166 g and 0.184 g, respectively, of solid material was analyzed for the other metals. Since mercury was not detected in these samples and since such a minute amount of material was digested, the undetected mercury results for samples MJ0KC2 and MJ0KC3 were qualified 'R', unusable. There were a number of detects for the ICP-AES analysis, indicating that at least some ICP analytes were measurable in the small sample aliquots. All ICP-AES analytes, including non-detects, in samples MJ0KC2 and MJ0KC3 were qualified 'J', estimated (unknown bias).

There were 460 data points reported: 19 results were qualified due to blank contamination; 20 results were estimated due to matrix spike recovery; 20 results were estimated due to serial dilution; 4 results were estimated or possible false negatives due to suspected interference; 44 results were estimated due to reduced sample aliquot size; 2 results were rejected due to extremely reduced sample aliquot size. Overall, 21.7 percent of the data was qualified (only counting one qualification per data point for those results qualified for more than one reason).

Below are the definitions for the National Functional Guidelines for Inorganic Data Review (02/94) qualifiers used when validating/qualifying data from Inorganic analysis.

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. (Note: Analyte may or may not be present.)

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

At the request of the site assessment manager, bias for the data was qualitatively assessed and if applicable, the following additional qualifiers were applied:

L - Low bias.

H - High bias.

K - Unknown Bias.

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intentionally left blank.

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KC1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40933S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 37.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	18600			P
7440-36-0	Antimony	2.2	JBK		P
7440-38-2	Arsenic	9.4			P
7440-39-3	Barium	332			P
7440-41-7	Beryllium	0.64	JBK		P
7440-43-9	Cadmium	1.1	JBK		P
7440-70-2	Calcium	7670			P
7440-47-3	Chromium	22.4			P
7440-48-4	Cobalt	7.3	JBK		P
7440-50-8	Copper	70.4			P
7439-89-6	Iron	20700			P
7439-92-1	Lead	34.7			P
7439-95-4	Magnesium	29000			P
7439-96-5	Manganese	388		~~N~~	P
7439-97-6	Mercury	0.14	U		CV
7440-02-0	Nickel	17.9	JBK		P
7440-09-7	Potassium	13400		~~E~~ JK	P
7782-49-2	Selenium	12.4		~~N~~ JL	P
7440-22-4	Silver	1.5	JBK		P
7440-23-5	Sodium	1210	JBK		P
7440-28-0	Thallium	2.8	U		P
7440-62-2	Vanadium	39.0			P
7440-66-6	Zinc	206			P
	Cyanide				NR

10/30/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KC2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40934S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 16.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	19100		JK	P
7440-36-0	Antimony	3.5	U	JK	P
7440-38-2	Arsenic	11.2	B	JK	P
7440-39-3	Barium	195	B	JK	P
7440-41-7	Beryllium	0.52	~~B~~	U JK	P
7440-43-9	Cadmium	1.3	B	JK	P
7440-70-2	Calcium	16000		JK	P
7440-47-3	Chromium	28.1		JK	P
7440-48-4	Cobalt	9.7	B	JK	P
7440-50-8	Copper	62.1		JK	P
7439-89-6	Iron	23600		JK	P
7439-92-1	Lead	49.4		JK	P
7439-95-4	Magnesium	38400		JK	P
7439-96-5	Manganese	784		~~N~~ JK	P
7439-97-6	Mercury	~~0.30~~	~~U~~	R	CV
7440-02-0	Nickel	26.3	B	JK	P
7440-09-7	Potassium	31600		~~E~~ JK	P
7782-49-2	Selenium	15.9		~~N~~ JK	P
7440-22-4	Silver	2.0	~~B~~	U JK	P
7440-23-5	Sodium	4420	B	JK	P
7440-28-0	Thallium	6.1	U	JK	P
7440-62-2	Vanadium	32.3	B	JK	P
7440-66-6	Zinc	218		JK	P
	Cyanide				NR

10/23/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KC3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40935S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 18.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16600		JK	P
7440-36-0	Antimony	3.8	B	JK	P
7440-38-2	Arsenic	7.0	B	JK	P
7440-39-3	Barium	164	B	JK	P
7440-41-7	Beryllium	0.43	~~B~~	4 JK	P
7440-43-9	Cadmium	0.71	~~B~~	4 JK	P
7440-70-2	Calcium	6330		JK	P
7440-47-3	Chromium	21.4		JK	P
7440-48-4	Cobalt	7.6	B	JK	P
7440-50-8	Copper	45.3		JK	P
7439-89-6	Iron	19600		JK	P
7439-92-1	Lead	43.1		JK	P
7439-95-4	Magnesium	22900		JK	P
7439-96-5	Manganese	310		~~N~~ JK	P
7439-97-6	Mercury	~~0.27~~	~~U~~	R	CV
7440-02-0	Nickel	21.9	B	JK	P
7440-09-7	Potassium	27900		~~E~~ JK	P
7782-49-2	Selenium	18.0		~~N~~ JK	P
7440-22-4	Silver	1.5	~~B~~	4 JK	P
7440-23-5	Sodium	4130	B	JK	P
7440-28-0	Thallium	5.5	U	JK	P
7440-62-2	Vanadium	29.4	B	JK	P
7440-66-6	Zinc	140			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KC4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40936S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 97.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	20200			P
7440-36-0	Antimony	1.3	JBK		P
7440-38-2	Arsenic	12.1			P
7440-39-3	Barium	450			P
7440-41-7	Beryllium	0.63	JBK		P
7440-43-9	Cadmium	3.4			P
7440-70-2	Calcium	39600			P
7440-47-3	Chromium	32.3			P
7440-48-4	Cobalt	11.9			P
7440-50-8	Copper	69.3			P
7439-89-6	Iron	27900			P
7439-92-1	Lead	124			P
7439-95-4	Magnesium	33500			P
7439-96-5	Manganese	673		~~N~~	P
7439-97-6	Mercury	0.10	JBK		CV
7440-02-0	Nickel	31.9			P
7440-09-7	Potassium	3920		~~E~~ JK	P
7782-49-2	Selenium	0.70	U	~~N~~ JL	P
7440-22-4	Silver	1.5	JBK		P
7440-23-5	Sodium	597	JBK		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	47.4			P
7440-66-6	Zinc	239			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KC5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40937S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 40.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10100			P
7440-36-0	Antimony	1.4	U		P
7440-38-2	Arsenic	4.0	JBK		P
7440-39-3	Barium	182			P
7440-41-7	Beryllium	0.32	~~B~~	U	P
7440-43-9	Cadmium	0.10	U		P
7440-70-2	Calcium	8150			P
7440-47-3	Chromium	14.6			P
7440-48-4	Cobalt	6.9	JBK		P
7440-50-8	Copper	16.1			P
7439-89-6	Iron	17500			P
7439-92-1	Lead	8.5			P
7439-95-4	Magnesium	5070			P
7439-96-5	Manganese	364		~~N~~	P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	14.9	JBK		P
7440-09-7	Potassium	1640	B	~~E~~ JK	P
7782-49-2	Selenium	1.7	U	~~N~~ SK	P
7440-22-4	Silver	1.1	JBK		P
7440-23-5	Sodium	423	JBK		P
7440-28-0	Thallium	2.5	U		P
7440-62-2	Vanadium	21.6	JBK		P
7440-66-6	Zinc	58.2			P
	Cyanide				NR

10/30/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KC6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40938S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 79.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2490			P
7440-36-0	Antimony	0.73	U		P
7440-38-2	Arsenic	1.9	~~B~~ J K		P
7440-39-3	Barium	41.4	~~B~~ J K		P
7440-41-7	Beryllium	0.06	~~B~~ U		P
7440-43-9	Cadmium	0.05	U		P
7440-70-2	Calcium	5590			P
7440-47-3	Chromium	4.9			P
7440-48-4	Cobalt	2.6	~~B~~ J K		P
7440-50-8	Copper	4.3	~~B~~ J K		P
7439-89-6	Iron	6910			P
7439-92-1	Lead	2.5			P
7439-95-4	Magnesium	1800			P
7439-96-5	Manganese	105		~~N~~	P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	4.9	~~B~~ J K		P
7440-09-7	Potassium	423	B	~~E~~ J K	P
7782-49-2	Selenium	0.85	U	~~N~~ J K	P
7440-22-4	Silver	0.37	~~B~~ U		P
7440-23-5	Sodium	206	~~B~~ J K		P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	9.5	~~B~~ J K		P
7440-66-6	Zinc	14.4			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KC7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40939S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 91.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8420			P
7440-36-0	Antimony	0.95	JBK		P
7440-38-2	Arsenic	4.9		JL	P
7440-39-3	Barium	170			P
7440-41-7	Beryllium	0.25	JBK		P
7440-43-9	Cadmium	0.04	U		P
7440-70-2	Calcium	26100			P
7440-47-3	Chromium	10.8			P
7440-48-4	Cobalt	4.7	JBK		P
7440-50-8	Copper	18.7			P
7439-89-6	Iron	11300			P
7439-92-1	Lead	7.5			P
7439-95-4	Magnesium	4000			P
7439-96-5	Manganese	311		~~N~~	P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	10.9			P
7440-09-7	Potassium	1540		~~E~~ JK	P
7782-49-2	Selenium	0.74	U	~~N~~ JL	P
7440-22-4	Silver	0.75	JBK		P
7440-23-5	Sodium	266	JBK		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	16.3			P
7440-66-6	Zinc	47.9			P
	Cyanide				NR

10/30/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KC8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40940S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 82.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2080			P
7440-36-0	Antimony	0.71	U		P
7440-38-2	Arsenic	1.1	U	JK	P
7440-39-3	Barium	34.0	JBK		P
7440-41-7	Beryllium	0.08	~~B~~	U	P
7440-43-9	Cadmium	0.05	U		P
7440-70-2	Calcium	2730			P
7440-47-3	Chromium	5.4			P
7440-48-4	Cobalt	2.2	JBK		P
7440-50-8	Copper	2.8	JBK		P
7439-89-6	Iron	5590			P
7439-92-1	Lead	2.0			P
7439-95-4	Magnesium	1430			P
7439-96-5	Manganese	91.7		~~N~~	P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	3.6	JBK		P
7440-09-7	Potassium	605	B	~~E~~ JK	P
7782-49-2	Selenium	0.83	U	~~N~~ JL	P
7440-22-4	Silver	0.30	~~B~~	U	P
7440-23-5	Sodium	151	JBK		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	8.9	JBK		P
7440-66-6	Zinc	10.8			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KC9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40941S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 67.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13100			P
7440-36-0	Antimony	0.86	U		P
7440-38-2	Arsenic	4.3		JK	P
7440-39-3	Barium	205			P
7440-41-7	Beryllium	0.45	JBK		P
7440-43-9	Cadmium	0.06	U	JK	P
7440-70-2	Calcium	4940			P
7440-47-3	Chromium	24.7			P
7440-48-4	Cobalt	10.5	JBK		P
7440-50-8	Copper	21.3		JK	P
7439-89-6	Iron	27900			P
7439-92-1	Lead	13.8			P
7439-95-4	Magnesium	6940			P
7439-96-5	Manganese	507		~~N~~	P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	25.4			P
7440-09-7	Potassium	2550		~~B~~ JK	P
7782-49-2	Selenium	1.0	U	~~N~~ JL	P
7440-22-4	Silver	1.8	JBK		P
7440-23-5	Sodium	229	JBK		P
7440-28-0	Thallium	1.5	U		P
7440-62-2	Vanadium	36.9			P
7440-66-6	Zinc	78.2			P
	Cyanide				NR

10/30/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KD1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40942S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 61.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8500			P
7440-36-0	Antimony	0.95	U		P
7440-38-2	Arsenic	5.0		JK	P
7440-39-3	Barium	133			P
7440-41-7	Beryllium	0.20	~~B~~	U	P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	7610			P
7440-47-3	Chromium	14.1			P
7440-48-4	Cobalt	7.0	JK		P
7440-50-8	Copper	12.3			P
7439-89-6	Iron	16800			P
7439-92-1	Lead	115			P
7439-95-4	Magnesium	6450			P
7439-96-5	Manganese	273		~~N~~	P
7439-97-6	Mercury	0.08	U		CV
7440-02-0	Nickel	14.1			P
7440-09-7	Potassium	1560	B	~~E~~ JK	P
7782-49-2	Selenium	1.1	JBK	~~N~~ ~~J~~ LM	P
7440-22-4	Silver	1.1	JBK		P
7440-23-5	Sodium	250	JBK		P
7440-28-0	Thallium	1.7	U		P
7440-62-2	Vanadium	23.0			P
7440-66-6	Zinc	52.2			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KD2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40943S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 80.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3960			P
7440-36-0	Antimony	0.85	JBK		P
7440-38-2	Arsenic	2.8			P
7440-39-3	Barium	63.0			P
7440-41-7	Beryllium	0.10	~~B~~	4	P
7440-43-9	Cadmium	0.05	U		P
7440-70-2	Calcium	5740			P
7440-47-3	Chromium	6.8			P
7440-48-4	Cobalt	4.7	JBK		P
7440-50-8	Copper	6.5			P
7439-89-6	Iron	10200			P
7439-92-1	Lead	4.5			P
7439-95-4	Magnesium	3720			P
7439-96-5	Manganese	144		~~N~~	P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	7.0	JBK		P
7440-09-7	Potassium	603	B	~~E~~ JK	P
7782-49-2	Selenium	0.84	U	~~N~~ JL	P
7440-22-4	Silver	0.74	JBK		P
7440-23-5	Sodium	162	JBK		P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	10.9	JBK		P
7440-66-6	Zinc	26.5			P
	Cyanide				NR

10/31/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KD4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40944S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 92.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8790			P
7440-36-0	Antimony	1.8	JBK		P
7440-38-2	Arsenic	26.8			P
7440-39-3	Barium	96.1			P
7440-41-7	Beryllium	0.37	JBK		P
7440-43-9	Cadmium	0.04	U	JK	P
7440-70-2	Calcium	6340			P
7440-47-3	Chromium	17.3			P
7440-48-4	Cobalt	7.1	JBK		P
7440-50-8	Copper	207			P
7439-89-6	Iron	36000			P
7439-92-1	Lead	25.5			P
7439-95-4	Magnesium	3490			P
7439-96-5	Manganese	190		~~N~~	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	25.1			P
7440-09-7	Potassium	1430		~~EJK~~	P
7782-49-2	Selenium	1.0	JBK	~~N,JKMW~~	P
7440-22-4	Silver	2.3			P
7440-23-5	Sodium	117	JBK		P
7440-28-0	Thallium	2.3		U	P
7440-62-2	Vanadium	31.0			P
7440-66-6	Zinc	77.6			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KD5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40945S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 93.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6980			P
7440-36-0	Antimony	1.0	JBK		P
7440-38-2	Arsenic	13.0			P
7440-39-3	Barium	83.2			P
7440-41-7	Beryllium	0.23	JBK		P
7440-43-9	Cadmium	0.04	U	JK	P
7440-70-2	Calcium	56700			P
7440-47-3	Chromium	22.0			P
7440-48-4	Cobalt	5.9	JBK		P
7440-50-8	Copper	47.6			P
7439-89-6	Iron	20300			P
7439-92-1	Lead	13.1			P
7439-95-4	Magnesium	4660			P
7439-96-5	Manganese	293		~~N~~	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	18.9			P
7440-09-7	Potassium	899	B	~~E~~ JK	P
7782-49-2	Selenium	0.72	U	~~N~~ JL	P
7440-22-4	Silver	1.1	JBK		P
7440-23-5	Sodium	155	JBK		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	25.8			P
7440-66-6	Zinc	62.2			P
	Cyanide				NR

10/30/0

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KH0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40946S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 98.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11100			P
7440-36-0	Antimony	1.0	JBK		P
7440-38-2	Arsenic	17.8			P
7440-39-3	Barium	181			P
7440-41-7	Beryllium	0.38	JBK		P
7440-43-9	Cadmium	0.35	JBK		P
7440-70-2	Calcium	5490			P
7440-47-3	Chromium	14.0			P
7440-48-4	Cobalt	5.7	JBK		P
7440-50-8	Copper	21.6			P
7439-89-6	Iron	14700			P
7439-92-1	Lead	17.0			P
7439-95-4	Magnesium	3220			P
7439-96-5	Manganese	352		~~N~~	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	20.9			P
7440-09-7	Potassium	2550		~~E~~ JK	P
7782-49-2	Selenium	0.94	JBK	~~N~~ JK	P
7440-22-4	Silver	1.1	JBK		P
7440-23-5	Sodium	189	JBK		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	42.5			P
7440-66-6	Zinc	105			P
	Cyanide				NR

10/30/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KH2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40947S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 94.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	18100			P
7440-36-0	Antimony	1.9	JBK		P
7440-38-2	Arsenic	68.2			P
7440-39-3	Barium	168			P
7440-41-7	Beryllium	0.89	JBK		P
7440-43-9	Cadmium	4.8			P
7440-70-2	Calcium	5420			P
7440-47-3	Chromium	13.9			P
7440-48-4	Cobalt	14.7			P
7440-50-8	Copper	55.2			P
7439-89-6	Iron	25200			P
7439-92-1	Lead	183			P
7439-95-4	Magnesium	4110			P
7439-96-5	Manganese	1070		~~N~~	P
7439-97-6	Mercury	0.06	JBK		CV
7440-02-0	Nickel	16.1			P
7440-09-7	Potassium	1300		~~E~~ JK	P
7782-49-2	Selenium	1.5		~~N~~ JL	P
7440-22-4	Silver	6.7			P
7440-23-5	Sodium	129	JBK		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	41.9			P
7440-66-6	Zinc	462			P
	Cyanide				NR

10/30/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KH3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40948S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 98.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3370			P
7440-36-0	Antimony	6.1	~~J~~BK		P
7440-38-2	Arsenic	64.3			P
7440-39-3	Barium	70.4			P
7440-41-7	Beryllium	1.1			P
7440-43-9	Cadmium	7.8			P
7440-70-2	Calcium	245000			P
7440-47-3	Chromium	6.4			P
7440-48-4	Cobalt	9.4	~~J~~BK		P
7440-50-8	Copper	137			P
7439-89-6	Iron	23900			P
7439-92-1	Lead	70.9			P
7439-95-4	Magnesium	6040			P
7439-96-5	Manganese	360		~~N~~	P
7439-97-6	Mercury	0.42			CV
7440-02-0	Nickel	23.5			P
7440-09-7	Potassium	1230		~~E~~JK	P
7782-49-2	Selenium	3.0		~~N~~ JK	P
7440-22-4	Silver	2.3			P
7440-23-5	Sodium	177	~~J~~BK		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	16.3			P
7440-66-6	Zinc	649			P
	Cyanide				NR

10/30/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KH5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40950S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 99.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4700			P
7440-36-0	Antimony	1.5	JBK		P
7440-38-2	Arsenic	20.4			P
7440-39-3	Barium	73.5			P
7440-41-7	Beryllium	0.30	JBK		P
7440-43-9	Cadmium	0.52	JBK		P
7440-70-2	Calcium	7950			P
7440-47-3	Chromium	12.0			P
7440-48-4	Cobalt	4.3	JBK		P
7440-50-8	Copper	19.6			P
7439-89-6	Iron	12500			P
7439-92-1	Lead	12.1			P
7439-95-4	Magnesium	2840			P
7439-96-5	Manganese	236		~~N~~	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	20.2			P
7440-09-7	Potassium	1180		~~E~~ JK	P
7782-49-2	Selenium	0.68	U	~~N~~ JL	P
7440-22-4	Silver	0.94	JBK		P
7440-23-5	Sodium	140	JBK		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	35.3			P
7440-66-6	Zinc	76.1			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KH4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40949S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 99.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8130			P
7440-36-0	Antimony	4.3	JBK		P
7440-38-2	Arsenic	233			P
7440-39-3	Barium	34.6	JBK		P
7440-41-7	Beryllium	1.2			P
7440-43-9	Cadmium	9.7			P
7440-70-2	Calcium	38400			P
7440-47-3	Chromium	19.1			P
7440-48-4	Cobalt	12.5			P
7440-50-8	Copper	121			P
7439-89-6	Iron	30500			P
7439-92-1	Lead	69.3			P
7439-95-4	Magnesium	7710			P
7439-96-5	Manganese	655		~~N~~	P
7439-97-6	Mercury	2.9			CV
7440-02-0	Nickel	67.0			P
7440-09-7	Potassium	1820		~~E~~ JK	P
7782-49-2	Selenium	5.9		~~N~~ JK	P
7440-22-4	Silver	4.6			P
7440-23-5	Sodium	122	JBK		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	87.5			P
7440-66-6	Zinc	990			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KH7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40951S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 95.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1780			P
7440-36-0	Antimony	3.5	JBK		P
7440-38-2	Arsenic	8.7			P
7440-39-3	Barium	3330			P
7440-41-7	Beryllium	0.06	~~B~~	U	P
7440-43-9	Cadmium	124			P
7440-70-2	Calcium	109000			P
7440-47-3	Chromium	12.5			P
7440-48-4	Cobalt	28.3			P
7440-50-8	Copper	73.8			P
7439-89-6	Iron	12600			P
7439-92-1	Lead	2130			P
7439-95-4	Magnesium	68600			P
7439-96-5	Manganese	203		~~N~~	P
7439-97-6	Mercury	0.18			CV
7440-02-0	Nickel	12.7			P
7440-09-7	Potassium	238	B	~~E~~ JK	P
7782-49-2	Selenium	1.4		~~N~~ JL	P
7440-22-4	Silver	12.0			P
7440-23-5	Sodium	575	JBK		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	10.6			P
7440-66-6	Zinc	44900			P
	Cyanide				NR

10/30/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KH8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Matrix (soil/water): SOIL Lab Sample ID: 40952S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 96.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2520			P
7440-36-0	Antimony	10.6	JBK		P
7440-38-2	Arsenic	17.4			P
7440-39-3	Barium	5350			P
7440-41-7	Beryllium	0.07	~~B~~	U	P
7440-43-9	Cadmium	129			P
7440-70-2	Calcium	75000			P
7440-47-3	Chromium	76.5			P
7440-48-4	Cobalt	34.8			P
7440-50-8	Copper	115			P
7439-89-6	Iron	21400			P
7439-92-1	Lead	2190			P
7439-95-4	Magnesium	42400			P
7439-96-5	Manganese	220		~~N~~	P
7439-97-6	Mercury	0.35			CV
7440-02-0	Nickel	24.5			P
7440-09-7	Potassium	355	B	EJK	P
7782-49-2	Selenium	2.9		~~N~~ JL	P
7440-22-4	Silver	14.8			P
7440-23-5	Sodium	667	JBK		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	21.7			P
7440-66-6	Zinc	49000			P
	Cyanide				NR

10/30/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

ICP ID Number: P3 Date: 07/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium	493.40		200	1.2	P
Beryllium			5		NR
Cadmium			5		NR
Calcium	317.90		5000	73.1	P
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese	257.60		15	0.7	P
Mercury			0.2		NR
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc	206.20		20	3.6	P
Cyanide			10		NR

Comments:
P3: THERMO JARRELL ASH

U.S. EPA - CLP

10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

ICP ID Number: P4 Date: 07/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	17.7	P
Antimony	206.80		60	2.9	P
Arsenic	189.00		10	4.6	P
Barium	493.40		200	0.7	P
Beryllium	313.00		5	0.1	P
Cadmium	226.50		5	0.2	P
Calcium	317.90		5000	40.4	P
Chromium	267.70		10	0.4	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.9	P
Iron	271.40		100	9.8	P
Lead	220.30		3	1.8	P
Magnesium	279.00		5000	13.5	P
Manganese	257.60		15	0.3	P
Mercury			0.2		NR
Nickel	231.60		40	1.6	P
Potassium	766.40		5000	9.7	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.3	P
Sodium	330.20		5000	114.2	P
Thallium	190.80		10	5.1	P
Vanadium	292.40		50	0.7	P
Zinc	206.20		20	0.9	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

U.S. EPA - CLP

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

ICP ID Number: Date: 07/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:

C5: CETAC M6000

U.S. EPA - CLP

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	09/26/01	1.00	200
MJ0KC1	09/26/01	1.00	200
MJ0KC2	09/26/01	1.00	200
MJ0KC3	09/26/01	1.00	200
MJ0KC4	09/26/01	1.00	200
MJ0KC5	09/26/01	1.00	200
MJ0KC6	09/26/01	1.00	200
MJ0KC7	09/26/01	1.00	200
MJ0KC8	09/26/01	1.00	200
MJ0KC9	09/26/01	1.00	200
MJ0KD1	09/26/01	1.00	200
MJ0KD2	09/26/01	1.00	200
MJ0KD2D	09/26/01	1.00	200
MJ0KD2S	09/26/01	1.00	200
MJ0KD4	09/26/01	1.00	200
MJ0KD5	09/26/01	1.00	200
MJ0KH0	09/26/01	1.00	200
MJ0KH2	09/26/01	1.00	200
MJ0KH3	09/26/01	1.00	200
MJ0KH4	09/26/01	1.00	200
MJ0KH5	09/26/01	1.00	200
MJ0KH7	09/26/01	1.00	200
MJ0KH8	09/26/01	1.00	200
PBS	09/26/01	1.00	200

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KC1

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	09/25/01	0.20	100
MJ0KC1	09/25/01	0.20	100
MJ0KC2	09/25/01	0.20	100
MJ0KC3	09/25/01	0.20	100
MJ0KC4	09/25/01	0.20	100
MJ0KC5	09/25/01	0.20	100
MJ0KC6	09/25/01	0.20	100
MJ0KC7	09/25/01	0.20	100
MJ0KC8	09/25/01	0.20	100
MJ0KC9	09/25/01	0.20	100
MJ0KD1	09/25/01	0.20	100
MJ0KD2	09/25/01	0.20	100
MJ0KD2D	09/25/01	0.20	100
MJ0KD2S	09/25/01	0.20	100
MJ0KD4	09/25/01	0.20	100
MJ0KD5	09/25/01	0.20	100
MJ0KH0	09/25/01	0.20	100
MJ0KH2	09/25/01	0.20	100
MJ0KH3	09/25/01	0.20	100
MJ0KH4	09/25/01	0.20	100
MJ0KH5	09/25/01	0.20	100
MJ0KH7	09/25/01	0.20	100
MJ0KH8	09/25/01	0.20	100
PBS	09/25/01	0.20	100

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MEMORANDUM

DATE	November 6, 2001
TO	Leatta Dahlhoff, Project Manager, E & E, Seattle, WA
FROM	Mark Woodke, Chemist, E & E, Seattle, WA
SUBJ	**Inorganic Data Summary Check, Upper Columbia River Mines/Mills ESI, Stevens and Pend Oreille Counties, Washington**
REF	TDD. 01-02-0028 PAN: 001281.0073.01SR

The data quality summary check of 3 water and 11 solid samples collected from the Upper Columbia River Mines/Mills ESI, Stevens and Pend Oreille Counties, Washington has been completed Target Analyte List metals analysis (EPA CLP SOW ILM04.1) was performed by Sentinel, Inc , Huntsville, Alabama.

The samples were numbered:

MJ0KD3	MJ0KK0	MJ0KK3	MJ0KK6	MJ0KK9	MJ0KH1
MJ0KK1	MJ0KK4	MJ0KK7	MJ0KL0	MJ0KH6	MJ0KK2
MJ0KK5	MJ0KK8				

The following discrepancy was noted.

Sample MJ0KK6 was identified as MJ0KK4 in the last section of the memorandum; sample qualifications were applied correctly, therefore no action was taken.

All sample results originally qualified "B" by the laboratory to indicate a result less than the CRDL were changed to "JBK" by the secondary reviewer to indicate an estimated quantity less than the CRDL with an unknown bias

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

IN REPLY
REFER TO: OEA-095 November 1, 2001

MEMORANDUM

SUBJECT: Upper Columbia River/ESI Mines and Mills, CLP Metals Analysis, Data Validation
Case: 29730
SDG: MJ0KD3

FROM: Laura Castrilli, Chemist
Quality Assurance and Data Unit, OEA

TO: Monica Tonel, Site Assessment Manager
Office of Environmental Cleanup

CC: Bruce Woods, Region 10 CLP TPO
Mark Woodke, Ecology and Environment Inc.

The following is a validation of ICP-AES and mercury analyses of eleven soil/sediment and three water samples from the Upper Columbia River/ESI Mines and Mills site. The analyses were performed following the USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis Multi-media, Multi-Concentration, ILM04.1. Analyses were conducted by Sentinel, Inc., Huntsville, Alabama. This validation was conducted for the following samples:

MJ0KD3	MJ0KK0	MJ0KK3	MJ0KK6	MJ0KK9
MJ0KH1	MJ0KK1	MJ0KK4	MJ0KK7	MJ0KL0
MJ0KH6	MJ0KK2	MJ0KK5	MJ0KK8	

Data Qualifications

The following comments refer to the Sentinel Laboratory's performance in meeting quality control specifications outlined in the *CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM04.1*. The comments presented herein are based on the information provided for the review.

1.0 Timeliness - Acceptable

The technical (40 CFR part 136) holding time from the date of collection for mercury in water is 28 days. The holding time for the remaining metals in water is 180 days. The samples were collected between 09/10/01 and 09/13/01. ICP-AES analyses were completed

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between 09/27/01 and 10/02/01. Mercury analyses were completed on 09/25/01.

All analyses were conducted within the technical water holding times, therefore no qualification was made based on holding time.

2.0 Sample Preparation - Acceptable

The samples were prepared for mercury and ICP-AES analyses on 09/25/01. No qualification was made based on sample preparation.

3.0 Calibrations/Calibration Verifications -

The samples were analyzed for mercury by CVAAS on 09/25/01. The initial calibration included one blank and six standards. The curve was linear with a correlation coefficient greater than 0.995.

The samples were analyzed by ICP-AES on 09/27/01 (most analytes), 09/28/01 (re-analysis for copper and/or lead for samples affected by poor continuing calibration verification recovery or interference check sample recovery) and 10/02/01 (dilution analysis for copper in sample MJ0KK1). The instruments were standardized each day of analysis according to the analytical method using one blank and a single calibration standard for each element.

All ICP-AES and CVAAS (mercury) calibrations were performed as required and met the acceptance criteria; therefore, no qualification was made on this basis.

Calibration verification samples are required before and after sample analysis and after every 10 samples during analysis. Mercury recoveries must be within 80-120%. Other metal recoveries must be within 90-110%.

All ICP-AES and CVAAS (mercury) calibration verification (initial and continuing) samples bracketing <u>reported</u> sample results met the frequency and recovery criteria; with the exception of sodium and silver in the final CCV for the primary 09/28/01 analysis. Since both recoveries (each were 89.7%R), were so close to the acceptance criteria, no qualification was made based on ICP-AES or CVAAS calibration verification.

There was one instance of a calibration verification (CCV)/calibration blank (CCB) pair being ran after a 1.5 hour break in analysis. Since the only affected sample analyses were for the duplicate, matrix spike and post spike analyses for soil/sediment sample MJ0KK3 (the results of which compared favorably with the earlier native analysis for this sample), and since the affected analyses were immediately preceded by an acceptable CCV/CCB pair, no qualification was made based on the break in analysis/long time between CCV/CCBs.

4.0 Laboratory Control Samples - Acceptable

Laboratory Control samples (LCS) are digested and analyzed along with the samples to verify the efficiency of laboratory procedures (LCS analyses are not required for mercury in water). All recoveries associated with reported sample results met the acceptance criteria for control samples, therefore no qualification was made based on LCS results.

5.0 Blanks -

Procedural blanks were prepared with the samples to show potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified if the analyte concentration was less than five times the analytical value in the blank.

Aluminum, barium, calcium, copper, iron, magnesium, manganese, potassium, silver, and zinc were detected in the water preparation blank. Calcium and potassium were detected in the soil/sediment preparation blank. Aluminum, barium, calcium, chromium, iron, magnesium, manganese, and silver were detected in one or more continuing calibration blanks (CCBs). Beryllium, magnesium, and sodium in one or more CCBs had negative values with absolute values greater than the detection limits.

Based on blank contamination, the following qualifications were made:

- aluminum in sample MJ0KH6 was qualified 'U', undetected
- beryllium in samples MJ0KK4 and MJ0KL0 was qualified 'J', estimated
- chromium in sample MJ0KH1 was qualified 'U', undetected
- copper in sample MJ0KH6 was qualified 'U', undetected
- manganese in sample MJ0KH6 was qualified 'U', undetected
- silver in samples MJ0KH1 and MJ0KK5 was qualified 'U', undetected

The remaining sample results were greater than five times the associated blank levels (or were already undetected) and were not qualified on this basis.

6.0 ICP-AES Interference Check Sample -

The interference check sample (ICS) is analyzed by ICP-AES to verify interelement and background correction factors. Analysis is required at the beginning and end of each sample analysis run and recoveries must be between 80% and 120%. All ICS recoveries associated with

reported sample results were within the recovery criterion.

The raw data for a number of samples had interfering levels of calcium, magnesium, and/or iron. Analytes for which iron is an interferent were qualified as follows:

- Cadmium in sample MJ0KD3 was qualified 'UJ' estimated detection limit (possible false negative).

7.0 Duplicate Analysis -

Duplicate analysis was done on water sample MJ0KH6. Water duplicate results were within the ±20% Relative Percent Difference (RPD) or ±CRDL criteria for water results < 5 times the CRDL criteria; with the exception of iron (outside the CRDL criteria). All water iron results were qualified 'J' estimated.

Duplicate analysis was done on soil/sediment sample MJ0KK3. Soil/sediment duplicate results were within the ±35% Relative Percent Difference (RPD) or ±2xCRDL criteria for soil/sediment results < 5 times the CRDL criteria; therefore no qualification was made on this basis.

Laboratory '*' qualifiers were removed from soil/sediment arsenic results as the laboratory used the stricter water criteria to qualify soil/sediment results.

8.0 Matrix Spike Analysis -

Matrix spike sample analyses are done to provide information about the effect of the sample matrix on digestion and measurement methods. Matrix spike recovery must be within the limits of 75 - 125%.

Matrix spike analysis was done on water sample MJ0KH6. All soil/sediment matrix spike recoveries were within the required QC limits; therefore water results were not qualified based on matrix spike recovery.

Matrix spike analysis was done on soil/sediment sample MJ0KK3. All soil/sediment matrix spike recoveries were within the required QC limits; with the exception of antimony (64%R) and arsenic (45.2%). All antimony and arsenic soil/sediment results were qualified 'J', estimated (low bias suspected for samples not qualified for other reasons).

9.0 ICP-AES Serial Dilution -

Water sample MJ0KH6 and soil/sediment sample MJ0KK3 were analyzed by ICP-AES serial dilution to check for potential interferences. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) were within the 10%D criteria; with the exception of

potassium in water (27.7%D) and calcium in soil/sediment (11.7%D). All water potassium results were qualified 'J', estimated. All soil/sediment calcium results were qualified 'J', estimated (unknown bias).

10.0 Detection Limits - Acceptable

Sample results which fall below the instrument detection limit (IDL) are assigned the value of the instrument detection limit and the 'U' qualifier is attached.

Contract Required Detection Limit (CRDL) standards are required for most analytes to demonstrate a linear calibration curve near the CRDL. CRDL standards were run at the required frequency.

11.0 Overall Assessment of the Data

This validation of the data is based on the criteria outlined in the *National Functional Guidelines for Inorganic Data Review (02/94)*.

The sample cooler(s) had a temperature upon receipt of 9°C. According to the sample receipt log book, all applicable pHs were within specific guidelines. Properly preserved water metals samples (pH<2) do not require cooling (40 CFR 136.2, Table II). In the reviewer's judgement, it is unlikely that the elevated temperature for soil/sediment would cause appreciable loss of metals, therefore no action was taken based on the elevated cooler temperature.

Soil/sediment sample MJ0KK4 had a very low percent solids - 19.1. The raw data was checked to make sure there wasn't a calculation error. There was no calculation error.

For soil/sediment the amount of each sample analyzed for mercury is 0.2 g, wet weight, while the amount of each sample analyzed for other metals is 1.0 gram, wet weight. With 19.1%, this means only approximately 0.038 g of solid material was analyzed for mercury and approximately 0.191 g of solid material was analyzed for the other metals. Since mercury was not detected in this sample and since such a minute amount of material was digested, the undetected mercury result for samples MJ0KK6 was qualified 'R', unusable. There were a number of detects for the ICP-AES analysis, indicating that at least some ICP analytes were measurable in the small sample aliquot. All ICP-AES analytes, including non-detects, in samples MJ0KK6 was qualified 'J', estimated (unknown bias).

There were 322 data points reported: 8 results were qualified due to blank contamination; 22 results were estimated due to matrix spike recovery; 3 results were estimated due to duplicate precision; 14 results were estimated due to serial dilution; 1 result was suspected to be a possible false negative due to high iron; 22 results were estimated due to reduced sample aliquot size; 1 result was rejected

due to extremely reduced sample aliquot size. Overall, 20.5 percent of the data was qualified (only counting one qualification per data point for those results qualified for more than one reason).

Below are the definitions for the National Functional Guidelines for Inorganic Data Review (02/94) qualifiers used when validating/qualifying data from Inorganic analysis.

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. (Note: Analyte may or may not be present.)

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

At the request of the site assessment manager, bias for the data was qualitatively assessed and if applicable, the following additional qualifiers were applied:

L - Low bias.

H - High bias.

K - Unknown Bias.

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KD3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

Matrix (soil/water): WATER Lab Sample ID: 40919S

Level (low/med): LOW Date Received: 09/19/01

% 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	84500			P
7440-36-0	Antimony	2.9	U		P
7440-38-2	Arsenic	4.6	U		P
7440-39-3	Barium	7.7	JBK		P
7440-41-7	Beryllium	3.5	JBK		P
7440-43-9	Cadmium	0.20	U	JK	P
7440-70-2	Calcium	316000			P
7440-47-3	Chromium	71.6			P
7440-48-4	Cobalt	213			P
7440-50-8	Copper	6120			P
7439-89-6	Iron	695000		JK	P
7439-92-1	Lead	11.3			P
7439-95-4	Magnesium	190000			P
7439-96-5	Manganese	10200			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	64.4			P
7440-09-7	Potassium	382	B	~~E~~ JK	P
7782-49-2	Selenium	3.4	U		P
7440-22-4	Silver	19.5			P
7440-23-5	Sodium	8090			P
7440-28-0	Thallium	21.6			P
7440-62-2	Vanadium	3.9	JBK		P
7440-66-6	Zinc	937			P
	Cyanide				NR

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Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KH1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

Matrix (soil/water): WATER Lab Sample ID: 40920S

Level (low/med): LOW Date Received: 09/19/01

% 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	1430			P
7440-36-0	Antimony	2.9	U		P
7440-38-2	Arsenic	95.3			P
7440-39-3	Barium	18.9	JB K		P
7440-41-7	Beryllium	0.82	JB K		P
7440-43-9	Cadmium	7.1			P
7440-70-2	Calcium	108000			P
7440-47-3	Chromium	1.0	~~B~~	U	P
7440-48-4	Cobalt	1.5	JB K		P
7440-50-8	Copper	161			P
7439-89-6	Iron	2780		* JK	P
7439-92-1	Lead	5.2			P
7439-95-4	Magnesium	28800			P
7439-96-5	Manganese	202			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	7.4	JB K		P
7440-09-7	Potassium	4930	B	E JK	P
7782-49-2	Selenium	3.4	U		P
7440-22-4	Silver	0.38	~~B~~	U	P
7440-23-5	Sodium	4790	JB K		P
7440-28-0	Thallium	5.1	U		P
7440-62-2	Vanadium	2.0	JB K		P
7440-66-6	Zinc	829			P
	Cyanide				NR

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Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KH6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

Matrix (soil/water): WATER Lab Sample ID: 40921S

Level (low/med): LOW Date Received: 09/19/01

% 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	134	~~B~~	U	P
7440-36-0	Antimony	2.9	U		P
7440-38-2	Arsenic	4.6	U		P
7440-39-3	Barium	122	~~B~~ J K		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium	0.51	~~B~~ J K		P
7440-70-2	Calcium	82600			P
7440-47-3	Chromium	0.40	U		P
7440-48-4	Cobalt	1.1	U		P
7440-50-8	Copper	2.2	~~B~~	U	P
7439-89-6	Iron	192		* JK	P
7439-92-1	Lead	1.8	U		P
7439-95-4	Magnesium	33700			P
7439-96-5	Manganese	4.9	~~B~~	U	P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.0	~~B~~ J K		P
7440-09-7	Potassium	1870	B	~~E~~ JK	P
7782-49-2	Selenium	3.4	U		P
7440-22-4	Silver	0.30	U		P
7440-23-5	Sodium	2750	~~B~~ J K		P
7440-28-0	Thallium	5.1	U		P
7440-62-2	Vanadium	0.70	U		P
7440-66-6	Zinc	1480			P
	Cyanide				NR

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Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KK0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

Matrix (soil/water): SOIL Lab Sample ID: 40922S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 95.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13200			P
7440-36-0	Antimony	11.8	JBK	~~N-JLAV~~	P
7440-38-2	Arsenic	294		N* JL	P
7440-39-3	Barium	157			P
7440-41-7	Beryllium	0.17	JBK		P
7440-43-9	Cadmium	2.0			P
7440-70-2	Calcium	4790		E JK	P
7440-47-3	Chromium	13.0			P
7440-48-4	Cobalt	20.5			P
7440-50-8	Copper	2430			P
7439-89-6	Iron	31800			P
7439-92-1	Lead	2600			P
7439-95-4	Magnesium	3550			P
7439-96-5	Manganese	275			P
7439-97-6	Mercury	0.28			CV
7440-02-0	Nickel	12.0			P
7440-09-7	Potassium	1310			P
7782-49-2	Selenium	1.2			P
7440-22-4	Silver	13.1			P
7440-23-5	Sodium	212	JBK		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	33.8			P
7440-66-6	Zinc	120			P
	Cyanide				NR

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Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KK1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

Matrix (soil/water): SOIL Lab Sample ID: 40923S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 89.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13600			P
7440-36-0	Antimony	21.4		~~N~~ JL	P
7440-38-2	Arsenic	297		~~N*~~ JL	P
7440-39-3	Barium	178			P
7440-41-7	Beryllium	0.31	JB~~K~~		P
7440-43-9	Cadmium	26.9			P
7440-70-2	Calcium	23700		~~E~~ JL	P
7440-47-3	Chromium	10.8			P
7440-48-4	Cobalt	112			P
7440-50-8	Copper	14700			P
7439-89-6	Iron	35700			P
7439-92-1	Lead	7980			P
7439-95-4	Magnesium	8040			P
7439-96-5	Manganese	594			P
7439-97-6	Mercury	0.34			CV
7440-02-0	Nickel	25.3			P
7440-09-7	Potassium	4900			P
7782-49-2	Selenium	0.76	U		P
7440-22-4	Silver	21.3			P
7440-23-5	Sodium	2000			P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	44.1			P
7440-66-6	Zinc	978			P
	Cyanide				NR

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Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KK2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

Matrix (soil/water): SOIL Lab Sample ID: 40924S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 90.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8070			P
7440-36-0	Antimony	60.6		~~N~~ JL	P
7440-38-2	Arsenic	209		~~N*~~ JL	P
7440-39-3	Barium	87.1			P
7440-41-7	Beryllium	0.18	JBK		P
7440-43-9	Cadmium	105			P
7440-70-2	Calcium	15800		~~E~~ JL	P
7440-47-3	Chromium	10.4			P
7440-48-4	Cobalt	42.0			P
7440-50-8	Copper	4480			P
7439-89-6	Iron	23200			P
7439-92-1	Lead	10500			P
7439-95-4	Magnesium	5970			P
7439-96-5	Manganese	351			P
7439-97-6	Mercury	0.40			CV
7440-02-0	Nickel	16.5			P
7440-09-7	Potassium	1910			P
7782-49-2	Selenium	1.4			P
7440-22-4	Silver	26.7			P
7440-23-5	Sodium	494	JBK		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	27.9			P
7440-66-6	Zinc	5420			P
	Cyanide				NR

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Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KK3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

Matrix (soil/water): SOIL Lab Sample ID: 40925S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 85.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7170			P
7440-36-0	Antimony	0.68	U	~~N~~JL	P
7440-38-2	Arsenic	17.6		~~N*~~JL	P
7440-39-3	Barium	69.0			P
7440-41-7	Beryllium	0.19	JBK		P
7440-43-9	Cadmium	2.6			P
7440-70-2	Calcium	3110		~~E~~JK	P
7440-47-3	Chromium	14.5			P
7440-48-4	Cobalt	5.8	JBK		P
7440-50-8	Copper	124			P
7439-89-6	Iron	13700			P
7439-92-1	Lead	87.1			P
7439-95-4	Magnesium	3650			P
7439-96-5	Manganese	261			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	13.3			P
7440-09-7	Potassium	1380			P
7782-49-2	Selenium	0.79	U		P
7440-22-4	Silver	0.92	JBK		P
7440-23-5	Sodium	189	JBK		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	24.7			P
7440-66-6	Zinc	92.2			P
	Cyanide				NR

11/01/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

9

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KK4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

Matrix (soil/water): SOIL Lab Sample ID: 40926S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 19.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7650		JK	P
7440-36-0	Antimony	8.3	B	NJK	P
7440-38-2	Arsenic	39.9		~~N*~~JK	P
7440-39-3	Barium	413		JK	P
7440-41-7	Beryllium	0.22	B	JK	P
7440-43-9	Cadmium	5.9		JK	P
7440-70-2	Calcium	222000		~~E~~JK	P
7440-47-3	Chromium	34.8		JK	P
7440-48-4	Cobalt	16.3	B	JK	P
7440-50-8	Copper	1090		JK	P
7439-89-6	Iron	15400		JK	P
7439-92-1	Lead	887		JK	P
7439-95-4	Magnesium	5950		JK	P
7439-96-5	Manganese	339		JK	P
7439-97-6	Mercury	~~0.26~~	U	~~J~~ R	CV
7440-02-0	Nickel	14.5	B	JK	P
7440-09-7	Potassium	1650	B	JK	P
7782-49-2	Selenium	5.8		JK	P
7440-22-4	Silver	3.3	B	JK	P
7440-23-5	Sodium	684	B	JK	P
7440-28-0	Thallium	5.3	U	JK	P
7440-62-2	Vanadium	24.8	B	JK	P
7440-66-6	Zinc	223			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KK5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

Matrix (soil/water): SOIL Lab Sample ID: 40927S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 79.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2740			P
7440-36-0	Antimony	0.73	U	~~N~~ JL	P
7440-38-2	Arsenic	1.2	U	~~N~~ JL	P
7440-39-3	Barium	145			P
7440-41-7	Beryllium	0.03	JB		P
7440-43-9	Cadmium	0.26	JB		P
7440-70-2	Calcium	90700		~~E~~ JK	P
7440-47-3	Chromium	7.6			P
7440-48-4	Cobalt	1.7	JB		P
7440-50-8	Copper	6.8			P
7439-89-6	Iron	6560			P
7439-92-1	Lead	16.6			P
7439-95-4	Magnesium	2600			P
7439-96-5	Manganese	87.3			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	4.1	JB		P
7440-09-7	Potassium	485	JB		P
7782-49-2	Selenium	0.86	U		P
7440-22-4	Silver	0.15	~~B~~	U	P
7440-23-5	Sodium	175	JB		P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	14.6			P
7440-66-6	Zinc	26.4			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KK6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

Matrix (soil/water): SOIL Lab Sample ID: 40928S

Level (low/med): LOW Date Received: 09/19/01

% 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	4810			P
7440-36-0	Antimony	1.5	JBK	~~N~~ JKMW	P
7440-38-2	Arsenic	2.6		~~N*~~ JL	P
7440-39-3	Barium	194			P
7440-41-7	Beryllium	0.09	JBK		P
7440-43-9	Cadmium	1.3			P
7440-70-2	Calcium	90500		~~E~~ JK	P
7440-47-3	Chromium	17.6			P
7440-48-4	Cobalt	2.9	JBK		P
7440-50-8	Copper	17.3			P
7439-89-6	Iron	7690			P
7439-92-1	Lead	57.0			P
7439-95-4	Magnesium	3520			P
7439-96-5	Manganese	152			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	8.0	JBK		P
7440-09-7	Potassium	897	JBK		P
7782-49-2	Selenium	1.1	JBK		P
7440-22-4	Silver	0.57	JBK		P
7440-23-5	Sodium	255	JBK		P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	13.8			P
7440-66-6	Zinc	60.9			P
	Cyanide				NR

11/01/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KK7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

Matrix (soil/water): SOIL Lab Sample ID: 40929S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 91.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16400			P
7440-36-0	Antimony	2.8	JBK	~~N*JLMN~~	P
7440-38-2	Arsenic	8.3		N*JL	P
7440-39-3	Barium	470			P
7440-41-7	Beryllium	0.31	JBK		P
7440-43-9	Cadmium	3.4			P
7440-70-2	Calcium	8210		EJL	P
7440-47-3	Chromium	15.6			P
7440-48-4	Cobalt	6.0	JBK		P
7440-50-8	Copper	11.8			P
7439-89-6	Iron	19600			P
7439-92-1	Lead	152			P
7439-95-4	Magnesium	4160			P
7439-96-5	Manganese	922			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	14.4			P
7440-09-7	Potassium	1160			P
7782-49-2	Selenium	0.74	U		P
7440-22-4	Silver	1.3	JBK		P
7440-23-5	Sodium	201	JBK		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	27.4			P
7440-66-6	Zinc	835			P
	Cyanide				NR

10/10/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KK8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

Matrix (soil/water): SOIL Lab Sample ID: 40930S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 54.3

Concentration 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	1.1	U	~~N~~ JL	P
7440-38-2	Arsenic	3.5	JBK	~~N*~~ JL	P
7440-39-3	Barium	114			P
7440-41-7	Beryllium	0.27	JBK		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	11900		~~E~~ JK	P
7440-47-3	Chromium	11.0			P
7440-48-4	Cobalt	5.0	JBK		P
7440-50-8	Copper	10.2			P
7439-89-6	Iron	13500			P
7439-92-1	Lead	12.9			P
7439-95-4	Magnesium	6010			P
7439-96-5	Manganese	252			P
7439-97-6	Mercury	0.09	U		CV
7440-02-0	Nickel	10.8	JBK		P
7440-09-7	Potassium	1370	JBK		P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	0.83	JBK		P
7440-23-5	Sodium	272	JBK		P
7440-28-0	Thallium	1.9	U		P
7440-62-2	Vanadium	17.4	JBK		P
7440-66-6	Zinc	52.5			P
	Cyanide				NR

11/01/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KK9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

Matrix (soil/water): SOIL Lab Sample ID: 40931S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 57.0

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	1.0	U	~~N~~ JL	P
7440-38-2	Arsenic	1.6	U	~~N~~*JL	P
7440-39-3	Barium	57.7	JB		P
7440-41-7	Beryllium	0.20	JB		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	3240		~~E~~ JL	P
7440-47-3	Chromium	17.5			P
7440-48-4	Cobalt	4.2	JB		P
7440-50-8	Copper	15.7			P
7439-89-6	Iron	12800			P
7439-92-1	Lead	6.0			P
7439-95-4	Magnesium	3750			P
7439-96-5	Manganese	192			P
7439-97-6	Mercury	0.09	U		CV
7440-02-0	Nickel	12.0	JB		P
7440-09-7	Potassium	965	JB		P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	0.78	JB		P
7440-23-5	Sodium	234	JB		P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	26.2			P
7440-66-6	Zinc	37.1			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KL0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

Matrix (soil/water): SOIL Lab Sample ID: 40932S

Level (low/med): LOW Date Received: 09/19/01

% 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	3820			P
7440-36-0	Antimony	0.83	U	~~N~~ JL	P
7440-38-2	Arsenic	1.3	U	~~N*~~JL	P
7440-39-3	Barium	28.4	JBK		P
7440-41-7	Beryllium	0.10	B	JK	P
7440-43-9	Cadmium	0.06	U		P
7440-70-2	Calcium	3000		~~E~~JK	P
7440-47-3	Chromium	9.6			P
7440-48-4	Cobalt	3.0	JBK		P
7440-50-8	Copper	30.4			P
7439-89-6	Iron	10100			P
7439-92-1	Lead	3.5			P
7439-95-4	Magnesium	2590			P
7439-96-5	Manganese	150			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	6.2	JBK		P
7440-09-7	Potassium	550	JBK		P
7782-49-2	Selenium	0.97	U		P
7440-22-4	Silver	0.74	JBK		P
7440-23-5	Sodium	239	JBK		P
7440-28-0	Thallium	1.5	U		P
7440-62-2	Vanadium	19.0			P
7440-66-6	Zinc	24.5			P
	Cyanide				NR

Acceptable

olor Before: BROWN Clarity Before: Texture: MEDIUM

olor After: YELLOW Clarity After: Artifacts:

omments:

10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

ICP ID Number: P3 Date: 07/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic	189.00		10	1.7	P
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper	324.70		25	3.6	P
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury			0.2		NR
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
P3: THERMO JARRELL ASH

10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

ICP ID Number: P4 Date: 07/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	17.7	P
Antimony	206.80		60	2.9	P
Arsenic	189.00		10	4.6	P
Barium	493.40		200	0.7	P
Beryllium	313.00		5	0.1	P
Cadmium	226.50		5	0.2	P
Calcium	317.90		5000	40.4	P
Chromium	267.70		10	0.4	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.9	P
Iron	271.40		100	9.8	P
Lead	220.30		3	1.8	P
Magnesium	279.00		5000	13.5	P
Manganese	257.60		15	0.3	P
Mercury			0.2		NR
Nickel	231.60		40	1.6	P
Potassium	766.40		5000	9.7	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.3	P
Sodium	330.20		5000	114.2	P
Thallium	190.80		10	5.1	P
Vanadium	292.40		50	0.7	P
Zinc	206.20		20	0.9	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

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10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

ICP ID Number: Date: 07/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	09/25/01	1.00	200
LCSW	09/25/01		100
MJ0KD3	09/25/01		100
MJ0KH1	09/25/01		100
MJ0KH6	09/25/01		100
MJ0KH6D	09/25/01		100
MJ0KH6S	09/25/01		100
MJ0KK0	09/25/01	1.00	200
MJ0KK1	09/25/01	1.00	200
MJ0KK2	09/25/01	1.00	200
MJ0KK3	09/25/01	1.00	200
MJ0KK3D	09/25/01	1.00	200
MJ0KK3S	09/25/01	1.00	200
MJ0KK4	09/25/01	1.00	200
MJ0KK5	09/25/01	1.00	200
MJ0KK6	09/25/01	1.00	200
MJ0KK7	09/25/01	1.00	200
MJ0KK8	09/25/01	1.00	200
MJ0KK9	09/25/01	1.00	200
MJ0KL0	09/25/01	1.00	200
PBS	09/25/01	1.00	200
PBW	09/25/01		100

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KD3

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	09/25/01	0.20	100
MJ0KD3	09/25/01		100
MJ0KH1	09/25/01		100
MJ0KH6	09/25/01		100
MJ0KH6D	09/25/01		100
MJ0KH6S	09/25/01		100
MJ0KK0	09/25/01	0.20	100
MJ0KK1	09/25/01	0.20	100
MJ0KK2	09/25/01	0.20	100
MJ0KK3	09/25/01	0.20	100
MJ0KK3D	09/25/01	0.20	100
MJ0KK3S	09/25/01	0.20	100
MJ0KK4	09/25/01	0.20	100
MJ0KK5	09/25/01	0.20	100
MJ0KK6	09/25/01	0.20	100
MJ0KK7	09/25/01	0.20	100
MJ0KK8	09/25/01	0.20	100
MJ0KK9	09/25/01	0.20	100
MJ0KL0	09/25/01	0.20	100
PBS	09/25/01	0.20	100
PBW	09/25/01		100

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Tel (206) 624-9537, Fax (206) 621-9832

MEMORANDUM

DATE: November 27, 2001

TO: Leatta Dahlhoff, Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, Chemist, E & E, Seattle, WA MW

SUBJ. **Inorganic Data Summary Check, Upper Columbia River Mines/Mills ESI, Pend Oreille and Stevens Counties, Washington**

REF: **TDD: 01-02-0028** **PAN: 001281.0073.01SR**

The data quality summary check of 11 solid samples collected from the Upper Columbia River Mines/Mills ESI, Pend Oreille and Stevens Counties, Washington has been completed. Target Analyte List metals analysis (EPA CLP SOW ILM04.1) was performed by Sentinel, Inc., Huntsville, Alabama.

The samples were numbered:

MJ0KH9	MJ0KJ0	MJ0KJ1	MJ0KJ2	MJ0KJ3	MJ0KJ4
MJ0KJ5	MJ0KJ6	MJ0KJ7	MJ0KJ8	MJ0KJ9	

No discrepancies were noted.

All sample results originally qualified "B" by the laboratory to indicate a result less than the Contract Required Detection Limit (CRDL) were changed to "JBK" by the secondary reviewer to indicate an estimated quantity less than the CRDL with an unknown bias.

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

IN REPLY REFER TO: OEA-095

November 19, 2001

MEMORANDUM

SUBJECT: Upper Columbia River/ESI Mines and Mills, CLP Metals Analysis, Data Validation
Case: 29730
SDG: MJ0KH9

FROM: Laura Castrilli, Chemist
Quality Assurance and Data Unit, OEA

TO: Monica Tonel, Site Assessment Manager
Office of Environmental Cleanup

CC: Bruce Woods, Region 10 CLP TPO
Mark Woodke, Ecology and Environment Inc.

The following is a validation of ICP-AES and mercury analyses of eleven soil/sediment samples from the Upper Columbia River/ESI Mines and Mills site. The analyses were performed following the USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis Multi-media, Multi-Concentration, ILM04.1. Analyses were conducted by Sentinel, Inc., Huntsville, Alabama. This validation was conducted for the following samples:

MJ0KH9	MJ0KJ1	MJ0KJ3	MJ0KJ5	MJ0KJ7	MJ0KJ9
MJ0KJ0	MJ0KJ2	MJ0KJ4	MJ0KJ6	MJ0KJ8	

Data Qualifications

The following comments refer to the Sentinel Laboratory's performance in meeting quality control specifications outlined in the *CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM04.1*. The comments presented herein are based on the information provided for the review.

1.0 Timeliness - Acceptable

The technical (40 CFR part 136) holding time from the date of collection for mercury in water is 28 days. The holding time for the remaining metals in water is 180 days. The samples were collected on 09/12/01. ICP-AES analyses were completed between 9/28/01 and 10/02/01. Mercury analyses were completed on 09/25/01.

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All analyses were conducted within the technical water holding times, therefore no qualification was made based on holding time.

2.0 Sample Preparation - Acceptable

The samples were prepared for mercury analyses on 09/24/01. The samples were prepared for ICP-AES analyses on 09/25/01. No qualification was made based on sample preparation.

3.0 Calibrations/Calibration Verifications - Acceptable

The samples were analyzed for mercury by CVAAS on 09/25/01. The initial calibration included one blank and six standards. The curve was linear with a correlation coefficient greater than 0.995.

The samples were analyzed by ICP-AES on 09/28/01 (most analytes) and 10/02/01 (dilution analyses for barium). The instrument was standardized each day of analysis according to the analytical method using one blank and a single calibration standard for each element.

All ICP-AES and CVAAS (mercury) calibrations were performed as required and met the acceptance criteria; therefore, no qualification was made on this basis.

Calibration verification samples are required before and after sample analysis and after every 10 samples during analysis. Mercury recoveries must be within 80-120%. Other metal recoveries must be within 90-110%.

All ICP-AES and CVAAS (mercury) calibration verification (initial and continuing) samples bracketing reported sample results met the frequency and recovery criteria; therefore no qualification was made based on ICP-AES or CVAAS calibration verification.

4.0 Laboratory Control Samples - Acceptable

Laboratory Control samples (LCS) are digested and analyzed along with the samples to verify the efficiency of laboratory procedures. All recoveries associated with reported sample results met the acceptance criteria for control samples, therefore no qualification was made based on LCS results.

5.0 Blanks -

Procedural blanks were prepared with the samples to show potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified if the analyte concentration was less than five times the analytical value in the blank.

Iron and manganese were detected in the preparation blank. Arsenic in the preparation blank had a negative result with an absolute value greater than the instrumental detection limit. Barium and thallium were detected in one or more continuing calibration blanks (CCBs). Lead in a CCB had a negative value with an absolute value greater than the detection limit.

Based on blank contamination, the following qualifications were made:

- arsenic in samples MJ0KJ5 through MJ0KJ7 was qualified 'J', estimated

The remaining sample results were greater than five times the associated blank levels (or were already undetected) and were not qualified on this basis.

6.0 ICP-AES Interference Check Sample - Acceptable

The interference check sample (ICS) is analyzed by ICP-AES to verify interelement and background correction factors. Analysis is required at the beginning and end of each sample analysis run and recoveries must be between 80% and 120%. All ICS recoveries associated with reported sample results were within the recovery criterion; therefore no qualification was made based on ICS recovery.

The raw data for a couple of samples had interfering levels of calcium and/or magnesium. The estimated interference due to high calcium or magnesium was negligible; therefore no qualification was made based on suspected interference.

7.0 Duplicate Analysis -

Duplicate analysis was done on soil/sediment sample MJ0KJ5. Soil/sediment duplicate results were within the ±35% Relative Percent Difference (RPD) or ±2xCRDL criteria for soil/sediment results < 5 times the CRDL criteria; with the exception of lead (38.2%RPD). All lead results were qualified 'J', estimated due to duplicate precision.

Laboratory '*' qualifiers were removed from magnesium and zinc results as the lab used the stricter water criteria to qualify soil/sediment results.

8.0 Matrix Spike Analysis -

Matrix spike sample analyses are done to provide information about the effect of the sample matrix on digestion and measurement methods. Matrix spike recovery must be within the limits of 75 - 125%.

Matrix spike analysis was done on soil/sediment sample MJ0KJ5. All soil/sediment matrix spike recoveries were within the required QC limits; with the exception of lead (34%R) and selenium (73.4%R). All

lead and selenium results were qualified 'J', estimated. Low bias is suspected for results that were not qualified for other reasons.

9.0 ICP-AES Serial Dilution -

Sample MJ0KJ5 was analyzed by ICP-AES serial dilution to check for potential interferences. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) were within the 10%D criteria; with the exception of calcium (10.5%D). Since the dilution result was so close to the acceptance criteria, calcium results were not qualified based on serial dilution.

10.0 Detection Limits - Acceptable

Sample results which fall below the instrument detection limit (IDL) are assigned the value of the instrument detection limit and the 'U' qualifier is attached.

Contract Required Detection Limit (CRDL) standards are required for most analytes to demonstrate a linear calibration curve near the CRDL. CRDL standards were run at the required frequency.

11.0 Overall Assessment of the Data

This validation of the data is based on the criteria outlined in the *National Functional Guidelines for Inorganic Data Review (02/94)*.

Seven of the samples were analyzed at a dilution as the undiluted results for barium were above the linear range of the instrument. The dilutions were examined for evidence of interference due to high barium. Originally, all dilutions were reported to be ten fold dilutions. However, the results for six of the samples had major differences in the major ions. On November 1, 2001, the laboratory was contacted and asked to confirm whether the dilution level for samples MJ0KH9, MJ0KJ0, MJ0KJ1, MJ0KJ2, MJ0KJ8, and MJ0KJ9 was accurate.

On November 13, 2001, the laboratory faxed replacement forms I and forms XIV for this SDG, along with amended raw instrument data for the barium dilutions to show that the dilution level for samples MJ0KH9, MJ0KJ0, MJ0KJ1, MJ0KJ2, MJ0KJ8, and MJ0KJ9 was actually 100 fold, rather than 10 fold. The replacement forms for the effected samples are attached. The original forms, as they do not have accurate results for barium, are not attached. Electronic data users will need to edit electronic data to match the revised barium results for these samples. Taking into consideration the instrumental detection limits and corresponding dilution levels, the raw data for the undiluted and diluted samples did not show evidence of significant interference due to high barium.

The sample cooler(s) had a temperature upon receipt of 9°C. In the

reviewer's judgement, it is unlikely that the elevated temperature for soil/sediment would cause appreciable loss of metals, therefore no action was taken based on the elevated cooler temperature.

Soil/sediment samples MJ0KJ6 and MJ0KJ7 had low percent solids - 9.4% and 23.6%, respectively. The raw data was checked to make sure there wasn't a calculation error. There were no calculation errors.

For soil/sediment the amount of each sample analyzed for mercury is 0.2 g, wet weight, while the amount of each sample analyzed for other metals is 1.0 gram, wet weight. With 9.4% and 23.6% solids, this means only approximately 0.0188 g and 0.0472 g, respectively, of solid material was analyzed for mercury and approximately 0.094 g and 0.236 g, respectively, of solid material was analyzed for the other metals. Since mercury was not detected in these samples and since such a minute amount of material was digested, the undetected mercury results for samples MJ0KJ6 and MJ0KJ7 were qualified 'R', unusable. There were a number of detects for the ICP-AES analysis, indicating that at least some ICP analytes were measurable in the small sample aliquots. All ICP-AES analytes, including non-detects, in samples MJ0KJ6 and MJ0KJ7 were qualified 'J', estimated (unknown bias).

There were 253 data points reported: 3 results were qualified due to blank contamination; 11 results were estimated due to duplicate precision; 22 results were estimated due to matrix spike recovery; 44 results were estimated due to reduced sample aliquot size; 2 results were rejected due to extremely reduced sample aliquot size. Overall, 25.7 percent of the data was qualified (only counting one qualification per data point for those results qualified for more than one reason).

Below are the definitions for the National Functional Guidelines for Inorganic Data Review (02/94) qualifiers used when validating/qualifying data from Inorganic analysis.

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. (Note: Analyte may or may not be present.)

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

At the request of the site assessment manager, bias for the data was qualitatively assessed and if applicable, the following additional qualifiers were applied:

L - Low bias.

H - High bias.

K - Unknown Bias.

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KH9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KH9

Matrix (soil/water): SOIL Lab Sample ID: 40953S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 89.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3890			P
7440-36-0	Antimony	6.3	B	K	P
7440-38-2	Arsenic	11.4			P
7440-39-3	Barium	117000			P
7440-41-7	Beryllium	0.18	U		P
7440-43-9	Cadmium	6.0			P
7440-70-2	Calcium	70500		~~E~~	P
7440-47-3	Chromium	46.8			P
7440-48-4	Cobalt	14.2			P
7440-50-8	Copper	55.0			P
7439-89-6	Iron	5780			P
7439-92-1	Lead	33.3		~~N*~~ JK	P
7439-95-4	Magnesium	12500		~~*~~	P
7439-96-5	Manganese	80.2			P
7439-97-6	Mercury	0.19			CV
7440-02-0	Nickel	90.4			P
7440-09-7	Potassium	297	B	K	P
7782-49-2	Selenium	4.9		~~N~~ JC	P
7440-22-4	Silver	0.69	U		P
7440-23-5	Sodium	694	B	K	P
7440-28-0	Thallium	0.45	U		P
7440-62-2	Vanadium	270			P
7440-66-6	Zinc	770		~~*~~	P
	Cyanide				NR

Please replace the attached pages in SDG MJ0KH9

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To Laura Castrilli From H. Conlon

Co./Dept. USEPA Reg 10 Co. Sentinel Inc

Phone # Phone # (856) 534-9800

Fax # (206) 553-8210 Fax #

11/19/01

Color Before: GREY Clarity Before: Texture: MEDIUM

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KJ0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KH9

Matrix (soil/water): SOIL Lab Sample ID: 40954S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 96.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4030			P
7440-36-0	Antimony	5.9	JBK		P
7440-38-2	Arsenic	7.1			P
7440-39-3	Barium	115000			P
7440-41-7	Beryllium	0.17	U		P
7440-43-9	Cadmium	4.7			P
7440-70-2	Calcium	60400		~~E~~	P
7440-47-3	Chromium	34.1			P
7440-48-4	Cobalt	13.4			P
7440-50-8	Copper	41.6			P
7439-89-6	Iron	3290			P
7439-92-1	Lead	15.5		~~N~~ JK	P
7439-95-4	Magnesium	5110			P
7439-96-5	Manganese	46.0			P
7439-97-6	Mercury	0.13			CV
7440-02-0	Nickel	71.8			P
7440-09-7	Potassium	237	JBK		P
7782-49-2	Selenium	4.0		~~N~~ JK	P
7440-22-4	Silver	0.64	U		P
7440-23-5	Sodium	654	JBK		P
7440-28-0	Thallium	0.42	U		P
7440-62-2	Vanadium	183			P
7440-66-6	Zinc	534			P
	Cyanide				NR

11/19/01

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MJ0KJ1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KH9

Matrix (soil/water): SOIL Lab Sample ID: 40955S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 96.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4180			P
7440-36-0	Antimony	5.1	JBK		P
7440-38-2	Arsenic	6.9			P
7440-39-3	Barium	122000			P
7440-41-7	Beryllium	0.17	U		P
7440-43-9	Cadmium	4.3			P
7440-70-2	Calcium	59200		~~B~~	P
7440-47-3	Chromium	30.9			P
7440-48-4	Cobalt	14.1			P
7440-50-8	Copper	39.2			P
7439-89-6	Iron	2740			P
7439-92-1	Lead	11.2		~~N*~~ JK	P
7439-95-4	Magnesium	4130		~~*~~	P
7439-96-5	Manganese	43.8			P
7439-97-6	Mercury	0.12			CV
7440-02-0	Nickel	67.3			P
7440-09-7	Potassium	233	JBK		P
7782-49-2	Selenium	3.8		~~N~~ JL	P
7440-22-4	Silver	0.64	U		P
7440-23-5	Sodium	610	JBK		P
7440-28-0	Thallium	0.42	U		P
7440-62-2	Vanadium	172			P
7440-66-6	Zinc	457		~~*~~	P
	Cyanide				NR

11/19/01

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KJ2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KH9

Matrix (soil/water): SOIL Lab Sample ID: 40956S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 69.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3620			P
7440-36-0	Antimony	9.6	JBK		P
7440-38-2	Arsenic	10.0			P
7440-39-3	Barium	154000			P
7440-41-7	Beryllium	0.23	U		P
7440-43-9	Cadmium	6.4			P
7440-70-2	Calcium	74000		~~E~~	P
7440-47-3	Chromium	55.5			P
7440-48-4	Cobalt	18.7			P
7440-50-8	Copper	67.4			P
7439-89-6	Iron	3960			P
7439-92-1	Lead	12.3		~~N~~ JK	P
7439-95-4	Magnesium	5840		*	P
7439-96-5	Manganese	67.0			P
7439-97-6	Mercury	0.17			CV
7440-02-0	Nickel	106			P
7440-09-7	Potassium	465	JBK		P
7782-49-2	Selenium	6.7		~~N~~ JK	P
7440-22-4	Silver	0.89	U		P
7440-23-5	Sodium	809	JBK		P
7440-28-0	Thallium	0.57	U		P
7440-62-2	Vanadium	294			P
7440-66-6	Zinc	723		*	P
	Cyanide				NR

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KJ3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KH9

Matrix (soil/water): SOIL Lab Sample ID: 40957S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 61.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1810			P
7440-36-0	Antimony	2.1	U		P
7440-38-2	Arsenic	4.3			P
7440-39-3	Barium	3980			P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	4.7			P
7440-70-2	Calcium	93500		~~E~~	P
7440-47-3	Chromium	11.1			P
7440-48-4	Cobalt	0.98	U		P
7440-50-8	Copper	30.7			P
7439-89-6	Iron	11300			P
7439-92-1	Lead	317		~~N*~~ JK	P
7439-95-4	Magnesium	59800		*	P
7439-96-5	Manganese	186			P
7439-97-6	Mercury	0.08	U		CV
7440-02-0	Nickel	15.5			P
7440-09-7	Potassium	280	JBK		P
7782-49-2	Selenium	0.60	JBK	~~NJK~~ MU	P
7440-22-4	Silver	1.0	U		P
7440-23-5	Sodium	439	JBK		P
7440-28-0	Thallium	0.65	U		P
7440-62-2	Vanadium	16.7			P
7440-66-6	Zinc	2150		*	P
	Cyanide				NR

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KJ4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KH9

Matrix (soil/water): SOIL Lab Sample ID: 40958S

Level (low/med): LOW Date Received: 09/19/01

% 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	1720			P
7440-36-0	Antimony	3.0	JBK		P
7440-38-2	Arsenic	6.9			P
7440-39-3	Barium	9080			P
7440-41-7	Beryllium	0.34	U		P
7440-43-9	Cadmium	7.5			P
7440-70-2	Calcium	107000		~~E~~	P
7440-47-3	Chromium	10.0			P
7440-48-4	Cobalt	1.3	JBK		P
7440-50-8	Copper	49.4			P
7439-89-6	Iron	17500			P
7439-92-1	Lead	320		~~N*JK~~	P
7439-95-4	Magnesium	65300		*	P
7439-96-5	Manganese	204			P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	18.4			P
7440-09-7	Potassium	599	JBK		P
7782-49-2	Selenium	1.1	JBK	~~NJ~~	P
7440-22-4	Silver	1.3	U		P
7440-23-5	Sodium	470	JBK		P
7440-28-0	Thallium	0.86	U		P
7440-62-2	Vanadium	22.0			P
7440-66-6	Zinc	3250		*	P
	Cyanide				NR

10/31/01

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KJ5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KH9

Matrix (soil/water): SOIL Lab Sample ID: 40959S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 60.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4070			P
7440-36-0	Antimony	2.1	U		P
7440-38-2	Arsenic	2.7	B	JK	P
7440-39-3	Barium	101			P
7440-41-7	Beryllium	0.27	U		P
7440-43-9	Cadmium	1.2	JBK		P
7440-70-2	Calcium	109000		~~B~~	P
7440-47-3	Chromium	9.9			P
7440-48-4	Cobalt	2.6	JBK		P
7440-50-8	Copper	6.9	JBK		P
7439-89-6	Iron	9200			P
7439-92-1	Lead	15.3		~~N*~~ JK	P
7439-95-4	Magnesium	3780		*	P
7439-96-5	Manganese	239			P
7439-97-6	Mercury	0.08	U		CV
7440-02-0	Nickel	10.8	JBK		P
7440-09-7	Potassium	410	JBK		P
7782-49-2	Selenium	1.4	JBK	~~N~~ JL	P
7440-22-4	Silver	1.0	U		P
7440-23-5	Sodium	557	JBK		P
7440-28-0	Thallium	0.67	U		P
7440-62-2	Vanadium	15.9	JBK		P
7440-66-6	Zinc	76.3		*	P
	Cyanide				NR

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KJ6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KH9

Matrix (soil/water): SOIL Lab Sample ID: 40960S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 9.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9060		JK	P
7440-36-0	Antimony	13.6	U	JK	P
7440-38-2	Arsenic	13.3	B	JK	P
7440-39-3	Barium	8720		JK	P
7440-41-7	Beryllium	1.7	U	JK	P
7440-43-9	Cadmium	6.0	B	JK	P
7440-70-2	Calcium	69200		~~E~~ JK	P
7440-47-3	Chromium	27.8		JK	P
7440-48-4	Cobalt	10.5	B	JK	P
7440-50-8	Copper	34.9	B	JK	P
7439-89-6	Iron	29200		JK	P
7439-92-1	Lead	43.0		~~N~~ JK	P
7439-95-4	Magnesium	5850	B	* JK	P
7439-96-5	Manganese	926		JK	P
7439-97-6	Mercury	~~0.53~~ ~~U~~		R	CV
7440-02-0	Nickel	33.2	B	JK	P
7440-09-7	Potassium	1300	B	JK	P
7782-49-2	Selenium	12.1		~~N~~ JK	P
7440-22-4	Silver	6.6	U	JK	P
7440-23-5	Sodium	1730	B	JK	P
7440-28-0	Thallium	4.3	U	JK	P
7440-62-2	Vanadium	33.9	B	JK	P
7440-66-6	Zinc	1550		* JK	P
	Cyanide				NR

10/31/01

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FORM I - IN ILM04.1

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KJ7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KH9

Matrix (soil/water): SOIL Lab Sample ID: 40961S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 23.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7580		JK	P
7440-36-0	Antimony	5.4	U	JK	P
7440-38-2	Arsenic	6.8	B	JK	P
7440-39-3	Barium	348		JK	P
7440-41-7	Beryllium	0.68	U	JK	P
7440-43-9	Cadmium	4.1	B	JK	P
7440-70-2	Calcium	91300		~~E~~ JK	P
7440-47-3	Chromium	20.8		JK	P
7440-48-4	Cobalt	6.9	B	JK	P
7440-50-8	Copper	23.2		JK	P
7439-89-6	Iron	16600		JK	P
7439-92-1	Lead	30.4		~~N~~* JK	P
7439-95-4	Magnesium	5660		* JK	P
7439-96-5	Manganese	370		JK	P
7439-97-6	Mercury	~~0.21~~	~~U~~	R	CV
7440-02-0	Nickel	25.1	B	JK	P
7440-09-7	Potassium	751	B	JK	P
7782-49-2	Selenium	10.2		~~N~~ JK	P
7440-22-4	Silver	2.6	U	JK	P
7440-23-5	Sodium	1000	B	JK	P
7440-28-0	Thallium	1.7	U	JK	P
7440-62-2	Vanadium	19.4	B	JK	P
7440-66-6	Zinc	343		* JK	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KJ8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KH9

Matrix (soil/water): SOIL Lab Sample ID: 40962S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 97.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	749			P
7440-36-0	Antimony	4.5	JBK		P
7440-38-2	Arsenic	5.2			P
7440-39-3	Barium	83600			P
7440-41-7	Beryllium	0.16	U		P
7440-43-9	Cadmium	2.9			P
7440-70-2	Calcium	30600		~~B~~	P
7440-47-3	Chromium	18.3			P
7440-48-4	Cobalt	10.2	JBK		P
7440-50-8	Copper	31.0			P
7439-89-6	Iron	2090			P
7439-92-1	Lead	381		~~N*~~ JK	P
7439-95-4	Magnesium	2200		*	P
7439-96-5	Manganese	30.3			P
7439-97-6	Mercury	0.06	JBK		CV
7440-02-0	Nickel	47.5			P
7440-09-7	Potassium	170	JBK		P
7782-49-2	Selenium	2.8		~~N~~ JL	P
7440-22-4	Silver	0.64	U		P
7440-23-5	Sodium	409	JBK		P
7440-28-0	Thallium	0.41	U		P
7440-62-2	Vanadium	94.1			P
7440-66-6	Zinc	318		*	P
	Cyanide				NR

11/8/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0KJ9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29730 SAS No.: SDG No.: MJ0KH9

Matrix (soil/water): SOIL Lab Sample ID: 40963S

Level (low/med): LOW Date Received: 09/19/01

% Solids: 96.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	929			P
7440-36-0	Antimony	4.6	JBK		P
7440-38-2	Arsenic	5.0			P
7440-39-3	Barium	97800			P
7440-41-7	Beryllium	0.17	U		P
7440-43-9	Cadmium	3.2			P
7440-70-2	Calcium	36500		E	P
7440-47-3	Chromium	21.2			P
7440-48-4	Cobalt	12.1			P
7440-50-8	Copper	30.5			P
7439-89-6	Iron	1990			P
7439-92-1	Lead	25.8		N*JK	P
7439-95-4	Magnesium	2890		*	P
7439-96-5	Manganese	30.5			P
7439-97-6	Mercury	0.06	JBK		CV
7440-02-0	Nickel	53.9			P
7440-09-7	Potassium	186	JBK		P
7782-49-2	Selenium	3.5		N JK	P
7440-22-4	Silver	0.64	U		P
7440-23-5	Sodium	473	JBK		P
7440-28-0	Thallium	0.41	U		P
7440-62-2	Vanadium	112			P
7440-66-6	Zinc	339		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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International Specialists in the Environment
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Tel. (206) 624-9537, Fax (206) 621-9832

MEMORANDUM

DATE: September 21, 2001

TO: Leatta Dahlhoff, Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, Chemist, E & E, Seattle, WA MW

SUBJ. **Data Quality Assurance Summary Check, Upper Columbia River ESI, Stevens and Pend Oreille Counties, Washington**

REF: TDD: 01-02-0028 PAN: 001281.0073.01SR

The data quality assurance summary check of seven soil samples collected for the Upper Columbia River ESI in Stevens and Pend Oreille Counties, Washington, has been completed. The samples were analyzed for chlorinated pesticides/polychlorinated biphenyls (Pest/PCBs) in accordance with USEPA SW-846 Methods 8081 and 8082 by the Manchester Environmental Laboratory, Port Orchard, Washington.

The following discrepancy was noted:

Bias qualifiers were not added to estimated quantities.

All concerns were reported to Ms. Ginna Grepo-Grove, TOPO, USEPA, Region 10 on September 21, 2001. The discrepancy was corrected by the primary reviewer.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr East
Port Orchard, Washington 98366

August 14, 2001

MEMORANDUM

SUBJECT: Case Narrative for Upper Columbia River/Mines ESI, Washington for Chlorinated Pesticides/PCB Analysis of Soil Samples

FROM: R. H. Rieck
Chemist

VERIFIED:

TO: Monica Tonel
Project Officer

The Case Narrative for seven soil samples from Upper Columbia River/Mines ESI, Washington for Chlorinated Pesticides/PCBs has been completed. Extraction and analysis of the samples were performed by EPA Methods 3540B Modified and 8081/8082 respectively. The samples included in this memo are #'s 01254150-01254156.

I. Holding Times:

Acceptable. The samples were collected June 23, 2001. The samples were extracted June 27, 2001. Because sample 01254152 went dry during extraction, it was re-extracted June 28, 2001 along with another blank, OBS1179B1. The sample extracts and other associated extracts were analyzed August 1, 2001. All holding times until analysis were within the allowable 40 days. With all holding times being acceptable no qualifiers were assigned on this basis.

II. Instrument Performance:

A Hewlett-Packard gas chromatograph (GC) using dual micro electron capture (EC) detectors with Restek Rtx-CLPEST and Rtx-CLPEST2 narrow-bore capillary columns (0.25mm ID x 30m) was used for this analysis.

A. DDT Retention Time: Acceptable.

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B. Retention Time Windows: Acceptable. Retention times for the standards were within the windows set by the initial calibration. The retention time windows used were 1.0% of the initial retention time.

C. DDT/Endrin Degradation: Acceptable.

D. Surrogate Retention Times: Acceptable. All samples had retention time percent differences less than 1.5% for the surrogates Tetra-m-xylene (TMX), 4,4'-Dibromooctafluorobiphenyl (DBOB), Dibutylchlorendate (DBC), and Decachlorobiphenyl(DCB).

III. Calibration:

A. Initial Calibration: Acceptable. For all extracts covered by this memo, a six-point calibration was used for the Chlorinated Pesticides. A four-point calibration curve for Aroclors 1221, 1242, 1254 and 1260. Calibration curves were generated using either a quadratic or a linear-fit equation and had correlation coefficients of 0.999 or better. A single point standard was determined for Aroclors 1016, 1232, and 1248 for pattern recognition, and for PQL determination.

B. Analytical Sequence: Acceptable.

C. Continuing Calibration: Acceptable. The continuing calibration standards were within the 20 percent difference criteria for both columns. Therefore, no qualifiers were assigned on this basis.

IV. Method Blank Analysis:

Acceptable: Three method blanks, OBS1178A1, OBS1178A2, and OBS1179B1, were analyzed with the soil samples. No peaks occurred at or above the quantitation limit in any of the blanks. Therefore, no qualifiers were assigned on this basis.

V. Surrogate Recoveries:

Acceptable. The TMX recoveries ranged from 63% to 95% with an average of 75.9% and a standard deviation of ± 11.6%. The DBOB recoveries ranged from 62% to 94% with an average of 77.8% and a standard deviation of ± 11.3%. The DBC recoveries ranged from 55% to 93% with an average of 79.4% and a standard deviation of ± 11.3%. The DCB recoveries ranged from 48% to 95% with an average of 81.5% and a standard deviation of ± 13.7%.

Samples #'s 01254155 and 01254156 contained substantial concentrations of oil that suppressed the responses and in turn the recoveries for both DBC and DCB. With the recoveries being acceptable for both TMX and DBOB in both samples it is unnecessary to qualify the data for either sample. Note, however, that the reporting limits for both samples are doubled due to the matrix effect. No qualifiers were assigned on this basis for any of the samples in this set.

VI. Matrix Spike/Matrix Spike Duplicate:

Generally Acceptable. Sample 01254151 was spiked in duplicate with 20 chlorinated pesticides. Except for endrin aldehyde, which was mostly lost due to absorption on the Florisil® column used in the clean up procedure (10% and 12% recoveries), the recoveries ranged from 81% to 113%. The recoveries and precision were within the expected range and considered acceptable.

No qualifiers were assigned on this basis for any of the samples in this set except for endrin aldehyde which is flagged "J" as estimated.

VII. Compound Identification/Quantitation:

Chlorinated pesticides and PCBs were not detected in any of the samples at the reporting limit.

VIII. Overall Assessment/Data Use:

Acceptable for use with the qualifiers as assigned in the sections above. The data was evaluated using the guidelines set out in the "Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses" (Dec. '94).

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	6/23/01
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	01254150
Account Code:	01T10P50102D106XLA00	**Type:**	Reg sample
Station Description:	VSSS01SS		

GC

Parameter . Pesticides - PCB's
Method . 8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846
Prep Method. 3540B

Analytes		Result	Units	Qlfr
309002	Aldrin	3.9	ug/kg	U
319846	Alpha-BHC	3.9	ug/kg	U
319857	Beta-BHC	3.9	ug/kg	U
5103719	cis-Chlordane (alpha-Chlordane)	3.9	ug/kg	U
319868	Delta-BHC	3.9	ug/kg	U
60571	Dieldrin	3.9	ug/kg	U
959988	Endosulfan I	3.9	ug/kg	U
33213659	Endosulfan II	3.9	ug/kg	U
1031078	Endosulfan Sulfate	3 9	ug/kg	U
72208	Endrin	3.9	ug/kg	U
7421934	Endrin Aldehyde	3.9	ug/kg	UJ
53494705	Endrin Ketone	3 9	ug/kg	U
5103742	Gamma-Chlordane	3.9	ug/kg	U
76448	Heptachlor	3.9	ug/kg	U
1024573	Heptachlor Epoxide	3.9	ug/kg	U
58899	Lindane	3.9	ug/kg	U
72435	Methoxychlor	3 9	ug/kg	U
72548	P,P'-DDD	3.9	ug/kg	U
72559	P,P'-DDE	3 9	ug/kg	U
50293	P,P'-DDT	3.9	ug/kg	U
12674112	PCB-1016	39	ug/kg	U
11104282	PCB-1221	39	ug/kg	U
11141165	PCB-1232	39	ug/kg	U
53469219	PCB-1242	39	ug/kg	U
12672296	PCB-1248	39	ug/kg	U
11097691	PCB-1254	39	ug/kg	U
11096825	PCB-1260	39	ug/kg	U
8001352	Toxaphene	230	ug/kg	U
10386842	4,4-Dibromooctafluorobiphenyl	82	%Rec	
*2051243	Decachlorobiphenyl	95	%Rec	
*1770805	Dibutylchlorendate	83	%Rec	
*300105	Tetrachlorometaxylene	84	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	6/23/01
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	01254151
Account Code:	01T10P50102D106XLA00	**Type:**	Reg sample
Station Description:	VSSS02SS		

GC

Parameter : Pesticides - PCB's
Method : 8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846
Prep Method: 3540B
Analytes :

		Result	Units	Qlfr
309002	Aldrin	1.8	ug/kg	U
319846	Alpha-BHC	1.8	ug/kg	U
319857	Beta-BHC	1 8	ug/kg	U
5103719	cis-Chlordane (alpha-Chlordane)	1.8	ug/kg	U
319868	Delta-BHC	1.8	ug/kg	U
60571	Dieldrin	1.8	ug/kg	U
959988	Endosulfan I	1.8	ug/kg	U
33213659	Endosulfan II	1.8	ug/kg	U
1031078	Endosulfan Sulfate	1.8	ug/kg	U
72208	Endrin	1.8	ug/kg	U
7421934	Endrin Aldehyde	1.8	ug/kg	UJ
53494705	Endrin Ketone	1.8	ug/kg	U
5103742	Gamma-Chlordane	1.8	ug/kg	U
76448	Heptachlor	1 8	ug/kg	U
1024573	Heptachlor Epoxide	1 8	ug/kg	U
58899	Lindane	1.8	ug/kg	U
72435	Methoxychlor	1 8	ug/kg	U
72548	P,P'-DDD	1.8	ug/kg	U
72559	P,P'-DDE	1.8	ug/kg	U
50293	P,P'-DDT	1.8	ug/kg	U
12674112	PCB-1016	18	ug/kg	U
11104282	PCB-1221	18	ug/kg	U
11141165	PCB-1232	18	ug/kg	U
53469219	PCB-1242	18	ug/kg	U
12672296	PCB-1248	18	ug/kg	U
11097691	PCB-1254	18	ug/kg	U
11096825	PCB-1260	18	ug/kg	U
8001352	Toxaphene	110	ug/kg	U
10386842	4,4-Dibromooctafluorobiphenyl	85	%Rec	
*2051243	Decachlorobiphenyl	84	%Rec	
*1770805	Dibutylchlorendate	79	%Rec	
*300105	Tetrachlorometaxylene	84	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	01254151
Account Code:	01T10P50102D106XLA00	**Type:**	Matrix Spike
Station Description:			

GC

Parameter . Pesticides - PCB's
Method : 8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846
Prep Method: 3540B

Analytes		Result	Units	Qlfr
10386842	4,4-Dibromooctafluorobiphenyl	94	%Rec	
309002	Aldrin	90	%Rec	
319846	Alpha-BHC	94	%Rec	
319857	Beta-BHC	87	%Rec	
5103719	cis-Chlordane (alpha-Chlordane)	87	%Rec	
*2051243	Decachlorobiphenyl	94	%Rec	
319868	Delta-BHC	96	%Rec	
*1770805	Dibutylchlorendate	91	%Rec	
60571	Dieldrin	89	%Rec	
959988	Endosulfan I	113	%Rec	
33213659	Endosulfan II	101	%Rec	
1031078	Endosulfan Sulfate	97	%Rec	
72208	Endrin	93	%Rec	
7421934	Endrin Aldehyde	10	%Rec	
53494705	Endrin Ketone	97	%Rec	
5103742	Gamma-Chlordane	88	%Rec	
76448	Heptachlor	93	%Rec	
1024573	Heptachlor Epoxide	90	%Rec	
58899	Lindane	92	%Rec	
72435	Methoxychlor	102	%Rec	
72548	P,P'-DDD	87	%Rec	
72559	P,P'-DDE	95	%Rec	
50293	P,P'-DDT	103	%Rec	
*300105	Tetrachlorometaxylene	92	%Rec	

Project Code:	TEC-774B	**Collected:**	
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	01254151
Account Code:	01T10P50102D106XLA00	**Type:**	Matrix Spike Dupl
Station Description:			

GC

Parameter : Pesticides - PCB's
Method : 8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846
Prep Method: 3540B

		Result	Units	Qlfr
Analytes	10386842 4,4-Dibromooctafluorobiphenyl	89	%Rec	
	309002 Aldrin	85	%Rec	
	319846 Alpha-BHC	87	%Rec	
	319857 Beta-BHC	81	%Rec	
	5103719 cis-Chlordane (alpha-Chlordane)	83	%Rec	
	*2051243 Decachlorobiphenyl	89	%Rec	
	319868 Delta-BHC	87	%Rec	
	*1770805 Dibutylchlorendate	88	%Rec	
	60571 Dieldrin	84	%Rec	
	959988 Endosulfan I	107	%Rec	
	33213659 Endosulfan II	92	%Rec	
	1031078 Endosulfan Sulfate	81	%Rec	
	72208 Endrin	86	%Rec	
	7421934 Endrin Aldehyde	12	%Rec	
	53494705 Endrin Ketone	86	%Rec	
	5103742 Gamma-Chlordane	82	%Rec	
	76448 Heptachlor	84	%Rec	
	1024573 Heptachlor Epoxide	85	%Rec	
	58899 Lindane	86	%Rec	
	72435 Methoxychlor	95	%Rec	
	72548 P,P'-DDD	80	%Rec	
	72559 P,P'-DDE	89	%Rec	
	50293 P,P'-DDT	96	%Rec	
	*300105 Tetrachlorometaxylene	86	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	6/23/01
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	01254152
Account Code:	01T10P50102D106XLA00	**Type:**	Reg sample
Station Description:	VSSS03SS		

GC

Parameter : Pesticides - PCB's
Method : 8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846
Prep Method: 3540B

Analytes		Result	Units	Qlfr
309002	Aldrin	1.8	ug/kg	U
319846	Alpha-BHC	1.8	ug/kg	U
319857	Beta-BHC	1.8	ug/kg	U
5103719	cis-Chlordane (alpha-Chlordane)	1.8	ug/kg	U
319868	Delta-BHC	1.8	ug/kg	U
60571	Dieldrin	1.8	ug/kg	U
959988	Endosulfan I	1.8	ug/kg	U
33213659	Endosulfan II	1.8	ug/kg	U
1031078	Endosulfan Sulfate	1.8	ug/kg	U
72208	Endrin	1.8	ug/kg	U
7421934	Endrin Aldehyde	1.8	ug/kg	UJ
53494705	Endrin Ketone	1.8	ug/kg	U
5103742	Gamma-Chlordane	1 8	ug/kg	U
76448	Heptachlor	1.8	ug/kg	U
1024573	Heptachlor Epoxide	1.8	ug/kg	U
58899	Lindane	1.8	ug/kg	U
72435	Methoxychlor	1 8	ug/kg	U
72548	P,P'-DDD	1.8	ug/kg	U
72559	P,P'-DDE	1 8	ug/kg	U
50293	P,P'-DDT	1.8	ug/kg	U
12674112	PCB-1016	18	ug/kg	U
11104282	PCB-1221	18	ug/kg	U
11141165	PCB-1232	18	ug/kg	U
53469219	PCB-1242	18	ug/kg	U
12672296	PCB-1248	18	ug/kg	U
11097691	PCB-1254	18	ug/kg	U
11096825	PCB-1260	18	ug/kg	U
8001352	Toxaphene	110	ug/kg	U
10386842	4,4-Dibromooctafluorobiphenyl	71	%Rec	
*2051243	Decachlorobiphenyl	84	%Rec	
*1770805	Dibutylchlorendate	85	%Rec	
*300105	Tetrachlorometaxylene	65	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	6/23/01
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	01254153
Account Code:	01T10P50102D106XLA00	**Type:**	Reg sample
Station Description:	VSSS04SS		

GC

Parameter : Pesticides - PCB's
Method : 8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846
Prep Method: 3540B

Analytes		Result	Units	Qlfr
309002	Aldrin	1.6	ug/kg	U
319846	Alpha-BHC	1.6	ug/kg	U
319857	Beta-BHC	1.6	ug/kg	U
5103719	cis-Chlordane (alpha-Chlordane)	1.6	ug/kg	U
319868	Delta-BHC	1 6	ug/kg	U
60571	Dieldrin	1.6	ug/kg	U
959988	Endosulfan I	1.6	ug/kg	U
33213659	Endosulfan II	1.6	ug/kg	U
1031078	Endosulfan Sulfate	1.6	ug/kg	U
72208	Endrin	1.6	ug/kg	U
7421934	Endrin Aldehyde	1.6	ug/kg	UJ
53494705	Endrin Ketone	1.6	ug/kg	U
5103742	Gamma-Chlordane	1.6	ug/kg	U
76448	Heptachlor	1.6	ug/kg	U
1024573	Heptachlor Epoxide	1.6	ug/kg	U
58899	Lindane	1.6	ug/kg	U
72435	Methoxychlor	1.6	ug/kg	U
72548	P,P'-DDD	1.6	ug/kg	U
72559	P,P'-DDE	1 6	ug/kg	U
50293	P,P'-DDT	1.6	ug/kg	U
12674112	PCB-1016	16	ug/kg	U
11104282	PCB-1221	16	ug/kg	U
11141165	PCB-1232	16	ug/kg	U
53469219	PCB-1242	16	ug/kg	U
12672296	PCB-1248	16	ug/kg	U
11097691	PCB-1254	16	ug/kg	U
11096825	PCB-1260	16	ug/kg	U
8001352	Toxaphene	98	ug/kg	U
10386842	4,4-Dibromooctafluorobiphenyl	72	%Rec	
*2051243	Decachlorobiphenyl	79	%Rec	
*1770805	Dibutylchlorendate	76	%Rec	
*300105	Tetrachlorometaxylene	64	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	6/23/01
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	01254154
Account Code:	01T10P50102D106XLA00	**Type:**	Reg sample
Station Description:	VSSS05SS		

GC

Parameter Pesticides - PCB's
Method 8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846
Prep Method: 3540B

Analytes :		Result	Units	Qlfr
309002	Aldrin	2.0	ug/kg	U
319846	Alpha-BHC	2.0	ug/kg	U
319857	Beta-BHC	2.0	ug/kg	U
5103719	cis-Chlordane (alpha-Chlordane)	2.0	ug/kg	U
319868	Delta-BHC	2.0	ug/kg	U
60571	Dieldrin	2.0	ug/kg	U
959988	Endosulfan I	2.0	ug/kg	U
33213659	Endosulfan II	2.0	ug/kg	U
1031078	Endosulfan Sulfate	2.0	ug/kg	U
72208	Endrin	2.0	ug/kg	U
7421934	Endrin Aldehyde	2.0	ug/kg	UJ
53494705	Endrin Ketone	2 0	ug/kg	U
5103742	Gamma-Chlordane	2.0	ug/kg	U
76448	Heptachlor	2.0	ug/kg	U
1024573	Heptachlor Epoxide	2.0	ug/kg	U
58899	Lindane	2 0	ug/kg	U
72435	Methoxychlor	2.0	ug/kg	U
72548	P,P'-DDD	2.0	ug/kg	U
72559	P,P'-DDE	2.0	ug/kg	U
50293	P,P'-DDT	2.0	ug/kg	U
12674112	PCB-1016	20	ug/kg	U
11104282	PCB-1221	20	ug/kg	U
11141165	PCB-1232	20	ug/kg	U
53469219	PCB-1242	20	ug/kg	U
12672296	PCB-1248	20	ug/kg	U
11097691	PCB-1254	20	ug/kg	U
11096825	PCB-1260	20	ug/kg	U
8001352	Toxaphene	120	ug/kg	U
10386842	4,4-Dibromooctafluorobiphenyl	69	%Rec	
*2051243	Decachlorobiphenyl	73	%Rec	
*1770805	Dibutylchlorendate	67	%Rec	
*300105	Tetrachlorometaxylene	63	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	6/23/01
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	01254155
Account Code:	01T10P50102D106XLA00	**Type:**	Reg sample
Station Description:	VSSS06SS		

GC

Parameter : Pesticides - PCB's
Method : 8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846
Prep Method: 3540B
Analytes :

		Result	Units	Qlfr
309002	Aldrin	3.4	ug/kg	U
319846	Alpha-BHC	3 4	ug/kg	U
319857	Beta-BHC	3 4	ug/kg	U
5103719	cis-Chlordane (alpha-Chlordane)	3.4	ug/kg	U
319868	Delta-BHC	3.4	ug/kg	U
60571	Dieldrin	3.4	ug/kg	U
959988	Endosulfan I	3.4	ug/kg	U
33213659	Endosulfan II	3.4	ug/kg	U
1031078	Endosulfan Sulfate	3.4	ug/kg	U
72208	Endrin	3.4	ug/kg	U
7421934	Endrin Aldehyde	3.4	ug/kg	UJ
53494705	Endrin Ketone	3 4	ug/kg	U
5103742	Gamma-Chlordane	3 4	ug/kg	U
76448	Heptachlor	3.4	ug/kg	U
1024573	Heptachlor Epoxide	3.4	ug/kg	U
58899	Lindane	3 4	ug/kg	U
72435	Methoxychlor	3.4	ug/kg	U
72548	P,P'-DDD	3.4	ug/kg	U
72559	P,P'-DDE	3.4	ug/kg	U
50293	P,P'-DDT	3.4	ug/kg	U
12674112	PCB-1016	17	ug/kg	U
11104282	PCB-1221	17	ug/kg	U
11141165	PCB-1232	17	ug/kg	U
53469219	PCB-1242	17	ug/kg	U
12672296	PCB-1248	17	ug/kg	U
11097691	PCB-1254	17	ug/kg	U
11096825	PCB-1260	17	ug/kg	U
8001352	Toxaphene	210	ug/kg	U
10386842	4,4-Dibromooctafluorobiphenyl	97	%Rec	
*2051243	Decachlorobiphenyl	48	%Rec	
*1770805	Dibutylchlorendate	55	%Rec	
*300105	Tetrachlorometaxylene	95	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	6/23/01
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	01254156
Account Code:	01T10P50102D106XLA00	**Type:**	Reg sample
Station Description:	VSSS07SS		

GC

Parameter Pesticides - PCB's
Method 8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846
Prep Method 3540B

Analytes		Result	Units	Qlfr
309002	Aldrin	5.6	ug/kg	U
319846	Alpha-BHC	5.6	ug/kg	U
319857	Beta-BHC	5.6	ug/kg	U
5103719	cis-Chlordane (alpha-Chlordane)	5.6	ug/kg	U
319868	Delta-BHC	5 6	ug/kg	U
60571	Dieldrin	5.6	ug/kg	U
959988	Endosulfan I	5.6	ug/kg	U
33213659	Endosulfan II	5.6	ug/kg	U
1031078	Endosulfan Sulfate	5.6	ug/kg	U
72208	Endrin	5.6	ug/kg	U
7421934	Endrin Aldehyde	5.6	ug/kg	UJ
53494705	Endrin Ketone	5 6	ug/kg	U
5103742	Gamma-Chlordane	5.6	ug/kg	U
76448	Heptachlor	5 6	ug/kg	U
1024573	Heptachlor Epoxide	5.6	ug/kg	U
58899	Lindane	5.6	ug/kg	U
72435	Methoxychlor	5.6	ug/kg	U
72548	P,P'-DDD	5.6	ug/kg	U
72559	P,P'-DDE	5.6	ug/kg	U
50293	P,P'-DDT	5.6	ug/kg	U
12674112	PCB-1016	28	ug/kg	U
11104282	PCB-1221	28	ug/kg	U
11141165	PCB-1232	28	ug/kg	U
53469219	PCB-1242	28	ug/kg	U
12672296	PCB-1248	28	ug/kg	U
11097691	PCB-1254	28	ug/kg	U
11096825	PCB-1260	28	ug/kg	U
8001352	Toxaphene	170	ug/kg	U
10386842	4,4-Dibromooctafluorobiphenyl	62	%Rec	
*2051243	Decachlorobiphenyl	66	%Rec	
*1770805	Dibutylchlorendate	67	%Rec	
*300105	Tetrachlorometaxylene	71	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	OBS1178A1
Account Code:	01T10P50102D106XLA00	**Type:**	Blank
Station Description:			

GC

Parameter : Pesticides - PCB's
Method : 8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846
Prep Method : 3540B

		Result	Units	Qlfr
Analytes	309002 Aldrin			ND
	319846 Alpha-BHC			ND
	319857 Beta-BHC			ND
	5103719 cis-Chlordane (alpha-Chlordane)			ND
	319868 Delta-BHC			ND
	60571 Dieldrin			ND
	959988 Endosulfan I			ND
	33213659 Endosulfan II			ND
	1031078 Endosulfan Sulfate			ND
	72208 Endrin			ND
	7421934 Endrin Aldehyde			ND
	53494705 Endrin Ketone			ND
	5103742 Gamma-Chlordane			ND
	76448 Heptachlor			ND
	1024573 Heptachlor Epoxide			ND
	58899 Lindane			ND
	72435 Methoxychlor			ND
	72548 P,P'-DDD			ND
	72559 P,P'-DDE			ND
	50293 P,P'-DDT			ND
	12674112 PCB-1016			ND
	11104282 PCB-1221			ND
	11141165 PCB-1232			ND
	53469219 PCB-1242			ND
	12672296 PCB-1248			ND
	11097691 PCB-1254			ND
	11096825 PCB-1260			ND
	8001352 Toxaphene			ND
	10386842 4,4-Dibromooctafluorobiphenyl	75	%Rec	
	*2051243 Decachlorobiphenyl	95	%Rec	
	*1770805 Dibutylchlorendate	93	%Rec	
	*300105 Tetrachlorometaxylene	69	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	OBS1178A2
Account Code:	01T10P50102D106XLA00	**Type:**	Blank
Station Description:			

GC

Parameter : Pesticides - PCB's
Method 8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846
Prep Method: 3540B

Analytes		Result	Units	Qlfr
309002	Aldrin			ND
319846	Alpha-BHC			ND
319857	Beta-BHC			ND
5103719	cis-Chlordane (alpha-Chlordane)			ND
319868	Delta-BHC			ND
60571	Dieldrin			ND
959988	Endosulfan I			ND
33213659	Endosulfan II			ND
1031078	Endosulfan Sulfate			ND
72208	Endrin			ND
7421934	Endrin Aldehyde			ND
53494705	Endrin Ketone			ND
5103742	Gamma-Chlordane			ND
76448	Heptachlor			ND
1024573	Heptachlor Epoxide			ND
58899	Lindane			ND
72435	Methoxychlor			ND
72548	P,P'-DDD			ND
72559	P,P'-DDE			ND
50293	P,P'-DDT			ND
12674112	PCB-1016			ND
11104282	PCB-1221			ND
11141165	PCB-1232			ND
53469219	PCB-1242			ND
12672296	PCB-1248			ND
11097691	PCB-1254			ND
11096825	PCB-1260			ND
8001352	Toxaphene			ND
10386842	4,4-Dibromooctafluorobiphenyl	71	%Rec	
*2051243	Decachlorobiphenyl	87	%Rec	
*1770805	Dibutylchlorendate	87	%Rec	
*300105	Tetrachlorometaxylene	73	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	OBS1179B1
Account Code:	01T10P50102D106XLA00	**Type:**	Blank
Station Description:			

GC

Parameter : Pesticides - PCB's
Method : 8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846
Prep Method: 3540B

		Result	Units	Qlfr
Analytes : 309002	Aldrin			ND
319846	Alpha-BHC			ND
319857	Beta-BHC			ND
5103719	cis-Chlordane (alpha-Chlordane)			ND
319868	Delta-BHC			ND
60571	Dieldrin			ND
959988	Endosulfan I			ND
33213659	Endosulfan II			ND
1031078	Endosulfan Sulfate			ND
72208	Endrin			ND
7421934	Endrin Aldehyde			ND
53494705	Endrin Ketone			ND
5103742	Gamma-Chlordane			ND
76448	Heptachlor			ND
1024573	Heptachlor Epoxide			ND
58899	Lindane			ND
72435	Methoxychlor			ND
72548	P,P'-DDD			ND
72559	P,P'-DDE			ND
50293	P,P'-DDT			ND
12674112	PCB-1016			ND
11104282	PCB-1221			ND
11141165	PCB-1232			ND
53469219	PCB-1242			ND
12672296	PCB-1248			ND
11097691	PCB-1254			ND
11096825	PCB-1260			ND
8001352	Toxaphene			ND
10386842	4,4-Dibromooctafluorobiphenyl	67	%Rec	
*2051243	Decachlorobiphenyl	84	%Rec	
*1770805	Dibutylchlorendate	82	%Rec	
*300105	Tetrachlorometaxylene	65	%Rec	

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MEMORANDUM

DATE September 21, 2001

TO Leatta Dahlhoff, Project Manager, E & E, Seattle, WA

FROM Mark Woodke, Chemist, E & E, Seattle, WA MW

SUBJ **Data Quality Assurance Summary Check, Upper Columbia River ESI, Stevens and Pend Oreille Counties, Washington**

REF TDD: 01-02-0028 PAN: 001281.0073.01SR

The data quality assurance summary check of five soil samples collected for the Upper Columbia River ESI in Stevens and Pend Oreille Counties, Washington, has been completed The samples were analyzed for Semivolatile Organic Compounds (SVOCs) in accordance with the USEPA SW-846 Method 8270C by the Manchester Environmental Laboratory, Port Orchard, Washington

The following discrepancies were noted

Pages 2, 14, 18, and 19 of the data were not provided

Bias qualifiers were not added to estimated quantities

All concerns were reported to Ms Ginna Grepo-Grove, TOPO, USEPA, Region 10 on September 21, 2001 The above items were corrected by the primary reviewer

recycled paper

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

August 15, 2001

MEMORANDUM

SUBJECT: Peer Review and Data Validation Report of Semivolatiles' Results for the Upper Columbia River Project Samples 01254150, 01254151, 01254152, 01254155, and 01254156

FROM: Gerald H. Dodo, Chemist
USEPA

TO: Monica Tonel, USEPA
Ginna Grepo-Grove, USEPA

CC: Mark Woodke, E&E

The following is a peer review and data validation report of the semivolatiles analyses' results for soil samples collected for the Upper Columbia River project. The samples were analyzed at the USEPA Region 10 Laboratory using USEPA SW846 Method 8270C. This report covers the samples listed above.

The project code for these samples is TEC-774B and the account number is 01T10P50102D106XLA00.

Data qualifications

The following comments refer to the laboratory performance in meeting the Quality Control specifications outlined in the USEPA Method 8270C and the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (10/99).

I. Holding Times: Acceptable

The recommended holding time for the extraction of non-aqueous samples is 14 days from the date of sampling. Extracts have a holding time limit of 40 days from the time of preparation. All samples were extracted and analyzed within

holding time maximums. No qualifiers were applied based on holding times.

II. GC/MS Tuning and Performance: Acceptable

The tuning summary agreed with the raw data. All decafluorotriphenylphosphine ion abundance met criteria. All sample analyses were preceded by a tune less than 12 hours prior to analysis. No qualifiers were applied on the basis of the tuning data.

III. Initial Calibration: Acceptable

A six to nine-point initial calibration was performed on 07/31/01. Average RRFs met the criteria of ≥0.05. Correlation coefficients were ≥0.99. %RSDs of the RRFs met the criteria of ≤30%. No qualifiers were applied based on the initial calibration.

IV. Continuing Calibration:

The continuing calibration check standard met the criteria for frequency of analysis and RRT windows for all target compounds and surrogates. The RRFs were ≥0.05 and the accuracy for the target compounds met the criteria of 75-125% of the true value except for the following.

08/03/01 Sample 01254150.

3B-coprostanol resulted with >125% of the true value. The associated results for this compound were non-detected, therefore, no qualifiers were applied.

V. Blanks:

Method blanks were prepared and analyzed with the sample extraction batches. Target compounds detected in the samples were reported without qualification if the sample result area integration exceeded ten times that of the blank for common contaminates (e.g., phthalates) or five times that of the blank for the other target compounds. Detected sample results were qualified U if the area integration was below these criteria. The sample concentration or the sample quantitation limit, whichever is greater, was reported as the qualified result. Tentatively identified compounds detected in the blanks were deleted from the sample results.

VI. Surrogates: Acceptable

Method 8270C and the Functional Guidelines specifications for surrogate recoveries were applied. A criterion of 50-150% recovery for pyrene-d10 was applied as well. The recoveries met the criteria, therefore, no qualifiers were applied based on the surrogates.

VII. Matrix Spike/Matrix Spike Duplicate (MS/MSD):

An MS/MSD analysis was performed using sample 01254151 (S1/S2). The MS/MSD criteria as described in the CLP Statement of Work and the Region 10 acceptance ranges (50-150% recovery, ≤50% relative percent difference, RPD) were applied. The following recoveries did not meet the applied criteria:

Compound	Recovery (S1/S2)
N-nitrosodimethylamine	/49
aniline	24/26
2,4-dimethylphenol	11/32
4-chloroaniline	43/42
hexachlorocyclopentadiene	0/0
di-n-butylphthalate	43/41
butylbenzylphthalate	41/38
bis(2-ethylhexyl)phthalate	10/11
di-n-octylphthalate	8/9

The compounds above were not detected in sample 01254151. The reported hexachlorocyclopentadiene and di-n-octylphthalate results for this sample were qualified R due to the <10% recoveries. The reported N-nitrosodimethylamine, aniline, 2,4-dimethylphenol, 4-chloroaniline, di-n-butylphthalate, butylbenzylphthalate, and bis(2-ethylhexyl)phthalate results for this sample were qualified UJ due to the low recoveries.

VIII. Internal Standard Performance: Acceptable

The retention time variations of all internal standards were within 30 seconds of the continuing calibration standard. The %areas of all internal standards were within the specified 50% to 200% of the continuing calibration standards. No qualifiers were applied based on the internal standards.

IX. Target Compound Identification: Acceptable

All detected target compounds' relative retention times were within acceptable limits of the related standards in the continuing calibration standard. Criteria were met for mass spectral ion matching and ion abundance matching or the mass spectra were judged acceptable.

X. Compound Quantitation: Acceptable

Calculations were based on the initial calibration. Sample quantitation limits were adjusted appropriately as according to sample amounts and calibration data. Detected results below the sample quantitation limits were qualified J.

XI. Tentatively Identified Compounds: Acceptable

Spectra for all tentatively identified compounds (TICs) met criteria for mass spectral ion matching and ion abundance matching or the mass spectra were judged acceptable.

Overall Assessment for the Case

The usefulness of the data is based on the criteria outlined in the USEPA Method 8270C and the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (10/99). All requirements for data qualifiers from the preceding sections were accumulated. Each sample data summary sheet and each compound was checked for positive or negative results. From this overall need for data qualifiers for each analysis was determined. In cases where more than one of the preceding sections required data qualifiers, the most restrictive qualifier has been added to the data.

In general, all unqualified data can be used without restriction. The usefulness of qualified data should be treated according to the severity of the qualifier. Should questions arise regarding the qualification of data and its relation to the usefulness, the reader is encouraged to contact Gerald Dodo at the Region 10 laboratory, phone number (360) 871-8728.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
EXP	-	The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
NAF	-	Not analyzed for.
NAR	-	No analytical result.
*	-	The analyte was present in the sample. (Visual aid to locate detected compounds on the report sheet.)

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	6/23/01
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	01254150
Account Code:	01T10P50102D106XLA00	**Type:**	Reg sample
Station Description:	VSSS01SS		

GCMS

Parameter : Semi-volatiles
Method : 8270-M BNA
Prep Method: 3510M/3540
Analytes :

		Result	Units	Qlfr
92524	**1,1'-Biphenyl**	**240**	**ug/kg**	
120821	1,2,4-Trichlorobenzene	78.8	ug/kg	U
122667	1,2-Diphenylhydrazine	78.8	ug/kg	U
95954	2,4,5-Trichlorophenol	78.8	ug/kg	U
88062	2,4,6-Trichlorophenol	78.8	ug/kg	U
120832	2,4-Dichlorophenol	78.8	ug/kg	U
105679	2,4-Dimethylphenol	78.8	ug/kg	U
51285	2,4-Dinitrophenol	788	ug/kg	U
121142	2,4-Dinitrotoluene	394	ug/kg	U
606202	2,6-Dinitrotoluene	394	ug/kg	U
91587	2-Chloronaphthalene	78.8	ug/kg	U
95578	2-Chlorophenol	78.8	ug/kg	U
88744	2-Nitroaniline	394	ug/kg	U
88755	2-Nitrophenol	78.8	ug/kg	U
91941	3,3'-Dichlorobenzidine	315	ug/kg	U
99092	3-Nitroaniline	394	ug/kg	U
360689	3B-Coprostanol	1580	ug/kg	U
534521	4,6-Dinitro-2-methylphenol	394	ug/kg	U
101553	4-Bromophenyl-Phenylether	78.8	ug/kg	U
59507	4-Chloro-3-methylphenol	158	ug/kg	U
106478	4-Chloroaniline	78.8	ug/kg	U
7005723	4-Chlorophenyl-Phenylether	78.8	ug/kg	U
106445	4-Methylphenol	78.8	ug/kg	U
100016	4-Nitroaniline	158	ug/kg	U
100027	4-Nitrophenol	158	ug/kg	U
86748	**9H-Carbazole**	**175**	**ug/kg**	
86737	**9H-Fluorene**	**794**	**ug/kg**	
83329	**Acenaphthene**	**618**	**ug/kg**	
208968	**Acenaphthylene**	**25.1**	**ug/kg**	**J**
62533	Aniline	78.8	ug/kg	U
120127	**Anthracene**	**779**	**ug/kg**	
1912249	Atrazine	158	ug/kg	U
100527	Benzaldehyde	78.8	ug/kg	U
95501	Benzene, 1,2-dichloro-	78.8	ug/kg	U
541731	Benzene, 1,3-dichloro-	78.8	ug/kg	U
106467	Benzene, 1,4-dichloro-	78.8	ug/kg	U
100516	Benzenemethanol	78.8	ug/kg	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	6/23/01
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	01254151
Account Code:	01T10P50102D106XLA00	**Type:**	Reg sample
Station Description:	VSSS02SS		

GCMS

Parameter : Semi-volatiles
Method : 8270-M BNA
Prep Method: 3510M/3540
Analytes :

		Result	Units	Qlfr
117840	Di-n-octylphthalate			R
77474	Hexachlorocyclopentadiene			R
92524	1,1'-Biphenyl	145	ug/kg	U
120821	1,2,4-Trichlorobenzene	145	ug/kg	U
122667	1,2-Diphenylhydrazine	145	ug/kg	U
95954	2,4,5-Trichlorophenol	145	ug/kg	U
88062	2,4,6-Trichlorophenol	145	ug/kg	U
120832	2,4-Dichlorophenol	145	ug/kg	U
105679	2,4-Dimethylphenol	145	ug/kg	UJ
51285	2,4-Dinitrophenol	1450	ug/kg	U
121142	2,4-Dinitrotoluene	725	ug/kg	U
606202	2,6-Dinitrotoluene	725	ug/kg	U
91587	2-Chloronaphthalene	145	ug/kg	U
95578	2-Chlorophenol	145	ug/kg	U
88744	2-Nitroaniline	725	ug/kg	U
88755	2-Nitrophenol	145	ug/kg	U
91941	3,3'-Dichlorobenzidine	580	ug/kg	U
99092	3-Nitroaniline	725	ug/kg	U
360689	3B-Coprostanol	2900	ug/kg	U
534521	4,6-Dinitro-2-methylphenol	725	ug/kg	U
101553	4-Bromophenyl-Phenylether	145	ug/kg	U
59507	4-Chloro-3-methylphenol	290	ug/kg	U
106478	4-Chloroaniline	145	ug/kg	UJ
7005723	4-Chlorophenyl-Phenylether	145	ug/kg	U
106445	4-Methylphenol	145	ug/kg	U
100016	4-Nitroaniline	290	ug/kg	U
100027	4-Nitrophenol	290	ug/kg	U
86748	9H-Carbazole	145	ug/kg	U
86737	9H-Fluorene	145	ug/kg	U
83329	Acenaphthene	145	ug/kg	U
208968	Acenaphthylene	145	ug/kg	U
62533	Aniline	145	ug/kg	UJ
120127	Anthracene	145	ug/kg	U
1912249	Atrazine	290	ug/kg	U
100527	Benzaldehyde	145	ug/kg	U
95501	Benzene, 1,2-dichloro-	145	ug/kg	U
541731	Benzene, 1,3-dichloro-	145	ug/kg	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

			Result	Units	Qlfr
Analytes	1718510	Terphenyl-d14	61	%Rec	
Parameter	Semi-volatiles - Tentatives				
Method	8270-M	BNA			
Prep Method:	3510M/3540				
Analytes	238846	11H-Benzo[a]fluorene	329	ug/kg	NJ
	35465715	2-Phenylnaphthalene	1340	ug/kg	NJ
	203645	4H-Cyclopenta[def]phenanthrene	1350	ug/kg	NJ
	613127	Anthracene, 2-methyl-	847	ug/kg	NJ
	205436	Benzo[b]naphtho[1,2-d]thiophen e	454	ug/kg	NJ
	203123	Benzo[ghi]fluoranthene	519	ug/kg	NJ
	132650	Dibenzothiophene	656	ug/kg	NJ
	7372885	DIBENZOTHIOPHENE, 4-METHYL-	476	ug/kg	NJ
	575439	Naphthalene, 1,6-dimethyl-	346	ug/kg	NJ
	832699	Phenanthrene, 1-methyl-	639	ug/kg	NJ
	832713	Phenanthrene, 3-methyl-	1150	ug/kg	NJ
	2381217	Pyrene, 1-methyl-	394	ug/kg	NJ
	3353126	Pyrene, 4-methyl-	396	ug/kg	NJ
	*3008001	Unknown 01	355	ug/kg	NJ
	*3008002	Unknown 02	765	ug/kg	NJ

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	6/23/01
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	01254151
Account Code:	01T10P50102D106XLA00	**Type:**	Reg sample
Station Description:	VSSS02SS		

GCMS

Parameter : Semi-volatiles
Method : 8270-M BNA
Prep Method: 3510M/3540
Analytes :

		Result	Units	Qlfr
117840	Di-n-octylphthalate			R
77474	Hexachlorocyclopentadiene			R
92524	1,1'-Biphenyl	145	ug/kg	U
120821	1,2,4-Trichlorobenzene	145	ug/kg	U
122667	1,2-Diphenylhydrazine	145	ug/kg	U
95954	2,4,5-Trichlorophenol	145	ug/kg	U
88062	2,4,6-Trichlorophenol	145	ug/kg	U
120832	2,4-Dichlorophenol	145	ug/kg	U
105679	2,4-Dimethylphenol	145	ug/kg	UJ
51285	2,4-Dinitrophenol	1450	ug/kg	U
121142	2,4-Dinitrotoluene	725	ug/kg	U
606202	2,6-Dinitrotoluene	725	ug/kg	U
91587	2-Chloronaphthalene	145	ug/kg	U
95578	2-Chlorophenol	145	ug/kg	U
88744	2-Nitroaniline	725	ug/kg	U
88755	2-Nitrophenol	145	ug/kg	U
91941	3,3'-Dichlorobenzidine	580	ug/kg	U
99092	3-Nitroaniline	725	ug/kg	U
360689	3B-Coprostanol	2900	ug/kg	U
534521	4,6-Dinitro-2-methylphenol	725	ug/kg	U
101553	4-Bromophenyl-Phenylether	145	ug/kg	U
59507	4-Chloro-3-methylphenol	290	ug/kg	U
106478	4-Chloroaniline	145	ug/kg	UJ
7005723	4-Chlorophenyl-Phenylether	145	ug/kg	U
106445	4-Methylphenol	145	ug/kg	U
100016	4-Nitroaniline	290	ug/kg	U
100027	4-Nitrophenol	290	ug/kg	U
86748	9H-Carbazole	145	ug/kg	U
86737	9H-Fluorene	145	ug/kg	U
83329	Acenaphthene	145	ug/kg	U
208968	Acenaphthylene	145	ug/kg	U
62533	Aniline	145	ug/kg	UJ
120127	Anthracene	145	ug/kg	U
1912249	Atrazine	290	ug/kg	U
100527	Benzaldehyde	145	ug/kg	U
95501	Benzene, 1,2-dichloro-	145	ug/kg	U
541731	Benzene, 1,3-dichloro-	145	ug/kg	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

			Result	Units	Qlfr
Analytes	106467	Benzene, 1,4-dichloro-	145	ug/kg	U
	100516	Benzenemethanol	145	ug/kg	U
	56553	Benzo(a)anthracene	145	ug/kg	U
	50328	Benzo(a)pyrene	290	ug/kg	U
	191242	Benzo(g,h,i)perylene	145	ug/kg	U
	205992	Benzo[b]Fluoranthene	290	ug/kg	U
	207089	Benzo[k]fluoranthene	145	ug/kg	U
	65850	Benzoic acid	725	ug/kg	U
	111444	bis(2-Chloroethyl)ether	145	ug/kg	U
	108601	BIS(2-CHLOROISOPROPYL)ETHER	145	ug/kg	U
	117817	Bis(2-ethylhexyl) phthalate	145	ug/kg	UJ
	85687	Butylbenzylphthalate	725	ug/kg	UJ
	58082	Caffeine	145	ug/kg	U
	105602	Caprolactam	145	ug/kg	U
	218019	Chrysene	145	ug/kg	U
	84742	Di-n-Butylphthalate	290	ug/kg	UJ
	53703	Dibenzo[a,h]anthracene	145	ug/kg	U
	132649	Dibenzofuran	145	ug/kg	U
	84662	Diethyl phthalate	145	ug/kg	U
	131113	Dimethylphthalate	145	ug/kg	U
	98862	Ethanone, 1-phenyl-	145	ug/kg	U
	206440	Fluoranthene	145	ug/kg	U
	118741	Hexachlorobenzene	145	ug/kg	U
	87683	Hexachlorobutadiene	145	ug/kg	U
	67721	Hexachloroethane	145	ug/kg	U
	193395	Indeno(1,2,3-cd)pyrene	290	ug/kg	U
	78591	**Isophorone**	**99.7**	**ug/kg**	**J**
	111911	Methane, bis(2-chloroethoxy)-	145	ug/kg	U
	62759	N-Nitrosodimethylamine	145	ug/kg	UJ
	621647	N-Nitrosodinpropylamine	145	ug/kg	U
	86306	n-Nitrosodiphenylamine	145	ug/kg	U
	91203	Naphthalene	145	ug/kg	U
	90120	Naphthalene, 1-methyl-	145	ug/kg	U
	91576	Naphthalene, 2-methyl-	145	ug/kg	U
	98953	Nitrobenzene	145	ug/kg	U
	87865	Pentachlorophenol	1450	ug/kg	U
	85018	Phenanthrene	145	ug/kg	U
	108952	Phenol	145	ug/kg	U
	95487	Phenol, 2-methyl-	145	ug/kg	U
	129000	Pyrene	145	ug/kg	U
	483658	Retene	279	ug/kg	U
	321608	1,1'-Biphenyl, 2-fluoro-	67	%Rec	
	2199691	1,2-Dichlorobenzene-d4	49	%Rec	
	93951736	2-chlorophenol-d4	60	%Rec	
	1718521	D10-Pyrene	91	%Rec	
	4165600	Nitrobenzene-d5	59	%Rec	
	367124	Phenol, 2-fluoro-	55	%Rec	
	4165622	Phenol-d5	61	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

			Result	Units	Qlfr
Analytes	1718510	Terphenyl-d14	71	%Rec	
Parameter :	Semi-volatiles - Tentatives				
Method :	8270-M	BNA			
Prep Method:	3510M/3540				
Analytes :	**36728720**	**28-Nor-17.beta.(H)-hopane**	**633**	**ug/kg**	**NJ**
	***3008001**	**Unknown 01**	**303**	**ug/kg**	**NJ**
	***3008002**	**Unknown 02**	**1980**	**ug/kg**	**NJ**
	***3008003**	**Unknown 03**	**363**	**ug/kg**	**NJ**
	***308004**	**Unknown 04**	**459**	**ug/kg**	**NJ**
	***3008005**	**Unknown 05**	**1410**	**ug/kg**	**NJ**

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	01254151
Account Code:	01T10P50102D106XLA00	**Type:**	Matrix Spike
Station Description:			

GCMS

Parameter : Semi-volatiles
Method : 8270-M BNA
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
321608	1,1'-Biphenyl, 2-fluoro-	70	%Rec	
120821	1,2,4-Trichlorobenzene	69.7	%Rec	
2199691	1,2-Dichlorobenzene-d4	62	%Rec	
122667	1,2-Diphenylhydrazine	72.2	%Rec	
95954	2,4,5-Trichlorophenol	80.9	%Rec	
88062	2,4,6-Trichlorophenol	74.6	%Rec	
120832	2,4-Dichlorophenol	75.2	%Rec	
105679	2,4-Dimethylphenol	10.8	%Rec	
51285	2,4-Dinitrophenol	109	%Rec	
121142	2,4-Dinitrotoluene	69.4	%Rec	
606202	2,6-Dinitrotoluene	64.4	%Rec	
91587	2-Chloronaphthalene	76.3	%Rec	
95578	2-Chlorophenol	67.4	%Rec	
93951736	2-chlorophenol-d4	65	%Rec	
88744	2-Nitroaniline	64.0	%Rec	
88755	2-Nitrophenol	67.6	%Rec	
99092	3-Nitroaniline	58.2	%Rec	
534521	4,6-Dinitro-2-methylphenol	80.3	%Rec	
101553	4-Bromophenyl-Phenylether	79.5	%Rec	
59507	4-Chloro-3-methylphenol	79 5	%Rec	
106478	4-Chloroaniline	43.0	%Rec	
7005723	4-Chlorophenyl-Phenylether	75.7	%Rec	
106445	4-Methylphenol	65 8	%Rec	
100016	4-Nitroaniline	61.8	%Rec	
100027	4-Nitrophenol	78.6	%Rec	
86737	9H-Fluorene	78.8	%Rec	
83329	Acenaphthene	74.0	%Rec	
208968	Acenaphthylene	74 3	%Rec	
62533	Aniline	24.3	%Rec	
120127	Anthracene	76.9	%Rec	
95501	Benzene, 1,2-dichloro-	62.2	%Rec	
541731	Benzene, 1,3-dichloro-	56.9	%Rec	
106467	Benzene, 1,4-dichloro-	58.4	%Rec	
100516	Benzenemethanol	52.9	%Rec	
56553	Benzo(a)anthracene	80.3	%Rec	
50328	Benzo(a)pyrene	80.6	%Rec	
191242	Benzo(g,h,i)perylene	76 8	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

			Result	Units	Qlfr
Analytes	205992	Benzo[b]Fluoranthene	74.7	%Rec	
	207089	Benzo[k]fluoranthene	75.2	%Rec	
	65850	Benzoic acid	64.2	%Rec	
	111444	bis(2-Chloroethyl)ether	64.7	%Rec	
	108601	BIS(2-CHLOROISOPROPYL)ETHER	63.7	%Rec	
	117817	Bis(2-ethylhexyl) phthalate	10.2	%Rec	
	85687	Butylbenzylphthalate	40.6	%Rec	
	218019	Chrysene	78.1	%Rec	
	1718521	D10-Pyrene	74	%Rec	
	84742	Di-n-Butylphthalate	42.7	%Rec	
	117840	Di-n-octylphthalate	8.4	%Rec	
	53703	Dibenzo[a,h]anthracene	81.3	%Rec	
	132649	Dibenzofuran	74.6	%Rec	
	84662	Diethyl phthalate	65.1	%Rec	
	131113	Dimethylphthalate	76.9	%Rec	
	206440	Fluoranthene	84.8	%Rec	
	118741	Hexachlorobenzene	76.1	%Rec	
	87683	Hexachlorobutadiene	65.9	%Rec	
	77474	Hexachlorocyclopentadiene	0.0	%Rec	
	67721	Hexachloroethane	56.5	%Rec	
	193395	Indeno(1,2,3-cd)pyrene	71.0	%Rec	
	78591	Isophorone	65.1	%Rec	
	111911	Methane, bis(2-chloroethoxy)-	66.5	%Rec	
	62759	N-Nitrosodimethylamine	53.7	%Rec	
	621647	N-Nitrosodinpropylamine	66.6	%Rec	
	86306	n-Nitrosodiphenylamine	68.7	%Rec	
	91203	Naphthalene	70.5	%Rec	
	91576	Naphthalene, 2-methyl-	72.1	%Rec	
	98953	Nitrobenzene	67.4	%Rec	
	4165600	Nitrobenzene-d5	63	%Rec	
	87865	Pentachlorophenol	53.0	%Rec	
	85018	Phenanthrene	79.7	%Rec	
	108952	Phenol	70.0	%Rec	
	367124	Phenol, 2-fluoro-	60	%Rec	
	95487	Phenol, 2-methyl-	56.4	%Rec	
	4165622	Phenol-d5	66	%Rec	
	129000	Pyrene	78.0	%Rec	
	1718510	Terphenyl-d14	72	%Rec	

Project Code:	TEC-774B	**Collected:**	
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	01254151
Account Code:	01T10P50102D106XLA00	**Type:**	Matrix Spike Dupl
Station Description:			

GCMS

Parameter : Semi-volatiles
Method : 8270-M BNA
Prep Method : 3510M/3540
Analytes :

		Result	Units	Qlfr
321608	1,1'-Biphenyl, 2-fluoro-	63	%Rec	
120821	1,2,4-Trichlorobenzene	61.4	%Rec	
2199691	1,2-Dichlorobenzene-d4	56	%Rec	
122667	1,2-Diphenylhydrazine	64.8	%Rec	
95954	2,4,5-Trichlorophenol	71.7	%Rec	
88062	2,4,6-Trichlorophenol	67.6	%Rec	
120832	2,4-Dichlorophenol	67.4	%Rec	
105679	2,4-Dimethylphenol	32.0	%Rec	
51285	2,4-Dinitrophenol	105	%Rec	
121142	2,4-Dinitrotoluene	63.2	%Rec	
606202	2,6-Dinitrotoluene	58.6	%Rec	
91587	2-Chloronaphthalene	67.7	%Rec	
95578	2-Chlorophenol	62.2	%Rec	
93951736	2-chlorophenol-d4	60	%Rec	
88744	2-Nitroaniline	53.9	%Rec	
88755	2-Nitrophenol	59.5	%Rec	
99092	3-Nitroaniline	49.6	%Rec	
534521	4,6-Dinitro-2-methylphenol	72.6	%Rec	
101553	4-Bromophenyl-Phenylether	73.2	%Rec	
59507	4-Chloro-3-methylphenol	74.4	%Rec	
106478	4-Chloroaniline	41.5	%Rec	
7005723	4-Chlorophenyl-Phenylether	69.3	%Rec	
106445	4-Methylphenol	64.1	%Rec	
100016	4-Nitroaniline	55.5	%Rec	
100027	4-Nitrophenol	66.4	%Rec	
86737	9H-Fluorene	70.9	%Rec	
83329	Acenaphthene	65 7	%Rec	
208968	Acenaphthylene	66 0	%Rec	
62533	Aniline	25.5	%Rec	
120127	Anthracene	68 9	%Rec	
95501	Benzene, 1,2-dichloro-	56 3	%Rec	
541731	Benzene, 1,3-dichloro-	52.2	%Rec	
106467	Benzene, 1,4-dichloro-	53.2	%Rec	
100516	Benzenemethanol	60 8	%Rec	
56553	Benzo(a)anthracene	72.3	%Rec	
50328	Benzo(a)pyrene	71.9	%Rec	
191242	Benzo(g,h,i)perylene	69.3	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

			Result	Units	Qlfr
Analytes	205992	Benzo[b]Fluoranthene	64.8	%Rec	
	207089	Benzo[k]fluoranthene	69.0	%Rec	
	65850	Benzoic acid	63.1	%Rec	
	111444	bis(2-Chloroethyl)ether	59.5	%Rec	
	108601	BIS(2-CHLOROISOPROPYL)ETHER	58.1	%Rec	
	117817	Bis(2-ethylhexyl) phthalate	10.6	%Rec	
	85687	Butylbenzylphthalate	38.3	%Rec	
	218019	Chrysene	68.4	%Rec	
	1718521	D10-Pyrene	66	%Rec	
	84742	Di-n-Butylphthalate	41.2	%Rec	
	117840	Di-n-octylphthalate	8.8	%Rec	
	53703	Dibenzo[a,h]anthracene	73.2	%Rec	
	132649	Dibenzofuran	62.5	%Rec	
	84662	Diethyl phthalate	60.6	%Rec	
	131113	Dimethylphthalate	69.3	%Rec	
	206440	Fluoranthene	75.7	%Rec	
	118741	Hexachlorobenzene	68.9	%Rec	
	87683	Hexachlorobutadiene	59.0	%Rec	
	77474	Hexachlorocyclopentadiene	0.0	%Rec	
	67721	Hexachloroethane	51.8	%Rec	
	193395	Indeno(1,2,3-cd)pyrene	64.7	%Rec	
	78591	Isophorone	57.5	%Rec	
	111911	Methane, bis(2-chloroethoxy)-	60.3	%Rec	
	62759	N-Nitrosodimethylamine	48.9	%Rec	
	621647	N-Nitrosodinpropylamine	60.0	%Rec	
	86306	n-Nitrosodiphenylamine	63.7	%Rec	
	91203	Naphthalene	62.6	%Rec	
	91576	Naphthalene, 2-methyl-	61.0	%Rec	
	98953	Nitrobenzene	61.6	%Rec	
	4165600	Nitrobenzene-d5	57	%Rec	
	87865	Pentachlorophenol	40.4	%Rec	
	85018	Phenanthrene	70.5	%Rec	
	108952	Phenol	64.7	%Rec	
	367124	Phenol, 2-fluoro-	56	%Rec	
	95487	Phenol, 2-methyl-	50.6	%Rec	
	4165622	Phenol-d5	60	%Rec	
	129000	Pyrene	69.6	%Rec	
	1718510	Terphenyl-d14	65	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	6/23/01
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	01254152
Account Code:	01T10P50102D106XLA00	**Type:**	Reg sample
Station Description:	VSSS03SS		

GCMS

Parameter : Semi-volatiles
Method : 8270-M BNA
Prep Method: 3510M/3540
Analytes :

		Result	Units	Qlfr
92524	1,1'-Biphenyl	72.8	ug/kg	U
120821	1,2,4-Trichlorobenzene	72.8	ug/kg	U
122667	1,2-Diphenylhydrazine	72.8	ug/kg	U
95954	2,4,5-Trichlorophenol	72.8	ug/kg	U
88062	2,4,6-Trichlorophenol	72.8	ug/kg	U
120832	2,4-Dichlorophenol	72.8	ug/kg	U
105679	2,4-Dimethylphenol	72.8	ug/kg	U
51285	2,4-Dinitrophenol	728	ug/kg	U
121142	2,4-Dinitrotoluene	364	ug/kg	U
606202	2,6-Dinitrotoluene	364	ug/kg	U
91587	2-Chloronaphthalene	72.8	ug/kg	U
95578	2-Chlorophenol	72.8	ug/kg	U
88744	2-Nitroaniline	364	ug/kg	U
88755	2-Nitrophenol	72.8	ug/kg	U
91941	3,3'-Dichlorobenzidine	291	ug/kg	U
99092	3-Nitroaniline	364	ug/kg	U
360689	3B-Coprostanol	1460	ug/kg	U
534521	4,6-Dinitro-2-methylphenol	364	ug/kg	U
101553	4-Bromophenyl-Phenylether	72.8	ug/kg	U
59507	4-Chloro-3-methylphenol	146	ug/kg	U
106478	4-Chloroaniline	72.8	ug/kg	U
7005723	4-Chlorophenyl-Phenylether	72.8	ug/kg	U
106445	4-Methylphenol	72.8	ug/kg	U
100016	4-Nitroaniline	146	ug/kg	U
100027	4-Nitrophenol	146	ug/kg	U
86748	9H-Carbazole	72.8	ug/kg	U
86737	9H-Fluorene	72.8	ug/kg	U
83329	Acenaphthene	72.8	ug/kg	U
208968	Acenaphthylene	72.8	ug/kg	U
62533	Aniline	72.8	ug/kg	U
120127	Anthracene	72.8	ug/kg	U
1912249	Atrazine	146	ug/kg	U
100527	Benzaldehyde	72.8	ug/kg	U
95501	Benzene, 1,2-dichloro-	72.8	ug/kg	U
541731	Benzene, 1,3-dichloro-	72.8	ug/kg	U
106467	Benzene, 1,4-dichloro-	72.8	ug/kg	U
100516	**Benzenemethanol**	**76.7**	**ug/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

			Result	Units	Qlfr
Analytes	**56553**	**Benzo(a)anthracene**	**8.5**	**ug/kg**	**J**
	50328	Benzo(a)pyrene	146	ug/kg	U
	191242	Benzo(g,h,i)perylene	72.8	ug/kg	U
	205992	Benzo[b]Fluoranthene	146	ug/kg	U
	207089	Benzo[k]fluoranthene	72.8	ug/kg	U
	65850	Benzoic acid	364	ug/kg	U
	111444	bis(2-Chloroethyl)ether	72.8	ug/kg	U
	108601	BIS(2-CHLOROISOPROPYL)ETHER	72.8	ug/kg	U
	117817	Bis(2-ethylhexyl) phthalate	72.8	ug/kg	U
	85687	Butylbenzylphthalate	364	ug/kg	U
	58082	Caffeine	72.8	ug/kg	U
	105602	Caprolactam	72.8	ug/kg	U
	218019	Chrysene	72.8	ug/kg	U
	84742	Di-n-Butylphthalate	146	ug/kg	U
	117840	Di-n-octylphthalate	72.8	ug/kg	U
	53703	Dibenzo[a,h]anthracene	72.8	ug/kg	U
	132649	Dibenzofuran	72.8	ug/kg	U
	84662	Diethyl phthalate	72.8	ug/kg	U
	131113	Dimethylphthalate	72.8	ug/kg	U
	98862	Ethanone, 1-phenyl-	72.8	ug/kg	U
	206440	Fluoranthene	72.8	ug/kg	U
	118741	Hexachlorobenzene	72.8	ug/kg	U
	87683	Hexachlorobutadiene	72.8	ug/kg	U
	77474	Hexachlorocyclopentadiene	146	ug/kg	U
	67721	Hexachloroethane	72.8	ug/kg	U
	193395	Indeno(1,2,3-cd)pyrene	146	ug/kg	U
	78591	Isophorone	72.8	ug/kg	U
	111911	Methane, bis(2-chloroethoxy)-	72.8	ug/kg	U
	62759	N-Nitrosodimethylamine	72.8	ug/kg	U
	621647	N-Nitrosodinpropylamine	72 8	ug/kg	U
	86306	n-Nitrosodiphenylamine	72.8	ug/kg	U
	91203	Naphthalene	72.8	ug/kg	U
	90120	Naphthalene, 1-methyl-	72 8	ug/kg	U
	91576	Naphthalene, 2-methyl-	72.8	ug/kg	U
	98953	Nitrobenzene	72.8	ug/kg	U
	87865	Pentachlorophenol	728	ug/kg	U
	85018	Phenanthrene	72.8	ug/kg	U
	108952	Phenol	72.8	ug/kg	U
	95487	Phenol, 2-methyl-	72.8	ug/kg	U
	129000	Pyrene	72 8	ug/kg	U
	483658	Retene	140	ug/kg	U
	321608	1,1'-Biphenyl, 2-fluoro-	60	%Rec	
	2199691	1,2-Dichlorobenzene-d4	42	%Rec	
	93951736	2-chlorophenol-d4	55	%Rec	
	1718521	D10-Pyrene	82	%Rec	
	4165600	Nitrobenzene-d5	53	%Rec	
	367124	Phenol, 2-fluoro-	51	%Rec	
	4165622	Phenol-d5	53	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

			Result	Units	Qlfr
Analytes	: 1718510	Terphenyl-d14	64	%Rec	
Parameter	: Semi-volatiles - Tentatives				
Method	: 8270-M	BNA			
Prep Method	: 3510M/3540				
Analytes	: **83476**	**.gamma.-Sitosterol**	**905**	**ug/kg**	**NJ**
	18720655	**3-Heptanol, 5-methyl-**	**155**	**ug/kg**	**NJ**

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

			Result	Units	Qlfr
Analytes	: 1718510	Terphenyl-d14	58	%Rec	
Parameter	: Semi-volatiles - Tentatives				
Method	: 8270-M	BNA			
Prep Method	: 3510M/3540				
Analytes	: ***3008001**	**Unknown 01**	**213**	**ug/kg**	**NJ**
	***3008002**	**Unknown 02**	**1440**	**ug/kg**	**NJ**
	***3008003**	**Unknown 03**	**13000**	**ug/kg**	**NJ**
	***3008004**	**Unknown 04**	**17100**	**ug/kg**	**NJ**
	***3008005**	**Unknown 05**	**9910**	**ug/kg**	**NJ**

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

			Result	Units	Qlfr
Analytes	56553	Benzo(a)anthracene	342	ug/kg	U
	50328	Benzo(a)pyrene	685	ug/kg	U
	191242	Benzo(g,h,i)perylene	342	ug/kg	U
	205992	Benzo[b]Fluoranthene	685	ug/kg	U
	207089	Benzo[k]fluoranthene	342	ug/kg	U
	65850	Benzoic acid	1710	ug/kg	U
	111444	bis(2-Chloroethyl)ether	342	ug/kg	U
	108601	BIS(2-CHLOROISOPROPYL)ETHER	342	ug/kg	U
	117817	Bis(2-ethylhexyl) phthalate	342	ug/kg	U
	85687	Butylbenzylphthalate	1710	ug/kg	U
	58082	Caffeine	342	ug/kg	U
	105602	Caprolactam	342	ug/kg	U
	218019	Chrysene	342	ug/kg	U
	84742	Di-n-Butylphthalate	685	ug/kg	U
	117840	Di-n-octylphthalate	342	ug/kg	U
	53703	Dibenzo[a,h]anthracene	342	ug/kg	U
	132649	Dibenzofuran	342	ug/kg	U
	84662	Diethyl phthalate	342	ug/kg	U
	131113	Dimethylphthalate	342	ug/kg	U
	98862	Ethanone, 1-phenyl-	342	ug/kg	U
	206440	Fluoranthene	342	ug/kg	U
	118741	Hexachlorobenzene	342	ug/kg	U
	87683	Hexachlorobutadiene	342	ug/kg	U
	77474	Hexachlorocyclopentadiene	685	ug/kg	U
	67721	Hexachloroethane	342	ug/kg	U
	193395	Indeno(1,2,3-cd)pyrene	685	ug/kg	U
	78591	Isophorone	342	ug/kg	U
	111911	Methane, bis(2-chloroethoxy)-	342	ug/kg	U
	62759	N-Nitrosodimethylamine	342	ug/kg	U
	621647	N-Nitrosodinpropylamine	342	ug/kg	U
	86306	n-Nitrosodiphenylamine	342	ug/kg	U
	91203	Naphthalene	342	ug/kg	U
	90120	Naphthalene, 1-methyl-	342	ug/kg	U
	91576	Naphthalene, 2-methyl-	342	ug/kg	U
	98953	Nitrobenzene	342	ug/kg	U
	87865	Pentachlorophenol	3420	ug/kg	U
	85018	Phenanthrene	342	ug/kg	U
	108952	Phenol	342	ug/kg	U
	95487	Phenol, 2-methyl-	342	ug/kg	U
	129000	Pyrene	342	ug/kg	U
	483658	Retene	659	ug/kg	U
	321608	1,1'-Biphenyl, 2-fluoro-	54	%Rec	
	2199691	1,2-Dichlorobenzene-d4	50	%Rec	
	93951736	2-chlorophenol-d4	48	%Rec	
	1718521	D10-Pyrene	71	%Rec	
	4165600	Nitrobenzene-d5	41	%Rec	
	367124	Phenol, 2-fluoro-	44	%Rec	
	4165622	Phenol-d5	41	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

			Result	Units	Qlfr
Analytes	: 1718510	Terphenyl-d14	58	%Rec	
Parameter	: Semi-volatiles - Tentatives				
Method	: 8270-M	BNA			
Prep Method	: 3510M/3540				
Analytes	: ***3008001**	**Unknown 01**	**213**	**ug/kg**	**NJ**
	***3008002**	**Unknown 02**	**1440**	**ug/kg**	**NJ**
	***3008003**	**Unknown 03**	**13000**	**ug/kg**	**NJ**
	***3008004**	**Unknown 04**	**17100**	**ug/kg**	**NJ**
	***3008005**	**Unknown 05**	**9910**	**ug/kg**	**NJ**

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	6/23/01
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	01254156
Account Code:	01T10P50102D106XLA00	**Type:**	Reg sample
Station Description:	VSSS07SS		

			Result	Units	Qlfr
GCMS					
Parameter	: Semi-volatiles				
Method	: 8270-M	BNA			
Prep Method:	3510M/3540				
Analytes	: 92524	1,1'-Biphenyl	560	ug/kg	U
	120821	1,2,4-Trichlorobenzene	560	ug/kg	U
	122667	1,2-Diphenylhydrazine	560	ug/kg	U
	95954	2,4,5-Trichlorophenol	560	ug/kg	U
	88062	2,4,6-Trichlorophenol	560	ug/kg	U
	120832	2,4-Dichlorophenol	560	ug/kg	U
	105679	2,4-Dimethylphenol	560	ug/kg	U
	51285	2,4-Dinitrophenol	5600	ug/kg	U
	121142	2,4-Dinitrotoluene	2800	ug/kg	U
	606202	2,6-Dinitrotoluene	2800	ug/kg	U
	91587	2-Chloronaphthalene	560	ug/kg	U
	95578	2-Chlorophenol	560	ug/kg	U
	88744	2-Nitroaniline	2800	ug/kg	U
	88755	2-Nitrophenol	560	ug/kg	U
	91941	3,3'-Dichlorobenzidine	2240	ug/kg	U
	99092	3-Nitroaniline	2800	ug/kg	U
	360689	3B-Coprostanol	11200	ug/kg	U
	534521	4,6-Dinitro-2-methylphenol	2800	ug/kg	U
	101553	4-Bromophenyl-Phenylether	560	ug/kg	U
	59507	4-Chloro-3-methylphenol	1120	ug/kg	U
	106478	4-Chloroaniline	560	ug/kg	U
	7005723	4-Chlorophenyl-Phenylether	560	ug/kg	U
	106445	4-Methylphenol	560	ug/kg	U
	100016	4-Nitroaniline	1120	ug/kg	U
	100027	4-Nitrophenol	1120	ug/kg	U
	86748	9H-Carbazole	560	ug/kg	U
	86737	9H-Fluorene	560	ug/kg	U
	83329	Acenaphthene	560	ug/kg	U
	208968	Acenaphthylene	560	ug/kg	U
	62533	Aniline	560	ug/kg	U
	120127	Anthracene	560	ug/kg	U
	1912249	Atrazine	1120	ug/kg	U
	100527	Benzaldehyde	560	ug/kg	U
	95501	Benzene, 1,2-dichloro-	560	ug/kg	U
	541731	Benzene, 1,3-dichloro-	560	ug/kg	U
	106467	Benzene, 1,4-dichloro-	560	ug/kg	U
	100516	Benzenemethanol	560	ug/kg	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	BS1178A1
Account Code:	01T10P50102D106XLA00	**Type:**	Blank
Station Description:			

GCMS

Parameter : Semi-volatiles
Method : 8270-M BNA
Prep Method: 3510M/3540

		Result	Units	Qlfr
Analytes : 92524	1,1'-Biphenyl	66.7	ug/kg	U
120821	1,2,4-Trichlorobenzene	66.7	ug/kg	U
122667	1,2-Diphenylhydrazine	66.7	ug/kg	U
95954	2,4,5-Trichlorophenol	66.7	ug/kg	U
88062	2,4,6-Trichlorophenol	66.7	ug/kg	U
120832	2,4-Dichlorophenol	66.7	ug/kg	U
105679	2,4-Dimethylphenol	66.7	ug/kg	U
51285	2,4-Dinitrophenol	667	ug/kg	U
121142	2,4-Dinitrotoluene	333	ug/kg	U
606202	2,6-Dinitrotoluene	333	ug/kg	U
91587	2-Chloronaphthalene	66.7	ug/kg	U
95578	2-Chlorophenol	66.7	ug/kg	U
88744	2-Nitroaniline	333	ug/kg	U
88755	2-Nitrophenol	66.7	ug/kg	U
91941	3,3'-Dichlorobenzidine	267	ug/kg	U
99092	3-Nitroaniline	333	ug/kg	U
360689	3B-Coprostanol	1330	ug/kg	U
534521	4,6-Dinitro-2-methylphenol	333	ug/kg	U
101553	4-Bromophenyl-Phenylether	66 7	ug/kg	U
59507	4-Chloro-3-methylphenol	133	ug/kg	U
106478	4-Chloroaniline	66.7	ug/kg	U
7005723	4-Chlorophenyl-Phenylether	66.7	ug/kg	U
106445	4-Methylphenol	66.7	ug/kg	U
100016	4-Nitroaniline	133	ug/kg	U
100027	4-Nitrophenol	133	ug/kg	U
86748	9H-Carbazole	66 7	ug/kg	U
86737	9H-Fluorene	66.7	ug/kg	U
83329	Acenaphthene	66.7	ug/kg	U
208968	Acenaphthylene	66.7	ug/kg	U
62533	Aniline	66.7	ug/kg	U
120127	Anthracene	66.7	ug/kg	U
1912249	Atrazine	133	ug/kg	U
100527	Benzaldehyde	66.7	ug/kg	U
95501	Benzene, 1,2-dichloro-	66 7	ug/kg	U
541731	Benzene, 1,3-dichloro-	66.7	ug/kg	U
106467	Benzene, 1,4-dichloro-	66.7	ug/kg	U
100516	Benzenemethanol	66.7	ug/kg	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

			Result	Units	Qlfr
Analytes	56553	Benzo(a)anthracene	66.7	ug/kg	U
	50328	Benzo(a)pyrene	133	ug/kg	U
	191242	Benzo(g,h,i)perylene	66.7	ug/kg	U
	205992	Benzo[b]Fluoranthene	133	ug/kg	U
	207089	Benzo[k]fluoranthene	66.7	ug/kg	U
	65850	Benzoic acid	333	ug/kg	U
	111444	bis(2-Chloroethyl)ether	66.7	ug/kg	U
	108601	BIS(2-CHLOROISOPROPYL)ETHER	66.7	ug/kg	U
	117817	Bis(2-ethylhexyl) phthalate	66.7	ug/kg	U
	85687	Butylbenzylphthalate	333	ug/kg	U
	58082	Caffeine	66.7	ug/kg	U
	105602	Caprolactam	66.7	ug/kg	U
	218019	Chrysene	66.7	ug/kg	U
	84742	Di-n-Butylphthalate	133	ug/kg	U
	117840	Di-n-octylphthalate	66.7	ug/kg	U
	53703	Dibenzo[a,h]anthracene	66.7	ug/kg	U
	132649	Dibenzofuran	66.7	ug/kg	U
	84662	Diethyl phthalate	66.7	ug/kg	U
	131113	Dimethylphthalate	66.7	ug/kg	U
	98862	Ethanone, 1-phenyl-	66.7	ug/kg	U
	206440	Fluoranthene	66.7	ug/kg	U
	118741	Hexachlorobenzene	66.7	ug/kg	U
	87683	Hexachlorobutadiene	66.7	ug/kg	U
	77474	Hexachlorocyclopentadiene	133	ug/kg	U
	67721	Hexachloroethane	66.7	ug/kg	U
	193395	Indeno(1,2,3-cd)pyrene	133	ug/kg	U
	78591	Isophorone	66.7	ug/kg	U
	111911	Methane, bis(2-chloroethoxy)-	66.7	ug/kg	U
	62759	N-Nitrosodimethylamine	66 7	ug/kg	U
	621647	N-Nitrosodinpropylamine	66.7	ug/kg	U
	86306	n-Nitrosodiphenylamine	66.7	ug/kg	U
	91203	Naphthalene	66.7	ug/kg	U
	90120	Naphthalene, 1-methyl-	66.7	ug/kg	U
	91576	Naphthalene, 2-methyl-	66 7	ug/kg	U
	98953	Nitrobenzene	66.7	ug/kg	U
	87865	Pentachlorophenol	667	ug/kg	U
	85018	Phenanthrene	66.7	ug/kg	U
	108952	Phenol	66.7	ug/kg	U
	95487	Phenol, 2-methyl-	66.7	ug/kg	U
	129000	Pyrene	66.7	ug/kg	U
	483658	Retene	128	ug/kg	U
	321608	1,1'-Biphenyl, 2-fluoro-	58	%Rec	
	2199691	1,2-Dichlorobenzene-d4	50	%Rec	
	93951736	2-chlorophenol-d4	54	%Rec	
	1718521	D10-Pyrene	80	%Rec	
	4165600	Nitrobenzene-d5	55	%Rec	
	367124	Phenol, 2-fluoro-	51	%Rec	
	4165622	Phenol-d5	52	%Rec	

			Result	Units	Qlfr
Analytes	1718510	Terphenyl-d14	63	%Rec	
Parameter	Semi-volatiles - Tentatives				
Method	8270-M	BNA			
Prep Method:	3510M/3540				
Analytes	**38147001**	**1,1,1,5,7,7,7-Heptamethyl-3,3-bis(trimet**	**62.8**	**ug/kg**	**NJ**
	81209	**1,3-Dimethyl-Nitrobenzene**	**69.7**	**ug/kg**	**NJ**
	5920296	**1H-Pyrazole, 3-ethyl-4,5-dihyd ro-**	**84.8**	**ug/kg**	**NJ**
	541593	**1H-Pyrrole-2,5-dione**	**607**	**ug/kg**	**NJ**
	110134	**2,5-Hexanedione**	**75.6**	**ug/kg**	**NJ**
	3102338	**3-Penten-2-one, (E)-**	**111**	**ug/kg**	**NJ**
	141797	**3-Penten-2-one, 4-methyl-**	**103**	**ug/kg**	**NJ**
	286204	**7-Oxabicyclo[4.1.0]heptane**	**80.3**	**ug/kg**	**NJ**
	540976	**Cyclohexasiloxane, dodecamethy l-**	**383**	**ug/kg**	**NJ**
	541026	**Cyclopentasiloxane, decamethyl -**	**328**	**ug/kg**	**NJ**
	556672	**Cyclotetrasiloxane, octamethyl -**	**166**	**ug/kg**	**NJ**
	108883	**Toluene**	**246**	**ug/kg**	**NJ**
	115866	**Triphenyl Phosphate**	**77.7**	**ug/kg**	**NJ**
	***3008001**	**Unknown 01**	**1200**	**ug/kg**	**NJ**
	***3008002**	**Unknown 02**	**38200**	**ug/kg**	**NJ**
	***3008003**	**Unknown 03**	**62.2**	**ug/kg**	**NJ**
	***3008004**	**Unknown 04**	**441**	**ug/kg**	**NJ**
	***3008005**	**Unknown 05**	**369**	**ug/kg**	**NJ**
	***3008006**	**Unknown 06**	**70.9**	**ug/kg**	**NJ**
	***3008007**	**Unknown 07**	**101**	**ug/kg**	**NJ**

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

Project Code:	TEC-774B	**Collected:**	
Project Name:	UPPER COLUMBIA RIVER/MINES ESI	**Matrix:**	Solid
Project Officer:	MONICA TONEL	**Sample Number:**	BS1178A2
Account Code:	01T10P50102D106XLA00	**Type:**	Blank
Station Description:			

GCMS

Parameter : Semi-volatiles
Method : 8270-M BNA
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	92524	1,1'-Biphenyl	66.7	ug/kg	U
	120821	1,2,4-Trichlorobenzene	66.7	ug/kg	U
	122667	1,2-Diphenylhydrazine	66.7	ug/kg	U
	95954	2,4,5-Trichlorophenol	66.7	ug/kg	U
	88062	2,4,6-Trichlorophenol	66.7	ug/kg	U
	120832	2,4-Dichlorophenol	66.7	ug/kg	U
	105679	2,4-Dimethylphenol	66.7	ug/kg	U
	51285	2,4-Dinitrophenol	667	ug/kg	U
	121142	2,4-Dinitrotoluene	333	ug/kg	U
	606202	2,6-Dinitrotoluene	333	ug/kg	U
	91587	2-Chloronaphthalene	66.7	ug/kg	U
	95578	2-Chlorophenol	66.7	ug/kg	U
	88744	2-Nitroaniline	333	ug/kg	U
	88755	2-Nitrophenol	66.7	ug/kg	U
	91941	3,3'-Dichlorobenzidine	267	ug/kg	U
	99092	3-Nitroaniline	333	ug/kg	U
	360689	3B-Coprostanol	1330	ug/kg	U
	534521	4,6-Dinitro-2-methylphenol	333	ug/kg	U
	101553	4-Bromophenyl-Phenylether	66.7	ug/kg	U
	59507	4-Chloro-3-methylphenol	133	ug/kg	U
	106478	4-Chloroaniline	66.7	ug/kg	U
	7005723	4-Chlorophenyl-Phenylether	66.7	ug/kg	U
	106445	4-Methylphenol	66.7	ug/kg	U
	100016	4-Nitroaniline	133	ug/kg	U
	100027	4-Nitrophenol	133	ug/kg	U
	86748	9H-Carbazole	66.7	ug/kg	U
	86737	9H-Fluorene	66.7	ug/kg	U
	83329	Acenaphthene	66.7	ug/kg	U
	208968	Acenaphthylene	66.7	ug/kg	U
	62533	Aniline	66.7	ug/kg	U
	120127	Anthracene	66.7	ug/kg	U
	1912249	Atrazine	133	ug/kg	U
	100527	Benzaldehyde	66.7	ug/kg	U
	95501	Benzene, 1,2-dichloro-	66.7	ug/kg	U
	541731	Benzene, 1,3-dichloro-	66.7	ug/kg	U
	106467	Benzene, 1,4-dichloro-	66.7	ug/kg	U
	100516	Benzenemethanol	66 7	ug/kg	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-774B

			Result	Units	Qlfr
Analytes	56553	Benzo(a)anthracene	66.7	ug/kg	U
	50328	Benzo(a)pyrene	133	ug/kg	U
	191242	Benzo(g,h,i)perylene	66.7	ug/kg	U
	205992	Benzo[b]Fluoranthene	133	ug/kg	U
	207089	Benzo[k]fluoranthene	66.7	ug/kg	U
	65850	Benzoic acid	333	ug/kg	U
	111444	bis(2-Chloroethyl)ether	66.7	ug/kg	U
	108601	BIS(2-CHLOROISOPROPYL)ETHER	66.7	ug/kg	U
	117817	Bis(2-ethylhexyl) phthalate	66.7	ug/kg	U
	85687	Butylbenzylphthalate	333	ug/kg	U
	58082	Caffeine	66.7	ug/kg	U
	105602	Caprolactam	66.7	ug/kg	U
	218019	Chrysene	66.7	ug/kg	U
	84742	Di-n-Butylphthalate	133	ug/kg	U
	117840	Di-n-octylphthalate	66.7	ug/kg	U
	53703	Dibenzo[a,h]anthracene	66.7	ug/kg	U
	132649	Dibenzofuran	66.7	ug/kg	U
	84662	Diethyl phthalate	66.7	ug/kg	U
	131113	Dimethylphthalate	66.7	ug/kg	U
	98862	Ethanone, 1-phenyl-	66.7	ug/kg	U
	206440	Fluoranthene	66.7	ug/kg	U
	118741	Hexachlorobenzene	66.7	ug/kg	U
	87683	Hexachlorobutadiene	66.7	ug/kg	U
	77474	Hexachlorocyclopentadiene	133	ug/kg	U
	67721	Hexachloroethane	66.7	ug/kg	U
	193395	Indeno(1,2,3-cd)pyrene	133	ug/kg	U
	78591	Isophorone	66.7	ug/kg	U
	111911	Methane, bis(2-chloroethoxy)-	66.7	ug/kg	U
	62759	N-Nitrosodimethylamine	66.7	ug/kg	U
	621647	N-Nitrosodinpropylamine	66.7	ug/kg	U
	86306	n-Nitrosodiphenylamine	66.7	ug/kg	U
	91203	Naphthalene	66.7	ug/kg	U
	90120	Naphthalene, 1-methyl-	66.7	ug/kg	U
	91576	Naphthalene, 2-methyl-	66.7	ug/kg	U
	98953	Nitrobenzene	66.7	ug/kg	U
	87865	Pentachlorophenol	667	ug/kg	U
	85018	Phenanthrene	66.7	ug/kg	U
	108952	Phenol	66.7	ug/kg	U
	95487	Phenol, 2-methyl-	66.7	ug/kg	U
	129000	Pyrene	66.7	ug/kg	U
	483658	Retene	128	ug/kg	U
	321608	1,1'-Biphenyl, 2-fluoro-	64	%Rec	
	2199691	1,2-Dichlorobenzene-d4	56	%Rec	
	93951736	2-chlorophenol-d4	59	%Rec	
	1718521	D10-Pyrene	87	%Rec	
	4165600	Nitrobenzene-d5	59	%Rec	
	367124	Phenol, 2-fluoro-	56	%Rec	
	4165622	Phenol-d5	56	%Rec	

			Result	Units	Qlfr
Analytes	1718510	Terphenyl-d14	70	%Rec	
Parameter	Semi-volatiles - Tentatives				
Method	8270-M	BNA			
Prep Method	3510M/3540				
Analytes :	**84640**	**1,2-Benzenedicarboxylic**	**111**	**ug/kg**	**NJ**
	110134	**2,5-Hexanedione**	**94.7**	**ug/kg**	**NJ**
	1123097	**2-Cyclohexen-1-one, 3,5-dimeth yl-**	**69.2**	**ug/kg**	**NJ**
	123422	**2-Pentanone, 4-hydroxy-4-methy l-**	**154000**	**ug/kg**	**NJ**
	872504	**2-Pyrrolidinone, 1-methyl-**	**45.6**	**ug/kg**	**NJ**
	3280511	**3,5-Hexadien-2-ol**	**142**	**ug/kg**	**NJ**
	141797	**3-Penten-2-one, 4-methyl-**	**463**	**ug/kg**	**NJ**
	926374	**4,4-Dimethyl-2-pentenal**	**593**	**ug/kg**	**NJ**
	108214	**Acetic acid, 1-methylethyl est er**	**325**	**ug/kg**	**NJ**
	83410	**Benzene, 1,2-dimethyl-3-nitro-**	**82.9**	**ug/kg**	**NJ**
	541026	**Cyclopentasiloxane, decamethyl -**	**35.1**	**ug/kg**	**NJ**
	108883	**Toluene**	**293**	**ug/kg**	**NJ**
	115866	**Triphenyl Phosphate**	**54.3**	**ug/kg**	**NJ**
	***3008001**	**Unknown 01**	**145**	**ug/kg**	**NJ**
	***3008002**	**Unknown 02**	**2250**	**ug/kg**	**NJ**
	***3008003**	**Unknown 03**	**429**	**ug/kg**	**NJ**
	***3008004**	**Unknown 04**	**73.7**	**ug/kg**	**NJ**

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ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: August 13, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Organic Analysis of Samples from the Upper Columbia River Lake Roosevelt/Mines Sites. Case: 29440 SDG: J0EN6

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1134
TDN: 1050
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 20 soil samples collected from the above referenced site has been completed. The samples were analyzed for Pest/PCB in accordance with the USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Organic Analyses (OLM04.2) by Envirosystems, Inc. of Columbia, MD.

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the USEPA CLP SOW for Organic Analysis (OLM04.2), the USEPA CLP National Functional Guidelines for Organic Data Review (10/99) and the Region 10 Guidelines for CLP Data Review.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

All of the samples met the method and technical (40 CFR 136) required holding times. The Holding Times Summary listing the pertinent collection, extraction, and analysis dates is attached at the end of this validation report.

Instrument Performance - Acceptable

The GC system met the SOW specified technical acceptance criteria prior to sample analyses, i.e., GC performance checks, retention times, and calibrations. The system remained stable throughout the course of analyses. Instrument blanks were all clean and there were no indications of carry-over.

Initial Calibrations - Acceptable

One Pest/PCB initial calibration was performed. The initial calibration met the SOW technical acceptance criteria.

Continuing Calibration Verification (CCVs) Standards - Acceptable

All of the CCVs met the criteria for frequency of analysis, the retention time and the percent differences (%Ds) criteria.

Compound Quantitation and Detection Limits - Acceptable

All of the samples were analyzed at the contract required quantitation limits (CRQLs). Target compounds that were detected at concentrations less than the CRQLs were qualified as estimated, "J". All of the reported results were adjusted for sample amounts analyzed.

Blanks - Acceptable

No target analytes were detected in any of the method or instrument blanks.

Analytical Sequence - Acceptable

All of the standards, blanks, samples, and QC samples were analyzed in accordance with the SOW specified analytical sequence.

Surrogate Spikes - Acceptable

All of the Pest/PCB surrogate spike recoveries met the applicable QC criteria (30-150%) with the following exception:

Sample J0EP2 had a high recovery (196%) for decachlorobiphenyl on the RTXCLP column due to matrix interference. None of the data were qualified on this basis.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) - Acceptable

Pest/PCB sample J0EP5 was utilized for MS/MSD analyses. The criteria for frequency of analysis, recoveries and RPDs were met.

Sample Clean-up - Acceptable

The pesticide florisil cartridge and GPC calibration checks met the criteria for frequency of analysis and recovery with the following exception:

Endrin had a recovery of 117% in the GPC calibration check which was above the upper QC limit of 110%. Sample results were not affected and therefore, none of the data were qualified on this basis.

Compound Identification

Single component pesticides and aroclors were qualified as follows: where %Ds (between two column concentrations) >30% but ≤60% - detected results were qualified as estimated, "J"; %Ds >60% with concentrations >CRQL - results were qualified as tentatively identified at the estimated concentration , "JN"; %Ds >60% with concentrations <CRQL - results were qualified as non-detects, "U", at the CRQL; %Ds >400% - results were qualified as non-detects with raised quantitation limit if >CRQL.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 560. Two (0.36%) were qualified as estimated, "J", because the analyte concentrations were below the CRQL. All other data points were qualified as non-detected, "U".

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

Data Qualifiers

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
JN	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

Holding Time Summary - Case 29440 SDG: J0EN6

Sample Number	Collection Date	VTSR*	Pest/PCB Extraction	Pest/PCB Analysis
J0EN6	6/20/01	6/22/01	6/27/01	7/10/01
J0EN7	6/20/01	6/22/01	6/27/01	7/10/01
J0EN8	6/20/01	6/22/01	6/27/01	7/10/01
J0EN9	6/20/01	6/22/01	6/27/01	7/10/01
J0EP0	6/20/01	6/22/01	6/27/01	7/10/01
J0EP1	6/20/01	6/22/01	6/27/01	7/10/01
J0EP2	6/20/01	6/22/01	6/27/01	7/10/01
J0EP3	6/20/01	6/22/01	6/27/01	7/10/01
J0EP4	6/20/01	6/22/01	6/27/01	7/10/01
J0EP5	6/20/01	6/22/01	6/27/01	7/10/01
J0EP6	6/20/01	6/22/01	6/27/01	7/10/01
J0EP7	6/20/01	6/22/01	6/27/01	7/10/01
J0EP8	6/20/01	6/22/01	6/27/01	7/10/01
J0EP9	6/20/01	6/22/01	6/27/01	7/10/01
J0EQ0	6/20/01	6/22/01	6/27/01	7/10/01
J0EQ2	6/20/01	6/22/01	6/27/01	7/10/01
J0EQ3	6/20/01	6/22/01	6/27/01	7/10/01
J0EQ4	6/20/01	6/22/01	6/27/01	7/10/01
J0EQ7	6/20/01	6/22/01	6/27/01	7/10/01
J0EQ8	6/20/01	6/22/01	6/27/01	7/10/01

*VTSR - Verified time of sample receipt in the laboratory.

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEN6

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061576

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 2 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 9.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.4	U
72-55-9	4,4'-DDE	3.4	U
72-20-8	Endrin	3.4	U
33213-65-9	Endosulfan II	3.4	U
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	3.4	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	3.4	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEN7

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061577

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 10 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.7	U
72-55-9	4,4'-DDE	3.7	U
72-20-8	Endrin	3.7	U
33213-65-9	Endosulfan II	3.7	U
72-54-8	4,4'-DDD	3.7	U
1031-07-8	Endosulfan sulfate	3.7	U
50-29-3	4,4'-DDT	3.7	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.7	U
7421-93-4	Endrin aldehyde	3.7	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	74	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	37	U
11096-82-5	Aroclor-1260	37	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEN8

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061578

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 8 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.9 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.6	U
72-55-9	4,4'-DDE	3.6	U
72-20-8	Endrin	3.6	U
33213-65-9	Endosulfan II	3.6	U
72-54-8	4,4'-DDD	3.6	U
1031-07-8	Endosulfan sulfate	3.6	U
50-29-3	4,4'-DDT	3.6	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.6	U
7421-93-4	Endrin aldehyde	3.6	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	73	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEN9

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061579

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 26 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	2.3	U
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	2.3	U
1024-57-3	Heptachlor epoxide	2.3	U
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.5	U
72-55-9	4,4'-DDE	4.5	U
72-20-8	Endrin	4.5	U
33213-65-9	Endosulfan II	4.5	U
72-54-8	4,4'-DDD	4.5	U
1031-07-8	Endosulfan sulfate	4.5	U
50-29-3	4,4'-DDT	4.5	U
72-43-5	Methoxychlor	23	U
53494-70-5	Endrin ketone	4.5	U
7421-93-4	Endrin aldehyde	4.5	U
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	2.3	U
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	45	U
11104-28-2	Aroclor-1221	91	U
11141-16-5	Aroclor-1232	45	U
53469-21-9	Aroclor-1242	45	U
12672-29-6	Aroclor-1248	45	U
11097-69-1	Aroclor-1254	45	U
11096-82-5	Aroclor-1260	45	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEP0

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061580

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 40 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.8	U
319-85-7	beta-BHC	2.8	U
319-86-8	delta-BHC	2.8	U
58-89-9	gamma-BHC (Lindane)	2.8	U
76-44-8	Heptachlor	2.8	U
309-00-2	Aldrin	2.8	U
1024-57-3	Heptachlor epoxide	2.8	U
959-98-8	Endosulfan I	2.8	U
60-57-1	Dieldrin	5.5	U
72-55-9	4,4'-DDE	5.5	U
72-20-8	Endrin	5.5	U
33213-65-9	Endosulfan II	5.5	U
72-54-8	4,4'-DDD	5.5	U
1031-07-8	Endosulfan sulfate	5.5	U
50-29-3	4,4'-DDT	5.5	U
72-43-5	Methoxychlor	28	U
53494-70-5	Endrin ketone	5.5	U
7421-93-4	Endrin aldehyde	5.5	U
5103-71-9	alpha-Chlordane	2.8	U
5103-74-2	gamma-Chlordane	2.8	U
8001-35-2	Toxaphene	280	U
12674-11-2	Aroclor-1016	55	U
11104-28-2	Aroclor-1221	110	U
11141-16-5	Aroclor-1232	55	U
53469-21-9	Aroclor-1242	55	U
12672-29-6	Aroclor-1248	55	U
11097-69-1	Aroclor-1254	55	U
11096-82-5	Aroclor-1260	55	U

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FORM I PEST. OLM04.2

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEP1

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061581

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 17 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	4.0	U
72-55-9	4,4'-DDE	4.0	U
72-20-8	Endrin	4.0	U
33213-65-9	Endosulfan II	4.0	U
72-54-8	4,4'-DDD	4.0	U
1031-07-8	Endosulfan sulfate	4.0	U
50-29-3	4,4'-DDT	4.0	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	4.0	U
7421-93-4	Endrin aldehyde	4.0	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	40	U
11104-28-2	Aroclor-1221	81	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	40	U
11096-82-5	Aroclor-1260	40	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEP2

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061582

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 24 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.2	U
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.3	U
72-55-9	4,4'-DDE	4.3	U
72-20-8	Endrin	4.3	U
33213-65-9	Endosulfan II	4.3	U
72-54-8	4,4'-DDD	4.3	U
1031-07-8	Endosulfan sulfate	4.3	U
50-29-3	4,4'-DDT	4.1	J ~~P~~ Q
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.3	U
7421-93-4	Endrin aldehyde	4.3	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	43	U
11104-28-2	Aroclor-1221	88	U
11141-16-5	Aroclor-1232	43	U
53469-21-9	Aroclor-1242	43	U
12672-29-6	Aroclor-1248	43	U
11097-69-1	Aroclor-1254	43	U
11096-82-5	Aroclor-1260	43	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEP3

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061583

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 21 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.2	U
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.2	U
72-55-9	4,4'-DDE	4.2	U
72-20-8	Endrin	4.2	U
33213-65-9	Endosulfan II	4.2	U
72-54-8	4,4'-DDD	4.2	U
1031-07-8	Endosulfan sulfate	4.2	U
50-29-3	4,4'-DDT	4.2	U
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.2	U
7421-93-4	Endrin aldehyde	4.2	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	42	U
11104-28-2	Aroclor-1221	85	U
11141-16-5	Aroclor-1232	42	U
53469-21-9	Aroclor-1242	42	U
12672-29-6	Aroclor-1248	42	U
11097-69-1	Aroclor-1254	42	U
11096-82-5	Aroclor-1260	42	U

CH 8-9-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEP4

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061584

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 20 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	4.1	U
33213-65-9	Endosulfan II	4.1	U
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.1	U
7421-93-4	Endrin aldehyde	4.1	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	84	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	41	U
11096-82-5	Aroclor-1260	41	U

CP 8-5-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEP5

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061585

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 24 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.9 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.2	U
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.3	U
72-55-9	4,4'-DDE	4.3	U
72-20-8	Endrin	4.3	U
33213-65-9	Endosulfan II	4.3	U
72-54-8	4,4'-DDD	4.3	U
1031-07-8	Endosulfan sulfate	4.3	U
50-29-3	4,4'-DDT	4.3	U
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.3	U
7421-93-4	Endrin aldehyde	4.3	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	43	U
11104-28-2	Aroclor-1221	88	U
11141-16-5	Aroclor-1232	43	U
53469-21-9	Aroclor-1242	43	U
12672-29-6	Aroclor-1248	43	U
11097-69-1	Aroclor-1254	43	U
11096-82-5	Aroclor-1260	43	U

DR 8-9-01

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEP6

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061586

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 24 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.2	U
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.3	U
72-55-9	4,4'-DDE	4.3	U
72-20-8	Endrin	4.3	U
33213-65-9	Endosulfan II	4.3	U
72-54-8	4,4'-DDD	4.3	U
1031-07-8	Endosulfan sulfate	4.3	U
50-29-3	4,4'-DDT	4.3	U
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.3	U
7421-93-4	Endrin aldehyde	4.3	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	43	U
11104-28-2	Aroclor-1221	88	U
11141-16-5	Aroclor-1232	43	U
53469-21-9	Aroclor-1242	43	U
12672-29-6	Aroclor-1248	43	U
11097-69-1	Aroclor-1254	43	U
11096-82-5	Aroclor-1260	43	U

WP 8-9-01

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEP7

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061587

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 28 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.4	U
319-85-7	beta-BHC	2.4	U
319-86-8	delta-BHC	2.4	U
58-89-9	gamma-BHC (Lindane)	2.4	U
76-44-8	Heptachlor	2.4	U
309-00-2	Aldrin	2.4	U
1024-57-3	Heptachlor epoxide	2.4	U
959-98-8	Endosulfan I	2.4	U
60-57-1	Dieldrin	4.6	U
72-55-9	4,4'-DDE	4.6	U
72-20-8	Endrin	4.6	U
33213-65-9	Endosulfan II	4.6	U
72-54-8	4,4'-DDD	4.6	U
1031-07-8	Endosulfan sulfate	4.6	U
50-29-3	4,4'-DDT	3.9	J Q
72-43-5	Methoxychlor	24	U
53494-70-5	Endrin ketone	4.6	U
7421-93-4	Endrin aldehyde	4.6	U
5103-71-9	alpha-Chlordane	2.4	U
5103-74-2	gamma-Chlordane	2.4	U
8001-35-2	Toxaphene	240	U
12674-11-2	Aroclor-1016	46	U
11104-28-2	Aroclor-1221	93	U
11141-16-5	Aroclor-1232	46	U
53469-21-9	Aroclor-1242	46	U
12672-29-6	Aroclor-1248	46	U
11097-69-1	Aroclor-1254	46	U
11096-82-5	Aroclor-1260	46	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEP8

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061588

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 23 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 9.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.2	U
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.3	U
72-55-9	4,4'-DDE	4.3	U
72-20-8	Endrin	4.3	U
33213-65-9	Endosulfan II	4.3	U
72-54-8	4,4'-DDD	4.3	U
1031-07-8	Endosulfan sulfate	4.3	U
50-29-3	4,4'-DDT	4.3	U
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.3	U
7421-93-4	Endrin aldehyde	4.3	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	43	U
11104-28-2	Aroclor-1221	87	U
11141-16-5	Aroclor-1232	43	U
53469-21-9	Aroclor-1242	43	U
12672-29-6	Aroclor-1248	43	U
11097-69-1	Aroclor-1254	43	U
11096-82-5	Aroclor-1260	43	U

GP 8-9-01

FORM I PEST OLM04.2

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEP9

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061589

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 20 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	4.1	U
33213-65-9	Endosulfan II	4.1	U
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.1	U
7421-93-4	Endrin aldehyde	4.1	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	84	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	41	U
11096-82-5	Aroclor-1260	41	U

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEQ0

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061590

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 20 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	4.1	U
33213-65-9	Endosulfan II	4.1	U
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.1	U
7421-93-4	Endrin aldehyde	4.1	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	84	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	41	U
11096-82-5	Aroclor-1260	41	U

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FORM I PEST OLM04.2

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEQ2

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061591

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 9 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.6	U
72-55-9	4,4'-DDE	3.6	U
72-20-8	Endrin	3.6	U
33213-65-9	Endosulfan II	3.6	U
72-54-8	4,4'-DDD	3.6	U
1031-07-8	Endosulfan sulfate	3.6	U
50-29-3	4,4'-DDT	3.6	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.6	U
7421-93-4	Endrin aldehyde	3.6	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	74	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEQ3

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061592

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 4 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.4	U
72-55-9	4,4'-DDE	3.4	U
72-20-8	Endrin	3.4	U
33213-65-9	Endosulfan II	3.4	U
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	3.4	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	3.4	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	70	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

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1E
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEQ4

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061593

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 8 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.6	U
72-55-9	4,4'-DDE	3.6	U
72-20-8	Endrin	3.6	U
33213-65-9	Endosulfan II	3.6	U
72-54-8	4,4'-DDD	3.6	U
1031-07-8	Endosulfan sulfate	3.6	U
50-29-3	4,4'-DDT	3.6	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.6	U
7421-93-4	Endrin aldehyde	3.6	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	73	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U

OP 8-9-01

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEQ7

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061595

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 31 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.5	U
319-85-7	beta-BHC	2.5	U
319-86-8	delta-BHC	2.5	U
58-89-9	gamma-BHC (Lindane)	2.5	U
76-44-8	Heptachlor	2.5	U
309-00-2	Aldrin	2.5	U
1024-57-3	Heptachlor epoxide	2.5	U
959-98-8	Endosulfan I	2.5	U
60-57-1	Dieldrin	4.8	U
72-55-9	4,4'-DDE	4.8	U
72-20-8	Endrin	4.8	U
33213-65-9	Endosulfan II	4.8	U
72-54-8	4,4'-DDD	4.8	U
1031-07-8	Endosulfan sulfate	4.8	U
50-29-3	4,4'-DDT	4.8	U
72-43-5	Methoxychlor	25	U
53494-70-5	Endrin ketone	4.8	U
7421-93-4	Endrin aldehyde	4.8	U
5103-71-9	alpha-Chlordane	2.5	U
5103-74-2	gamma-Chlordane	2.5	U
8001-35-2	Toxaphene	250	U
12674-11-2	Aroclor-1016	48	U
11104-28-2	Aroclor-1221	97	U
11141-16-5	Aroclor-1232	48	U
53469-21-9	Aroclor-1242	48	U
12672-29-6	Aroclor-1248	48	U
11097-69-1	Aroclor-1254	48	U
11096-82-5	Aroclor-1260	48	U

8-9-01

FORM I PEST OLM04.2

1E
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JOEQ8

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EN6

Matrix: (soil/water) SOIL Lab Sample ID: 01061596

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 26 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/10/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	2.3	U
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	2.3	U
1024-57-3	Heptachlor epoxide	2.3	U
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.5	U
72-55-9	4,4'-DDE	4.5	U
72-20-8	Endrin	4.5	U
33213-65-9	Endosulfan II	4.5	U
72-54-8	4,4'-DDD	4.5	U
1031-07-8	Endosulfan sulfate	4.5	U
50-29-3	4,4'-DDT	4.5	U
72-43-5	Methoxychlor	23	U
53494-70-5	Endrin ketone	4.5	U
7421-93-4	Endrin aldehyde	4.5	U
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	2.3	U
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	45	U
11104-28-2	Aroclor-1221	91	U
11141-16-5	Aroclor-1232	45	U
53469-21-9	Aroclor-1242	45	U
12672-29-6	Aroclor-1248	45	U
11097-69-1	Aroclor-1254	45	U
11096-82-5	Aroclor-1260	45	U

8-9-01

FORM I PEST. OLMO 4.2

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: August 13, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Organic Analysis of Samples from the Upper Columbia River Lake Roosevelt/Mines Sites. Case: 29440 SDG: J0EQ6

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1138
TDN: 1050
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 20 soil samples collected from the above referenced site has been completed. The samples were analyzed for Pest/PCB in accordance with the USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Organic Analyses (OLM04.2) by Envirosystems, Inc. of Columbia, MD.

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the USEPA CLP SOW for Organic Analysis (OLM04.2), the USEPA CLP National Functional Guidelines for Organic Data Review (10/99) and the Region 10 Guidelines for CLP Data Review.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

All of the samples met the method and technical (40 CFR 136) required holding times with the exception of samples J0ET3, J0ET4 and J0ET5. These samples were extracted 15 days from the sample collection date which only slightly exceeded the suggested technical holding time of 14 days for soils. None of the data were qualified on this basis. The Holding Times Summary listing the pertinent collection, extraction, and analysis dates is attached at the end of this validation report.

Instrument Performance - Acceptable

The GC system met the SOW specified technical acceptance criteria prior to sample analyses, i.e., GC performance checks, retention times, and calibrations. The system remained stable throughout the course of analyses. Instrument blanks were all clean and there were no indications of carry-over.

Initial Calibrations - Acceptable

One Pest/PCB initial calibration was performed. The initial calibration met the SOW technical acceptance criteria.

Continuing Calibration Verification (CCVs) Standards - Acceptable

All of the CCVs met the criteria for frequency of analysis, the retention time and the percent differences (%Ds) criteria.

Compound Quantitation and Detection Limits - Acceptable

All of the samples were analyzed at the contract required quantitation limits (CRQLs). Target compounds that were detected at concentrations less than the CRQLs were qualified as estimated, "J". All of the reported results were adjusted for sample amounts analyzed.

Blanks - Acceptable

No target analytes were detected in any of the method or instrument blanks.

Analytical Sequence - Acceptable

All of the standards, blanks, samples, and QC samples were analyzed in accordance with the SOW specified analytical sequence.

Surrogate Spikes - Acceptable

All of the Pest/PCB surrogate spike recoveries met the applicable QC criteria (30-150%).

Matrix Spike/Matrix Spike Duplicate (MS/MSD) - Acceptable

Pest/PCB sample J0EQ6 was utilized for MS/MSD analyses. The criteria for frequency of analysis, recoveries and RPDs were met.

Sample Clean-up - Acceptable

The pesticide florisil cartridge and GPC calibration checks met the criteria for frequency of analysis and recovery with the following exception:

Endrin had a recovery of 117% in one of the GPC calibration checks which was above the upper QC limit of 110%. Sample results were not affected and therefore, none of the data were qualified on this basis.

Compound Identification

Single component pesticides and aroclors were qualified as follows: where %Ds (between two column concentrations) >30% but ≤60% - detected results were qualified as estimated, "J"; %Ds >60% with concentrations >CRQL - results were qualified as tentatively identified at the estimated concentration , "JN"; %Ds >60% with concentrations <CRQL - results were qualified as non-detects, "U", at the CRQL; %Ds >400% - results were qualified as non-detects with raised quantitation limit if >CRQL.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 560. All data points were qualified as non-detected, "U".

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

Data Qualifiers

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
JN	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

Holding Time Summary - Case 29440 SDG: J0EQ6

Sample Number	Collection Date	VTSR*	Pest/PCB Extraction	Pest/PCB Analysis
J0EQ6	6/20/01	6/22/01	6/27/01	7/19/01
J0ET3	6/21/01	6/28/01	7/6/01	7/18/01
J0ET4	6/21/01	6/28/01	7/6/01	7/18/01
J0ET5	6/21/01	6/28/01	7/6/01	7/19/01
J0EW5	6/21/01	6/28/01	7/6/01	7/19/01
J0EZ4	6/23/01	6/28/01	7/6/01	7/19/01
J0EZ5	6/23/01	6/28/01	7/6/01	7/19/01
J0EZ6	6/24/01	6/28/01	7/6/01	7/19/01
J0F08	6/25/01	6/28/01	7/6/01	7/19/01
J0F09	6/25/01	6/28/01	7/6/01	7/19/01
J0F14	6/26/01	6/30/01	7/6/01	7/19/01
J0F16	6/26/01	6/30/01	7/6/01	7/19/01
J0F18	6/27/01	6/30/01	7/6/01	7/19/01
J0F19	6/27/01	6/30/01	7/6/01	7/19/01
J0FJ1	6/23/01	6/28/01	7/6/01	7/19/01
J0FJ2	6/23/01	6/28/01	7/6/01	7/19/01
J0FK0	6/23/01	6/28/01	7/6/01	7/19/01
J0FK4	6/26/01	6/28/01	7/6/01	7/19/01
J0FK5	6/26/01	6/28/01	7/6/01	7/19/01
J0FL2	6/28/01	6/30/01	7/6/01	7/19/01

*VTSR - Verified time of sample receipt in the laboratory.

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0EQ6

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EQ6

Matrix: (soil/water) SOIL Lab Sample ID: 01061594

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 78 decanted: (Y/N) N Date Received: 06/22/01

Extraction: (Type) SONC Date Extracted: 06/27/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	7.7	U
319-85-7	beta-BHC	7.7	U
319-86-8	delta-BHC	7.7	U
58-89-9	gamma-BHC (Lindane)	7.7	U
76-44-8	Heptachlor	7.7	U
309-00-2	Aldrin	7.7	U
1024-57-3	Heptachlor epoxide	7.7	U
959-98-8	Endosulfan I	7.7	U
60-57-1	Dieldrin	15	U
72-55-9	4,4'-DDE	15	U
72-20-8	Endrin	15	U
33213-65-9	Endosulfan II	15	U
72-54-8	4,4'-DDD	15	U
1031-07-8	Endosulfan sulfate	15	U
50-29-3	4,4'-DDT	15	U
72-43-5	Methoxychlor	77	U
53494-70-5	Endrin ketone	15	U
7421-93-4	Endrin aldehyde	15	U
5103-71-9	alpha-Chlordane	7.7	U
5103-74-2	gamma-Chlordane	7.7	U
8001-35-2	Toxaphene	770	U
12674-11-2	Aroclor-1016	150	U
11104-28-2	Aroclor-1221	300	U
11141-16-5	Aroclor-1232	150	U
53469-21-9	Aroclor-1242	150	U
12672-29-6	Aroclor-1248	150	U
11097-69-1	Aroclor-1254	150	U
11096-82-5	Aroclor-1260	150	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0ET3

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EQ6

Matrix: (soil/water) SOIL Lab Sample ID: 01061675

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 7 decanted: (Y/N) N Date Received: 06/28/01

Extraction: (Type) SONC Date Extracted: 07/06/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/18/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.5	U
72-55-9	4,4'-DDE	3.5	U
72-20-8	Endrin	3.5	U
33213-65-9	Endosulfan II	3.5	U
72-54-8	4,4'-DDD	3.5	U
1031-07-8	Endosulfan sulfate	3.5	U
50-29-3	4,4'-DDT	3.5	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.5	U
7421-93-4	Endrin aldehyde	3.5	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	72	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U

8-13-01

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0ET4

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EQ6

Matrix: (soil/water) SOIL Lab Sample ID: 01061676

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 11 decanted: (Y/N) N Date Received: 06/28/01

Extraction: (Type) SONC Date Extracted: 07/06/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/18/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.7	U
72-55-9	4,4'-DDE	3.7	U
72-20-8	Endrin	3.7	U
33213-65-9	Endosulfan II	3.7	U
72-54-8	4,4'-DDD	3.7	U
1031-07-8	Endosulfan sulfate	3.7	U
50-29-3	4,4'-DDT	3.7	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.7	U
7421-93-4	Endrin aldehyde	3.7	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	75	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	37	U
11096-82-5	Aroclor-1260	37	U

8-13-01

FORM I PEST OLM04.2

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0ET5

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EQ6

Matrix: (soil/water) SOIL Lab Sample ID: 01061677

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 9 decanted: (Y/N) N Date Received: 06/28/01

Extraction: (Type) SONC Date Extracted: 07/06/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.6	U
72-55-9	4,4'-DDE	3.6	U
72-20-8	Endrin	3.6	U
33213-65-9	Endosulfan II	3.6	U
72-54-8	4,4'-DDD	3.6	U
1031-07-8	Endosulfan sulfate	3.6	U
50-29-3	4,4'-DDT	3.6	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.6	U
7421-93-4	Endrin aldehyde	3.6	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	74	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U

8-13-01

FORM I PEST OLM04.2

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0EW5

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EQ6

Matrix: (soil/water) SOIL Lab Sample ID: 01061678

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 22 decanted: (Y/N) N Date Received: 06/28/01

Extraction: (Type) SONC Date Extracted: 07/06/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.2	U
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.2	U
72-55-9	4,4'-DDE	4.2	U
72-20-8	Endrin	4.2	U
33213-65-9	Endosulfan II	4.2	U
72-54-8	4,4'-DDD	4.2	U
1031-07-8	Endosulfan sulfate	4.2	U
50-29-3	4,4'-DDT	4.2	U
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.2	U
7421-93-4	Endrin aldehyde	4.2	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	42	U
11104-28-2	Aroclor-1221	86	U
11141-16-5	Aroclor-1232	42	U
53469-21-9	Aroclor-1242	42	U
12672-29-6	Aroclor-1248	42	U
11097-69-1	Aroclor-1254	42	U
11096-82-5	Aroclor-1260	42	U

CR 8-13-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0EZ4

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EQ6

Matrix: (soil/water) SOIL Lab Sample ID: 01061679

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 25 decanted: (Y/N) N Date Received: 06/28/01

Extraction: (Type) SONC Date Extracted: 07/06/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	2.3	U
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	2.3	U
1024-57-3	Heptachlor epoxide	2.3	U
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.4	U
72-55-9	4,4'-DDE	4.4	U
72-20-8	Endrin	4.4	U
33213-65-9	Endosulfan II	4.4	U
72-54-8	4,4'-DDD	4.4	U
1031-07-8	Endosulfan sulfate	4.4	U
50-29-3	4,4'-DDT	4.4	U
72-43-5	Methoxychlor	23	U
53494-70-5	Endrin ketone	4.4	U
7421-93-4	Endrin aldehyde	4.4	U
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	2.3	U
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	44	U
11104-28-2	Aroclor-1221	89	U
11141-16-5	Aroclor-1232	44	U
53469-21-9	Aroclor-1242	44	U
12672-29-6	Aroclor-1248	44	U
11097-69-1	Aroclor-1254	44	U
11096-82-5	Aroclor-1260	44	U

CP 8-13-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0EZ5

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EQ6

Matrix: (soil/water) SOIL Lab Sample ID: 01061680

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 12 decanted: (Y/N) N Date Received: 06/28/01

Extraction: (Type) SONC Date Extracted: 07/06/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.7	U
72-55-9	4,4'-DDE	3.7	U
72-20-8	Endrin	3.7	U
33213-65-9	Endosulfan II	3.7	U
72-54-8	4,4'-DDD	3.7	U
1031-07-8	Endosulfan sulfate	3.7	U
50-29-3	4,4'-DDT	3.7	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.7	U
7421-93-4	Endrin aldehyde	3.7	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	76	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	37	U
11096-82-5	Aroclor-1260	37	U

OP 8-15-01

FORM I PEST

OLM04.2

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0EZ6

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EQ6

Matrix: (soil/water) SOIL Lab Sample ID: 01061681

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 5 decanted: (Y/N) N Date Received: 06/28/01

Extraction: (Type) SONC Date Extracted: 07/06/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.5	U
72-55-9	4,4'-DDE	3.5	U
72-20-8	Endrin	3.5	U
33213-65-9	Endosulfan II	3.5	U
72-54-8	4,4'-DDD	3.5	U
1031-07-8	Endosulfan sulfate	3.5	U
50-29-3	4,4'-DDT	3.5	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.5	U
7421-93-4	Endrin aldehyde	3.5	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	71	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U

8-13-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0FJ1

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EQ6

Matrix: (soil/water) SOIL Lab Sample ID: 01061684

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 17 decanted: (Y/N) N Date Received: 06/28/01

Extraction: (Type) SONC Date Extracted: 07/06/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	4.0	U
72-55-9	4,4'-DDE	4.0	U
72-20-8	Endrin	4.0	U
33213-65-9	Endosulfan II	4.0	U
72-54-8	4,4'-DDD	4.0	U
1031-07-8	Endosulfan sulfate	4.0	U
50-29-3	4,4'-DDT	4.0	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	4.0	U
7421-93-4	Endrin aldehyde	4.0	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	40	U
11104-28-2	Aroclor-1221	81	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	40	U
11096-82-5	Aroclor-1260	40	U

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FORM I PEST. OLM04.2

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0FJ2

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EQ6

Matrix: (soil/water) SOIL Lab Sample ID: 01061685

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 29 decanted: (Y/N) N Date Received: 06/28/01

Extraction: (Type) SONC Date Extracted: 07/06/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.4	U
319-85-7	beta-BHC	2.4	U
319-86-8	delta-BHC	2.4	U
58-89-9	gamma-BHC (Lindane)	2.4	U
76-44-8	Heptachlor	2.4	U
309-00-2	Aldrin	2.4	U
1024-57-3	Heptachlor epoxide	2.4	U
959-98-8	Endosulfan I	2.4	U
60-57-1	Dieldrin	4.6	U
72-55-9	4,4'-DDE	4.6	U
72-20-8	Endrin	4.6	U
33213-65-9	Endosulfan II	4.6	U
72-54-8	4,4'-DDD	4.6	U
1031-07-8	Endosulfan sulfate	4.6	U
50-29-3	4,4'-DDT	4.6	U
72-43-5	Methoxychlor	24	U
53494-70-5	Endrin ketone	4.6	U
7421-93-4	Endrin aldehyde	4.6	U
5103-71-9	alpha-Chlordane	2.4	U
5103-74-2	gamma-Chlordane	2.4	U
8001-35-2	Toxaphene	240	U
12674-11-2	Aroclor-1016	46	U
11104-28-2	Aroclor-1221	94	U
11141-16-5	Aroclor-1232	46	U
53469-21-9	Aroclor-1242	46	U
12672-29-6	Aroclor-1248	46	U
11097-69-1	Aroclor-1254	46	U
11096-82-5	Aroclor-1260	46	U

8-13-01

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0FK0

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EQ6

Matrix: (soil/water) SOIL Lab Sample ID: 01061686

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 20 decanted: (Y/N) N Date Received: 06/28/01

Extraction: (Type) SONC Date Extracted: 07/06/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.9 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	4.1	U
33213-65-9	Endosulfan II	4.1	U
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.1	U
7421-93-4	Endrin aldehyde	4.1	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	84	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	41	U
11096-82-5	Aroclor-1260	41	U

DP 8-15-01

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0FL2

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EQ6

Matrix: (soil/water) SOIL Lab Sample ID: 01061723

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 27 decanted: (Y/N) N Date Received: 06/30/01

Extraction: (Type) SONC Date Extracted: 07/06/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	2.3	U
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	2.3	U
1024-57-3	Heptachlor epoxide	2.3	U
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.5	U
72-55-9	4,4'-DDE	4.5	U
72-20-8	Endrin	4.5	U
33213-65-9	Endosulfan II	4.5	U
72-54-8	4,4'-DDD	4.5	U
1031-07-8	Endosulfan sulfate	4.5	U
50-29-3	4,4'-DDT	4.5	U
72-43-5	Methoxychlor	23	U
53494-70-5	Endrin ketone	4.5	U
7421-93-4	Endrin aldehyde	4.5	U
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	2.3	U
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	45	U
11104-28-2	Aroclor-1221	92	U
11141-16-5	Aroclor-1232	45	U
53469-21-9	Aroclor-1242	45	U
12672-29-6	Aroclor-1248	45	U
11097-69-1	Aroclor-1254	45	U
11096-82-5	Aroclor-1260	45	U

CR 8-13-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0FJ1

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EQ6

Matrix: (soil/water) SOIL Lab Sample ID: 01061684

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 17 decanted: (Y/N) N Date Received: 06/28/01

Extraction: (Type) SONC Date Extracted: 07/06/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	4.0	U
72-55-9	4,4'-DDE	4.0	U
72-20-8	Endrin	4.0	U
33213-65-9	Endosulfan II	4.0	U
72-54-8	4,4'-DDD	4.0	U
1031-07-8	Endosulfan sulfate	4.0	U
50-29-3	4,4'-DDT	4.0	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	4.0	U
7421-93-4	Endrin aldehyde	4.0	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	40	U
11104-28-2	Aroclor-1221	81	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	40	U
11096-82-5	Aroclor-1260	40	U

OP 8-13-01

FORM I PEST. OLM04.2

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0FJ2

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EQ6

Matrix: (soil/water) SOIL Lab Sample ID: 01061685

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 29 decanted: (Y/N) N Date Received: 06/28/01

Extraction: (Type) SONC Date Extracted: 07/06/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.4	U
319-85-7	beta-BHC	2.4	U
319-86-8	delta-BHC	2.4	U
58-89-9	gamma-BHC (Lindane)	2.4	U
76-44-8	Heptachlor	2.4	U
309-00-2	Aldrin	2.4	U
1024-57-3	Heptachlor epoxide	2.4	U
959-98-8	Endosulfan I	2.4	U
60-57-1	Dieldrin	4.6	U
72-55-9	4,4'-DDE	4.6	U
72-20-8	Endrin	4.6	U
33213-65-9	Endosulfan II	4.6	U
72-54-8	4,4'-DDD	4.6	U
1031-07-8	Endosulfan sulfate	4.6	U
50-29-3	4,4'-DDT	4.6	U
72-43-5	Methoxychlor	24	U
53494-70-5	Endrin ketone	4.6	U
7421-93-4	Endrin aldehyde	4.6	U
5103-71-9	alpha-Chlordane	2.4	U
5103-74-2	gamma-Chlordane	2.4	U
8001-35-2	Toxaphene	240	U
12674-11-2	Aroclor-1016	46	U
11104-28-2	Aroclor-1221	94	U
11141-16-5	Aroclor-1232	46	U
53469-21-9	Aroclor-1242	46	U
12672-29-6	Aroclor-1248	46	U
11097-69-1	Aroclor-1254	46	U
11096-82-5	Aroclor-1260	46	U

8-13-01

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0FK0

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EQ6

Matrix: (soil/water) SOIL Lab Sample ID: 01061686

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 20 decanted: (Y/N) N Date Received: 06/28/01

Extraction: (Type) SONC Date Extracted: 07/06/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.9 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	4.1	U
33213-65-9	Endosulfan II	4.1	U
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.1	U
7421-93-4	Endrin aldehyde	4.1	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	84	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	41	U
11096-82-5	Aroclor-1260	41	U

8-15-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0FL2

Lab Name: ENVIROSYSTEMS Contract: 68W99023

Lab Code: ENVSYS Case No.: 29440 SAS No.: SDG No.: J0EQ6

Matrix: (soil/water) SOIL Lab Sample ID: 01061723

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 27 decanted: (Y/N) N Date Received: 06/30/01

Extraction: (Type) SONC Date Extracted: 07/06/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	2.3	U
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	2.3	U
1024-57-3	Heptachlor epoxide	2.3	U
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.5	U
72-55-9	4,4'-DDE	4.5	U
72-20-8	Endrin	4.5	U
33213-65-9	Endosulfan II	4.5	U
72-54-8	4,4'-DDD	4.5	U
1031-07-8	Endosulfan sulfate	4.5	U
50-29-3	4,4'-DDT	4.5	U
72-43-5	Methoxychlor	23	U
53494-70-5	Endrin ketone	4.5	U
7421-93-4	Endrin aldehyde	4.5	U
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	2.3	U
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	45	U
11104-28-2	Aroclor-1221	92	U
11141-16-5	Aroclor-1232	45	U
53469-21-9	Aroclor-1242	45	U
12672-29-6	Aroclor-1248	45	U
11097-69-1	Aroclor-1254	45	U
11096-82-5	Aroclor-1260	45	U

DR 8-13-01

MEMORANDUM

DATE November 6, 2001

TO Leatta Dahlhoff, Project Manager, E & E, Seattle, WA

FROM Mark Woodke, Chemist, E & E, Seattle, WA

SUBJ **Organic Data Summary Check, Upper Columbia River Mines/Mills ESI, Stevens and Pend Oreille Counties, Washington**

REF TDD 01-02-0028 PAN 001281.0073 01SR

The data quality summary check of 28 solid samples collected from the Upper Columbia River Mines/Mills ESI, Stevens and Pend Oreille Counties, Washington has been completed Semivolatile Organic Compound and Chlorinated Pesticide/Polychlorinated Biphenyl compound analysis (EPA CLP SOW OLM04 2) was performed by Laucks Testing Laboratory, Seattle, Washington

The samples were numbered

J0KC1	J0KC2	J0KC3	J0KC4	J0KC5	J0KC6
J0KC7	J0KC8	J0KC9	J0KD1	J0KD2	J0KD3
J0KD4	J0KH0	J0KH1	J0KH2	J0KH3	J0KH4
J0KH5	J0KH6	J0KH7	J0KJ1	J0KJ2	J0KJ3
J0KJ4	J0KK8	J0KK9	J0KL0		

No discrepancies were noted

All sample results originally qualified "JQ" by the laboratory to indicate a result less than the CRQL were changed to "JQK" by the secondary reviewer to indicate an estimated quantity less than the CRQL with an unknown bias

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

October 30, 2001

Reply To
Attn Of OEA-095

MEMORANDUM

SUBJECT: Data validation report for the semi-volatile organic compound (SVOC) and pesticide/polychlorinated biphenyl (Pest/PCB) analysis of samples from the Upper Columbia River/Mines Sites ESI. Case: 29730 SDGs: J0KC1, J0KH1

FROM: Chris Pace, Chemist, OEA

TO: Monica Tonel, SAM, OEC

CC: Mark Woodke, Ecology and Environment, Inc.
Bruce Woods, CLP PO, OEA
Ginna Grepo-Grove, Chemist, OEA

The quality assurance (QA) review of 28 soil samples collected from the above referenced site has been completed. Six samples were analyzed for SVOCs (all in SDG J0KH1) and twenty three for Pest/PCBs in accordance with the USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Organic Analyses (OLM04.2) by Laucks Testing Laboratory of Seattle, WA.

The following sample numbers were validated in this report:

SDG: J0KC1

J0KC1	J0KC3	J0KC5	J0KC7	J0KC9	J0KD2	J0KD4
J0KC2	J0KC4	J0KC6	J0KC8	J0KD1	J0KD3	J0KH0

SDG: J0KH1

J0KH1*	J0KH3	J0KH5	J0KH7*	J0KJ2	J0KJ4*	J0KK9
J0KH2*	J0KH4	J0KH6*	J0KJ1	J0KJ3	J0KK8*	J0KL0

* Analyzed for SVOCs

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control (QC) Specifications outlined in the USEPA CLP SOW for Organic Analysis (OLM04.2) and the USEPA CLP National Functional Guidelines for Organic Data Review (10/99)

The conclusions presented herein are based on the information provided for the review.

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Holding Time - Acceptable

The samples were collected between 9/10 and 9/13/01. All samples extracted within 9 days of sample collection and analyzed within 12 days of extraction. All of the samples met the technical required holding times for all analyses.

Instrument Performance Check - Acceptable

All of the GC/MS instrument performance checks met the ion abundance criteria. All of the GC instrument performance checks met the resolution, percent differences (%Ds) and percent breakdown criteria.

Initial Calibrations - Acceptable

One SVOC and one Pest/PCB initial calibration was performed. The initial calibrations met the SOW acceptance criteria for the percent relative standard deviations (%RSDs) and response factors for all target compounds and surrogates.

Continuing Calibration Verification (CCV)

All of the SVOC and Pest/PCB CCV checks met the criteria for frequency of analysis, minimum response factors and %Ds with the following exceptions:

- The %Ds for the following SVOC compounds exceeded the QC limits:

Date/Time of Analysis	Compound	%D	Qualifier Detect/Non-detect
9/26/01 (0935)	benzaldehyde	-36	J/UJ
	2,2'-oxybis(1-chloropropane)	-37	J/UJ
	hexachlorobutadiene	-27	J/UJ
	hexachlorocyclopentadiene	-61	J/UJ
	atrazine	-55	J/UJ
	benzo(k)fluoranthene	27	J/none
	2,4,6-tribromophenol (surr)	43	none

Quantitation Limits

SVOC samples J0KH1, J0KH2, J0KH6 and J0KH7 required medium level preparation due to sample matrix. The quantitation limits (QLs) were based on the lowest standard concentration analyzed in the initial calibrations. Target compounds that were detected at concentrations less than the contract required quantitation limits (CRQLs) were qualified as estimated, "J". All of the reported results were adjusted for sample amounts analyzed

Blanks

Bis(2-ethylhexyl)phthalate was detected below the CRQL in the SVOC blanks SBLKL3and SBLKL4. Bis(2-ethylhexyl)phthalate detected in the samples at concentrations less than ten times the value in their associated blank were qualified as non-detects, "U"

No target Pest/PCBs were detected in the method or instrument blanks.

Analytical Sequence - Acceptable

All of the standards, blanks, samples, and QC samples were analyzed in accordance with the SOW specified analytical sequence.

Surrogate Spikes - Acceptable

All of the SVOC and Pest/PCB surrogate spike recoveries met the applicable QC criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) - Acceptable

SVOC samples J0KJ4 (low level preparation) and J0KH7 (medium level preparation) were utilized for MS/MSD analyses. The criteria for frequency of analysis, recoveries and relative percent differences (RPDs) were met.

Pest/PCB samples J0KD2 (SDG J0KC1) and J0KH3 (SDG J0KH1) were utilized for MS/MSD analyses. The criteria for frequency of analysis, recoveries and relative percent differences (RPDs) were met.

Internal Standards - Acceptable

The acceptance criteria for internal standards (IS) are ±30 seconds for retention time (RT) shifts and -50% to +100% of the IS area as compared to the IS RT and area of the daily continuing calibration standard. All of the SVOC GC/MS analyses met the IS area and RT shift criteria.

Compound Identification

All of the compounds detected in the SVOC GC/MS analyses were within the retention time windows, met the USEPA spectral matching criteria and were judged to be acceptable.

Single component pesticides and Aroclors are qualified as follows: where %Ds (between two column concentrations) >30% but ≤60% - detected results were qualified as estimated, "J"; %Ds >60% with concentrations >CRQL - results were qualified as tentatively identified at the estimated concentration, "JN"; %Ds >60% with concentrations <CRQL - results were qualified as non-detects, "U"; %Ds >400% - results were qualified as non-detects with raised quantitation limit if >CRQL. In cases where target compounds were less than the CRQL and the result of chromatographic "noise" or interference the results are qualified as non-detected, "U".

Tentatively Identified Compounds

Peaks that were detected in the samples at areas >10% of the internal standards and were not part of the target compound lists were identified as tentatively identified compounds (TICs). TICs that were both found in the sample and in the associated method blank(s) were qualified as unusable, "R." Peaks that were identified as common laboratory contaminants, solvent preservatives, column bleed or aldol condensation products were qualified as unusable, "R" The rest of the peaks identified as TICs were qualified "NJ", tentatively identified at an estimated concentration.

SVOC samples J0KH1, J0KH2, J0KH6 and J0KH7 had chromatographic peaks present that were unaccounted for on the Form I TIC and/or reported as alkanes. See laboratory contact.

Laboratory Contact

The laboratory was contacted concerning the following·

SVOC samples J0KH1, J0KH2, J0KH6 and J0KH7 had chromatographic peaks present that were unaccounted for on the Form I TIC and/or reported as alkanes. Each of these samples had chromatograms displaying hydrocarbon type patterns. The reported TICs failed to account for many of the later eluting peaks on the hydrocarbon "hump". It was requested that the laboratory provide resubmitted raw data and CLP Forms concerning this issue.

Resolution: The laboratory responded by FAX (hard copy to follow) stating the HP Chemstation software appears to have problems with samples that have severe matrix problems and the only solution is to manually integrate and process. They then state that Lauck's purchased software for CLP inhibits them from manually processing and producing the actual CLP Forms and EDD.

Overall Assessment

The total number of SVOC data points was 390. Four (1.0%) were qualified as non-detected due to blank contamination. Thirty three (8.5%) were qualified as estimated due to values reported below the CRQL and continuing calibrations. The total number of Pest/PCB data points was 644. Two (0.3%) were qualified as non-detected due values reported above the CRQL with high %Ds between analytical columns and chromatographic interference.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW (with the exception of the TIC reporting difficulties discussed above). The data, as qualified, are acceptable and can be used for all purposes.

Data Qualifiers

U	-	The analyte was not detected at or above the reported result
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample
JN	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

EPA SAMPLE NO.

J0KH1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name. LAUCKS TESTING LABORATORIES Contract 68-W-00-075

Lab Code: LAUCKS Case No 29730 SAS No.. SDG No.: J0KH1

Matrix (soil/water) SOIL Lab Sample ID· 0109281-01

Sample wt/vol. 1 (g/mL) G Lab File ID: L0926016 D

Level· (low/med) MED Date Received 09/17/01

% Moisture 5 Decanted: (Y/N) N Date Extracted: 09/21/01

Concentrated Extract Volume 500 (µL) Date Analyzed: 09/26/01

Injection Volume 2 (µL) Dilution Factor: 1 0

GPC Cleanup· (Y/N) Y pH: 6.2 Extraction: (Type) PFEX

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(µg/L or µg/Kg) UG/KG	Q
100-52-7	Benzaldehyde	11000	U JK
108-95-2	Phenol	11000	U
111-44-4	bis(2-Chloroethyl)ether	11000	U
95-57-8	2-Chlorophenol	11000	U
95-48-7	2-Methylphenol	11000	U
108-60-1	2,2´-oxybis(1-Chloropropane)	11000	U JK
98-86-2	Acetophenone	11000	U
106-44-5	4-Methylphenol	11000	U
621-64-7	N-Nitroso-di-n-propylamine	11000	U
67-72-1	Hexachloroethane	11000	U
98-95-3	Nitrobenzene	11000	U
78-59-1	Isophorone	11000	U
88-75-5	2-Nitrophenol	11000	U
105-67-9	2,4-Dimethylphenol	11000	U
111-91-1	Bis(2-Chloroethoxy)methane	11000	U
120-83-2	2,4-Dichlorophenol	11000	U
91-20-3	Naphthalene	11000	U
106-47-8	4-Chloroaniline	11000	U
87-68-3	Hexachlorobutadiene	11000	U JK
105-60-2	Caprolactam	11000	U
59-50-7	4-Chloro-3-methylphenol	11000	U
91-57-6	2-Methylnaphthalene	11000	U
77-47-4	Hexachlorocyclopentadiene	11000	U JK
88-06-2	2,4,6-Trichlorophenol	11000	U
95-95-4	2,4,5-Trichlorophenol	26000	U
92-52-4	1,1´-Biphenyl	11000	U
91-58-7	2-Chloronaphthalene	11000	U
88-74-4	2-Nitroaniline	26000	U
131-11-3	Dimethylphthalate	11000	U
606-20-2	2,6-Dinitrotoluene	11000	U
208-96-8	Acenaphthylene	11000	U
99-09-2	3-Nitroaniline	26000	U
83-32-9	Acenaphthene	11000	U

10-25-01

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO

J0KH1

Lab Name: LAUCKS TESTING LABORATORIES Contract 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No. SDG No.: J0KH1

Matrix (soil/water) SOIL Lab Sample ID: 0109281-01

Sample wt/vol: 1 (g/mL) G Lab File ID: L0926016.D

Level. (low/med) MED Date Received: 09/17/01

% Moisture: 5 Decanted: (Y/N) N Date Extracted: 09/21/01

Concentrated Extract Volume. 500 (µL) Date Analyzed: 09/26/01

Injection Volume: 2 (µL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.2 Extraction: (Type) PFEX

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(µg/L or µg/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	26000	U
100-02-7	4-Nitrophenol	26000	U
132-64-9	Dibenzofuran	11000	U
121-14-2	2,4-Dinitrotoluene	11000	U
84-66-2	Diethylphthalate	11000	U
86-73-7	Fluorene	11000	U
7005-72-3	4-Chlorophenyl-phenylether	11000	U
100-01-6	4-Nitroaniline	26000	U
534-52-1	4,6-Dinitro-2-methylphenol	26000	U
86-30-6	N-Nitrosodiphenylamine (1)	11000	U
101-55-3	4-Bromophenyl-phenylether	11000	U
118-74-1	Hexachlorobenzene	11000	U
1912-24-9	Atrazine	11000	U JK
87-86-5	Pentachlorophenol	26000	U
85-01-8	Phenanthrene	11000	U
120-12-7	Anthracene	11000	U
86-74-8	Carbazole	11000	U
84-74-2	Di-n-butylphthalate	11000 ~~6900~~	~~JB~~ U
206-44-0	Fluoranthene	11000	U
129-00-0	Pyrene	11000	U
85-68-7	Butylbenzylphthalate	11000	U
91-94-1	3,3'-Dichlorobenzidine	11000	U
56-55-3	Benzo(a)anthracene	11000	U
218-01-9	Chrysene	11000	U
117-81-7	Bis(2-Ethylhexyl)phthalate	11000 ~~2500~~	~~JB~~ U
117-84-0	Di-n-octylphthalate	11000	U
205-99-2	Benzo(b)fluoranthene	11000	U
207-08-9	Benzo(k)fluoranthene	11000	U
50-32-8	Benzo(a)pyrene	11000	U
193-39-5	Indeno(1,2,3-cd)pyrene	11000	U
53-70-3	Dibenzo(a,h)anthracene	11000	U
191-24-2	Benzo(g,h,i)perylene	11000	U

(1) Cannot be separated from Diphenylamine

CP 10-25-01

EPA SAMPLE NO.

J0KH1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: LAUCKS TESTING LABORATORIES Contract. 68-W-00-075

Lab Code LAUCKS Case No : 29730 SAS No : SDG No.: J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-01

Sample wt/vol. 1 (g/mL) G Lab File ID: L0926016.D

Level· (low/med) MED Date Received: 09/17/01

% Moisture: 5 Decanted.(Y/N) N Date Extracted: 09/21/01

Concentrated Extract Volume: 500 (µL) Date Analyzed: 09/26/01

Injection Volume· 2 (µL) Dilution Factor: 1.0

GPC Cleanup. (Y/N) Y pH: 6.2 Extraction: (Type) PFEX

Number TICs found: 30 CONCENTRATION UNITS:

(µg/L or µg/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1	unknown	5.87	14000	J N
2.	unknown	5.98	5100	J
3.	unknown	6.02	5400	J
4.	unknown	6.05	5200	J
5.	unknown	6.37	5500	J
6.	unknown	6.40	4200	J
7.	unknown substituted benzene	6.57	6800	J
8.	unknown substituted cyclohex	6.64	6900	J
9. 81983-71-3	Cyclohexane, 1,1-dimethyl-2-	6.78	6800	JN
10.	unknown	6.81	4000	J N
11.	unknown	6.84	3600	J
12.	unknown	6.88	5600	J
13. 493-02-7	Naphthalene, decahydro-, tra	6.93	5800	JN
14.	unknown	7 10	6700	J N
15.	unknown	7.11	5800	J
16.	unknown	7.13	4300	J
17	unknown	7.40	6600	J
18.	unknown	7.46	27000	J
19	unknown substituted benzene	7 50	6300	J
20. 4175-53-5	1H-Indene, 2,3-dihydro-1,3-d	7.67	4500	JN
21.	unknown	7 69	12000	J N
22.	unknown substituted benzene	7 81	5700	J
23.	unknown	12 28	4500	J
24.	unknown	12.39	13000	J
25.	unknown	13.71	6400	J
26.	unknown	14.00	3500	J
27 62725-46-6	1,6-Methanonaphthalene-1,9(2	14.48	6600	JN
28	unknown	14.81	12000	J N
~~29~~	~~unknown~~ blank contamination (BC)	~~25 01~~	~~25000~~	~~J~~ R
~~30.~~	~~unknown~~	~~25 02~~	~~12000~~	~~J~~ R

CP 10-25-01

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KH2

Lab Name. LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No : 29730 SAS No.: SDG No.· J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-02

Sample wt/vol: 1 (g/mL) G Lab File ID: L0926017.D

Level: (low/med) MED Date Received· 09/17/01

% Moisture: 3 Decanted: (Y/N) N Date Extracted: 09/21/01

Concentrated Extract Volume: 500 (μL) Date Analyzed: 09/26/01

Injection Volume: 2 (μL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.3 Extraction: (Type) PFEX

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(μg/L or μg/Kg) UG/KG	Q
100-52-7	Benzaldehyde	10000	U JK
108-95-2	Phenol	10000	U
111-44-4	bis(2-Chloroethyl)ether	10000	U
95-57-8	2-Chlorophenol	10000	U
95-48-7	2-Methylphenol	10000	U
108-60-1	2,2´-oxybis(1-Chloropropane)	10000	U JK
98-86-2	Acetophenone	10000	U
106-44-5	4-Methylphenol	10000	U
621-64-7	N-Nitroso-di-n-propylamine	10000	U
67-72-1	Hexachloroethane	10000	U
98-95-3	Nitrobenzene	10000	U
78-59-1	Isophorone	10000	U
88-75-5	2-Nitrophenol	10000	U
105-67-9	2,4-Dimethylphenol	10000	U
111-91-1	Bis(2-Chloroethoxy)methane	10000	U
120-83-2	2,4-Dichlorophenol	10000	U
91-20-3	Naphthalene	10000	U
106-47-8	4-Chloroaniline	10000	U
87-68-3	Hexachlorobutadiene	10000	U JK
105-60-2	Caprolactam	10000	U
59-50-7	4-Chloro-3-methylphenol	10000	U
91-57-6	2-Methylnaphthalene	10000	U
77-47-4	Hexachlorocyclopentadiene	10000	U JK
88-06-2	2,4,6-Trichlorophenol	10000	U
95-95-4	2,4,5-Trichlorophenol	26000	U
92-52-4	1,1´-Biphenyl	10000	U
91-58-7	2-Chloronaphthalene	10000	U
88-74-4	2-Nitroaniline	26000	U
131-11-3	Dimethylphthalate	10000	U
606-20-2	2,6-Dinitrotoluene	10000	U
208-96-8	Acenaphthylene	10000	U
99-09-2	3-Nitroaniline	26000	U
83-32-9	Acenaphthene	10000	U

CP 10-25-01

EPA SAMPLE NO

J0KH2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name. LAUCKS TESTING LABORATORIES Contract· 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-02

Sample wt/vol· 1 (g/mL) G Lab File ID: L0926017.D

Level: (low/med) MED Date Received: 09/17/01

% Moisture: 3 Decanted: (Y/N) N Date Extracted. 09/21/01

Concentrated Extract Volume: 500 (μL) Date Analyzed: 09/26/01

Injection Volume: 2 (μL) Dilution Factor: 1.0

GPC Cleanup. (Y/N) Y pH: 6.3 Extraction: (Type) PFEX

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(μg/L or μg/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	26000	U
100-02-7	4-Nitrophenol	26000	U
132-64-9	Dibenzofuran	10000	U
121-14-2	2,4-Dinitrotoluene	10000	U
84-66-2	Diethylphthalate	10000	U
86-73-7	Fluorene	10000	U
7005-72-3	4-Chlorophenyl-phenylether	10000	U
100-01-6	4-Nitroaniline	26000	U
534-52-1	4,6-Dinitro-2-methylphenol	26000	U
86-30-6	N-Nitrosodiphenylamine (1)	10000	U
101-55-3	4-Bromophenyl-phenylether	10000	U
118-74-1	Hexachlorobenzene	10000	U
1912-24-9	Atrazine	10000	U JK
87-86-5	Pentachlorophenol	26000	U
85-01-8	Phenanthrene	10000	U
120-12-7	Anthracene	10000	U
86-74-8	Carbazole	10000	U
84-74-2	Di-n-butylphthalate	10000	U
206-44-0	Fluoranthene	10000	U
129-00-0	Pyrene	10000	U
85-68-7	Butylbenzylphthalate	10000	U
91-94-1	3,3´-Dichlorobenzidine	10000	U
56-55-3	Benzo(a)anthracene	10000	U
218-01-9	Chrysene	10000	U
117-81-7	Bis(2-Ethylhexyl)phthalate	10000 ~~3200~~	~~JB~~ U
117-84-0	Di-n-octylphthalate	10000	U
205-99-2	Benzo(b)fluoranthene	10000	U
207-08-9	Benzo(k)fluoranthene	10000	U
50-32-8	Benzo(a)pyrene	10000	U
193-39-5	Indeno(1,2,3-cd)pyrene	10000	U
53-70-3	Dibenzo(a,h)anthracene	10000	U
191-24-2	Benzo(g,h,i)perylene	10000	U

(1) Cannot be separated from Diphenylamine

CP 10-25-01

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

J0KH2

Lab Name: LAUCKS TESTING LABORATORIES Contract. 68-W-00-075

Lab Code: LAUCKS Case No : 29730 SAS No SDG No.. J0KH1

Matrix. (soil/water) SOIL Lab Sample ID: 0109281-02

Sample wt/vol: 1 (g/mL) G Lab File ID: L0926017.D

Level: (low/med) MED Date Received: 09/17/01

% Moisture: 3 Decanted:(Y/N) N Date Extracted: 09/21/01

Concentrated Extract Volume: 500 (µL) Date Analyzed: 09/26/01

Injection Volume: 2 (µL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.3 Extraction: (Type) PFEX

Number TICs found: 10 CONCENTRATION UNITS:

(µg/L or µg/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.	unknown	8.71	3200	J N
2.	unknown	9.38	3100	J
3.	unknown	9.50	3500	J
4.	unknown	9.86	2600	J
5.	unknown	9.95	3500	J
6.	unknown	10.10	4000	J
7.	unknown	10.21	6600	J
8.	unknown	10.51	5400	J
9.	unknown	11.03	8300	J
~~10.~~	~~unknown~~ BC	~~24.96~~	~~21000~~	~~JB~~ R

CP 10-25-01

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO

J0KH6

Lab Name. LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code. LAUCKS Case No.: 29730 SAS No.: SDG No . J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-06

Sample wt/vol· 1 (g/mL) G Lab File ID: L0926018.D

Level: (low/med) MED Date Received: 09/17/01

% Moisture· 1 Decanted: (Y/N) N Date Extracted: 09/21/01

Concentrated Extract Volume: 500 (µL) Date Analyzed: 09/26/01

Injection Volume: 2 (µL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 Extraction: (Type) PFEX

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(µg/L or µg/Kg) UG/KG	Q
100-52-7	Benzaldehyde	10000	U JK
108-95-2	Phenol	10000	U
111-44-4	bis(2-Chloroethyl)ether	10000	U
95-57-8	2-Chlorophenol	10000	U
95-48-7	2-Methylphenol	10000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10000	U JK
98-86-2	Acetophenone	10000	U
106-44-5	4-Methylphenol	10000	U
621-64-7	N-Nitroso-di-n-propylamine	10000	U
67-72-1	Hexachloroethane	10000	U
98-95-3	Nitrobenzene	10000	U
78-59-1	Isophorone	10000	U
88-75-5	2-Nitrophenol	10000	U
105-67-9	2,4-Dimethylphenol	10000	U
111-91-1	Bis(2-Chloroethoxy)methane	10000	U
120-83-2	2,4-Dichlorophenol	10000	U
91-20-3	Naphthalene	10000	U
106-47-8	4-Chloroaniline	10000	U
87-68-3	Hexachlorobutadiene	10000	U JK
105-60-2	Caprolactam	10000	U
59-50-7	4-Chloro-3-methylphenol	10000	U
91-57-6	2-Methylnaphthalene	10000	U
77-47-4	Hexachlorocyclopentadiene	10000	U JK
88-06-2	2,4,6-Trichlorophenol	10000	U
95-95-4	2,4,5-Trichlorophenol	25000	U
92-52-4	1,1'-Biphenyl	10000	U
91-58-7	2-Chloronaphthalene	10000	U
88-74-4	2-Nitroaniline	25000	U
131-11-3	Dimethylphthalate	10000	U
606-20-2	2,6-Dinitrotoluene	10000	U
208-96-8	Acenaphthylene	10000	U
99-09-2	3-Nitroaniline	25000	U
83-32-9	Acenaphthene	10000	U

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EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

J0KH6

Lab Name: LAUCKS TESTING LABORATORIES Contract. 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-06

Sample wt/vol. 1 (g/mL) G Lab File ID: L0926018.D

Level: (low/med) MED Date Received: 09/17/01

% Moisture: 1 Decanted: (Y/N) N Date Extracted: 09/21/01

Concentrated Extract Volume: 500 (µL) Date Analyzed: 09/26/01

Injection Volume: 2 (µL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 Extraction: (Type) PFEX

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	25000	U
100-02-7	4-Nitrophenol	25000	U
132-64-9	Dibenzofuran	10000	U
121-14-2	2,4-Dinitrotoluene	10000	U
84-66-2	Diethylphthalate	10000	U
86-73-7	Fluorene	10000	U
7005-72-3	4-Chlorophenyl-phenylether	10000	U
100-01-6	4-Nitroaniline	25000	U
534-52-1	4,6-Dinitro-2-methylphenol	25000	U
86-30-6	N-Nitrosodiphenylamine (1)	10000	U
101-55-3	4-Bromophenyl-phenylether	10000	U
118-74-1	Hexachlorobenzene	10000	U
1912-24-9	Atrazine	10000	U JK
87-86-5	Pentachlorophenol	25000	U
85-01-8	Phenanthrene	10000	U
120-12-7	Anthracene	10000	U
86-74-8	Carbazole	10000	U
84-74-2	Di-n-butylphthalate	10000	U
206-44-0	Fluoranthene	10000	U
129-00-0	Pyrene	10000	U
85-68-7	Butylbenzylphthalate	10000	U
91-94-1	3,3'-Dichlorobenzidine	10000	U
56-55-3	Benzo(a)anthracene	10000	U
218-01-9	Chrysene	10000	U
117-81-7	Bis(2-Ethylhexyl)phthalate	10000	U
117-84-0	Di-n-octylphthalate	10000	U
205-99-2	Benzo(b)fluoranthene	10000	U
207-08-9	Benzo(k)fluoranthene	10000	U
50-32-8	Benzo(a)pyrene	10000	U
193-39-5	Indeno(1,2,3-cd)pyrene	10000	U
53-70-3	Dibenzo(a,h)anthracene	10000	U
191-24-2	Benzo(g,h,i)perylene	10000	U

(1) Cannot be separated from Diphenylamine

CP, 10-25-01

EPA SAMPLE NO.

J0KH6

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No : 29730 SAS No.: SDG No.: J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-06

Sample wt/vol: 1 (g/mL) G Lab File ID: L0926018.D

Level: (low/med) MED Date Received: 09/17/01

% Moisture: 1 Decanted: (Y/N) N Date Extracted: 09/21/01

Concentrated Extract Volume: 500 (µL) Date Analyzed: 09/26/01

Injection Volume: 2 (µL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 Extraction: (Type) PFEX

Number TICs found: 24 CONCENTRATION UNITS:

(µg/L or µg/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.	unknown	12.05	2500	JN
2. 66563-30-2	Bacchotricuneatin c	12.07	5500	JN
3.	unknown	13.08	4700	JN
4.	unknown	13.24	2400	JN
5. 57-10-3	Hexadecanoic acid	13.86	16000	JN
6. 74685-33-9	3-Eicosene, (E)-	14.16	11000	JN
7.	unknown	14.31	7500	JN
8.	unknown substituted cyclohex	14.58	13000	J
9.	unknown	14.60	11000	J
10. 112-88-9	1-Octadecene	14.76	12000	JN
11.	unknown	14.78	40000	JN
12.	unknown	14.93	14000	J
13.	unknown	14.96	24000	J
14. 112-80-1	Oleic Acid	14.98	5200	JN
15.	unknown	14.99	23000	JN
16. 1795-17-1	Dodecylcyclohexane	15.19	13000	JN
17.	unknown	15.32	6900	JN
18.	unknown	15.36	7200	JN
19. 6006-33-3	n-Tridecylcyclohexane	15.76	8500	JN
20.	unknown	15.89	4200	JN
21.	unknown	16.08	5800	JN
22.	10-Heneicosene (c,t)	16.11	4800	JN
23.	unknown BC	16.63	15000	JN
~~24.~~	~~unknown~~	~~24.97~~	~~18000~~	~~JB~~ R

CP 10-25-01

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KH7

Lab Name. LAUCKS TESTING LABORATORIES Contract. 68-W-00-075

Lab Code: LAUCKS Case No.. 29730 SAS No.: SDG No.. J0KH1

Matrix. (soil/water) SOIL Lab Sample ID. 0109281-07

Sample wt/vol: 1 (g/mL) G Lab File ID· L0926019.D

Level: (low/med) MED Date Received: 09/17/01

% Moisture: 2 Decanted:(Y/N) N Date Extracted: 09/21/01

Concentrated Extract Volume: 500 (μL) Date Analyzed: 09/26/01

Injection Volume: 2 (μL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Extraction: (Type) PFEX

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(μg/L or μg/Kg) UG/KG	Q
100-52-7	Benzaldehyde	10000	U JK
108-95-2	Phenol	10000	U
111-44-4	bis(2-Chloroethyl)ether	10000	U
95-57-8	2-Chlorophenol	10000	U
95-48-7	2-Methylphenol	10000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10000	U JK
98-86-2	Acetophenone	10000	U
106-44-5	4-Methylphenol	10000	U
621-64-7	N-Nitroso-di-n-propylamine	10000	U
67-72-1	Hexachloroethane	10000	U
98-95-3	Nitrobenzene	10000	U
78-59-1	Isophorone	10000	U
88-75-5	2-Nitrophenol	10000	U
105-67-9	2,4-Dimethylphenol	10000	U
111-91-1	Bis(2-Chloroethoxy)methane	10000	U
120-83-2	2,4-Dichlorophenol	10000	U
91-20-3	Naphthalene	10000	U
106-47-8	4-Chloroaniline	10000	U
87-68-3	Hexachlorobutadiene	10000	U JK
105-60-2	Caprolactam	10000	U
59-50-7	4-Chloro-3-methylphenol	10000	U
91-57-6	2-Methylnaphthalene	10000	U
77-47-4	Hexachlorocyclopentadiene	10000	U JK
88-06-2	2,4,6-Trichlorophenol	10000	U
95-95-4	2,4,5-Trichlorophenol	26000	U
92-52-4	1,1'-Biphenyl	10000	U
91-58-7	2-Chloronaphthalene	10000	U
88-74-4	2-Nitroaniline	26000	U
131-11-3	Dimethylphthalate	10000	U
606-20-2	2,6-Dinitrotoluene	10000	U
208-96-8	Acenaphthylene	10000	U
99-09-2	3-Nitroaniline	26000	U
83-32-9	Acenaphthene	10000	U

CP 10-25-01

204

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

J0KH7

Lab Name. LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code. LAUCKS Case No 29730 SAS No.: SDG No.: J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-07

Sample wt/vol: 1 (g/mL) G Lab File ID: L0926019.D

Level: (low/med) MED Date Received: 09/17/01

% Moisture. 2 Decanted: (Y/N) N Date Extracted: 09/21/01

Concentrated Extract Volume: 500 (µL) Date Analyzed: 09/26/01

Injection Volume: 2 (µL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Extraction: (Type) PFEX

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(µg/L or µg/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	26000	U
100-02-7	4-Nitrophenol	26000	U
132-64-9	Dibenzofuran	10000	U
121-14-2	2,4-Dinitrotoluene	10000	U
84-66-2	Diethylphthalate	10000	U
86-73-7	Fluorene	10000	U
7005-72-3	4-Chlorophenyl-phenylether	10000	U
100-01-6	4-Nitroaniline	26000	U
534-52-1	4,6-Dinitro-2-methylphenol	26000	U
86-30-6	N-Nitrosodiphenylamine (1)	10000	U
101-55-3	4-Bromophenyl-phenylether	10000	U
118-74-1	Hexachlorobenzene	10000	U
1912-24-9	Atrazine	10000	U JK
87-86-5	Pentachlorophenol	26000	U
85-01-8	Phenanthrene	10000	U
120-12-7	Anthracene	10000	U
86-74-8	Carbazole	10000	U
84-74-2	Di-n-butylphthalate	10000	U
206-44-0	Fluoranthene	10000	U
129-00-0	Pyrene	10000	U
85-68-7	Butylbenzylphthalate	10000	U
91-94-1	3,3'-Dichlorobenzidine	10000	U
56-55-3	Benzo(a)anthracene	10000	U
218-01-9	Chrysene	10000	U
117-81-7	Bis(2-Ethylhexyl)phthalate	10000	U
117-84-0	Di-n-octylphthalate	10000	U
205-99-2	Benzo(b)fluoranthene	10000	U
207-08-9	Benzo(k)fluoranthene	10000	U
50-32-8	Benzo(a)pyrene	10000	U
193-39-5	Indeno(1,2,3-cd)pyrene	10000	U
53-70-3	Dibenzo(a,h)anthracene	10000	U
191-24-2	Benzo(g,h,i)perylene	10000	U

(1) Cannot be separated from Diphenylamine

VP 10-25-01

1G

EPA SAMPLE NO.

J0KH7

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No : 29730 SAS No. SDG No.: J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-07

Sample wt/vol: 1 (g/mL) G Lab File ID: L0926019.D

Level: (low/med) MED Date Received: 09/17/01

% Moisture: 2 Decanted: (Y/N) N Date Extracted: 09/21/01

Concentrated Extract Volume: 500 (µL) Date Analyzed: 09/26/01

Injection Volume: 2 (µL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Extraction: (Type) PFEX

Number TICs found: 5 CONCENTRATION UNITS:

(µg/L or µg/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.	unknown	8.05	6900	J N
2.	unknown	10.60	7800	J N
3.	unknown	12.58	2600	J N
~~4.~~	~~unknown~~	~~25.00~~	~~22000~~	~~JB~~ R
~~5.~~	~~unknown~~	~~25.02~~	~~5300~~	~~JB~~ R

CP 10-25-01

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO

J0KJ4

Lab Name LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code LAUCKS Case No.: 29730 SAS No. SDG No.: J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-11

Sample wt/vol. 30 (g/mL) G Lab File ID: L0926012.D

Level: (low/med) LOW Date Received: 09/17/01

% Moisture: 9 Decanted: (Y/N) N Date Extracted: 09/19/01

Concentrated Extract Volume: 500 (µL) Date Analyzed: 09/26/01

Injection Volume. 2 (µL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.9 Extraction: (Type) PFEX

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
100-52-7	Benzaldehyde	360	U JK
108-95-2	Phenol	360	U
111-44-4	bis(2-Chloroethyl)ether	360	U
95-57-8	2-Chlorophenol	360	U
95-48-7	2-Methylphenol	360	U
108-60-1	2,2'-oxybis(1-Chloropropane)	360	U JK
98-86-2	Acetophenone	360	U
106-44-5	4-Methylphenol	360	U
621-64-7	N-Nitroso-di-n-propylamine	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
88-75-5	2-Nitrophenol	360	U
105-67-9	2,4-Dimethylphenol	360	U
111-91-1	Bis(2-Chloroethoxy)methane	360	U
120-83-2	2,4-Dichlorophenol	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
87-68-3	Hexachlorobutadiene	360	U JK
105-60-2	Caprolactam	360	U
59-50-7	4-Chloro-3-methylphenol	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U JK
88-06-2	2,4,6-Trichlorophenol	360	U
95-95-4	2,4,5-Trichlorophenol	910	U
92-52-4	1,1'-Biphenyl	360	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	910	U
131-11-3	Dimethylphthalate	360	U
606-20-2	2,6-Dinitrotoluene	360	U
208-96-8	Acenaphthylene	360	U
99-09-2	3-Nitroaniline	910	U
83-32-9	Acenaphthene	360	U

10-25-01

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO

J0KJ4

Lab Name: LAUCKS TESTING LABORATORIES Contract 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-11

Sample wt/vol: 30 (g/mL) G Lab File ID: L0926012 D

Level: (low/med) LOW Date Received: 09/17/01

% Moisture: 9 Decanted: (Y/N) N Date Extracted: 09/19/01

Concentrated Extract Volume: 500 (µL) Date Analyzed: 09/26/01

Injection Volume: 2 (µL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.9 Extraction: (Type) PFEX

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	910	U
100-02-7	4-Nitrophenol	910	U
132-64-9	Dibenzofuran	360	U
121-14-2	2,4-Dinitrotoluene	360	U
84-66-2	Diethylphthalate	360	U
86-73-7	Fluorene	360	U
7005-72-3	4-Chlorophenyl-phenylether	360	U
100-01-6	4-Nitroaniline	910	U
534-52-1	4,6-Dinitro-2-methylphenol	910	U
86-30-6	N-Nitrosodiphenylamine (1)	360	U
101-55-3	4-Bromophenyl-phenylether	360	U
118-74-1	Hexachlorobenzene	360	U
1912-24-9	Atrazine	360	U JK
87-86-5	Pentachlorophenol	910	U
85-01-8	Phenanthrene	360	U
120-12-7	Anthracene	360	U
86-74-8	Carbazole	360	U
84-74-2	Di-n-butylphthalate	360	U
206-44-0	Fluoranthene	360	U
129-00-0	Pyrene	360	U
85-68-7	Butylbenzylphthalate	360	U
91-94-1	3,3'-Dichlorobenzidine	360	U
56-55-3	Benzo(a)anthracene	360	U
218-01-9	Chrysene	360	U
117-81-7	Bis(2-Ethylhexyl)phthalate	360	U
117-84-0	Di-n-octylphthalate	360	U
205-99-2	Benzo(b)fluoranthene	360	U
207-08-9	Benzo(k)fluoranthene	360	U
50-32-8	Benzo(a)pyrene	360	U
193-39-5	Indeno(1,2,3-cd)pyrene	360	U
53-70-3	Dibenzo(a,h)anthracene	360	U
191-24-2	Benzo(g,h,i)perylene	360	U

(1) Cannot be separated from Diphenylamine

CP 10-25-01

EPA SAMPLE NO

J0KJ4

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No : SDG No : J0KH1

Matrix: (soil/water) SOIL Lab Sample ID 0109281-11

Sample wt/vol: 30 (g/mL) G Lab File ID. L0926012.D

Level: (low/med) LOW Date Received: 09/17/01

% Moisture. 9 Decanted (Y/N) N Date Extracted: 09/19/01

Concentrated Extract Volume. 500 (µL) Date Analyzed: 09/26/01

Injection Volume. 2 (µL) Dilution Factor. 1.0

GPC Cleanup: (Y/N) Y pH: 6.9 Extraction: (Type) PFEX

Number TICs found: 30 CONCENTRATION UNITS:
(µg/L or µg/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.	475-20-7	1,4-Methanoazulene, decahydr	10.10	760	JN
2		unknown	13.23	360	JN
3.	57-10-3	Hexadecanoic acid	13.87	610	JN
4.	38748-84-4	1,5,9-Cyclotetradecatriene,	14.02	410	JN
5.		unknown	14.32	630	JN
6.		unknown	14.60	370	JN
7.	60-33-3	9,12-Octadecadienoic acid (Z	14.93	580	JN
8.	112-80-1	Oleic Acid	14.96	1200	JN
9.	57-11-4	Octadecanoic acid	15.06	470	JN
10.	2136-70-1	Ethanol, 2-(tetradecyloxy)-	15.78	370	JN
11.		unknown	15.90	350	JN
12.	511-15-9	2-Phenanthrenol, 4b,5,6,7,8,	16.12	1100	JN
13.	506-12-7	Heptadecanoic acid	16.17	840	JN
14.		unknown	16.64	390	JN
15.	2363-71-5	Heneicosanoic acid	16.68	340	JN
16.	1740-19-8	1-Phenanthrenecarboxylic aci	16.82	1100	JN
17.	1740-19-8	1-Phenanthrenecarboxylic aci	16.84	910	JN
18.	112-85-6	Docosanoic acid	17.23	2000	JN
19.		unknown	17 80	710	JN
20.	18435-45-5	1-Nonadecene	17.97	580	JN
21	2363-71-5	Heneicosanoic acid	18.46	1300	JN
22.		9-Hexacosene	19.24	480	JN
23	124-25-4	Tetradecanal	20.03	510	JN
24		unknown	20.42	2300	JN
25.	4651-51-8	Ergost-5-en-3-ol, (3.beta)-	21 73	1600	JN
26	83-48-7	Stigmasterol	21 92	500	JN
27		unknown	22 45	5900	JN
28		unknown	23 74	2000	J
29		unknown BC	24 18	580	J
~~30.~~		~~unknown~~	~~25 00~~	~~950~~	~~JB~~ R

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Pesticides/PCBs:

The holding time to extraction is 5 days in water and 10 days in soil calculated from the VTSR The holding time from extraction to analysis is 40 days. All samples were extracted and analyzed within holding time.

Semi-Volatile Fraction:

Sample Analyses:
All samples in this SDG were extracted and analyzed in accordance with EPA CLP OLM04.2 SOW.

Samples J0KH1, J0KH2, J0KH6 and J0KH7 were extracted using a medium level procedure.

Continuing Calibration Standard Analyses:
Analysis of the continuing calibration standard performed on 9/26/01 yielded a %D value for benzo[k]fluoranthene that exceeded the control limit. Up to four semi-volatile compounds may fail to meet the control limits as long as these compounds have a minimum RRF greater than or equal to 0.010 and the percent differences must be within the inclusive range of +/- 40.0 percent. As these criteria were met, the continuing calibration is valid and no corrective action was taken.

MS/MSD Analyses:
MS/MSD analyses were performed on samples J0KJ4 (low level) and J0KH7 (medium level) All recoveries and RPD values were in control.

Tentatively Identified Compounds (TICs):
In accordance with the OLM04.2 SOW, 30 non-target organic compounds of greatest apparent concentrations are reported as TICs. A number of the extracts had TICs reported that were also target analytes. Per the memo from Terry Smith on 10/30/00, all TICs with a 85% or greater match have been reported. Alkanes were library searched in addition to the 30 TICs. Alkane TICs that were detected in these samples are tabulated below. All concentrations are in µg/Kg.

EpaSampID	CAS	Analyte	RT	EstConc
J0KJ4	629-78-7	Heptadecane	14.07	180
J0KJ4		unknown alkane	14 66	180
J0KJ4	646-31-1	Tetracosane	17 93	160
J0KJ4	646-31-1	Tetracosane	19 17	330
J0KJ4		unknown alkane	19 53	300
J0KJ4	629-94-7	Heneicosane	20 32	590
J0KK8	294-62-2	Cyclododecane	10.44	220
J0KK8	629-78-7	Heptadecane	12 07	250
J0KK8	295-65-8	Cyclohexadecane	13 34	710
J0KK8	629-78-7	Heptadecane	15 76	330

JN

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J0KK8	544-76-3	Hexadecane	16 81	1200
J0KK8	629-94-7	Heneicosane	17.34	300
J0KK8	629-97-0	Docosane	17 91	1700
J0KK8	112-95-8	Eicosane	19.15	1400
J0KK8	630-01-3	Hexacosane	20 32	720
J0KK8		unknown alkane	20.52	260
J0KK8	295-65-8	Cyclohexadecane	20.78	390
J0KK8	7390-81-0	Oxirane, hexadecyl-	21.37	530
J0KK8	630-01-3	Hexacosane	21 70	700
J0KH1		unknown alkane	6.95	4100
J0KH1		unknown alkane	7.35	15000
J0KH1		unknown alkane	7.37	2300
J0KH1		unknown alkane	7.41	4500
J0KH1		unknown alkane	7.78	7000
J0KH1		unknown alkane	7.84	3000
J0KH1		unknown alkane	8.09	11000
J0KH1	6044-71-9	Dodecane, 6-methyl-	8.22	7100
J0KH1		unknown alkane	8.71	4700
J0KH1	544-76-3	Hexadecane	10.27	3400
J0KH1		unknown alkane	11.07	3600
J0KH1	26429-11-8	Heptadecane, 4-methyl-	11.69	22000
J0KH1	1921-70-6	Pentadecane, 2,6,10,14-tetramethyl-	12.10	29000
J0KH1	54833-48-6	Heptadecane, 2,6,10,15-tetramethyl-	12.81	47000
J0KH1	629-78-7	Heptadecane	13.36	19000
J0KH1		unknown alkane	14.01	6200
J0KH1	593-45-3	Octadecane	14.03	2300
J0KH1	7098-22-8	Tetratetracontane	14.50	12000
J0KH1	112-95-8	Eicosane	14 60	46000
J0KH1	54833-48-6	Heptadecane, 2,6,10,15-tetramethyl-	15.40	7000
J0KH2		unknown alkane	8.97	3400
J0KH2	31295-56-4	Dodecane, 2,6,11-trimethyl-	9.59	6900
J0KH2		unknown alkane	9.80	5700
J0KH2	17312-62-8	Decane, 5-propyl-	10.29	31000
J0KH2		unknown alkane	10.44	4400
J0KH2		unknown alkane	10 60	17000
J0KH2		unknown alkane	11.01	30000
J0KH2	7098-21-7	Tritetracontane	11 10	30000
J0KH2	17312-82-2	Undecane, 4,6-dimethyl-	11.72	45000
J0KH2	1921-70-6	Pentadecane, 2,6,10,14-tetramethyl-	12 15	21000
J0KH2	7225-64-1	Heptadecane, 9-octyl-	14.65	23000
J0KH6	593-45-3	Octadecane	12 77	11000
J0KH6	629-92-5	Nonadecane	13 43	30000
J0KH6		unknown alkane	13 83	22000
J0KH6	112-95-8	Eicosane	14 05	51000

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J0KH6		unknown alkane	14 45	12000
J0KH6		unknown alkane	14 49	42000
J0KH6	629-94-7	Heneicosane	14 66	59000
J0KH6		unknown alkane	14 82	30000
J0KH6	55320-06-4	Heneicosane, 11-decyl-	14 89	22000
J0KH6	629-97-0	Docosane	15 25	16000
J0KH6	7098-22-8	Tetratetracontane	15 42	28000
J0KH6	7098-22-8	Tetratetracontane	15 57	19000
J0KH6	629-94-7	Heneicosane	15 79	15000
J0KH6		unknown alkane	15 99	20000
J0KH6	54105-66-7	Cyclohexane, undecyl-	16 33	15000
J0KH6	1560-88-9	Octadecane, 2-methyl-	16 80	27000
J0KH6	55282-14-9	Docosane, 9-butyl-	17 02	14000
J0KH6	14739-72-1	Heneicosane, 11-pentyl-	17 57	20000
J0KH6	13475-76-8	Docosane, 11-butyl-	18 18	39000
J0KH6	629-94-7	Heneicosane	18 81	12000
J0KH7	630-01-3	Hexacosane	18.93	20000

J1

Pesticide/PCB Fraction:

10-30

Sample Analyses:
All samples in this SDG were extracted and analyzed in accordance with EPA CLP OLM04.2 SOW.

Initial Calibration Standard Analyses:
Analyses of the initial calibration standards on the DB5 column yielded a %RSD value for alpha-BHC that exceeded the control limit of 25%, and a %RSD value for gamma-BHC (Lindane) that exceeded the control limit of 20%. However, two single component target analytes per column may exceed the 20% limit (25% limit for alpha-BHC and delta-BHC) as long as the %RSD is less than or equal to 30%. Since this criterion was met, the initial calibration standard analyses are compliant with EPA OLM04.2 SOW, and no further action was taken.

MS/MSD Analyses:
MS/MSD analyses were performed on sample J0KH3. All recoveries were within control limits

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KH3

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-03

Sample wt/vol: 30 (g/mL) G Lab File ID: A930109.d

% Moisture: 35 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/19/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/30/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.6	U
319-85-7	beta-BHC	2.6	U
319-86-8	delta-BHC	2.6	U
58-89-9	gamma-BHC (Lindane)	2.6	U
76-44-8	Heptachlor	2.6	U
309-00-2	Aldrin	2.6	U
1024-57-3	Heptachlor epoxide	2.6	U
959-98-8	Endosulfan I	2.6	U
60-57-1	Dieldrin	5.1	U
72-55-9	4,4´-DDE	5.1	U
72-20-8	Endrin	5.1	U
33213-65-9	Endosulfan II	5.1	U
72-54-8	4,4´-DDD	5.1	U
1031-07-8	Endosulfan sulfate	5.1	U
50-29-3	4,4´-DDT	5.1	U
72-43-5	Methoxychlor	26	U
53494-70-5	Endrin ketone	5.1	U
7421-93-4	Endrin aldehyde	5.1	U
5103-71-9	alpha-Chlordane	2.6	U
5103-74-2	gamma-Chlordane	2.6	U
8001-35-2	Toxaphene	260	U
12674-11-2	Aroclor-1016	51	U
11104-28-2	Aroclor-1221	100	U
11141-16-5	Aroclor-1232	51	U
53469-21-9	Aroclor-1242	51	U
12672-29-6	Aroclor-1248	51	U
11097-69-1	Aroclor-1254	51	U
11096-82-5	Aroclor-1260	51	U

MP 10-25-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KH4

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-04

Sample wt/vol: 30 (g/mL) G Lab File ID: A930115.d

% Moisture: 82 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/19/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/01/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	9.4	U
319-85-7	beta-BHC	9.4	U
319-86-8	delta-BHC	9.4	U
58-89-9	gamma-BHC (Lindane)	9.4	U
76-44-8	Heptachlor	9.4	U
309-00-2	Aldrin	9.4	U
1024-57-3	Heptachlor epoxide	9.4	U
959-98-8	Endosulfan I	9.4	U
60-57-1	Dieldrin	18	U
72-55-9	4,4'-DDE	18	U
72-20-8	Endrin	18	U
33213-65-9	Endosulfan II	18	U
72-54-8	4,4'-DDD	18	U
1031-07-8	Endosulfan sulfate	18	U
50-29-3	4,4'-DDT	18	U
72-43-5	Methoxychlor	94	U
53494-70-5	Endrin ketone	18	U
7421-93-4	Endrin aldehyde	18	U
5103-71-9	alpha-Chlordane	9.4	U
5103-74-2	gamma-Chlordane	9.4	U
8001-35-2	Toxaphene	940	U
12674-11-2	Aroclor-1016	180	U
11104-28-2	Aroclor-1221	370	U
11141-16-5	Aroclor-1232	180	U
53469-21-9	Aroclor-1242	180	U
12672-29-6	Aroclor-1248	180	U
11097-69-1	Aroclor-1254	180	U
11096-82-5	Aroclor-1260	180	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KH5

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-05

Sample wt/vol: 30 (g/mL) G Lab File ID: A930116.d

% Moisture: 62 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/19/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/01/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 6.9 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	4.5	U
319-85-7	beta-BHC	4.5	U
319-86-8	delta-BHC	4.5	U
58-89-9	gamma-BHC (Lindane)	4.5	U
76-44-8	Heptachlor	4.5	U
309-00-2	Aldrin	4.5	U
1024-57-3	Heptachlor epoxide	4.5	U
959-98-8	Endosulfan I	4.5	U
60-57-1	Dieldrin	8.7	U
72-55-9	4,4'-DDE	8.7	U
72-20-8	Endrin	8.7	U
33213-65-9	Endosulfan II	8.7	U
72-54-8	4,4'-DDD	8.7	U
1031-07-8	Endosulfan sulfate	8.7	U
50-29-3	4,4'-DDT	8.7	U
72-43-5	Methoxychlor	45	U
53494-70-5	Endrin ketone	8.7	U
7421-93-4	Endrin aldehyde	8.7	U
5103-71-9	alpha-Chlordane	4.5	U
5103-74-2	gamma-Chlordane	4.5	U
8001-35-2	Toxaphene	450	U
12674-11-2	Aroclor-1016	87	U
11104-28-2	Aroclor-1221	180	U
11141-16-5	Aroclor-1232	87	U
53469-21-9	Aroclor-1242	87	U
12672-29-6	Aroclor-1248	87	U
11097-69-1	Aroclor-1254	87	U
11096-82-5	Aroclor-1260	87	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KJ1

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-08

Sample wt/vol: 30 (g/mL) G Lab File ID: A930117.d

% Moisture: 15 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/19/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/01/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	3.9	U
72-55-9	4,4'-DDE	3.9	U
72-20-8	Endrin	3.9	U
33213-65-9	Endosulfan II	3.9	U
72-54-8	4,4'-DDD	3.9	U
1031-07-8	Endosulfan sulfate	3.9	U
50-29-3	4,4'-DDT	3.9	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	3.9	U
7421-93-4	Endrin aldehyde	3.9	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	39	U
11104-28-2	Aroclor-1221	79	U
11141-16-5	Aroclor-1232	39	U
53469-21-9	Aroclor-1242	39	U
12672-29-6	Aroclor-1248	39	U
11097-69-1	Aroclor-1254	39	U
11096-82-5	Aroclor-1260	39	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KJ2

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-09

Sample wt/vol: 30 (g/mL) G Lab File ID: A930118.d

% Moisture: 76 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/19/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/01/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	7.1	U
319-85-7	beta-BHC	7.1	U
319-86-8	delta-BHC	7.1	U
58-89-9	gamma-BHC (Lindane)	7.1	U
76-44-8	Heptachlor	7.1	U
309-00-2	Aldrin	7.1	U
1024-57-3	Heptachlor epoxide	7.1	U
959-98-8	Endosulfan I	7.1	U
60-57-1	Dieldrin	14	U
72-55-9	4,4'-DDE	14	U
72-20-8	Endrin	14	U
33213-65-9	Endosulfan II	14	U
72-54-8	4,4'-DDD	14	U
1031-07-8	Endosulfan sulfate	14	U
50-29-3	4,4'-DDT	14	U
72-43-5	Methoxychlor	71	U
53494-70-5	Endrin ketone	14	U
7421-93-4	Endrin aldehyde	14	U
5103-71-9	alpha-Chlordane	7.1	U
5103-74-2	gamma-Chlordane	7.1	U
8001-35-2	Toxaphene	710	U
12674-11-2	Aroclor-1016	140	U
11104-28-2	Aroclor-1221	280	U
11141-16-5	Aroclor-1232	140	U
53469-21-9	Aroclor-1242	140	U
12672-29-6	Aroclor-1248	140	U
11097-69-1	Aroclor-1254	140	U
11096-82-5	Aroclor-1260	140	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KJ3

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-10

Sample wt/vol: 30 (g/mL) G Lab File ID: A930119.d

% Moisture: 22 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/19/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/01/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.2	U
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.2	U
72-55-9	4,4´-DDE	4.2	U
72-20-8	Endrin	4.2	U
33213-65-9	Endosulfan II	4.2	U
72-54-8	4,4´-DDD	4.2	U
1031-07-8	Endosulfan sulfate	4.2	U
50-29-3	4,4´-DDT	4.2	U
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.2	U
7421-93-4	Endrin aldehyde	4.2	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	42	U
11104-28-2	Aroclor-1221	86	U
11141-16-5	Aroclor-1232	42	U
53469-21-9	Aroclor-1242	42	U
12672-29-6	Aroclor-1248	42	U
11097-69-1	Aroclor-1254	42	U
11096-82-5	Aroclor-1260	42	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KK9

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-13

Sample wt/vol: 30 (g/mL) G Lab File ID: A930121.d

% Moisture: 38 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/19/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/01/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 6.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.7	U
319-85-7	beta-BHC	2.7	U
319-86-8	delta-BHC	2.7	U
58-89-9	gamma-BHC (Lindane)	2.7	U
76-44-8	Heptachlor	2.7	U
309-00-2	Aldrin	2.7	U
1024-57-3	Heptachlor epoxide	2.7	U
959-98-8	Endosulfan I	2.7	U
60-57-1	Dieldrin	5.3	U
72-55-9	4,4'-DDE	5.3	U
72-20-8	Endrin	5.3	U
33213-65-9	Endosulfan II	5.3	U
72-54-8	4,4'-DDD	5.3	U
1031-07-8	Endosulfan sulfate	5.3	U
50-29-3	4,4'-DDT	5.3	U
72-43-5	Methoxychlor	27	U
53494-70-5	Endrin ketone	5.3	U
7421-93-4	Endrin aldehyde	5.3	U
5103-71-9	alpha-Chlordane	2.7	U
5103-74-2	gamma-Chlordane	2.7	U
8001-35-2	Toxaphene	270	U
12674-11-2	Aroclor-1016	53	U
11104-28-2	Aroclor-1221	110	U
11141-16-5	Aroclor-1232	53	U
53469-21-9	Aroclor-1242	53	U
12672-29-6	Aroclor-1248	53	U
11097-69-1	Aroclor-1254	53	U
11096-82-5	Aroclor-1260	53	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KL0

Lab Name. LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KH1

Matrix: (soil/water) SOIL Lab Sample ID: 0109281-14

Sample wt/vol: 30 (g/mL) G Lab File ID: A930122.d

% Moisture: 20 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/19/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/01/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	4.1	U
33213-65-9	Endosulfan II	4.1	U
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.1	U
7421-93-4	Endrin aldehyde	4.1	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	84	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	41	U
11096-82-5	Aroclor-1260	41	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KC1

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KC1

Matrix: (soil/water) SOIL Lab Sample ID: 0109280-01

Sample wt/vol: 30 (g/mL) G Lab File ID: A928104.d

% Moisture: 61 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/18/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/28/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 7.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	4.4	U
319-85-7	beta-BHC	4.4	U
319-86-8	delta-BHC	4.4	U
58-89-9	gamma-BHC (Lindane)	4.4	U
76-44-8	Heptachlor	4.4	U
309-00-2	Aldrin	4.4	U
1024-57-3	Heptachlor epoxide	4.4	U
959-98-8	Endosulfan I	4.4	U
60-57-1	Dieldrin	8.5	U
72-55-9	4,4'-DDE	8.5	U
72-20-8	Endrin	8.5	U
33213-65-9	Endosulfan II	8.5	U
72-54-8	4,4'-DDD	8.5	U
1031-07-8	Endosulfan sulfate	8.5	U
50-29-3	4,4'-DDT	8.5	U
72-43-5	Methoxychlor	44	U
53494-70-5	Endrin ketone	8.5	U
7421-93-4	Endrin aldehyde	8.5	U
5103-71-9	alpha-Chlordane	4.4	U
5103-74-2	gamma-Chlordane	4.4	U
8001-35-2	Toxaphene	440	U
12674-11-2	Aroclor-1016	85	U
11104-28-2	Aroclor-1221	170	U
11141-16-5	Aroclor-1232	85	U
53469-21-9	Aroclor-1242	85	U
12672-29-6	Aroclor-1248	85	U
11097-69-1	Aroclor-1254	85	U
11096-82-5	Aroclor-1260	85	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KC2

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KC1

Matrix: (soil/water) SOIL Lab Sample ID: 0109280-02

Sample wt/vol: 30 (g/mL) G Lab File ID: A928105.d

% Moisture: 80 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/18/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/28/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	8.5	U
319-85-7	beta-BHC	8.5	U
319-86-8	delta-BHC	8.5	U
58-89-9	gamma-BHC (Lindane)	8.5	U
76-44-8	Heptachlor	8.5	U
309-00-2	Aldrin	8.5	U
1024-57-3	Heptachlor epoxide	8.5	U
959-98-8	Endosulfan I	8.5	U
60-57-1	Dieldrin	17	U
72-55-9	4,4'-DDE	17	U
72-20-8	Endrin	17	U
33213-65-9	Endosulfan II	17	U
72-54-8	4,4'-DDD	17	U
1031-07-8	Endosulfan sulfate	17	U
50-29-3	4,4'-DDT	17	U
72-43-5	Methoxychlor	85	U
53494-70-5	Endrin ketone	17	U
7421-93-4	Endrin aldehyde	17	U
5103-71-9	alpha-Chlordane	8.5	U
5103-74-2	gamma-Chlordane	8.5	U
8001-35-2	Toxaphene	850	U
12674-11-2	Aroclor-1016	170	U
11104-28-2	Aroclor-1221	340	U
11141-16-5	Aroclor-1232	170	U
53469-21-9	Aroclor-1242	170	U
12672-29-6	Aroclor-1248	170	U
11097-69-1	Aroclor-1254	170	U
11096-82-5	Aroclor-1260	170	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KC3

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KC1

Matrix. (soil/water) SOIL Lab Sample ID: 0109280-03

Sample wt/vol: 30 (g/mL) G Lab File ID: A928106.d

% Moisture: 71 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/18/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/28/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 8.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	5.9	U
319-85-7	beta-BHC	5.9	U
319-86-8	delta-BHC	5.9	U
58-89-9	gamma-BHC (Lindane)	5.9	U
76-44-8	Heptachlor	5.9	U
309-00-2	Aldrin	5.9	U
1024-57-3	Heptachlor epoxide	5.9	U
959-98-8	Endosulfan I	5.9	U
60-57-1	Dieldrin	11	U
72-55-9	4,4'-DDE	11	U
72-20-8	Endrin	11	U
33213-65-9	Endosulfan II	11	U
72-54-8	4,4'-DDD	11	U
1031-07-8	Endosulfan sulfate	11	U
50-29-3	4,4'-DDT	11	U
72-43-5	Methoxychlor	59	U
53494-70-5	Endrin ketone	11	U
7421-93-4	Endrin aldehyde	11	U
5103-71-9	alpha-Chlordane	5.9	U
5103-74-2	gamma-Chlordane	5.9	U
8001-35-2	Toxaphene	590	U
12674-11-2	Aroclor-1016	110	U
11104-28-2	Aroclor-1221	230	U
11141-16-5	Aroclor-1232	110	U
53469-21-9	Aroclor-1242	110	U
12672-29-6	Aroclor-1248	110	U
11097-69-1	Aroclor-1254	110	U
11096-82-5	Aroclor-1260	110	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KC4

Lab Name LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KC1

Matrix: (soil/water) SOIL Lab Sample ID: 0109280-04

Sample wt/vol: 30 (g/mL) G Lab File ID: A928107.d

% Moisture: 5 Decanted: (Y/N) N Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/18/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/28/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	2.0	~~J~~ U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.5	U
72-55-9	4,4'-DDE	3.5	U
72-20-8	Endrin	3.5	U
33213-65-9	Endosulfan II	3.5	U
72-54-8	4,4'-DDD	3.5	U
1031-07-8	Endosulfan sulfate	3.5	U
50-29-3	4,4'-DDT	3.5	U
72-43-5	Methoxychlor	18 ~~9.5~~	~~J~~ U
53494-70-5	Endrin ketone	4.0	
7421-93-4	Endrin aldehyde	3.5	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	71	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KC5

Lab Name LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KC1

Matrix: (soil/water) SOIL Lab Sample ID: 0109280-05

Sample wt/vol: 30 (g/mL) G Lab File ID: A928108.d

% Moisture: 45 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/18/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/28/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	3.1	U
319-85-7	beta-BHC	3.1	U
319-86-8	delta-BHC	3.1	U
58-89-9	gamma-BHC (Lindane)	3.1	U
76-44-8	Heptachlor	3.1	U
309-00-2	Aldrin	3.1	U
1024-57-3	Heptachlor epoxide	3.1	U
959-98-8	Endosulfan I	3.1	U
60-57-1	Dieldrin	6.0	U
72-55-9	4,4'-DDE	6.0	U
72-20-8	Endrin	6.0	U
33213-65-9	Endosulfan II	6.0	U
72-54-8	4,4'-DDD	6.0	U
1031-07-8	Endosulfan sulfate	6.0	U
50-29-3	4,4'-DDT	6.0	U
72-43-5	Methoxychlor	31	U
53494-70-5	Endrin ketone	6.0	U
7421-93-4	Endrin aldehyde	6.0	U
5103-71-9	alpha-Chlordane	3.1	U
5103-74-2	gamma-Chlordane	3.1	U
8001-35-2	Toxaphene	310	U
12674-11-2	Aroclor-1016	60	U
11104-28-2	Aroclor-1221	120	U
11141-16-5	Aroclor-1232	60	U
53469-21-9	Aroclor-1242	60	U
12672-29-6	Aroclor-1248	60	U
11097-69-1	Aroclor-1254	60	U
11096-82-5	Aroclor-1260	60	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KC6

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KC1

Matrix: (soil/water) SOIL Lab Sample ID: 0109280-06

Sample wt/vol: 30 (g/mL) G Lab File ID: A928109.d

% Moisture: 20 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/18/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/28/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	4.1	U
33213-65-9	Endosulfan II	4.1	U
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.1	U
7421-93-4	Endrin aldehyde	4.1	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	84	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	41	U
11096-82-5	Aroclor-1260	41	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KC7

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KC1

Matrix: (soil/water) SOIL Lab Sample ID: 0109280-07

Sample wt/vol: 30 (g/mL) G Lab File ID: A928110.d

% Moisture: 8 Decanted: (Y/N) N Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/18/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/28/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.6	U
72-55-9	4,4´-DDE	3.6	U
72-20-8	Endrin	3.6	U
33213-65-9	Endosulfan II	3.6	U
72-54-8	4,4´-DDD	3.6	U
1031-07-8	Endosulfan sulfate	3.6	U
50-29-3	4,4´-DDT	3.6	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.6	U
7421-93-4	Endrin aldehyde	3.6	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	73	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KC8

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KC1

Matrix: (soil/water) SOIL Lab Sample ID: 0109280-08

Sample wt/vol: 30 (g/mL) G Lab File ID: A928111.d

% Moisture: 14 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/18/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/28/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	3.8	U
72-55-9	4,4'-DDE	3.8	U
72-20-8	Endrin	3.8	U
33213-65-9	Endosulfan II	3.8	U
72-54-8	4,4'-DDD	3.8	U
1031-07-8	Endosulfan sulfate	3.8	U
50-29-3	4,4'-DDT	3.8	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	3.8	U
7421-93-4	Endrin aldehyde	3.8	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	78	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	38	U
11096-82-5	Aroclor-1260	38	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO

J0KC9

Lab Name. LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KC1

Matrix· (soil/water) SOIL Lab Sample ID: 0109280-09

Sample wt/vol: 30 (g/mL) G Lab File ID: A928115.d

% Moisture: 38 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/18/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/29/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 7.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.7	U
319-85-7	beta-BHC	2.7	U
319-86-8	delta-BHC	2.7	U
58-89-9	gamma-BHC (Lindane)	2.7	U
76-44-8	Heptachlor	2.7	U
309-00-2	Aldrin	2.7	U
1024-57-3	Heptachlor epoxide	2.7	U
959-98-8	Endosulfan I	2.7	U
60-57-1	Dieldrin	5.3	U
72-55-9	4,4´-DDE	5.3	U
72-20-8	Endrin	5.3	U
33213-65-9	Endosulfan II	5.3	U
72-54-8	4,4´-DDD	5.3	U
1031-07-8	Endosulfan sulfate	5.3	U
50-29-3	4,4´-DDT	5.3	U
72-43-5	Methoxychlor	27	U
53494-70-5	Endrin ketone	5.3	U
7421-93-4	Endrin aldehyde	5.3	U
5103-71-9	alpha-Chlordane	2.7	U
5103-74-2	gamma-Chlordane	2.7	U
8001-35-2	Toxaphene	270	U
12674-11-2	Aroclor-1016	53	U
11104-28-2	Aroclor-1221	110	U
11141-16-5	Aroclor-1232	53	U
53469-21-9	Aroclor-1242	53	U
12672-29-6	Aroclor-1248	53	U
11097-69-1	Aroclor-1254	53	U
11096-82-5	Aroclor-1260	53	U

CP 10-24-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KD2

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KC1

Matrix: (soil/water) SOIL Lab Sample ID: 0109280-11

Sample wt/vol: 30 (g/mL) G Lab File ID: A928117.d

% Moisture: 18 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/18/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/29/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.0	U
72-55-9	4,4'-DDE	4.0	U
72-20-8	Endrin	4.0	U
33213-65-9	Endosulfan II	4.0	U
72-54-8	4,4'-DDD	4.0	U
1031-07-8	Endosulfan sulfate	4.0	U
50-29-3	4,4'-DDT	4.0	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.0	U
7421-93-4	Endrin aldehyde	4.0	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	40	U
11104-28-2	Aroclor-1221	82	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	40	U
11096-82-5	Aroclor-1260	40	U

CP 10-24-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KD1

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KC1

Matrix: (soil/water) SOIL Lab Sample ID: 0109280-10

Sample wt/vol: 30 (g/mL) G Lab File ID: A928116.d

% Moisture: 27 Decanted: (Y/N) Y Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/18/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/29/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 7.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	2.3	U
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	2.3	U
1024-57-3	Heptachlor epoxide	2.3	U
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.5	U
72-55-9	4,4'-DDE	4.5	U
72-20-8	Endrin	4.5	U
33213-65-9	Endosulfan II	4.5	U
72-54-8	4,4'-DDD	4.5	U
1031-07-8	Endosulfan sulfate	4.5	U
50-29-3	4,4'-DDT	4.5	U
72-43-5	Methoxychlor	23	U
53494-70-5	Endrin ketone	4.5	U
7421-93-4	Endrin aldehyde	4.5	U
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	2.3	U
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	45	U
11104-28-2	Aroclor-1221	92	U
11141-16-5	Aroclor-1232	45	U
53469-21-9	Aroclor-1242	45	U
12672-29-6	Aroclor-1248	45	U
11097-69-1	Aroclor-1254	45	U
11096-82-5	Aroclor-1260	45	U

CP 10-24-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KD3

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KC1

Matrix: (soil/water) SOIL Lab Sample ID: 0109280-12

Sample wt/vol: 30 (g/mL) G Lab File ID: A928120.d

% Moisture: 10 Decanted: (Y/N) N Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/18/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/29/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 7.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.7	U
72-55-9	4,4'-DDE	3.7	U
72-20-8	Endrin	3.7	U
33213-65-9	Endosulfan II	3.7	U
72-54-8	4,4'-DDD	3.7	U
1031-07-8	Endosulfan sulfate	3.7	U
50-29-3	4,4'-DDT	3.7	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.7	U
7421-93-4	Endrin aldehyde	3.7	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	74	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	37	U
11096-82-5	Aroclor-1260	37	U

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KD4

Lab Name. LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KC1

Matrix: (soil/water) SOIL Lab Sample ID: 0109280-13

Sample wt/vol: 30 (g/mL) G Lab File ID: A928121.d

% Moisture: 9 Decanted: (Y/N) N Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/18/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/29/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.6	U
72-55-9	4,4'-DDE	3.6	U
72-20-8	Endrin	3.6	U
33213-65-9	Endosulfan II	3.6	U
72-54-8	4,4'-DDD	3.6	U
1031-07-8	Endosulfan sulfate	3.6	U
50-29-3	4,4'-DDT	3.6	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.6	U
7421-93-4	Endrin aldehyde	3.6	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	74	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

J0KH0

Lab Name: LAUCKS TESTING LABORATORIES Contract: 68-W-00-075

Lab Code: LAUCKS Case No.: 29730 SAS No.: SDG No.: J0KC1

Matrix: (soil/water) SOIL Lab Sample ID: 0109280-14

Sample wt/vol: 30 (g/mL) G Lab File ID: A928122.d

% Moisture: 2 Decanted: (Y/N) N Date Received: 09/17/01

Extraction: (Type) PFEX Date Extracted: 09/18/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/29/01

Injection Volume: 1 (uL) Dilution Factor 1

GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or µg/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.4	U
72-55-9	4,4'-DDE	3.4	U
72-20-8	Endrin	3.4	U
33213-65-9	Endosulfan II	3.4	U
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	3.4	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	3.4	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

CP 10-24-01

ecology and environment, inc.
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Tel (206) 624-9537, Fax (206) 621-9832

MEMORANDUM

DATE. July 24, 2001

TO. Leatta Dahlhoff, Project Manager, E & E, Seattle, WA

FROM Mark Woodke, START-Chemist, E & E, Seattle, WA MW

SUBJ **Organic Data Quality Assurance Review, Upper Columbia River Mines Site, Northeast Washington**

REF: TDD. 01-02-0028

The data quality assurance review of 33 soil samples collected from the Upper Columbia River Mines site located in Northeast Washington has been completed Analysis for Total Organic Carbon (Lloyd Kahn Method) was performed by the Ecology and Environment, Inc., Analytical Services Center, Lancaster, New York.

The samples were numbered:

ORSP01SD	ORSP02SD	BBPPO1SD	BBPP02SD	TCBK01SD ~~POBK01SD~~	~~POCR01SD~~ POCK01SD
VSPP01SD	VSPP02SD	PRRS01SD	PRTB01SD	PRRS02SD	PRTB02SD
PRTB03SD	PRTB04SD	PRTB05SD	PRRS03SD	POPP02SD	POPP03SD
POSP02SD	POSP01SD	PRTB10SD	JOPP01SD	POBK01SD	~~POPP04SD~~ GMPP04SD
GMPP05SD ~~POPP05SD~~	PRBK01SD	PRBK02SD	PRBK03SD	PRBK04SD	PRTB06SD
PRTB07SD	PRTB08SD	PRTB09SD			

Data Qualifications:

1. **Sample Holding Times: Satisfactory.**

All samples were maintained at 4°C (± 2°C). The samples were collected between June 22 and June 28, 2001, and were analyzed on July 9 or 10, 2001. All samples were analyzed within QC holding time limits except samples VSPP01SD, VSPP02SD, PRTB01SD and PRRS02SD, the reported reanalyses for these samples were qualified as estimated quantities (J)

2. **Calibration: Acceptable.**

A four-point initial calibration was performed daily prior to sample analysis with all correlation coefficients greater than 0 995 Continuing calibrations were performed a minimum of every 10 samples with all results within 10% of the true values

recycled paper

3. **Blanks: Acceptable.**

A method blank was analyzed at the required frequency of every 20 samples. There were no detections in the method blanks above the method reporting limit

4. **Laboratory Control Samples (LCS): Acceptable.**

All LCS recoveries were within QC limits of 71% to 125%

5. **Quadruplicate Analysis: Satisfactory.**

All method quadruplicate results were within QC limits except the analysis of sample POBK01SD; this outlier was due to matrix interferences. No action was taken based on the quadruplicate outlier alone

6. **Quantitation: Acceptable**

TOC concentrations were correctly calculated

7. **Laboratory Contact: Not Required**

No laboratory contact was required.

8. **Overall Assessment**

The overall usefulness of the data is based on the criteria outlined in the analytical method. Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

Ecology and Environment, Inc.

Analytical Services Center

4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Seattle Office
Lab Order: 0107001
Project: Upper Columbia River Phase I
Lab ID: 0107001-08A **Sample Type:** SAMP

Client Sample ID: VSPP02SD
Alt. Client ID: VSPP02SD
Collection Date: 6/22/01 1:25:00 PM
Matrix: SOIL **% Moist:** 17.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	2030	J	2420	mg/Kg-dry	1	7/9/01	TOC 5050A_SSM_010709	RLG

MW
7-24-01

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Seattle Office	**Client Sample ID:**	MJ0GL1
Lab Order:	0107001	**Alt. Client ID:**	PRTB01SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/25/01 12:00:00 PM
Lab ID:	0107001-10A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 64.50

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	74800	J	11000	mg/Kg-dry	1	7/10/01	TOC 5050A_SSM_010710	RLG

MW
7-24-01

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Seattle Office	**Client Sample ID:**	MJ0GL3
Lab Order:	0107001	**Alt. Client ID:**	PRRS02SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/25/01 12.30:00 PM
Lab ID:	0107001-11A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 22.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	595	J	2520	mg/Kg-dry	1	7/10/01	TOC 5050A_SSM_010710	RLG

MW
7-24-01

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Seattle Office	**Client Sample ID:**	MJ0GL4
Lab Order:	0107001	**Alt. Client ID:**	PRTB02SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/25/01 1:45:00 PM
Lab ID:	0107001-12A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 43.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	28900		3490	mg/Kg-dry	1	7/9/01	TOC 5050A_SSM_010709	RLG

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7-24-01

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Seattle Office	**Client Sample ID:**	MJ0GL5
Lab Order:	0107001	**Alt. Client ID:**	PRTB03SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/25/01 2 15:00 PM
Lab ID:	0107001-13A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 55.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	48200		4370	mg/Kg-dry	1	7/9/01	TOC 5050A_SSM_010709	RLG

MW
7-24-01

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier A -Result by Method of Std Addition
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	D - Diluted due to matrix or extended target compounds
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Seattle Office	**Client Sample ID:**	MJ0GL6
Lab Order:	0107001	**Alt. Client ID:**	PRTB04SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/26/01 10:10.00 AM
Lab ID:	0107001-14A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 63.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	77300		5350	mg/Kg-dry	1	7/9/01	TOC 5050A_SSM_010709	RLG

MW
7-24-01

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Seattle Office
Lab Order: 0107001
Project: Upper Columbia River Phase I
Lab ID: 0107001-15A **Sample Type:** SAMP

Client Sample ID: MJ0GL7
Alt. Client ID: PRTB05SD
Collection Date: 6/26/01 10:45.00 AM
Matrix: SOIL **% Moist:** 22.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	14100		2440	mg/Kg-dry	1	7/9/01	TOC 5050A_SSM_010709	RLG

MW 7-24-01

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Seattle Office	**Client Sample ID:**	MJ0GL8
Lab Order:	0107001	**Alt. Client ID:**	PRRS03SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/26/01 11:40:00 AM
Lab ID:	0107001-16A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 22.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	581	J	2450	mg/Kg-dry	1	7/9/01	TOC 5050A_SSM_010709	RLG

MW
7-24-01

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Seattle Office	**Client Sample ID:**	MJ0GM0
Lab Order:	0107001	**Alt. Client ID:**	POPP02SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/26/01 1 40.00 PM
Lab ID:	0107001-17A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 53.50

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	46100		4120	mg/Kg-dry	1	7/9/01	TOC 5050A_SSM_010709	RLG

MW
7-24-01

D[illegible]tions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
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R - RPD outside recovery limits
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Surr - Denotes Surrogate Compound
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Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
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Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

CLIENT:	E and E Seattle Office	**Client Sample ID:**	MJ0GM2
Lab Order:	0107001	**Alt. Client ID:**	POPP03SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/26/01 2:25:00 PM
Lab ID:	0107001-18A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 16.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	541	J	2300	mg/Kg-dry	1	7/9/01	TOC 5050A_SSM_010709	RLG

MW
7-24-01

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Seattle Office	**Client Sample ID:**	MJ0FK5
Lab Order:	0107001	**Alt. Client ID:**	POSP02SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/26/01 9 35 00 AM
Lab ID:	0107001-19A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 26.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	36100		2600	mg/Kg-dry	1	7/9/01	TOC 5050A_SSM_010709	RLG

MW
7-24-01

Qualifications:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier A -Result by Method of Std Addition
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	D - Diluted due to matrix or extended target compounds
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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NYS ELAP ID#: 10486

Phone: (716) 685-8080

CLIENT:	E and E Seattle Office	**Client Sample ID:**	MJ0FL7
Lab Order:	0107001	**Alt. Client ID:**	POSP01SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/26/01 9:11:00 AM
Lab ID:	0107001-20A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 25.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	62000		5100	mg/Kg-dry	1	7/10/01	TOC 5050A_SSM_010710	RLG

MW
7-24-01

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
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CLIENT:	E and E Seattle Office	**Client Sample ID:**	**PRTB10SD**
Lab Order:	0107001	**Alt. Client ID:**	PRTB10SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/28/01 2:55:00 PM
Lab ID:	**0107001-21A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 25.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	1520	J	2630	mg/Kg-dry	1	7/10/01	TOC 5050A_SSM_010710	RLG

JMW
7-24-01

[illegible]tions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
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CLIENT:	E and E Seattle Office	**Client Sample ID:**	**JOPP01SD**
Lab Order:	0107001	**Alt. Client ID:**	JOPP01SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/28/01 9:35:00 AM
Lab ID:	**0107001-22A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 11.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	1050	J	4420	mg/Kg-dry	1	7/10/01	TOC 5050A_SSM_010710	RLG

MW
7-24-01

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Seattle Office	**Client Sample ID:**	**POBK01SD**
Lab Order:	0107001	**Alt. Client ID:**	POBK01SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/27/01 1:00:00 PM
Lab ID:	**0107001-23A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 27.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	13700		4780	mg/Kg-dry	1	7/10/01	TOC 5050A_SSM_010710	RLG

MW
7/24/01

[illegible]itions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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CLIENT:	E and E Seattle Office	**Client Sample ID:**	~~POPP04SD~~ GMPP04SD
Lab Order:	0107001	**Alt. Client ID:**	POPP04SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/27/01 12:10:00 PM
Lab ID:	0107001-24A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 29 30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	8670		4560	mg/Kg-dry	1	7/10/01	TOC 5050A_SSM_010710	RLG

MW
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Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
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Laboratory Results

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Phone: (716) 685-8080

CLIENT:	E and E Seattle Office	**Client Sample ID:**	~~POPP05SD~~ GMPP05SD
Lab Order:	0107001	**Alt. Client ID:**	POPP05SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/27/01 12:35:00 PM
Lab ID:	0107001-25A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 14.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	10200		2320	mg/Kg-dry	1	7/10/01	TOC 5050A_SSM_010710	RLG

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7-24-01

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
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CLIENT:	E and E Seattle Office	**Client Sample ID:**	PRBK01SD
Lab Order:	0107001	**Alt. Client ID:**	PRBK01SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/28/01 1:55:00 PM
Lab ID:	0107001-26A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 15.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	2570		2300	mg/Kg-dry	1	7/10/01	TOC 5050A_SSM_010710	RLG

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Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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CLIENT:	E and E Seattle Office	**Client Sample ID:**	PRBK02SD
Lab Order:	0107001	**Alt. Client ID:**	PRBK02SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/28/01 2:05:00 PM
Lab ID:	0107001-27A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 27.50

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	7090		2760	mg/Kg-dry	1	7/10/01	TOC 5050A_SSM_010710	RLG

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[illegible]itions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
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Phone: (716) 685-8080

CLIENT:	E and E Seattle Office	**Client Sample ID:**	**PRBK03SD**
Lab Order:	0107001	**Alt. Client ID:**	PRBK03SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/28/01 2:15:00 PM
Lab ID:	**0107001-28A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 20.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	4550		2470	mg/Kg-dry	1	7/10/01	TOC 5050A_SSM_010710	RLG

MW
7-24-01

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
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NYS ELAP ID#: 10486
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CLIENT:	E and E Seattle Office	**Client Sample ID:**	**PRRS04SD**
Lab Order:	0107001	**Alt. Client ID:**	PRRS04SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/27/01 11:45:00 AM
Lab ID:	**0107001-29A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 43.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	45600		3530	mg/Kg-dry	1	7/10/01	TOC 5050A_SSM_010710	RLG

MW
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[illegible]initions:

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J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
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D - Diluted due to matrix or extended target compounds
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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Seattle Office	**Client Sample ID:**	PRTB06SD
Lab Order:	0107001	**Alt. Client ID:**	PRTB06SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/27/01 5:15:00 PM
Lab ID:	0107001-30A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 31.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	5490		2800	mg/Kg-dry	1	7/10/01	TOC 5050A_SSM_010710	RLG

MW 7-24-01

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
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CLIENT: E and E Seattle Office
Lab Order: 0107001
Project: Upper Columbia River Phase I
Lab ID: 0107001-31A **Sample Type:** SAMP

Client Sample ID: PRTB07SD
Alt. Client ID: PRTB07SD
Collection Date: 6/27/01 6:05:00 PM
Matrix: SOIL **% Moist:** 30.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	38100		2850	mg/Kg-dry	1	7/10/01	TOC 5050A_SSM_010710	RLG

MW 7-24-01

[illegible]itions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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NYS ELAP ID#: 10486
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CLIENT:	E and E Seattle Office	**Client Sample ID:**	**PRTB08SD**
Lab Order:	0107001	**Alt. Client ID:**	PRTB08SD
Project:	Upper Columbia River Phase I	**Collection Date:**	6/28/01 12:35:00 PM
Lab ID:	**0107001-32A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 21.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	599	J	2500	mg/Kg-dry	1	7/10/01	TOC 5050A_SSM_010710	RLG

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Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
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CLIENT: E and E Seattle Office
Lab Order: 0107001
Project: Upper Columbia River Phase I
Lab ID: 0107001-33A **Sample Type:** SAMP

Client Sample ID: PRTB09SD
Alt. Client ID: PRTB09SD
Collection Date: 6/28/01 1:10 00 PM
Matrix: SOIL **% Moist:** 22.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN 1_LK_TOC_S								
Total Organic Carbon	4270		2590	mg/Kg-dry	1	7/10/01	TOC 5050A_SSM_010710	RLG

MW
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Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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MEMORANDUM

DATE: October 5, 2001

TO: Leatta Dahlhoff, Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, Chemist, E & E, Seattle, WA

SUBJ: **Total Organic Carbon Data Quality Assurance Review, Upper Columbia River Mines/Mills ESI, Stevens & Pend Oreille Counties, WA**

REF: TDD: 01-02-0028 PAN: 001281.0073.01SR

The data quality assurance review of 23 sediment samples collected from the Upper Columbia River Mines/Mills ESI in Stevens and Pend Oreille Counties, Washington, has been completed. Total Organic Carbon (TOC) analysis (Method Lloyd Kahn) was performed by the Ecology and Environment, Inc., Analytical Services Center, Lancaster, New York.

The samples were numbered:

01090401	01090402	01090403	01090404	01090405	01090406
01090407	01090408	01090409	01090410	01090411	01090412
01090413	01090426	01090427	01090428	01090429	01090430
01090431	01090432	01090441	01090442	01090443	

<u>Data Qualifications</u>:

1. Sample Holding Times: Acceptable.

The samples maintained within the QC limits of 4°C ± 2°C. The samples were collected between September 10 and 13, 2001, and were analyzed by September 25, 2001, therefore meeting QC holding time criteria.

2. Calibration: Acceptable.

A four-point initial calibration was performed prior to each analysis sequence with a correlation coefficient ≥ 0.995. A minimum of one calibration standard and a blank were analyzed after every 10 samples with all recoveries within the QC limits of 90 % to 110 %.

3. Blanks: Satisfactory.

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each initial or continuing calibration. There were the following detections in method blanks:

recycled paper

Batch / Date	Analyte	Concentration
010924101R / 9-24-01	TOC	600 mg/kg
010925101R / 9-25-01	TOC	300 mg/kg

Sample results less than five times the associated blank concentration were qualified as not detected (U)

4. Laboratory Control Sample (LCS): Acceptable.

A LCS was analyzed with each batch of 20 samples with all recoveries within QC limits of 71 % to 125 %.

5. Quadruplicate Analysis: Acceptable.

A quadruplicate analysis was performed per 20 samples per matrix. Both sets of quadruplicate results had relative percent differences greater than the QC limit of < 30 %. No action was taken based on these outliers as the initial sample results were less than two times the sample quantitation limit.

6. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004) and the analytical method. Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the practical quantitation limits or because quality control criteria limits were not met.

The following bias qualifier was added to estimated quantities·

Q - The sample result is less than the sample quantitation limit.

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

lient: E and E Seattle Office
ab Order: 0109123
roject: Upper Columbia River Phase I
ab ID: 0109123-01A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090411
Alt. Client ID: LBBK02SD
Collection Date: 9/11/01 10:00:00 AM % Moist:23.60
Test Code: 1_LK_TOC_S

OTAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

nalyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
otal Organic Carbon	1490	J Q	2580	mg/Kg-dry	1	9/22/01	TOC 5050A_SSM_010922	MYO

MW
10501

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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ent: E and E Seattle Office
b Order: 0109123
ɔject: Upper Columbia River Phase I
b ID: 0109123-02A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090412
Alt. Client ID: NPPP01SD
Collection Date: 9/12/01 10:05:00 AM % Moist:8.24
Test Code: 1_LK_TOC_S

'TAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

alyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
al Organic Carbon	44800		3770	mg/Kg-dry	1	9/24/01	TOC 5050A_SSM_010924	MYO

MW
10-5-01

finitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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ie E and E Seattle Office
ıb Order: 0109123
oject: Upper Columbia River Phase I
ıb ID: 0109123-03A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090413
Alt. Client ID: NPBK01SD
Collection Date: 9/12/01 10:45:00 AM % Moist:6.68
Test Code: 1_LK_TOC_S

OTAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

nalyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
tal Organic Carbon	13100		2010	mg/Kg-dry	1	9/24/01	TOC 5050A_SSM_010924	MYO

MW
10/5/01

efinitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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ent: E and E Seattle Office
b Order: 0109123
ɔject: Upper Columbia River Phase I
b ID: 0109123-05A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090442
Alt. Client ID: KRBK01SD
Collection Date: 9/12/01 11:52:00 AM % Moist:42.60
Test Code: 1_LK_TOC_S

TAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

alyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ıl Organic Carbon	8660		3430	mg/Kg-dry	1	9/24/01	TOC 5050A_SSM_010924	MYO

MW
10-5-01

tions: ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Client: E and E Seattle Office
Lab Order: 0109123
Project: Upper Columbia River Phase I
Lab ID: 0109123-06A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090443
Alt. Client ID: KRBK02SD
Collection Date: 9/12/01 2:03:00 PM % Moist:26.80
Test Code: 1_LK_TOC_S

TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Total Organic Carbon	~~779~~	~~J~~ Q MW	2590 U	mg/Kg-dry	1	9/24/01	TOC 5050A_SSM_010924	MYO

MW
10-5-01

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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ent: E and E Seattle Office
b Order: 0109123
ıject: Upper Columbia River Phase I
ɔ ID: 0109123-07A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090426
Alt. Client ID: DTPP01SD
Collection Date: 9/10/01 3:55:00 PM % Moist:2.15
Test Code: 1_LK_TOC_S

TAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

alyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ıl Organic Carbon	20600		1950	mg/Kg-dry	1	9/22/01	TOC 5050A_SSM_010922	MYO

MW
10-5-01

ıitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
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Lab:	E and E Seattle Office	Client Sample ID:	01090428
Lab Order:	0109123	Alt. Client ID:	ANCK01SD
Project:	Upper Columbia River Phase I	Collection Date:	9/12/01 2:00:00 PM % Moist:84.20
Lab ID:	0109123-08A Sample Type: SAMP Matrix: Soil	Test Code:	1_LK_TOC_S

TOTAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Total Organic Carbon	150000		19100	mg/Kg-dry	1	9/24/01	TOC 5050A_SSM_010924	MYO

MW
10-5-01

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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ent: E and E Seattle Office
ɔ Order: 0109123
ıject: Upper Columbia River Phase I
ɔ ID: 0109123-09A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090429
Alt. Client ID: ANPP01SD
Collection Date: 9/12/01 3:10:00 PM % Moist:65.80
Test Code: 1_LK_TOC_S

TAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

ılyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ıl Organic Carbon	80600		5470	mg/Kg-dry	1	9/24/01	TOC 5050A_SSM_010924	MYO

MW
10-5-01

tions: ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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e E and E Seattle Office
b Order: 0109123
ıject: Upper Columbia River Phase I
ɔ ID: 0109123-10A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090427
Alt. Client ID: ANBK01SD
Collection Date: 9/12/01 3 45:00 PM % Moist:43.10
Test Code: 1_LK_TOC_S

TAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

alyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ıl Organic Carbon	34300		6380	mg/Kg-dry	1	9/25/01	TOC 5050A_SSM_010925	MYO

MW
10-501

ıtions: ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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lient: E and E Seattle Office
ab Order: 0109123
roject: Upper Columbia River Phase I
ab ID: 0109123-11A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090401
Alt. Client ID: LBDT01SD
Collection Date: 9/10/01 2:30:00 PM % Moist:60.70
Test Code: 1_LK_TOC_S

OTAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

nalyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
tal Organic Carbon	72700		9510	mg/Kg-dry	1	9/22/01	TOC 5050A_SSM_010922	MYO

MW
10-5-01

nitions: ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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ie E and E Seattle Office
ıb Order: 0109123
oject: Upper Columbia River Phase I
ıb ID: 0109123-12A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090402
Alt. Client ID: LBDT02SD
Collection Date: 9/10/01 3:00:00 PM % Moist:88.20
Test Code: 1_LK_TOC_S

)TAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

ıalyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
al Organic Carbon	109000		32400	mg/Kg-dry	1	9/22/01	TOC 5050A_SSM_010922	MYO

MW
10501

ıitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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ent: E and E Seattle Office
) Order: 0109123
ject: Upper Columbia River Phase I
) ID: 0109123-13A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090403
Alt. Client ID: LBDT03SD
Collection Date: 9/10/01 3:30.00 PM % Moist:77 90
Test Code: 1_LK_TOC_S

TAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

ılyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
l Organic Carbon	64500		16000	mg/Kg-dry	1	9/22/01	TOC 5050A_SSM_010922	MYO

MW
10501

tions: ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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ie E and E Seattle Office
b Order: 0109123
oject: Upper Columbia River Phase I
b ID: 0109123-14A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090404
Alt. Client ID: LBBK01SD
Collection Date: 9/10/01 4:15:00 PM % Moist:5.84
Test Code: 1_LK_TOC_S

'TAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

alyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
al Organic Carbon	46300		3990	mg/Kg-dry	1	9/22/01	TOC 5050A_SSM_010922	MYO

MW
10-3-01

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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NYS ELAP ID#: 10486
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ent: E and E Seattle Office
) Order: 0109123
ject: Upper Columbia River Phase I
) ID: 0109123-15A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090405
Alt. Client ID: NAPP01SD
Collection Date: 9/10/01 5:15:00 PM % Moist:47.20
Test Code: 1_LK_TOC_S

TAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

ılyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
l Organic Carbon	18400		3520	mg/Kg-dry	1	9/22/01	TOC 5050A_SSM_010922	MYO

MW
10-5-01

ıons:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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i E and E Seattle Office
ıb Order: 0109123
oject: Upper Columbia River Phase I
ıb ID: 0109123-16A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090406
Alt. Client ID: NACK01SD
Collection Date: 9/10/01 5:45:00 PM % Moist:21.20
Test Code: 1_LK_TOC_S

)TAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

ıalyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
al Organic Carbon	3050		2490	mg/Kg-dry	1	9/24/01	TOC 5050A_SSM_010924	MYO

MW
10-5-01

:tions: ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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ient: E and E Seattle Office
b Order: 0109123
oject: Upper Columbia River Phase I
b ID: 0109123-17A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090407
Alt. Client ID: NADT01SD
Collection Date: 9/10/01 6:15:00 PM % Moist:7.29
Test Code: 1_LK_TOC_S

TAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

ıalyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
al Organic Carbon	19500		3880	mg/Kg-dry	1	9/22/01	TOC 5050A_SSM_010922	MYO

MW
10-5-01

ıitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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ie E and E Seattle Office
ıb Order: 0109123
oject: Upper Columbia River Phase I
b ID: 0109123-18A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090408
Alt. Client ID: NABK01SD
Collection Date: 9/10/01 6:30:00 PM % Moist:16.90
Test Code: 1_LK_TOC_S

)TAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

ıalyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
al Organic Carbon	2210	U	2080	mg/Kg-dry	1	9/24/01	TOC 5050A_SSM_010924	MYO

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10-5-01

initions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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ent: E and E Seattle Office
b Order: 0109123
oject: Upper Columbia River Phase I
b ID: 0109123-19A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090409
Alt. Client ID: NABK02SD
Collection Date: 9/11/01 8:05.00 AM % Moist:41.40
Test Code: 1_LK_TOC_S

ITAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

ıalyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
al Organic Carbon	7760		3200	mg/Kg-dry	1	9/22/01	TOC 5050A_SSM_010922	MYO

MW
10-5-01

finitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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ient: E and E Seattle Office
ıb der: 0109123
oject: Upper Columbia River Phase I
ıb ID: 0109123-20A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090410
Alt. Client ID: LBPP01SD
Collection Date: 9/11/01 9:10.00 AM % Moist:31 40
Test Code: 1_LK_TOC_S

)TAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

ıalyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
tal Organic Carbon	3440		2760	mg/Kg-dry	1	9/22/01	TOC 5050A_SSM_010922	MYO

MW
10-5-01

:finitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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ent: E and E Seattle Office
ɔ Order: 0109123
ɔject: Upper Columbia River Phase I
ɔ ID: 0109123-21A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090430
Alt. Client ID: NSDT01SD
Collection Date: 9/13/01 12:05:00 PM % Moist:20.00
Test Code: 1_LK_TOC_S

TAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

alyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
al Organic Carbon	325	J Q	2140	mg/Kg-dry	1	9/25/01	TOC 5050A_SSM_010925	MYO

MW
10-5-01

finitions: ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Phone: (716) 685-8080

lient: E and E Seattle Office
a der: 0109123
roject: Upper Columbia River Phase I
ab ID: 0109123-22A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090431
Alt. Client ID: NSPP01SD
Collection Date: 9/13/01 12:30.00 PM % Moist:74.30
Test Code: 1_LK_TOC_S

OTAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

nalyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
otal Organic Carbon	99500		15400	mg/Kg-dry	1	9/25/01	TOC 5050A_SSM_010925	MYO

MW
10-5-01

efinitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

:cology and Environment, Inc.
nalytical Services Center
93 Walden Avenue
ıncaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

ient: E and E Seattle Office
ıb Order: 0109123
·oject: Upper Columbia River Phase I
ıb ID: 0109123-23A Sample Type: SAMP Matrix: Soil

Client Sample ID: 01090432
Alt. Client ID: NSBK01SD
Collection Date: 9/13/01 1:00.00 PM % Moist:29.90
Test Code: 1_LK_TOC_S

)TAL ORGANIC CARBON BY METHOD LLOYD KAHN Method: LLOYD KAHN Prep Method: NA

ıalyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
tal Organic Carbon	7550		5320	mg/Kg-dry	1	9/25/01	TOC 5050A_SSM_010925	MYO

MW
10-5-01

ınitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std Addition
D - Diluted due to matrix or extended target com pounds
N - Single Column Analysis

1.8

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

July 25, 2001

MEMORANDUM

SUBJECT: Field Screening Metals Results for the Upper Columbia River - Mining Area Analyses

FROM: Gerald H. Dodo
USEPA

TO: Monica Tonel
USEPA

cc: Leatta Dahlhoff
Ecology and Environment

Attached to this memo are the field screening analysis results for lead, zinc, and mercury acquired by ESAT for 84 samples at the Upper Columbia River mining areas. This work was performed under site account code 01T10P50102D106XLA00. The samples were analyzed in-situ using a Niton XL-723. Reference sample analyses were performed during each day of sample analyses using NIST SRM 2710. The reference sample results were within 20% of the stated true value, however, mercury was present at a concentration too low to be detected for this sample. All results were qualified F, acquired by a field screening method.

If you have any questions, please contact me at (360)871-8728.

151756

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Summary of XRF Screening Results
Lake Roosevelt Mine Study

Results in mg/Kg

No	Location	Sample ID	Date/Time	Zn	Pb	Hg
6	Red Top Rock Pile		6/18/01	1720 F	758 F	<26 F
7	Red Top Rock Pile	RDWR01SS	6/18/01	12896	15091	<96
8	Red Top Rock Pile		6/18/01	600	187	<18
9	Red Top Rock Pile	RDWR02SS	6/18/01	24589	8275	158
10	Red Top Rock Pile	RDWR03SS	6/18/01	7136	2640	<53
17	Copper King WR	CKWR01SS	6/19/01	434	327	<34
18	Copper King WR		6/19/01	159	103	<23
19	Copper King WR	CKWR02SS	6/19/01	< 225	226	<37
20	Copper King WR		6/19/01	< 240	121	<45
21	Copper King WR		6/19/01	< 144	173	<29
23	Black Rock Mine	BRWR01SS	6/19/01	181965	3709	216
24	Black Rock Mine	BRWR02SS	6/19/01	126976	698	<93
25	Black Rock Mine		6/19/01	12499	44	<31
26	Black Rock Mine		6/19/01	40294	417	<48
27	Black Rock Mine	BRWR03SS	6/19/01	358810	1130	286
32	Last Chance TP	LCTP05SS	6/20/01	124928	84070	<360
33	Last Chance TP	LCTP06SS	6/20/01	99994	41984	<270
34	Last Chance TP		6/20/01	43699	16192	<116
35	Last Chance Interfac	LCTP07SS	6/20/01	26394	7578	<85
36	Last Chance TP		6/20/01	21094	10694	<82
49	Great Western		6/21/01	39475	2570	75
50	Great Western	GWWR02SS	6/21/01	48077	3978	<70
51	Great Western		6/21/01	16691	1890	<42
53	Great Western		6/21/01	20595	1880	<48
54	Great Western		6/21/01	97792	10995	<195
55	Great Western	GWWR01SS	6/21/01	38784	2890	<74
57	Gladstone TP	GLTP01SS	6/21/01	14989	43085	<210
58	Gladstone TP		6/21/01	8608	18099	<134
59	Gladstone TP	GLTP02SS	6/21/01	17894	53965	<285
60	Gladstone TP		6/21/01	15898	30285	<195
61	Gladstone TP	GLTP03SS	6/21/01	16294	44493	<300
71	Electric Point Upper		6/22/01	1030	3920	<58
72	Electric Point Upper	EPWR03SS	6/22/01	1810	4867	<44
73	Electric Point Upper		6/22/01	1380	3808	<41
74	Electric Point Upper	EPWR02SS	6/22/01	2739	4218	<75
75	Electric Point Upper	EPWR01SS	6/22/01	2789	4067	<48
77	Electric Point Lower		6/22/01	12096	10298	<94
78	Electric Point Lower	EPWR07SS	6/22/01	32589	17600	147
79	Electric Point Lower	EPWR08SS	6/22/01	23693	19098	<195

No	Location	Sample ID	Date/Time	Zn	Pb	Hg
				7-25-01	7-25-01	7-25-01
85	Van Stone Mine		6/23/01	8467 F	379 F	<27 F
87	Van Stone Mine	VSWR01SS	6/23/01	17293	1440	<45
88	Van Stone Mine		6/23/01	1520	62	<17
90	Van Stone Mine		6/23/01	236	30	<14
91	Van Stone Mine	VSWR02SS	6/23/01	6944	344	<28
92	Van Stone Mine		6/23/01	5059	91	<25
94	Van Stone Mine		6/23/01	112	43	<13
95	Van Stone Mine	VSWR03SS	6/23/01	5827	154	<29
96	Van Stone Mine		6/23/01	3290	271	<24
97	Van Stone Mine		6/23/01	2629	299	<21
98	Van Stone Mine		6/23/01	5878	363	<27
99	Van Stone Mine	VSWR04SS	6/23/01	10797	847	<44
100	Van Stone Mine	VSWR05SS	6/23/01	11898	1730	<49
101	Van Stone Mine		6/23/01	4048	143	<26
102	Van Stone Mine		6/23/01	3920	687	<37
104	Van Stone Mine		6/23/01	18394	2210	<63
105	Van Stone Mine	VSWR06SS	6/23/01	34586	3878	<74
106	Van Stone Mine		6/23/01	29082	2629	<64
107	Van Stone Mine		6/23/01	4029	879	<28
108	Van Stone Mine	VSWR07SS	6/23/01	20890	6739	<68
109	Van Stone Mine	VSWR08SS	6/23/01	5600	361	<37
110	Van Stone Mine		6/23/01	5389	133	<24
112	Van Stone Mine		6/23/01	4730	128	<26
113	Van Stone Mine		6/23/01	4067	118	<30
114	Van Stone Mine	VSWR09SS	6/23/01	5040	61	<20
115	Van Stone Mine		6/23/01	4490	331	<24
116	Van Stone Mine		6/23/01	3398	738	<44
117	Van Stone Mine	VSWR10SS	6/23/01	3760	796	<51
118	Van Stone Mine		6/23/01	3210	1300	<39
119	Van Stone Mine		6/23/01	3930	1540	<44
120	Van Stone Mine	VSWR11SS	6/23/01	3160	221	<25
121	Van Stone Mine		6/23/01	5139	< 24	<19
122	Van Stone Mine		6/23/01	502	38	<20
123	Van Stone Mine	VSWR12SS	6/23/01	2939	906	<35
124	Van Stone Mine		6/23/01	3099	243	<23
125	Van Stone Mine		6/23/01	944	95	<36
133	Pend Oreille TP	POTP04SS	6/25/01	852	396	<21
134	Pend Oreille TP		6/25/01	648	413	<17
135	Pend Oreille TP		6/25/01	647	298	37
137	Pend Oreille TP		6/25/01	991	410	<24
138	Pend Oreille TP		6/25/01	595	416	<26
139	Pend Oreille TP	POTP05SS	6/25/01	1709	592	<30
141	Pend Oreille TP	POTP06SS	6/25/01	1890	612	<36
142	Pend Oreille TP		6/25/01	973	381	<30
143	Pend Oreille TP		6/25/01	661	240	<24

1.8

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr East
Port Orchard, Washington 98366

July 25, 2001

MEMORANDUM

SUBJECT: Field Screening Metals Results for the Upper Columbia River - Lake and Tributary Area Analyses

FROM: Gerald H. Dodo
USEPA

TO: Mark Ader
USEPA

cc: Susan Fitzgerald
Weston

Attached to this memo are the field screening analysis results for lead, zinc, and copper acquired by ESAT for 125 samples at the Upper Columbia River lake and tributary areas. This work was performed under site account code 01T10P50102D106XLA00. The samples were analyzed in-situ using a Niton XL-723. Reference sample analyses were performed during each day of sample analyses using NIST SRM 2710 and SRM 2711. The reference sample results were within 20% of the stated true value except for zinc from the SRM 2711 analyses for 05/23/01 and 05/31/01 which were low. The SRM 2710 analyses results for zinc on these two days were acceptable, however, the concentration is much higher for this sample. The reported zinc results for sample analyses performed on 05/23/01 and 05/31/01 may be biased low if <5000 mg/kg. All results were qualified F, acquired by a field screening method.

If you have any questions, please contact me at (360)871-8728.

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Summary of XRF Screening Results
Lake Roosevelt Lake and Tributary Study

XLNo	Sample ID	Date/Time	Results in mg/Kg Pb	Zn	Cu
37	1204115	5/17/01	< 25	< 165	< 450
38	1204115	5/17/01	26	< 105	< 300
39	1204115	5/17/01	42	< 210	< 615
40	1204115	5/17/01	41	< 117	< 315
41	1204115 Sampled	5/17/01	29	< 93	< 255
42	1204116	5/17/01	60	< 255	< 705
44	1204116 Sampled	5/17/01	95	216	< 93
45	1204116	5/17/01	74	143	< 165
51	1204119 Sampled	5/18/01	424	823	< 330
52	1204119	5/18/01	236	472	< 210
53	1204119	5/18/01	108	218	< 255
55	1204121	5/18/01	224	480	< 195
56	1204121	5/18/01	185	387	< 300
57	1204121 Sampled	5/18/01	194	522	< 144
58	1204121	5/18/01	28	< 165	< 465
60	1204122 Sampled	5/18/01	163	460	< 540
61	1204122	5/18/01	88	155	< 405
62	1204122	5/18/01	161	425	< 465
63	1204122	5/18/01	110	196	< 285
65	1204123	5/18/01	242	616	< 540
66	1204123	5/18/01	225	597	< 615
67	1204123 Sampled	5/18/01	223	640	< 375
69	1204125	5/19/01	96	226	< 128
70	1204125 Sampled	5/19/01	126	187	< 270
74	1204126 no sample	5/19/01	28	74	< 110
76	1204126 no sample	5/19/01	< 27	< 165	< 450
90	1214106	5/21/01	25	< 144	< 405
91	1214106	5/21/01	49	< 121	< 330
94	1214106	5/21/01	43	< 225	< 615
94	1214106	5/21/01	43	< 225	< 615
96	1214106 Sampled	5/21/01	196	474	< 375
98	1214116	5/21/01	238	666	< 147
99	1214116 Sampled	5/21/01	298	712	< 495
100	1214116	5/21/01	331	764	< 450
101	1214116	5/21/01	317	765	< 225
103	1214118 Sampled	5/21/01	361	1130	< 285

XLNo	Sample ID	Date/Time	Pb	Zn	Cu
104	1214118	5/21/01	250	571	< 750
106	1214101	5/21/01	47	< 115	< 300
107	1214101 Sampled	5/21/01	73	< 540	< 1500
113	1214122 Sampled	5/22/01	172	851	< 240
114	1214122	5/22/01	146	946	< 142
117	1214124	5/22/01	319	< 585	< 1650
118	1214124	5/22/01	249	902	< 390
119	1214124 Sampled	5/22/01	240	1060	< 270
122	1214126	5/22/01	121	589	< 165
123	1214126 Sampled	5/22/01	173	543	< 180
124	1214126	5/22/01	94	243	< 585
126	1214128	5/22/01	185	1230	< 345
127	1214128 Sampled	5/22/01	220	1250	< 465
128	1214128	5/22/01	159	1250	< 420
130	1214130	5/22/01	156	1100	< 225
131	1214130	5/22/01	176	< 465	< 1304
132	1214130	5/22/01	95	537	< 144
133	1214130	5/22/01	125	675	< 255
134	1214130	5/22/01	123	660	< 150
136	1214130	5/22/01	111	1050	< 145
137	1214130	5/22/01	122	896	< 330
138	1214130	5/22/01	118	1090	< 195
139	1214130 Sampled	5/22/01	508	6339	< 765
142	1214132	5/22/01	705	13299	1270
143	1214132 Sampled	5/22/01	1510	20698	1320
144	1214132	5/22/01	736	15194	1300
149	1214134	5/23/01	174	763	< 165
150	1214134	5/23/01	201	624	< 975
151	1214134	5/23/01	192	705	< 630
152	1214134	5/23/01	215	808	< 180
153	1214134	5/23/01	205	1050	< 315
154	1214134	5/23/01	103	< 390	< 1080
155	1214134	5/23/01	245	1819	< 195
156	1214134 Sampled	5/23/01	1080	12998	< 915
158	1214136	5/23/01	268	1500	< 1020
159	1214136	5/23/01	331	< 885	< 2549
160	1214136	5/23/01	250	1050	< 615
161	1214136 Sampled	5/23/01	326	3949	< 645
162	1214136	5/23/01	360	3440	< 210
164	1214138	5/23/01	94	488	< 195

XLNo	Sample ID	Date/Time	Pb	Zn	Cu
165	1214138 Sampled	5/23/01	169 F	2539 F	< 375 F
166	1214138	5/23/01	144	1170	< 225
167	1214138	5/23/01	79	593	< 270
168	1214138	5/23/01	227	1690	< 510
170	1214140	5/23/01	170	2650	274
171	1214140	5/23/01	192	2189	< 270
173	1214140 Sampled	5/23/01	189	3478	319
175	1214142	5/23/01	97	1040	< 270
175	1214142	5/23/01	97	1040	< 270
177	1214142 Sampled	5/23/01	349	4509	377
178	1214142	5/23/01	446	5427	460
179	1214142	5/23/01	153	3539	656
181	1214142	5/23/01	234	5658	773
183	1214144	5/23/01	301	7046	784
184	1214144 Sampled	5/23/01	611	8838	935
186	1214129	5/23/01	97	494	< 95
192	1214127	5/24/01	53	117	< 142
193	1214127	5/24/01	47	92	< 126
195	1214131	5/24/01	75	225	< 123
196	1214131	5/24/01	186	237	< 270
211	1224150	5/31/01	221	12896	1460
212	1224150 sampled	5/31/01	443	19699	< 2549
213	1224150	5/31/01	330	15898	1939
215	1224151	5/31/01	210	1420	< 180
216	1224151 sampled	5/31/01	190	2229	264
217	1224151	5/31/01	211	2120	170
218	1224151	5/31/01	189	2189	< 142
221	1224154	5/31/01	262	7770	962
222	1224154 sampled	5/31/01	281	12096	1570
224	1224155	5/31/01	328	11200	1140
225	1224155 sampled	5/31/01	300	13990	1659
228	1224157	5/31/01	229	11098	1650
229	1224157 sampled	5/31/01	346	12698	1440
236	1224160	6/1/01	203	5968	1180
237	1224160	6/1/01	337	9818	1470
238	1224160	6/1/01	200	10400	1380
239	1224160 sampled	6/1/01	411	16691	2450

XLNo	Sample ID	Date/Time	Pb	Zn	Cu
241	1224161	6/1/01	20 F	145 F	< 98 F
243	1224162 sampled	6/1/01	317	3179	317
244	1224162	6/1/01	260	2269	260
245	1224162	6/1/01	387	2850	397
247	1224163	6/1/01	198	16691	2469
249	1224165	6/1/01	523	934	< 89
251	1224164	6/1/01	142	2810	476
252	1224164	6/1/01	161	3229	348
253	1224164 sampled	6/1/01	260	5450	757
254	1224164	6/1/01	360	4560	772
255	1224164	6/1/01	193	4240	554
256	1224164	6/1/01	166	3170	524

APPENDIX E

KETTLE RIVER

Table E-1

KETTLE RIVER SEDIMENT SAMPLES
ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER EXPANDED SITE INSPECTION
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374223	01374224
CLP Inorganic ID	MJ0KK9	MJ0KL0
CLP Organic ID	J0KK9	J0KL0
E & E Sample ID	NU	NU
Station Location	KRBK01SD	KRBK02SD
Sample Depth	0-8	0-8
TAL Metals (mg/kg)		
Aluminum	**6130**	**3820**
Calcium	**3420 JL**	**3000 JK**
Chromium	**17.5**	**9.6**
Copper	**15.7**	**30.4**
Iron	**12800**	**10100**
Lead	**6.0**	**3.5**
Magnesium	**3750**	**2590**
Manganese	**192**	**150**
Vanadium	**26.2**	**19.0**
Zinc	**37.1**	**24.5**

Note Bold type indicates sample concentration is above the detection limit.

Key

CLP = Contract Laboratory Program
E & E = Ecology and Environment, Inc
EPA = United States Environmental Protection Agency
ID = Identification
J = The analyte was positively identified The associated numerical value is an estimate
K = Unknown bias
L = Low bias
mg/kg = milligrams per kilogram
ND = Not utilized
SD = Sediment
TAL = Target Analyte List
U = The analyte was not detected The associated numerical value is the contract required detection limit

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APPENDIX E
KETTLE RIVER

Table E-1

KETTLE RIVER SEDIMENT SAMPLES
ANALYTICAL RESULTS SUMMARY
UPPER COLUMBIA RIVER EXPANDED SITE INSPECTION
STEVENS COUNTY, WASHINGTON

EPA Sample ID	01374223	01374224
CLP Inorganic ID	MJ0KK9	MJ0KL0
CLP Organic ID	J0KK9	J0KL0
E & E Sample ID	NU	NU
Station Location	KRBK01SD	KRBK02SD
Sample Depth	0-8	0-8
TAL Metals (mg/kg)		
Aluminum	**6130**	**3820**
Calcium	**3420 JL**	**3000 JK**
Chromium	**17.5**	**9.6**
Copper	**15.7**	**30.4**
Iron	**12800**	**10100**
Lead	**6.0**	**3.5**
Magnesium	**3750**	**2590**
Manganese	**192**	**150**
Vanadium	**26.2**	**19.0**
Zinc	**37.1**	**24.5**

Note Bold type indicates sample concentration is above the detection limit

Key

CLP = Contract Laboratory Program

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ID = Identification

J = The analyte was positively identified The associated numerical value is an estimate

K = Unknown bias

L = Low bias

mg/kg = milligrams per kilogram

ND = Not utilized

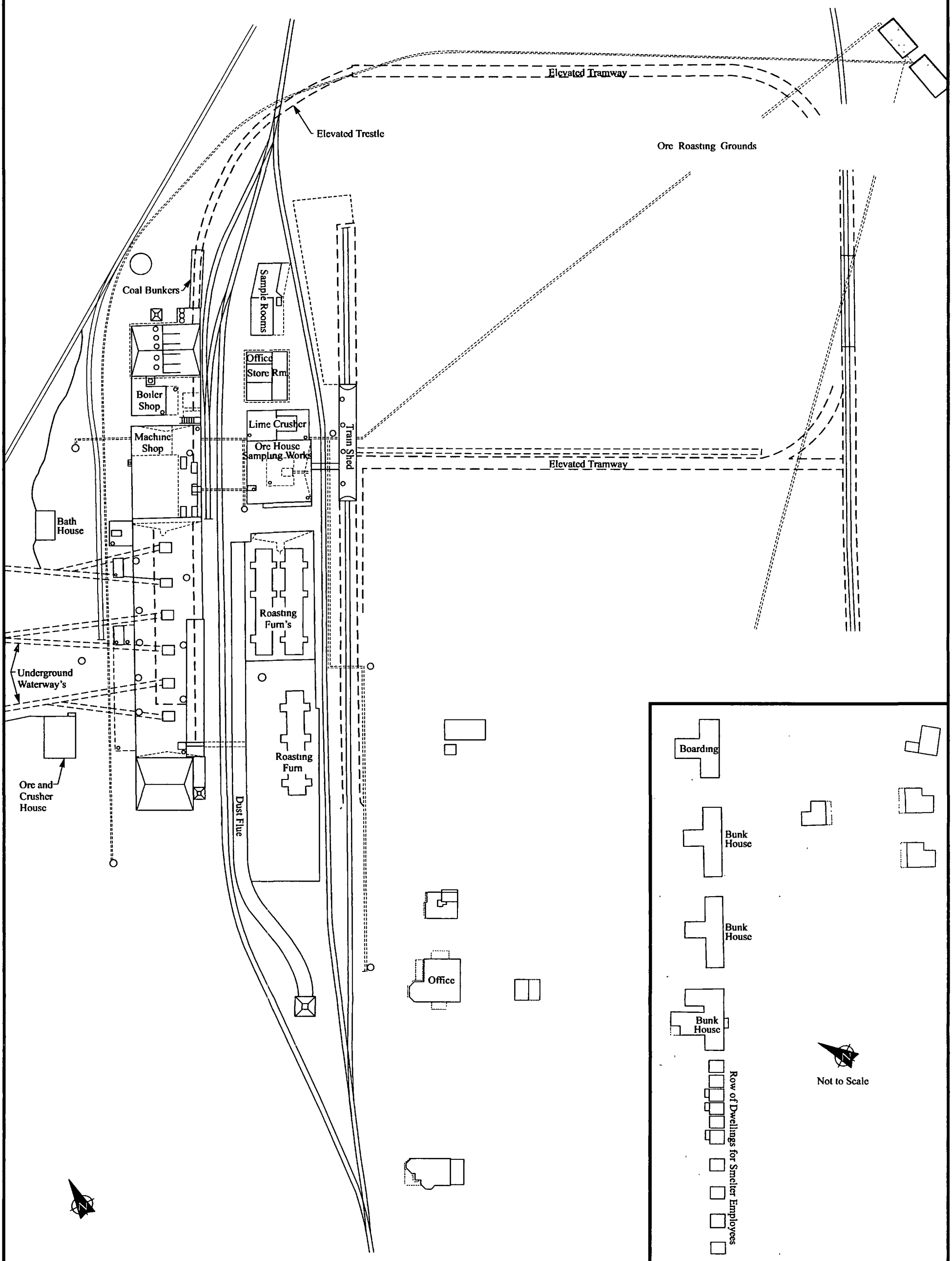
SD = Sediment

TAL = Target Analyte List

APPENDIX F

LEROI/NORTHPORT SMELTER HISTORICAL SITE MAPS

Base Map Reference: Sanborn Map Company, 1908



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International Specialists in the Environment
Seattle, Washington

UPPER COLUMBIA RIVER
EXPANDED SITE INSPECTION
Stevens County, Washington

0 50 100
Approximate Scale in Feet

Figure 1
SITE SKETCH

Date:	Drawn by:	
6/5/02	AES	10:START-2\01-02-0028\fig 1

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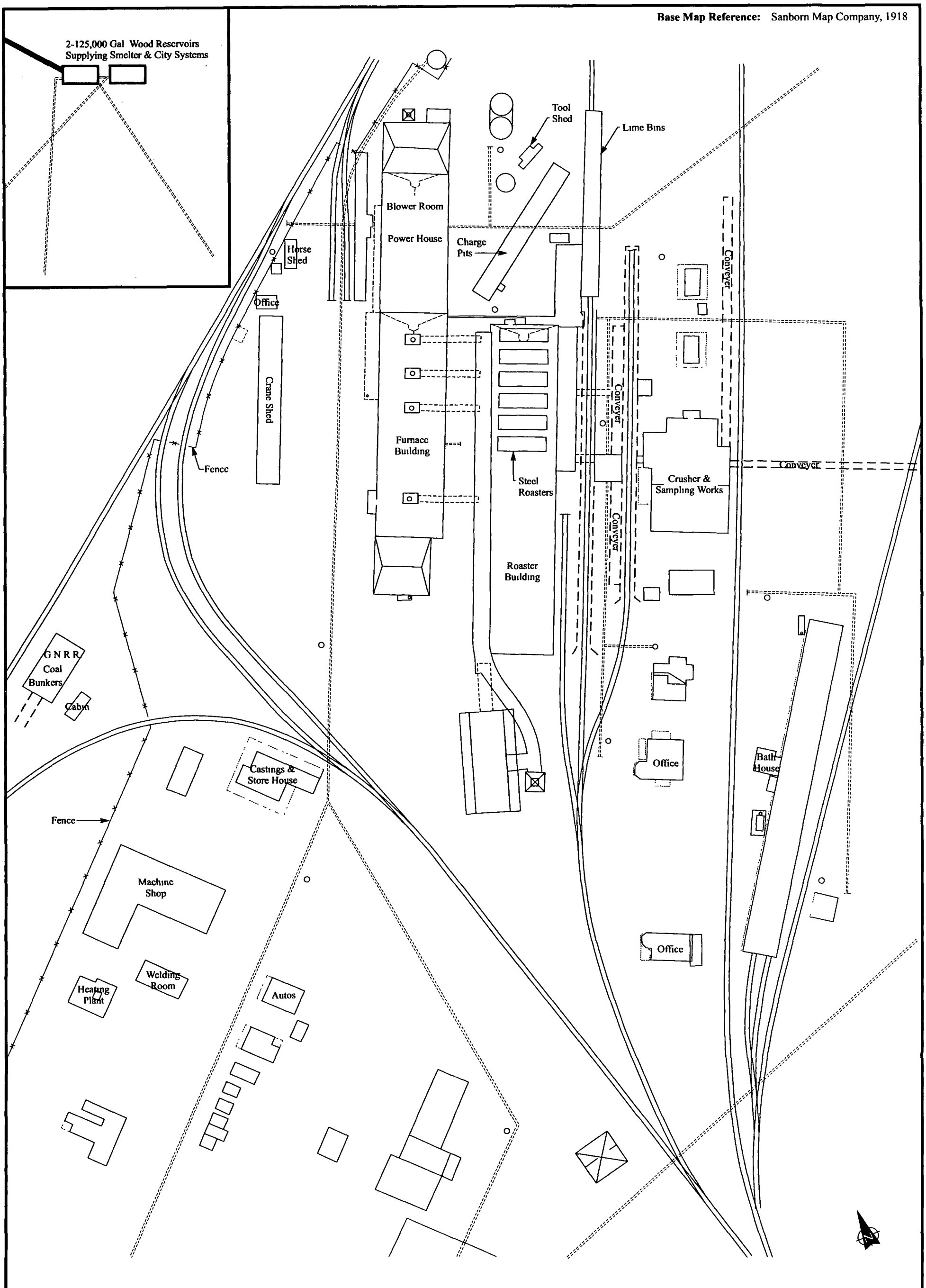

ecology and environment, inc.
International Specialists in the Environment
Seattle, Washington

UPPER COLUMBIA RIVER
EXPANDED SITE INSPECTION
Stevens County, Washington

Figure 2
SITE SKETCH

0 50 100
Approximate Scale in Feet

Date:	Drawn by:	
6/5/02	AES	10:START-2\01-02-0028\fig 2

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APPENDIX G

NORTHPORT CITY WELLS ANALYTICAL RESULTS

SAM802P1 SAM802M1 D W A I N 23/10/01

SAM8 SAMPLE VIEW PROGRAM 13:10:16.8

SYSTEM ID: 61850 K NORTHPORT WATER SYSTEM Grp/Type: AC

OMM

PGP-ID: IOC

NR	LAB	SAMPL	CLLCT-DATE	PTM	SRC	TYPE	MEAS	ND	NA	UK	UNSUIT	ER
RORS												
1	023	15896	10 30 2000	IOC	01		27		16			_
2	023	15897	10 30 2000	IOC	02		26	1	16			_
3	023	15833	10 04 1999	IOC	03		27		16			_
4	051	19648	08 03 1993	ICHEM	03		24			2		_
5	051	12762	10 03 1990	ICHEM	03		20			1		_
6	111	96458	12 10 1996	LCR	93		2					_
7	111	96459	12 10 1996	LCR	93		2					_
8	111	96460	12 10 1996	LCR	93		2					_
9	111	96461	12 10 1996	LCR	93		2					_
10	111	96462	12 10 1996	LCR	93		2					_
11	111	96463	12 10 1996	LCR	93		2					_
12	111	96464	12 10 1996	LCR	93		2					_

SAMPLE NR:

TRAN: ____ SAML

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---

AGAIN PMENU BACK FWD SAMP

RECEIVED
OCT 2 5 2001
Environmental Cleanup Office

SAM802P1 SAM802M2 DWAIN PAGE 1 23/10/01
TEST METHOD: IOC SAM8 SAMPLE VIEW PROGRAM 14:33:18.
2
SYSTEM: 61850 K NORTHPORT WATER SYSTEM GRP/TYPE: A COMM
LAB/SAMPLE NR: 023 15896 COLLECT DATE: 10 30 2000 DATA ERRORS:
SOURCE: 01 LAB RECEIVED: 10 31 2000 REPORTED: 12 13 2000
SAMPLE TYPE: B MULT SRCE 95 & 96:
SAMPLE PURPOSE: C LOCATION DESC: PH
UNSUITABLE:

EPA	DOH	TESTS	ANALYSIS	MEASUREMENT
1005	4	ARSENIC	LT	0.0050
1010	5	BARIUM		0.1400
1015	6	CADMIUM	LT	0.0010
1020	7	CHROMIUM	LT	0.0100
1035	11	MERCURY	LT	0.0005
1045	12	SELENIUM	LT	0.0050
1075	110	BERYLLIUM	LT	0.0030
1036	111	NICKEL	LT	0.0200
1074	112	ANTIMONY	LT	0.0020
1085	113	THALLIUM	LT	0.0010
1024	116	CYANIDE	LT	0.0500

TRAN: ____ SAML
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
AGAIN PMENU RTRN BACK NEXT
'PF4' To Return To Sample List; 'PF8' To Advance; 'PF7' BackUp

LAB/SAMPLE: 023 15896 COLLECT DATE: 10 30 2000 TEST METHOD: IO
C

EPA	DOH	TEST	ANALYSIS	MEASUREMENT
1085	19	FLUORIDE		0.3000
1041	114	NITRITE-N	LT	0.0500
1040	20	NITRATE-N		0.9000
1038	161	TOTAL NITRATE/NITRITE		0.9000
1028	8	IRON	LT	0.1000
1032	10	MANGANESE	LT	0.0100
1050	13	SILVER	LT	0.0100
1017	21	CHLORIDE		5.0000
1055	22	SULFATE	NA	
1095	24	ZINC	LT	0.2000
1052	14	SODIUM		7.0000
1915	15	HARDNESS		368.0000
1064	16	CONDUCTIVITY		660.0000
0100	17	TURBIDITY		0.3000
1905	18	COLOR		10.0000
1057	26	TDS-TOTAL DISSOLVED SOLIDS	NA	
1030	9	LEAD	LT	0.0020
1022	23	COPPER	LT	0.2000

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF
12---
AGAIN PMENU RTRN BACK NEXT
'PF4' To Return To Sample List; 'PF8' To Advance; 'PF7' BackUp

LAB/SAMPLE: 023 15896 COLLECT DATE: 10 30 2000 TEST METHOD: IO
C

EPA	DOH	TEST	ANALYSIS	MEASUREMEN
	171	ORTHOPHOSPHATE	NA	
	172	SILICA	NA	
	402	ALUMINUM	NA	
	403	ALKALINITY	NA	
	404	MAGNESIUM	NA	
	405	CALCIUM	NA	
	406	AMMONIA	NA	
	407	CHLORINE DIOXIDE	NA	
	408	OZONE	NA	
	409	PH	NA	
	410	CHLORAMINES	NA	
	99	INATIVATION RATIO	NA	
1012	100	RESIDUAL CHLORINE	NA	
1094	115	ASBESTOS	NA	

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF
2---
AGAIN PMENU RTRN BACK NEXT
PF4' To Return To Sample List; 'PF8' To Advance; 'PF7' BackUp

LAB/SAMPLE: 023 15897 COLLECT DATE: 10 30 2000 TEST METHOD: IO
C

EPA	DOH	TEST	ANALYSIS	MEASUREMEN T
	171	ORTHOPHOSPHATE	NA	
	172	SILICA	NA	
	402	ALUMINUM.	NA	
	403	ALKALINITY	NA	
	404	MAGNESIUM	NA	
	405	CALCIUM	NA	
	406	AMMONIA	NA	
	407	CHLORINE DIOXIDE	NA	
	408	OZONE	NA	
	409	PH	NA	
	410	CHLORAMINES	NA	
	99	INATIVATION RATIO	NA	
1012	100	RESIDUAL CHLORINE	NA	
1094	115	ASBESTOS	NA	

SAM802P1 SAM802M2 DWAIN PAGE 1 23/10/01
TEST METHOD: IOC SAM8 SAMPLE VIEW PROGRAM 14:33:51.
7
SYSTEM: 61850 K NORTHPORT WATER SYSTEM GRP/TYPE: A COMM
LAB/SAMPLE NR: 023 15897 COLLECT DATE: 10 30 2000 DATA ERRORS:
SOURCE: 02 LAB RECEIVED: 10 31 2000 REPORTED: 12 13 2000
SAMPLE TYPE: B MULT SRCE 95 & 96:
SAMPLE PURPOSE: C LOCATION DESC: PH
UNSUITABLE:

EPA	DOH	TESTS	ANALYSIS	MEASUREMENT
1005	4	ARSENIC	LT	0.0050
1010	5	BARIUM		0.1100
1015	6	CADMIUM	LT	0.0010
1020	7	CHROMIUM	LT	0.0100
1035	11	MERCURY	LT	0.0005
1045	12	SELENIUM	LT	0.0050
1075	110	BERYLLIUM	LT	0.0030
1036	111	NICKEL	LT	0.0200
1074	112	ANTIMONY	LT	0.0020
1085	113	THALLIUM	LT	0.0010
1024	116	CYANIDE	LT	0.0500

TRAN: ____ SAML
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
AGAIN PMENU RTRN BACK NEXT
'PF4' To Return To Sample List; 'PF8' To Advance; 'PF7' BackUp

LAB/SAMPLE: 023 15897 COLLECT DATE: 10 30 2000 TEST METHOD: IO
C

EPA	DOH	TEST	ANALYSIS	MEASUREMENT
1[illegible]5	19	FLUORIDE		0.3000
1[illegible]1	114	NITRITE-N	LT	0.0500
1040	20	NITRATE-N	LT	0.2000
1038	161	TOTAL NITRATE/NITRITE	ND	
1028	8	IRON	LT	0.1000
1032	10	MANGANESE		0.1300
1050	13	SILVER	LT	0.0100
1017	21	CHLORIDE		5.0000
1055	22	SULFATE	NA	
1095	24	ZINC	LT	0.2000
1052	14	SODIUM		7.0000
1915	15	HARDNESS		351.0000
1064	16	CONDUCTIVITY		640.0000
0100	17	TURBIDITY		0.1000
1905	18	COLOR		10.0000
1057	26	TDS-TOTAL DISSOLVED SOLIDS	NA	
1030	9	LEAD	LT	0.0020
1022	23	COPPER	LT	0.2000

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF
12---
AGAIN PMENU RTRN BACK NEXT
'PF4' To Return To Sample List; 'PF8' To Advance; 'PF7' BackUp

SAM802P1 SAM802M2 DWAIN PAGE 1 23/10/01
TEST METHOD: IOC SAM8 SAMPLE VIEW PROGRAM 14:34:18.
0
SYSTEM: 61850 K NORTHPORT WATER SYSTEM GRP/TYPE: A COMM
LAB/SAMPLE NR: 023 15833 COLLECT DATE: 10 04 1999 DATA ERRORS:
SOURCE: 03 LAB RECEIVED: 10 05 1999 REPORTED: 11 24 1999
SAMPLE TYPE: B MULT SRCE 95 & 96:
SAMPLE PURPOSE: C LOCATION DESC: WELL 3
UNSUITABLE:

EPA	DOH	TESTS	ANALYSIS	MEASUREMENT
1005	4	ARSENIC	LT	0.0050
1010	5	BARIUM		0.1400
1015	6	CADMIUM	LT	0.0010
1020	7	CHROMIUM	LT	0.0100
1035	11	MERCURY	LT	0.0005
1045	12	SELENIUM	LT	0.0050
1075	110	BERYLLIUM	LT	0.0030
1036	111	NICKEL	LT	0.0200
1074	112	ANTIMONY	LT	0.0020
1085	113	THALLIUM	LT	0.0010
1024	116	CYANIDE	LT	0.0500

TRAN: ____ SAML
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
AGAIN PMENU RTRN BACK NEXT
'PF4' To Return To Sample List; 'PF8' To Advance; 'PF7' BackUp

LAB/SAMPLE: 023 15833 COLLECT DATE: 10 04 1999 TEST METHOD: IO
C

EPA	DOH	TEST	ANALYSIS	MEASUREMEN T
	171	ORTHOPHOSPHATE	NA	
	172	SILICA	NA	
	402	ALUMINUM	NA	
	403	ALKALINITY	NA	
	404	MAGNESIUM	NA	
	405	CALCIUM	NA	
	406	AMMONIA	NA	
	407	CHLORINE DIOXIDE	NA	
	408	OZONE	NA	
	409	PH	NA	
	410	CHLORAMINES	NA	
	99	INATIVATION RATIO	NA	
1012	100	RESIDUAL CHLORINE	NA	
1094	115	ASBESTOS	NA	

SAM802P1 SAM802M1 D W A I N 23/10/01

SAM8 SAMPLE VIEW PROGRAM 14:37:59.9

SYSTEM ID: 61850 K NORTHPORT WATER SYSTEM Grp/Type: AC

OMM

PGP-ID: VOC

NR	LAB	SAMPL	CLLCT-DATE	PTM	SRC	TYPE	MEAS	ND	NA	UK	UNSUIT	ER
RORS												
1	054	03713	04 30 1991	524.2	01			57				
2	054	03714	04 30 1991	524.2	02			57				
3	054	03715	04 30 1991	524.2	03			57				
4	054	05117	11 13 1991	524.2	96			60	5			

SAMPLE NR:

TRAN: ____ SAML

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---

AGAIN PMENU BACK FWD SAMP

END OF FILE

SAM802P1 SAM801M1 D W A I N 10/23
/01

DRINKING WATER PROGRAM 14:38
SAMPLE REVIEW (SAM8)

PWS ID: 61850

FROM: _1 _1 1990
TO: 10 23 2001 (mmddyyyy)

SOURCE: __

PGP ID: SOC
PTM-ID: _____

TRAN: ____ SAML
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF
12---
AGAIN PMENU
NO SAMPLES FOUND; Press PF-2 To Continue !!!!!!!

SAM802P1 SAM802M1 D W A I N 23/10/01
SAM8 SAMPLE VIEW PROGRAM 14:40:12.1
SYSTEM ID: 31746 6 NORTHWEST ALLOYS INC Grp/Type: AN
TNC
PGP-ID: TOC

NR	LAB	SAMPL	CLLCT-DATE	PTM	SRC	TYPE	MEAS	ND	NA	UK	UNSUIT	ER
RORS												
1	017	93001	10 06 1998	NIT	01			1	2			_
2	017	93002	10 06 1998	NIT	02			1	2			_
3	119	95626	12 06 1999	ASB	92		1					_
4	024	42001	04 20 1998	LCR	93		1	1				_
5	024	42002	04 20 1998	LCR	93		1	1				_
6	024	42003	04 20 1998	LCR	93		1	1				_
7	024	42004	04 20 1998	LCR	93		1	1				_
8	024	42005	04 20 1998	LCR	93			2				_
9	024	42006	04 20 1998	LCR	93		1	1				_
10	024	42007	04 20 1998	LCR	93		1	1				_
11	024	42008	04 20 1998	LCR	93		1	1				_
12	024	42009	04 20 1998	LCR	93		1	1				_

SAMPLE NR: 1

TRAN: ____ SAML
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
AGAIN PMENU BACK FWD SAMP

SAM802P1 SAM802M2 DWAIN PAGE 1 23/10/01
TEST METHOD: NIT SAM8 SAMPLE VIEW PROGRAM 14:41:13.
1
SYSTEM: 31746 6 NORTHWEST ALLOYS INC GRP/TYPE: A NTNC
LAB/SAMPLE NR: 017 93001 COLLECT DATE: 10 06 1998 DATA ERRORS:
SOURCE: 01 LAB RECEIVED: 10 09 1998 REPORTED: 10 13 1998
SAMPLE TYPE: U MULT SRCE 95 & 96:
SAMPLE PURPOSE: C LOCATION DESC: BLDG 368
UNSUITABLE:

EPA	DOH	TESTS	ANALYSIS	MEASUREMENT
1040	20	NITRATE-N	ND	
1041	114	NITRITE-N	NA	
1038	161	TOTAL NITRATE/NITRITE	NA	

TRAN: ____ SAML
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
AGAIN PMENU RTRN BACK NEXT
'PF4' To Return To Sample List; 'PF8' To Advance; 'PF7' BackUp

SAM802P1 SAM802M2 DWAIN PAGE 1 23/10/01
TEST METHOD: NIT SAM8 SAMPLE VIEW PROGRAM 14:41:23.
8
SYSTEM: 31746 6 NORTHWEST ALLOYS INC GRP/TYPE: A NTNC
LAB/SAMPLE NR: 017 93002 COLLECT DATE: 10 06 1998 DATA ERRORS:
SOURCE: 02 LAB RECEIVED: 10 09 1998 REPORTED: 10 13 1998
SAMPLE TYPE: U MULT SRCE 95 & 96:
SAMPLE PURPOSE: C LOCATION DESC: BLDG 368
UNSUITABLE:

EPA	DOH	TESTS	ANALYSIS	MEASUREMENT
1040	20	NITRATE-N	ND	
1041	114	NITRITE-N	NA	
1038	161	TOTAL NITRATE/NITRITE	NA	

TRAN: ____ SAML
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
AGAIN PMENU RTRN BACK NEXT
'PF4' To Return To Sample List; 'PF8' To Advance; 'PF7' BackUp

SAM802P1 SAM802M2 DWAIN PAGE 1 23/10/01
TEST METHOD: ASB SAM8 SAMPLE VIEW PROGRAM 14:43:21.
9
SYSTEM: 31746 6 NORTHWEST ALLOYS INC GRP/TYPE: A NTNC
LAB/SAMPLE NR: 119 95626 COLLECT DATE: 12 06 1999 DATA ERRORS:
SOURCE: 92 LAB RECEIVED: 12 07 1999 REPORTED: 12 30 1999
SAMPLE TYPE: A MULT SRCE 95 & 96:
SAMPLE PURPOSE: C LOCATION DESC: BLDG 375 LAB SINK
UNSUITABLE:

EPA	DOH	TESTS	ANALYSIS	MEASUREMENT
1094	115	ASBESTOS	LT	0.0980

TRAN: ____ SAML
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
AGAIN PMENU RTRN BACK NEXT
'PF4' To Return To Sample List; 'PF8' To Advance; 'PF7' BackUp

SAM802P1 SAM802M1 D W A I N 23/10/01

SAM8 SAMPLE VIEW PROGRAM 14:39:23.7

SYSTEM ID: 31746 6 NORTHWEST ALLOYS INC Grp/Type: AN

TNC

PGP-ID: VOC

NR	LAB	SAMPL	CLLCT-DATE	PTM	SRC	TYPE	MEAS	ND	NA	UK	UNSUIT	ER
RORS												
1	017	03001	10 06 1998	524.2	01			30	33			
2	017	02601	04 17 1997	524.2	01			58	3			
3	017	03002	10 06 1998	524.2	02			30	33			
4	017	02602	04 17 1997	524.2	02			58	3			
5	017	07907	12 18 1992	524.2	02			57				
6	017	04099	06 30 1992	524.2	02			57				
7	017	05065	08 15 1996	524.2	03			58	3			
8	017	06477	10 13 1995	524.2	96			57	2			

SAMPLE NR:

TRAN: ____ SAML

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---

AGAIN PMENU BACK FWD SAMP

END OF FILE

SAM802P1 SAM801M1 D W A I N 10/23
/01

DRINKING WATER PROGRAM 14:39
SAMPLE REVIEW (SAM8)

PWS ID: 31746

FROM: _1 _1 1990
TO: 10 23 2001 (mmddyyyy)

SOURCE: __

PGP ID: SOC__
PTM-ID: _____

TRAN: ____ SAML
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF
12---
AGAIN PMENU
NO SAMPLES FOUND; Press PF-2 To Continue !!!!!!!

APPENDIX H

WESTON'S TRIP REPORT

SEDIMENT INVESTIGATION TRIP REPORT

Upper Columbia River/Lake Roosevelt Expanded Site Inspection
Northeast Washington

TDD: 01-02-0001

Prepared By:

ROY F. WESTON, INC.
190 Queen Anne Avenue North, Suite 200
Seattle, WA 98109-4926

December 2001

Contract No: 68-S0-01-02
WESTON Work Order No. 12644-001-002-0101-00

APPROVALS			
TITLE	NAME	SIGNATURE	DATE
START Site Leader	Susan FitzGerald		12-17-01
START Project Manager	Keith Pine		12/17/01
START QA Officer	Paul Swift		12/17/01

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SECTION 1

PROJECT DESCRIPTION

1.1 INTRODUCTION

Pursuant to United States Environmental Protection Agency (EPA) Contract No. 68-S0-01-02, Technical Direction Document (TDD) Number 01-02-0001, Roy F. Weston, Inc. (WESTON®) conducted sediment sampling on the Upper Columbia River/Lake Roosevelt for an Expanded Site Investigation (ESI). The ESI has been organized as a cooperative effort involving WESTON and Ecology and Environment, Inc. (E&E).

The ESI is conducted under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), is intended to collect sufficient data to enable evaluation of the site's potential for inclusion on the National Priorities List (NPL) and, for those sites determined to be NPL candidates, to establish priorities for additional action.

This document presents a summary of the sampling activities and the analytical results of the investigation conducted by WESTON for the Upper Columbia River/Lake Roosevelt ESI. WESTON's investigation area consisted primarily of the Columbia River and the reservoir formed upstream of Grand Coulee Dam known as Franklin D. Roosevelt Lake (Lake Roosevelt), from Inchelium, Washington, northward to the United States/Canada international border, including all known tributaries entering the river within that area. Sediment and/or surface water samples were also collected from Lake Roosevelt near the Grand Coulee Dam, selected tributaries to the Pend Oreille River, and the Columbia River tributary at the Cleveland Mine site in Stevens County (Figure 1). Sampling and analyses were conducted in accordance with the procedures outlined in the Sampling and Quality Assurance Plan (SQAP; WESTON 2001).

This document includes project description information (Section 1), sampling and analytical results (Section 2), and references (Section 3).

1.2 SAMPLE TYPES, NUMBERS, AND LOCATIONS

In total, WESTON collected 188 field samples between 14 May and 28 June 2001. The total number of samples includes:

- 53 surface sediment samples from the Columbia River/Lake Roosevelt, including 51 from depth intervals ranging from 0 to 8 inches below the sediment surface, and two from depth intervals from 18 to 24 inches below the sediment surface.
- 115 surface sediment samples from tributaries to the Columbia River/Lake Roosevelt.
- 6 soil samples in the Columbia River watershed.
- 5 surface sediment samples from tributaries to the Pend Oreille River.

- 1 surface water sample from the Columbia River/Lake Roosevelt.
- 3 surface water samples from tributaries to the Columbia River/Lake Roosevelt.
- 4 surface water samples from tributaries to the Pend Oreille River.
- 1 surface water sample from the City of Grand Coulee municipal drinking water distribution system.

The samples collected included those resulting from changes to the proposed scope of work requested by the EPA Task Monitors (TM), Mr. Mark Ader and Ms. Monica Tonel. Seventy-one tributaries located along Lake Roosevelt from Inchelium to Marcus Island, identified as "Phase 2" tributaries in the SQAP, were sampled. WESTON collected sediment, soil, and/or surface water samples from selected mine sites under investigation by E&E as part of the ESI. WESTON was unable to collect proposed samples in Canada. These samples may be collected at a later date if access is granted by the Canadian government.

Sample field duplicate quantities originally included in sample totals proposed in the SQAP were not collected, at the direction of the EPA TM.

1.3 STATION LOCATIONS, SAMPLING METHODS, AND ANALYTICAL REQUIREMENTS

1.3.1 Station Locations

Surface sediment and surface water sampling station locations are depicted in Figures 1A through 1J. Except where noted, the locations illustrated in the figures are based on Global Positioning System (GPS) data recorded in the field (which was differentially corrected through post-processing by Mr. Matt Gubitosa of EPA), and on location notes recorded on Field Sample Record Forms. A table of corrected GPS coordinates and location notes for each sampling station is provided in Appendix A. Copies of the Field Sample Record Forms for each sample are provided in Appendix B.

At the request of the EPA TM, station identification (ID) codes were revised to follow a sequential order from downstream to upstream along the river, as presented in Figures 1A through 1J. The station IDs consist of a two-letter code indicating the station type, followed by a three-digit sequential number. The following station type codes were used:

CS — Columbia River sediment
CW — Columbia River surface water
TS — Tributary sediment (downstream sampling location)
US — Tributary sediment/soil (upstream/upland sampling location)
UW — Upland surface water
RS — Rinsate of sediment sampling equipment
RW — Rinsate of water sampling equipment
TB — Trip Blank

Stations sampled in the field closely matched those proposed in Plates 1 through 8 of the SQAP (except for proposed locations shown in Canada). Upstream tributary locations and samples collected at individual mine sites were determined in the field at the direction of the EPA TM.

In several instances, proposed sampling locations were moved or abandoned due to the proximity of archaeological sites, inappropriate settings (e.g., landslide or non-depositional environments), physical hazards, the inability to identify specific stream channels, or property access restrictions to tributary locations. In addition to these factors, adequate recovery of surface sediment was not possible at some river sampling locations; in these cases, multiple attempts were made before the station was abandoned.

A sample station at Plum Point (CS003) was added in the field, at the direction of the EPA TM, in response to a request by Ms. Patti Stone of the Colville Confederated Tribes. Ms. Stone requested a sample from the Sawilla Basin area to replace the proposed 1.5 to 2-foot interval sample that was not collected at the Crescent Bay boat ramp (due to the presence of large cobbles at that location). Plum Point was selected because it appeared to be representative of conditions in the Sawilla Basin. While attempting to collect the sample, it became apparent that the surface sediment deposited on the bar at Plum Point consisted of a thin layer (3 inches) of loose material above dense older material. It was determined that a sample from the 1.5 to 2-foot interval would not be representative of material deposited or influenced by Lake Roosevelt; for this reason, only the top few inches of material were sampled, and the deeper sample at Plum Point was not collected.

The sample location at the Boise Cascade log boom (CS020), and a tributary location (TS050) were added based on observations in the field. The samples collected from 18- to 24-inch interval at Haag Cove (CS017) and Pingston Creek (CS024) were collected at the request of the EPA TM.

Stranger Creek East was not sampled. Although the field sampling record for station TS007 (sample TR-060-SD) identifies the sample location as Stranger Creek East, the corrected GPS data indicates that the location sampled was an unnamed ephemeral tributary. Stations TS009 (sample TR-063-SD) and TS037 (sample TR-090-SD) are unproposed locations identified in the field as dry ephemeral tributaries.

1.3.2 Sampling Methods

1.3.2.1 Sediment Sampling

Sediment samples were collected from the Columbia River and Lake Roosevelt during the annual low water season brought about by managed discharges at Grand Coulee Dam. The mean high water (MHW) or average annual "full pool" elevation for Lake Roosevelt is 1,290 feet above mean sea level (feet MSL). All sediment samples from the river (including Lake Roosevelt) were collected from locations below the MHW elevation, as determined by estimated water level elevations and observed shoreline MHW level indicators (e.g., water marks on shoreline, tree lines). Water levels measured at Grand Coulee Dam during the river sediment sampling period ranged from 1237.01 feet MSL on 14 May to 1277.88 feet MSL on 8 June. A

graph of water level elevations measured at Grand Coulee Dam over the period of 14 May through 30 June is presented in Figure 2. Many of the sampling locations were subaerially exposed during the sampling event because of the seasonally low water levels. Both exposed and submerged sediment samples were collected.

At every exposed river sampling area, metals concentrations of potential sampling locations were screened using a portable x-ray fluorescence analyzer (XRF). Generally, two to three locations in the station area were screened, and the location displaying the highest concentrations was selected for sampling. A memo presenting the results of XRF screening conducted in the field is included in Appendix C.

All sediment samples were collected using stainless steel sampling equipment, including a petit ponar dredge, hand auger, and/or bowls and spoons. All sampling was conducted in accordance with the procedures outlined in the SQAP. Samples from all locations were collected in a downstream-to-upstream sequence, except for CR-036-SD, which was collected at a more southerly point (downstream) than CR-035-SD, which was collected two hours earlier. Three sediment samples at the Cleveland Mine site were collected in an upstream to downstream sequence.

All but one of the exposed stations were sampled using a bowl and spoon. The two samples at Haag Cove (CS017), from depth intervals of 0 to 6 inches, and 18 to 24 inches below the sediment surface, respectively, were collected using a hand auger.

All but one of the submerged stations were sampled using a petit ponar dredge sampler deployed from the EPA research vessel (RV) *Monitor*. The RV *Monitor* was operated by Mr. "Doc" Thompson of EPA. Sampling with the petit ponar dredge required between one and five grabs to collect the required volume. Penetration depths using the dredge ranged from 0 to 5 inches. Sediment from submerged sites was not screened with the XRF due to the high moisture content of the material, which interferes with the instrument's analysis. The station north of Pingston Creek (CS024) was covered by approximately two feet of water at the time of sampling, and the sample from this station was collected from a depth of 18 to 24 inches below the sediment surface using a hand auger.

Tributary sampling locations were identified based on United States Geological Survey (USGS) 7.5 minute series topographic maps. Samples from tributaries were collected using a bowl and spoon. Water depths at tributary sampling locations were generally 0 to 4 inches, but depths up to 12 inches were recorded. When submerged sediment was sampled, care was taken to minimize the disturbance and suspension of fine-grained material. Depths of tributary sediment samples ranged from 0.5 to 10 inches below the sediment surface. Sampling locations at tributaries were generally not screened with the XRF, at the direction of the EPA TM.

Upon collection, sample material was typically placed in pre-cleaned stainless-steel bowls for homogenization prior to being placed in labeled pre-cleaned sample jars. Sample material at 19 Phase 2 tributaries that was to be analyzed for Target Analyte List (TAL) metals only, was collected and homogenized directly in the glass sample jars. This was necessary due to a shortage of pre-cleaned sampling bowls resulting from the addition of the Phase 2 tributaries,

and was noted on the sampling form at each location where it occurred. Observations of sample material characteristics such as grain size, color, odor, and the presence of debris (including suspected slag material) were noted on a Field Sampling Record Form for each sample (Appendix B). Sample grain size was described according to visually estimated percentages of gravel, sand, silt, and clay. Each sample was subsequently classified into one of four categories, based on the estimated percentage of fine-grained sediment (silt and clay) or "fines" in each sample. The sample grain size classifications were as follows:

1. Less than 25% fines
2. Greater than 25% but less than 50% fines
3. Greater than 50% but less than 75 % fines
4. Greater than 75% fines

The grain size classification for each sediment sample is listed in Table 1-1.

After the sample containers were filled, the samples were photographed and packed in coolers with ice for shipment.

1.3.2.2 Water Sampling

Surface water sampling followed the procedures detailed in the SQAP. One sample of surface water from the Columbia River/Lake Roosevelt was collected immediately upstream of the City of Grand Coulee municipal drinking water system intake (station CW002). A Kemmerer bottle was lowered from the RV *Monitor* to approximately 1208 feet above MSL, the elevation of the intake as reported by Mr. Dennis Francis of the City of Grand Coulee. The sample was collected, and subsequently decanted into sample containers.

One water sample from the City of Grand Coulee municipal supply was collected directly from a spigot located in the system's Dill Avenue Pump House (station CW001). Contrary to information obtained prior to the sampling event, the Grand Coulee municipal water system did not have a sampling port located upstream of the city's chlorination treatment point. Sodium thiosulfate ($Na_2S_2O_3$) was not available at the time of sampling; therefore, with the permission of the EPA, the VOC water sample was submitted without $Na_2S_2O_3$ preservation. The water samples from Lake Roosevelt and the City of Grand Coulee were also submitted to the laboratory for TAL metals analysis. The samples were preserved with nitric acid at the lab prior to analysis.

Seven surface water samples were collected from tributaries to the Columbia River/Lake Roosevelt and Pend Oreille Rivers by directly immersing the sample containers into the stream. At the Cleveland Mine site, the surface water sample was collected following the collection of upstream sediment samples.

1.3.3 Analytical Requirements

In general, all samples were analyzed in accordance with the methods and procedures specified in the SQAP (WESTON 2001). Chemical analyses performed on each sample are presented in Table 1-2. A sample quality assurance and quality control (QA/QC) analysis summary is

presented in Table 1-3. Minor deviations from the proposed sample analytical requirements occurred as follows:

- Pesticide/polychlorinated biphenyls (Pest/PCB) and total organic carbon (TOC) analyses were added to the requirements for samples from four of the five northernmost tributaries to the Columbia River, at the direction of the EPA TM; these tributaries were identified in the SQAP for TAL metals analysis only.
- Phase 2 tributary sample analyses were not included in the quantities proposed in the SQAP. The Phase 2 tributary sampling effort resulted in an additional 71 samples analyzed for TAL metals, and an additional 17 samples analyzed for Pest/PCB and TOC.
- Three soil samples collected at the Van Stone Mine site were submitted for TAL metals, Pest/PCB, TOC, and semivolatile organic compound (SVOC; method OLM04.2) analyses. Soil SVOC analysis was not included among the analytical requirements in the SQAP.
- It was estimated in the SQAP that four surface water field samples would be collected and analyzed for TAL metals, Pest/PCB, VOCs, and SVOCs. A total of nine surface water field samples were actually collected; all were analyzed for TAL metals, and two were also analyzed for Pest/PCB, VOCs, and SVOCs.

1.4 SAMPLE HANDLING, PACKAGING, AND SHIPPING

Samples were handled, packaged, and shipped in accordance with the procedures specified in the SQAP (WESTON 2001).

1.5 DOCUMENTATION

All field documentation, sample designation, labeling, and chain of custody procedures were followed in accordance with the procedures specified in the SQAP (WESTON 2001).

1.6 CONTACTS

Several federal agencies assisted in this investigation, including the National Park Service, which agreed to provide backup vessels and to serve as an emergency contact for the field crew; the U.S. Forest Service, which provided personnel to assist in sample collection; and the U.S. Bureau of Reclamation, which provided periodic updates on Lake Roosevelt water levels. A list summarizing individuals and affiliated agencies contacted during the course of this investigation is provided in Appendix D.

1.7 EQUIPMENT DECONTAMINATION AND INVESTIGATION-DERIVED WASTE

Procedures specified in the SQAP (WESTON 2001) for decontaminating equipment and disposing of investigation-derived waste (IDW) were followed during field activities.

Every effort was made to minimize the need for decontamination of sampling equipment through the use of dedicated pre-cleaned sampling equipment (e.g., bowls, spoons), however, the use of non-dedicated sampling equipment (e.g., dredge samplers) was required in some locations, as discussed above. When used, the non-dedicated sampling equipment was decontaminated prior to each use to avoid sample cross-contamination.

The following procedure was followed for all non-dedicated sampling equipment used to collect routine samples undergoing trace organic or inorganic constituent analyses. Non-dedicated sampling equipment was:

1. Cleaned with tap water and nonphosphate detergent using a brush if necessary to remove particulate matter and surface films.
2. Rinsed thoroughly with tap or river water.
3. Rinsed thoroughly with analyte free water.
4. Air-dried, when possible, away from potential sources of contamination (e.g., splashes).

The use of a solvent rinse, proposed in the decontamination procedure presented in the SQAP was never necessary because organic residues were never apparent following the detergent wash.

WESTON made every effort to minimize the generation of IDW that could not be disposed of as solid waste. All extra sediment volume collected for a sample remained at the sampling location. Disposable personal protective equipment generated during field activities was double-bagged in plastic garbage bags and disposed of at a solid waste disposal facility. No IDW water was generated during the investigation.

SECTION 2

SAMPLING RESULTS

The following sections present the analytical data generated during this investigation. Chain-of-custody forms and data validation reports are provided in Appendix E.

2.1 DATA PRESENTATION

Analytical data tables for surface sediment and surface water are presented in Appendix F. Table 2.1 shows concentrations of constituents detected in sediment samples. Table 2.2 shows concentrations of constituents detected in surface water samples. Analytical data are reported as follows:

- Sediment inorganics are expressed in units of milligram per kilogram (mg/kg) dry-weight. Milligram per kilogram is equivalent to part per million (ppm).
- Sediment organics are expressed in units of microgram per kilogram (µg/kg) dry-weight; sediment nonionic/nonpolar organics are also expressed in units of µg/kg-organic carbon (i.e., the dry-weight concentration was normalized to the organic carbon content of the sample by dividing the chemical concentration by the sample-specific decimal fraction of organic carbon). Microgram per kilogram is equivalent to part per billion (ppb).
- Sediment total organic carbon (TOC) are expressed as mg/kg.
- Surface water inorganics are expressed in units of microgram per liter (µg/L).
- Surface water organics are expressed in units of microgram per liter (µg/L).

The following qualifiers were used in the data validation:

U — The compound was analyzed for, but not detected.

UJ — The compound was analyzed for, but was not detected; the associated quantitation limit is an estimate because quality control criteria were not met.

J — The analyte was positively identified, but the associated numerical values is an estimate quantity because quality control criteria were not met or because concentrations reported are less than the quantitation limit or lowest calibration standard.

NJ — The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

R — Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.

B — Detected inorganic concentration is below the method reporting limit/Contract Required Detection Limit (CRDL) but is above the instrument detection limit.

Q — Detected organic concentration is below the method reporting limit/CRDL but is above the method detection limit.

H — High bias.

K — Unknown bias.

L — Low bias.

2.2 SEDIMENT ANALYTICAL RESULTS

Table 2-1 shows concentrations of constituents detected in sediment samples.

2.2.1 TAL Metals

One hundred seventy-nine samples were analyzed for TAL metals. Analytical results indicated that TAL metals were detected at all stations. Nine metals were detected in all samples: aluminum, barium, calcium, copper, iron, magnesium, manganese, vanadium, and zinc. Table 2-1 provides a summary of the detected metals. Figures 3A through 3J illustrate copper, lead, and zinc concentrations in sediment samples. The sediment data table in Appendix F presents a complete listing of the analytical results.

2.2.2 Pesticides/PCBs

One hundred samples were analyzed for Pest/PCBs. Pesticides were detected at 12 stations. Seven pesticide compounds were detected: 4,4'-DDE, 4,4'-DDT, alpha-chlordane, beta-BHC, endrin, endrin aldehyde, and methoxychlor. Detected concentrations ranged from an estimate of 0.64 µg/kg endrin aldehyde in a sample from an unnamed tributary (station TS072) to 52 µg/kg methoxychlor in a sample from Lake Roosevelt in the Marcus Flats area (station CS026).

Aroclor-1254 and Aroclor-1260 were the only detected PCBs. These compounds were detected in samples from two stations in Lake Roosevelt, the North Dam boat ramp (station CS002) and north of Quillisascut Creek (station CS012). PCB concentrations were qualified as estimates, ranging from 5.9 µg/kg (station CS002) to 38 µg/kg (station CS012).

2.2.3 Total Organic Carbon

Organic carbon was detected in 86 of the 97 samples analyzed for TOC. Detected concentrations ranged from 1,210 mg/kg in the river sediment sample from south of Steamboat Rock (station CS046), to 328,000 mg/kg in the tributary sediment sample from Cuba Canyon Creek (station TS031).

2.2.4 Semivolatile Organic Compounds

Three soil samples from the Van Stone Mine site were analyzed for SVOCs. Two SVOCs were detected. Benzylbutylphthalate was detected in the sample from station US009 at an estimated concentration of 220 µg/kg, and in the sample from station US007 at an estimated concentration

of 130 µg/kg. Bis(2-ethylhexyl)phthalate was detected in the sample from station US007 at an estimated concentration of 56 µg/kg.

2.3 SURFACE WATER ANALYTICAL RESULTS

Table 2-2 shows concentrations of constituents detected in surface water samples.

2.3.1 TAL Metals

Nine surface water samples were analyzed for TAL metals. Table 2-2 provides a summary of the detected metals. Appendix F presents a complete listing of the data.

2.3.2 Pesticides/PCBs

Two surface water samples, from the City of Grand Coulee municipal drinking water system distribution point (station CW001) and from Lake Roosevelt near the system intake (station CW002), were analyzed for pesticides/PCBs. No pesticides or PCBs were detected in either sample.

2.3.3 Semivolatile Organic Compounds

Two surface water samples, from the City of Grand Coulee municipal drinking water system distribution point (station CW001) and from Lake Roosevelt near the system intake (station CW002), were analyzed for SVOCs. No SVOCs were detected in either sample.

2.3.4 Volatile Organic Compounds

Two surface water samples, from the City of Grand Coulee municipal drinking water system distribution point (station CW001) and from Lake Roosevelt near the system intake (station CW002), were analyzed for VOCs. Chloroform, the only VOC detected, was reported in the sample from the distribution point at a concentration of 26 µg/L.

SECTION 3

REFERENCE

WESTON (Roy F. Weston, Inc.). 2001. Upper Columbia River/Lake Roosevelt Expanded Site Inspection Sampling and Quality Assurance Plan, TDD: 01-02-0001-A, EPA Contract: 68-S0-01-02. Prepared for the U.S. Environmental Protection Agency Region X. May 2001.

TABLES

Table 1-1—Grain Size Classification of Sediment Samples

Station ID	Internal Sample ID	Grain Size Class	Station ID	Internal Sample ID	Grain Size Class	Station ID	Internal Sample ID	Grain Size Class
CS001	CR-003-SD	3	TS008	TR-064-SD	4	TS068	TR-115-SD	1
CS002	CR-001-SD	3	TS009	TR-063-SD	1	TS069	TR-119-SD	1
CS003	CR-004-SD	4	TS010	TR-065-SD	1	TS070	TR-116-SD	1
CS004	CR-005-SD	4	TS011	TR-066-SD	4	TS071	TR-117-SD	1
CS005	CR-006-SD	4	TS012	TR-068-SD	3	TS072	TR-118-SD	1
CS006	CR-007-SD	1	TS013	TR-067-SD	2	TS073	TR-120-SD	1
CS007	CR-008-SD	2	TS014	TR-069-SD	1	TS074	TR-121-SD	1
CS008	CR-009-SD	2	TS015	TR-070-SD	3	TS075	TR-122-SD	1
CS009	CR-010-SD	1	TS016	TR-071-SD	3	TS076	TR-001-SD	3
CS010	CR-011-SD	4	TS017	TR-072-SD	4	TS077	TR-002-SD	3
CS011	CR-012-SD	4	TS018	TR-073-SD	4	TS078	TR-005-SD	2
CS012	CR-013-SD	4	TS019	TR-074-SD	1	TS079	TR-004-SD	2
CS013	CR-014-SD	4	TS020	TR-075-SD	4	TS080	TR-006-SD	2
CS014	CR-015-SD	4	TS021	TR-076-SD	4	TS081	TR-007-SD	3
CS015	CR-016-SD	4	TS022	TR-077-SD	2	TS082	TR-008-SD	3
CS016	CR-017-SD	4	TS023	TR-078-SD	4	TS083	TR-009-SD	3
CS017	CR-018-SD	4	TS024	TR-079-SD	3	TS084	TR-010-SD	1
CS017	CR-066-SD	3	TS025	TR-080-SD	2	TS085	TR-011-SD	4
CS018	CR-019-SD	3	TS026	TR-081-SD	3	TS086	TR-012-SD	NA
CS019	CR-020-SD	4	TS027	TR-082-SD	3	TS087	TR-013-SD	2
CS020	CR-023-SD	4	TS028	TR-083-SD	2	TS088	TR-014-SD	2
CS021	CR-022-SD	4	TS029	TR-084-SD	2	TS089	TR-016-SD	NA
CS022	CR-024-SD	4	TS030	TR-085-SD	2	TS090	TR-040-SD	1
CS023	CR-025-SD	3	TS031	TR-086-SD	1	TS091	TR-127-SD	2
CS024	CR-062-SD	3	TS032	TR-087-SD	1	TS092	TR-041-SD	2
CS025	CR-026-SD	4	TS033	TR-088-SD	4	TS093	TR-017-SD	3
CS026	CR-029-SD	3	TS034	TR-089-SD	1	TS094	TR-018-SD	3
CS027	CR-027-SD	3	TS035	TR-128-SD	2	TS095	TR-019-SD	2
CS028	CR-028-SD	4	TS036	TR-129-SD	4	TS096	TR-042-SD	1
CS029	CR-030-SD	3	TS037	TR-090-SD	1	TS097	TR-020-SD	3
CS030	CR-031-SD	3	TS038	TR-091-SD	1	TS098	TR-022-SD	NA
CS031	CR-032-SD	2	TS039	TR-093-SD	1	TS099	TR-043-SD	1
CS032	CR-033-SD	3	TS040	TR-094-SD	1	TS100	TR-023-SD	2
CS033	CR-034-SD	3	TS041	TR-095-SD	2	TS101	TR-044-SD	1
CS034	CR-036-SD	3	TS042	TR-096-SD	3	TS102	TR-024-SD	4
CS035	CR-035-SD	3	TS043	TR-097-SD	2	TS103	TR-025-SD	1
CS036	CR-037-SD	2	TS044	TR-104-SD	1	TS104	TR-045-SD	2
CS037	CR-038-SD	2	TS045	TR-105-SD	4	TS105	TR-047-SD	1
CS038	CR-039-SD	2	TS046	TR-106-SD	2	TS106	TR-026-SD	2
CS039	CR-040-SD	2	TS047	TR-107-SD	4	TS107	TR-027-SD	2
CS040	CR-041-SD	2	TS048	TR-098-SD	1	TS108	TR-028-SD	3
CS041	CR-042-SD	1	TS049	TR-099-SD	1	TS109	TR-029-SD	2
CS042	CR-043-SD	1	TS050	TR-125-SD	2	TS110	TR-030-SD	1
CS043	CR-044-SD	1	TS051	TR-100-SD	2	US001	BK-150-SD	1
CS044	CR-045-SD	1	TS052	TR-101-SD	1	US002	BK-152-SD	1
CS045	CR-046-SD	1	TS053	TR-102-SD	1	US003	BK-153-SD	1
CS046	CR-047-SD	1	TS054	TR-103-SD	1	US004	BK-155-SD	1
CS047	CR-048-SD	1	TS055	TR-108-SD	1	US005	BK-130-SD	1
CS048	CR-049-SD	1	TS056	TR-109-SD	1	US006	BK-131-SD	1

Table 1-1—Grain Size Classification of Sediment Samples

Station ID	Internal Sample ID	Grain Size Class	Station ID	Internal Sample ID	Grain Size Class	Station ID	Internal Sample ID	Grain Size Class
CS049	CR-050-SD	1	TS057	TR-110-SD	1	US007	BK-134-SD	3
CS050	CR-051-SD	2	TS058	TR-111-SD	1	US008	BK-135-SD	2
CS051	CR-052-SD	1	TS059	TR-112-SD	1	US009	BK-133-SD	1
CS052	CR-053-SD	1	TS060	TR-113-SD	1	US010	BK-139-SD	1
TS001	TR-056-SD	4	TS061	TR-123-SD	1	US011	BK-142-SD	4
TS002	TR-057-SD	4	TS062	TR-124-SD	1	US012	BK-140-SD	1
TS003	TR-058-SD	3	TS063	TR-126-SD	1	US013	BK-138-SD	1
TS004	TR-059-SD	3	TS064	TR-037-SD	1	US014	TR-147-SD	1
TS005	TR-061-SD	1	TS065	TR-038-SD	2	US015	TR-145-SD	1
TS006	TR-062-SD	2	TS066	TR-039-SD	3	US016	TR-136-SD	1
TS007	TR-060-SD	1	TS067	TR-114-SD	1			

Grain Size Classes:

1. < 25% fines
2. Greater than 25% but less than 50% fines
3. Greater than 50% but less than 75% fines
4. > 75% fines

NA: Not available

Table 1-2—Sample Analytical Requirements

Station ID	Station Description	Sample Interval (below media surface)	Sample Identification				Analyses					Sample Date	Sample Time
			Regional Tracking #	Inorganic CLP #	Organic CLP #	Internal Sample ID	TAL Metals	Pest/PCB	VOC	SVOC	TOC		
CW001	Grand Coulee Drinking Water System distribution	NA (spigot)	01204101	MJ08Y3	JX426	CR-002-SW	X	X	X	X		14-May-01	1435
CW002	Lake Roosevelt Grand Coulee Drinking Water Intake	32 feet	01204102	MJ08Y4	JX427	CR-003-SW	X	X	X	X		14-May-01	1130
CS001	Lake Roosevelt Crescent Bay boat ramp	0 - 3"	01204106	MJ08Y8	JX431	CR-003-SD	X	X			X	14-May-01	1800
CS002	Lake Roosevelt North Dam Boat Ramp	0	01204104	MJ08Y6	JX429	CR-001-SD	X	X			X	14-May-01	1900
CS003	Lake Roosevelt Plum Point	0 -4"	01204107	MJ08Y9	JX432	CR-004-SD	X	X			X	15-May-01	1300
CS004	Lake Roosevelt near Inchelium	0 -4"	01204110	MJ08Z0	JX433	CR-005-SD	X	X			X	17-May-01	1000
CS005	Lake Roosevelt at point south of Hall Creek	0 -4"	01204111	MJ08Z1	JX434	CR-006-SD	X	X			X	17-May-01	1045
CS006	Lake Roosevelt at Mission Point	0 -4"	01204112	MJ08Z2	JX435	CR-007-SD	X	X			X	17-May-01	1130
CS007	Lake Roosevelt north of Daisy Station	0 - 2 "	01204113	MJ08Z3	JX436	CR-008-SD	X	X			X	17-May-01	1330
CS008	Lake Roosevelt south of Cheweka Creek	0 - 4"	01204114	MJ08Z4	JX437	CR-009-SD	X	X			X	17-May-01	1415
CS009	Lake Roosevelt south of Chalk Grade Point	0 - 7 "	01204115	MJ08Z5	JX438	CR-010-SD	X	X			X	17-May-01	1445
CS010	Lake Roosevelt south of Barnaby Island	0 - 0.5"	01204116	MJ08Z6	JX439	CR-011-SD	X	X			X	17-May-01	1600
CS011	Lake Roosevelt on flats north of Quillisascut Creek	0 - 2 "	01204117	MJ08Z7	JX440	CR-012-SD	X	X			X	17-May-01	1700
CS012	Lake Roosevelt on flats north of Quillisascut Creek	0 - 3 "	01204118	MJ08Z8	JX441	CR-013-SD	X	X			X	18-May-01	1030
CS013	Lake Roosevelt on flats between French Point Rocks and La Fleur Creek	0 - 4 "	01204119	MJ08Z9	JX442	CR-014-SD	X	X			X	18-May-01	1100
CS014	Lake Roosevelt on mid-channel bar east of French Point Rocks	0 - 4 "	01204120	MJ0900	JX443	CR-015-SD	X	X			X	18-May-01	1230

Table 1-2—Sample Analytical Requirements

Station ID	Station Description	Sample Interval (below media surface)	Sample Identification				Analyses					Sample Date	Sample Time
			Regional Tracking #	Inorganic CLP #	Organic CLP #	Internal Sample ID	TAL Metals	Pest/PCB	VOC	SVOC	TOC		
CS015	Lake Roosevelt north of French Point	0 - 8 "	01204121	MJ0901	JX444	CR-016-SD	X	X			X	18-May-01	1330
CS016	Lake Roosevelt on flats North of Bradbury Beach	0 - 1"	01204122	MJ0902	JX445	CR-017-SD	X	X			X	18-May-01	1430
CS017	Lake Roosevelt on flats fronting Haag Cove	0 - 6 "	01204123	MJ0903	JX446	CR-018-SD	X	X			X	18-May-01	1530
CS017	Lake Roosevelt on flats fronting Haag Cove	18-24"	01204124	MJ09E2	JX550	CR-066-SD	X	X			X	18-May-01	1545
CS018	Lake Roosevelt on flats south of Colville River	0 - 6.5 "	01204125	MJ0904	JX447	CR-019-SD	X	X			X	19-May-01	900
CS019	Lake Roosevelt in bay at Colville River mouth	0 - 5 "	01204126	MJ0905	JX448	CR-020-SD	X	X			X	19-May-01	1045
CS020	Lake Roosevelt south of Boise Cascade Log Boom	0 - 4"	01204127	MJ0908	JX451	CR-023-SD	X	X			X	19-May-01	1130
CS021	Lake Roosevelt, Marcus Flats, northwest of Martin Spring Creek	0 - 4"	01214102	MJ0907	JX450	CR-022-SD	X	X			X	21-May-01	1030
CS022	Lake Roosevelt, Marcus Flats, southwest of Pingston Creek	0 - 4"	01214104	MJ0909	JX452	CR-024-SD	X	X			X	21-May-01	1050
CS023	Lake Roosevelt, Marcus Flats (west bank)	0 < 0.25"	01214106	MJ0910	JX453	CR-025-SD	X	X			X	21-May-01	1200
CS024	Marcus Flats, north of Pingston Creek	18 - 24"	01234124	MJ0BK4	JX804	CR-062-SD	X	X			X	08-Jun-01	945
CS025	Lake Roosevelt on Marcus Flats west of Pingston Creek	0 - 3"	01214108	MJ0911	JX454	CR-026-SD	X	X			X	21-May-01	1245
CS026	Lake Roosevelt, Marcus Flats, south of Marcus Island	0 - 3"	01214114	MJ0914	JX457	CR-029-SD	X	X			X	21-May-01	1415
CS027	Lake Roosevelt, Marcus Flats, east of Kamloops	0 - 4"	01214110	MJ0912	JX455	CR-027-SD	X	X			X	21-May-01	1330
CS028	Lake Roosevelt, Marcus Flats northeast	0 - 2"	01214112	MJ0913	JX456	CR-028-SD	X	X			X	21-May-01	1445

Table 1-2—Sample Analytical Requirements

Station ID	Station Description	Sample Interval (below media surface)	Sample Identification				Analyses					Sample Date	Sample Time
			Regional Tracking #	Inorganic CLP #	Organic CLP #	Internal Sample ID	TAL Metals	Pest/PCB	VOC	SVOC	TOC		
CS029	Lake Roosevelt north of Summer Island	0 - 2"	01214116	MJ0915	JX458	CR-030-SD	X	X			X	21-May-01	1545
CS030	Lake Roosevelt on flats at Evans Campground	0 - 1"	01214118	MJ0916	JX459	CR-031-SD	X	X			X	21-May-01	1645
CS031	Lake Roosevelt east of Snag Cove	0 - 2"	01214120	MJ0917	JX460	CR-032-SD	X	X			X	21-May-01	1800
CS032	Lake Roosevelt on flats south of Bossburg	0 - 1"	01214122	MJ0918	JX461	CR-033-SD	X	X			X	22-May-01	1000
CS033	Lake Roosevelt on flats north of Bossburg	0 - 5"	01214124	MJ0919	JX462	CR-034-SD	X	X			X	22-May-01	1100
CS034	Lake Roosevelt on flats south of North Gorge (east bank)	0 - 1"	01214128	MJ0921	JX464	CR-036-SD	X	X			X	22-May-01	1400
CS035	Lake Roosevelt on flats south of North Gorge (west bank)	0 - 0.25 "	01214126	MJ0920	JX463	CR-035-SD	X	X			X	22-May-01	1200
CS036	Lake Roosevelt east of Flat Creek (north bank)	0 - 2"	01214130	MJ0922	JX465	CR-037-SD	X	X			X	22-May-01	1500
CS037	Lake Roosevelt at China Bar	0 - 2"	01214132	MJ0923	JX466	CR-038-SD	X	X			X	22-May-01	1630
CS038	Lake Roosevelt near navigation light south of Crown Creek	0 - 3"	01214134	MJ0924	JX467	CR-039-SD	X	X			X	23-May-01	1015
CS039	Lake Roosevelt north of Rattlesnake Creek (east bank)	0 - 4"	01214136	MJ0925	JX468	CR-040-SD	X	X			X	23-May-01	1130
CS040	Lake Roosevelt north of Onion Creek	0 - 2"	01214138	MJ0926	JX469	CR-041-SD	X	X			X	23-May-01	1245
CS041	Upper Columbia River southern tip of island northwest of Onion Creek	0 - 3"	01214140	MJ0927	JX470	CR-042-SD	X	X			X	23-May-01	1330
CS042	Upper Columbia River southern tip of Island south of Squaw Creek	0 - 2"	01214142	MJ0928	JX471	CR-043-SD	X	X			X	23-May-01	1400
CS043	Upper Columbia River north of Fivemile Creek	0 - 2"	01214144	MJ0929	JX472	CR-044-SD	X	X			X	23-May-01	1515
CS044	Upper Columbia River on beach at Northport	0 - 4"	01224150	MJ0930	JX473	CR-045-SD	X	X			X	31-May-01	1045

Table 1-2—Sample Analytical Requirements

Station ID	Station Description	Sample Interval (below media surface)	Sample Identification				Analyses					Sample Date	Sample Time
			Regional Tracking #	Inorganic CLP #	Organic CLP #	Internal Sample ID	TAL Metals	Pest/PCB	VOC	SVOC	TOC		
CS045	Upper Columbia River north of Big Sheep Creek	0 - 3"	01224151	MJ0931	JX474	CR-046-SD	X	X			X	31-May-01	1215
CS046	Upper Columbia River south of Steamboat Rock	0 - 1"	01224154	MJ0932	JX475	CR-047-SD	X	X			X	31-May-01	1430
CS047	Upper Columbia River northeast of Steamboat Rock	0 - 1"	01224155	MJ0933	JX476	CR-048-SD	X	X			X	31-May-01	1515
CS048	Upper Columbia River north of Goodeve Creek	0 - 3"	01224157	MJ0934	JX477	CR-049-SD	X	X			X	31-May-01	1630
CS049	Upper Columbia River on point bar southwest of Scriver Creek	0 - 2"	01224160	MJ0935	JX478	CR-050-SD	X	X			X	01-Jun-01	930
CS050	Upper Columbia River south of Tom Bush Creek	0 - 2"	01224162	MJ0936	JX479	CR-051-SD	X	X			X	01-Jun-01	1145
CS051	Upper Columbia River at "Black Sand Beach"	0 - 4"	01224163	MJ0937	JX480	CR-052-SD	X	X			X	01-Jun-01	1230
CS052	Upper Columbia River on boulder bar near border	0 - 3"	01224164	MJ0938	JX481	CR-053-SD	X	X			X	01-Jun-01	1415
TS001	Unnamed, T32N R37E, Section 8	0 - 2"	01234079	MJ0BJ4		TR-056-SD	X					05-Jun-01	1000
TS002	Unnamed, Clover Leaf Beach Campground	0 -0 5"	01234080	MJ0BJ5		TR-057-SD	X					05-Jun-01	1045
TS003	Unnamed, T32N R37E, Section 8 (northern tributary)	0 - 3"	01234053	MJ09E4		TR-058-SD	X					03-Jun-01	1500
TS004	Stranger Creek (west)	0 - 3"	01234081	MJ0BJ6	JX570	TR-059-SD	X	X			X	05-Jun-01	1145
TS005	Hall Creek	0 - 2"	01234052	MJ09E6	JX559	TR-061-SD	X	X			X	03-Jun-01	1315
TS006	Cobbs Creek	0 - 2"	01234082	MJ0BJ7		TR-062-SD	X					05-Jun-01	1245
TS007	Unnamed, T33N, R37E, Section 28	0 - 4"	01234054	MJ09E5	JX558	TR-060-SD	X	X			X	04-Jun-01	1430
TS008	Unnamed, T33N, R37E, Section 30	0 - 1"	01234083	MJ0BJ8		TR-064-SD	X					05-Jun-01	1400
TS009	unproposed sampling location	0 - 3"	01234055	MJ09E8		TR-063-SD	X					04-Jun-01	1645
TS010	Unnamed, T33N, R37E, Section 21	0 - 3"	01234058	MJ09E7		TR-065-SD	X					04-Jun-01	1550

Table 1-2—Sample Analytical Requirements

Station ID	Station Description	Sample Interval (below media surface)	Sample Identification				Analyses					Sample Date	Sample Time
			Regional Tracking #	Inorganic CLP #	Organic CLP #	Internal Sample ID	TAL Metals	Pest/PCB	VOC	SVOC	TOC		
TS011	Unnamed, T33N, R37E, Section 19	0 - 2"	01234084	MJ0BJ9		TR-066-SD	X					05-Jun-01	1445
TS012	Unnamed, T33N, R37E, Section 18	0 - 3"	01234051	MJ09F0		TR-068-SD	X					03-Jun-01	1045
TS013	Magee Creek	0 - 4"	01234056	MJ09E9		TR-067-SD	X					04-Jun-01	1245
TS014	Jennings Creek	0 - 3"	01234057	MJ09F1		TR-069-SD	X					04-Jun-01	1400
TS015	Little Jim Creek	0 - 2"	01234050	MJ09F2		TR-070-SD	X					03-Jun-01	935
TS016	Unnamed, T33N R36E, Section 1	0 - 1"	01234096	MJ0BK8		TR-071-SD	X					05-Jun-01	1545
TS017	Unnamed, T33N R37E, Section 4	0 - 1"	01234097	MJ0BK9		TR-072-SD	X					05-Jun-01	1630
TS018	Unnamed, T33N R37E, Section 5	0 - 1"	01234098	MJ0BL0		TR-073-SD	X					06-Jun-01	945
TS019	Unnamed, T34N R37E, Section 32	0 - 2"	01234085	MJ09F3		TR-074-SD	X					06-Jun-01	1030
TS020	Unnamed, T34N R36E, Section 36	0 - 2.5"	01234059	MJ09F4		TR-075-SD	X					03-Jun-01	1030
TS021	Unnamed, T34N R36E, Section 25	0 - 1.5"	01234060	MJ09F5		TR-076-SD	X					03-Jun-01	1100
TS022	Cheweka Creek	0 - 2"	01234099	MJ0BL1	JX571	TR-077-SD	X	X			X	06-Jun-01	1100
TS023	Unnamed, T34N, R37E, Section 29 (north of Cheweka Creek)	0 - 1.5"	01234100	MJ0BL2		TR-078-SD	X					06-Jun-01	1215
TS024	Unnamed, T34N, R37E, Section 29 (NW qtr)	0 - 3"	01234101	MJ0BL3		TR-079-SD	X					06-Jun-01	1300
TS025	Unnamed, T34N, R37E, Section 20	0 - 5"	01234102	MJ0BL4		TR-080-SD	X					06-Jun-01	1330
TS026	Barnaby Creek	0 - 2"	01234061	MJ09F6		TR-081-SD	X					03-Jun-01	1300
TS027	Rotter Bay Creek	0 - 3"	01234064	MJ09F7		TR-082-SD	X					04-Jun-01	1200
TS028	Quillisascut Creek	0 - 2"	01234086	MJ09F8		TR-083-SD	X					06-Jun-01	1415
TS029	Unnamed, T34N, R36E, Section 11	0 - 1"	01234062	MJ09F9		TR-084-SD	X					03-Jun-01	1345
TS030	Unnamed, T34N, R37E, Section 6	0 - 1.5"	01234087	MJ09G0		TR-085-SD	X					06-Jun-01	1515
TS031	Cuba Canyon Creek	0 - 8"	01234103	MJ0BL5	JX572	TR-086-SD	X	X			X	06-Jun-01	1600
TS032	Unnamed, T35N, R37E, Section 31	0 - 2"	01234112	MJ0BM4		TR-087-SD	X					07-Jun-02	915

Table 1-2—Sample Analytical Requirements

Station ID	Station Description	Sample Interval (below media surface)	Sample Identification				Analyses					Sample Date	Sample Time
			Regional Tracking #	Inorganic CLP #	Organic CLP #	Internal Sample ID	TAL Metals	Pest/PCB	VOC	SVOC	TOC		
TS033	La Fleur Creek	0 - 2"	01234063	MJ09G1		TR-088-SD	X					03-Jun-01	1450
TS034	Unnamed, T36N, R37E, Section 32	0 - 3"	01234113	MJ0BM5		TR-089-SD	X					07-Jun-01	1000
TS035	Unnamed, T36N, R37E, Section 33 (southwest qtr); drains Nettleton Lake	0 - 4"	01234128	MJ0BK8		TR-128-SD	X					09-Jun-01	1500
TS036	Unnamed, T35N, R37E, Section 33 (northwest qtr)	0 - 6"	01234129	MJ0BK9	JX793	TR-129-SD	X	X			X	09-Jun-01	1530
TS037	unproposed sampling location	0 - 4"	01234067	MJ09G2		TR-090-SD	X					04-Jun-01	930
TS038	Unnamed, T35N, R37E, Section 22 (south of Bradbury campground)	0 - 3"	01234068	MJ09G3	JX560	TR-091-SD	X	X			X	04-Jun-01	1030
TS039	Martin Creek	0 - 2"	01234114	MJ0BM6		TR-093-SD	X					07-Jun-01	1030
TS040	Unnamed, T35N, R37E, Section 15 (north of Bradbury campground)	0 - 3"	01234071	MJ09G6		TR-094-SD	X					06-Jun-01	1200
TS041	Roper Creek	0 - 2"	01234115	MJ0BM7		TR-095-SD	X					07-Jun-01	1130
TS042	Rickey Creek	0 - 1"	01234116	MJOBM8		TR-096-SD	X					07-Jun-01	1300
TS043	Cougar Canyon Creek	0 - 4"	01234072	MJ09G7		TR-097-SD	X					04-Jun-01	1015
TS044	Hallam Creek	0 - 4"	01234106	MJ0BL8	JX573	TR-104-SD	X	X			X	06-Jun-01	1500
TS045	Unnamed ephemeral tributary west of Mingo Creek	0 - 7"	01234075	MJ09H0	JX564	TR-105-SD	X	X			X	04-Jun-01	1830
TS046	Mingo Creek	0 - 1 5"	01234076	MJ0BJ1	JX565	TR-106-SD	X	X			X	04-Jun-01	1745
TS047	Colville River	0 - 2"	01234077	MJ0BJ2	JX566	TR-107-SD	X	X			X	04-Jun-01	1715
TS048	Sherman Creek	0 - 2"	01234073	MJ09G8	JX562	TR-098-SD	X	X			X	04-Jun-01	1105
TS049	Unnamed, T36N, R37E, Section 22, SE qtr	0 - 2"	01234117	MJ0BM9		TR-099-SD	X					07-Jun-01	1645
TS050	Unmapped tributary adjacent to TS051	0 - 3"	01234136	MJ0BJ4		TR-125-SD	X					09-Jun-01	1730
TS051	Unnamed, T36N, R37E, Section 22, NE qtr	0 - 3"	01234118	MJ0BN0		TR-100-SD	X					07-Jun-01	1600
TS052	Unnamed, T36N, R37E, Section 15, SE qtr, western trib	0 - 4"	01234104	MJ0BL6		TR-101-SD	X					07-Jun-01	1500

Table 1-2—Sample Analytical Requirements

Station ID	Station Description	Sample Interval (below media surface)	Sample Identification				Analyses					Sample Date	Sample Time
			Regional Tracking #	Inorganic CLP #	Organic CLP #	Internal Sample ID	TAL Metals	Pest/PCB	VOC	SVOC	TOC		
TS053	Unnamed, T36N, R37E, Section 15, SE qtr, eastern trib	0 - 2"	01234119	MJ0BN1		TR-102-SD	X					07-Jun-01	1430
TS054	Unnamed, T36N, R37E, Section 14, SW qtr	0 - 2"	01234120	MJ0BN2		TR-103-SD	X					07-Jun-01	1400
TS055	Unnamed, ephemeral tributary, T36N, R38E, Section 18, SW qtr	0 - 1"	01234078	MJ0BJ3		TR-108-SD	X					04-Jun-01	1300
TS056	Martin Spring Creek	0 - 1.5"	01234107	MJ0BL9	JX574	TR-109-SD	X	X			X	06-Jun-01	1645
TS057	Pingston Creek	0 - 3"	01234108	MJ0BM0	JX791	TR-110-SD	X	X			X	06-Jun-01	1600
TS058	Nancy Creek	0 - 4"	01234109	MJ0BM1		TR-111-SD	X					06-Jun-01	1400
TS059	Unnamed ephemeral tributary at T37N, R37E, Section 33	0 - 5"	01234121	MJOBJ1		TR-112-SD	X					09-Jun-01	1645
TS060	Unnamed tributary T37N, R37E, Section 16, southwest qtr	0 - 1"	01234065	MJ09F8		TR-113-SD	X					06-Jun-01	900
TS061	Unnamed ephemeral tributary at T37N, R37E, Section 22	0 - 3"	01234110	MJ0BM2		TR-123-SD	X					06-Jun-01	1245
TS062	Unnamed, across from Marcus Island T37N, R37E, Section 23	0 - 7"	01234111	MJ0BM3		TR-124-SD	X					06-Jun-01	1130
TS063	Unnamed ephemeral tributary at T37N, R38E, Section 28	0 - 4"	01234123	MJ0BK3	JX803	TR-126-SD	X	X			X	08-Jun-01	1615
TS064	Unnamed ephemeral tributary at T37N, R38E, Section 22 (SW qtr)	0 - 3.5"	01234127	MJ0BK7	JX807	TR-037-SD	X	X			X	08-Jun-01	1120
TS065	Unnamed ephemeral tributary at T37N, R38E, Section 22 (NW qtr)	0 - 1"	01234125	MJ0BK5	JX805	TR-038-SD	X	X			X	08-Jun-01	1130
TS066	Unnamed, spring drainage east of Evans Campground peninsula	0 - 1.5"	01234126	MJ0BK6		TR-039-SD	X					08-Jun-01	1245
TS067	Deadman Creek	0 - 2"	01234066	MJ09G0	JX567	TR-114-SD	X	X			X	05-Jun-01	1345
TS068	Unnamed ephemeral tributary, T37N, R37E, Section 16, northwest qtr	0 - 1"	01234088	MJ0BK0		TR-115-SD	X					06-Jun-01	1030

Table 1-2—Sample Analytical Requirements

Station ID	Station Description	Sample Interval (below media surface)	Sample Identification				Analyses					Sample Date	Sample Time
			Regional Tracking #	Inorganic CLP #	Organic CLP #	Internal Sample ID	TAL Metals	Pest/PCB	VOC	SVOC	TOC		
TS069	Unnamed tributary to Kettle River Arm, draining pond near Boyds	0 - 3"	01234092	MJ0BK4		TR-119-SD	X					05-Jun-01	1320
TS070	Unnamed ephemeral tributary, T37N, R37E, Section 9, NW qtr, SE qtr	0 - 8"	01234089	MJ0BK1		TR-116-SD	X					05-Jun-01	1530
TS071	Unnamed ephemeral tributary, T37N, R37E, Section 9, NW qtr, NE qtr	0 - 2"	01234090	MJ0BK2		TR-117-SD	X					05-Jun-01	1600
TS072	Unnamed ephemeral tributary, T37N, R38E, Section 4, NE qtr	0 - 3"	01234091	MJ0BK3	JX568	TR-118-SD	X	X			X	05-Jun-01	1430
TS073	Matsen Creek	0 - 3"	01234093	MJ0BK5		TR-120-SD	X					05-Jun-01	1145
TS074	Doyle Creek	0 - 5"	01234094	MJ0BK6		TR-121-SD	X					05-Jun-01	1100
TS075	Kettle River	0 - 2"	01234095	MJ0BK7	JX569	TR-122-SD	X	X			X	05-Jun-01	945
TS076	China Creek	0 - 1"	01214101	MJ0952		TR-001-SD	X					21-May-01	1715
TS077	Unnamed tributary south of Snag Cove	0 - 1"	01214103	MJ0953		TR-002-SD	X					22-May-01	1045
TS078	Unnamed ephemeral tributary at T38N, R37E, Section 36 (SW qtr)	0 - 1"	01214105	MJ0954		TR-005-SD	X					22-May-01	1345
TS079	Unnamed ephemeral tributary entering river at T38N, R37E,Section 35 (NE qtr)	0 - 1"	01214107	MJ0955		TR-004-SD	X					22-May-01	1455
TS080	Unnamed tributary directly across from Bossburg, WA	0 - 1"	01214109	MJ0956		TR-006-SD	X					22-May-01	1550
TS081	Dilly Lake ephemeral tributary	0 - 1"	01214111	MJ0957		TR-007-SD	X					22-May-01	1705
TS082	Unnamed ephemeral tributary upstream of Dilly Lake ephemeral tributary	0 - 1"	01214113	MJ0958		TR-008-SD	X					22-May-01	1735
TS083	Unnamed ephemeral tributary at T38N, R38E, Section 21	0 - 2"	01214115	MJ0959		TR-009-SD	X					23-May-01	1100

Table 1-2—Sample Analytical Requirements

Station ID	Station Description	Sample Interval (below media surface)	Sample Identification				Analyses					Sample Date	Sample Time
			Regional Tracking #	Inorganic CLP #	Organic CLP #	Internal Sample ID	TAL Metals	Pest/PCB	VOC	SVOC	TOC		
TS084	Unnamed ephemeral tributary at T38N, R38E, Section 22	0 - 2"	01214117	MJ0960		TR-010-SD	X					23-May-01	1220
TS085	Unnamed ephemeral tributary at North Gorge Campground	0 -.5"	01214119	MJ0961		TR-011-SD	X					23-May-01	1410
TS086	Unnamed ephemeral tributary at T38N, R38E,Section 17 (NW qtr)	missing sample log	01214121	MJ0962		TR-012-SD	X					23-May-01	1445
TS087	Unnamed ephemeral tributary downstream of Lodgepole Cr at T38N, R38E,Section 8 (NW qtr)	0 - 1"	01214123	MJ0963		TR-013-SD	X					23-May-01	1555
TS088	Lodgepole Creek	0 - 1"	01214125	MJ0964		TR-014-SD	X					23-May-01	1640
TS089	Unnamed ephemeral tributary at T38N, R38E, Section 10	0 - 2"	01214129	MJ0968		TR-016-SD	X					23-May-01	1645
TS090	Fifteenmile Creek	0 - 3"	01234137	MJ0BJ5	JX795	TR-040-SD	X	X			X	08-Jun-01	1645
TS091	Unnamed ephemeral tributary at Flat Creek	0 - 6"	01234143	MJ0BJ2		TR-127-SD	X					08-Jun-01	1545
TS092	Flat Creek	0 - 1"	01234138	MJ0BJ6	JX796	TR-041-SD	X	X			X	08-Jun-01	1500
TS093	Unnamed ephemeral tributary downstream of China Bar	0 - 2"	01214127	MJ0967		TR-017-SD	X					24-May-01	1215
TS094	Unnamed ephemeral tributary at T39N, R39E, Section 25 (SW qtr)	0 - 3"	01214131	MJ0969		TR-018-SD	X					24-May-01	1300
TS095	Crown Creek	0 - 2"	01214133	MJ0970		TR-019-SD	X					24-May-01	1345
TS096	Rattlesnake Creek	0 - 5"	01234139	MJ0BJ7	JX797	TR-042-SD	X	X			X	08-Jun-01	1145
TS097	Unnamed ephemeral tributary downstream from Moses Spring Creek	0 - 3"	01214135	MJ0971		TR-020-SD	X					24-May-01	1615
TS098	Moses Spring Creek	0 - 3"	01214137	MJ0972		TR-022-SD	X					24-May-01	1530
TS099	Onion Creek	0 - 4"	01234140	MJ0BJ8	JX798	TR-043-SD	X	X			X	08-Jun-01	1300
TS100	Unnamed ephemeral tributary in T39N, R39E, Section 10	0 - 1.5"	01214139	MJ0973		TR-023-SD	X					24-May-01	1435
TS101	Squaw Creek	0 - 4 "	01234141	MJ0BJ9	JX799	TR-044-SD	X	X			X	09-Jun-01	1030

Table 1-2—Sample Analytical Requirements

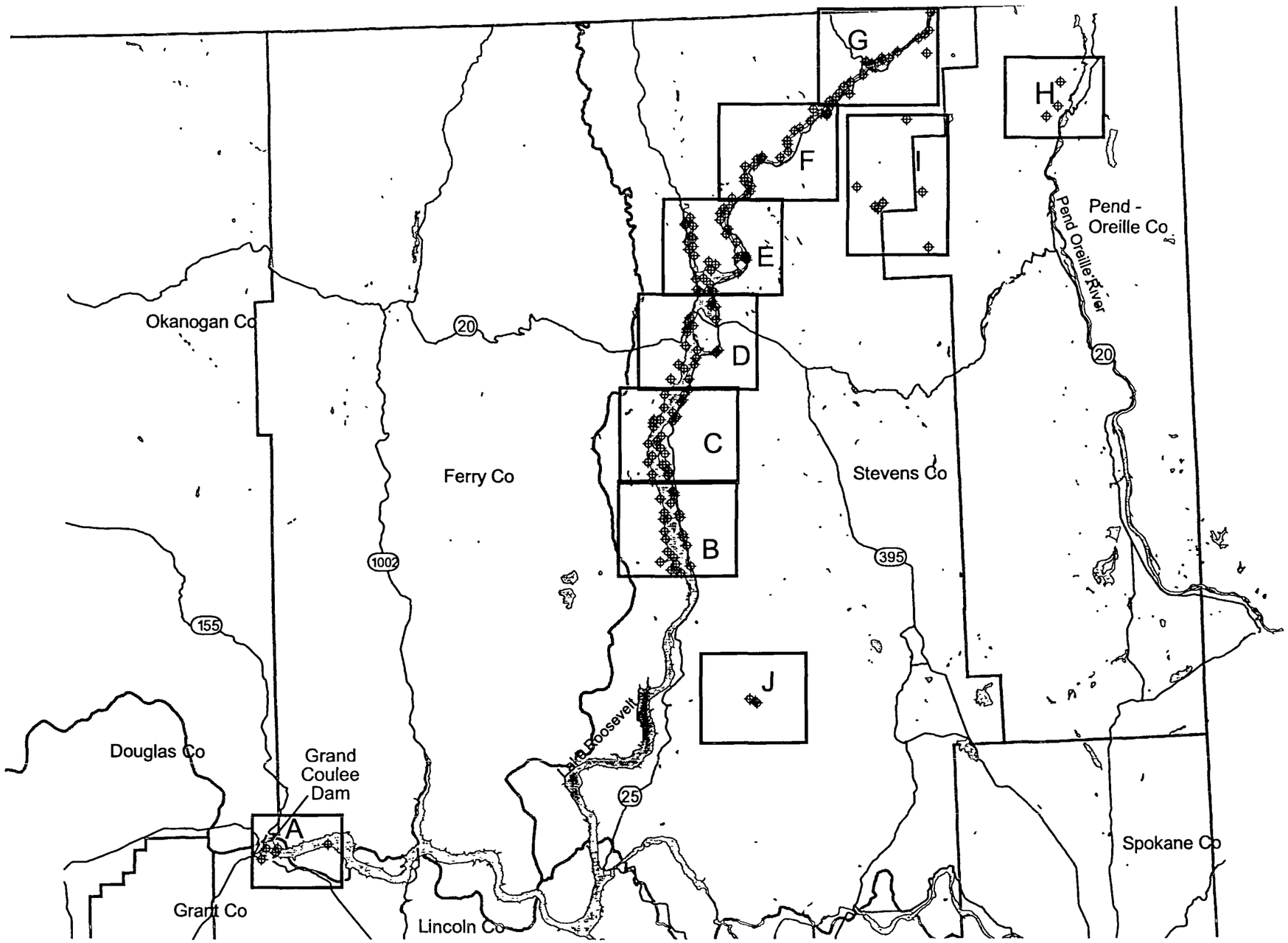
Station ID	Station Description	Sample Interval (below media surface)	Sample Identification				Analyses					Sample Date	Sample Time
			Regional Tracking #	Inorganic CLP #	Organic CLP #	Internal Sample ID	TAL Metals	Pest/PCB	VOC	SVOC	TOC		
TS102	Unnamed tributary from nearshore ponds	0 - 1"	01214141	MJ0974		TR-024-SD	X					24-May-01	1325
TS103	Fivemile Creek	0 - 3"	01214143	MJ0975		TR-025-SD	X					24-May-01	1145
TS104	Bear Creek	0 - 2"	01234142	MJ0BK0	JX800	TR-045-SD	X	X			X	09-Jun-01	930
TS105	Deep Creek	0 - 4"	01234122	MJ0BK2	JX802	TR-047-SD	X	X			X	08-Jun-01	1000
TS106	Big Sheep Creek	0 - 2"	01224153	MJ0976	JX552	TR-026-SD	X	X			X	31-May-01	1345
TS107	Quartz Creek	0 - 4"	01224152	MJ0977		TR-027-SD	X					31-May-01	1300
TS108	Goodeve Creek	0 - 4.5"	01224156	MJ0978	JX553	TR-028-SD	X	X			X	31-May-01	1545
TS109	Scriver Creek	0 - 3"	01224161	MJ0979	JX554	TR-029-SD	X	X			X	01-Jun-01	1100
TS110	Unnamed tributary NE of Gaging Station	0 - 8 "	01224165	MJ0980	JX555	TR-030-SD	X	X			X	01-Jun-01	1330
US001	Tributary to Tom Bush Creek; Melrose Mine	0-3"	01264068	MJ0BQ1	JX827	BK-150-SD	X	X			X	27-Jun-01	900
US002	Flume Creek; Sullivan Mine	0-2"	01264070	MJ0BQ3	JX829	BK-152-SD	X	X			X	28-Jun-01	930
US003	Flume Creek South Fork	0-4"	01264073	MJ0BQ5	JX831	BK-153-SD	X	X			X	28-Jun-01	1045
US004	Linton Creek; Oriole Mine	0-2"	01264075	MJ0BQ7	JX832	BK-155-SD	X	X			X	28-Jun-01	1300
US005	Unnamed tributary to Onion Creek; Van Stone Mine	0-3"	01264050	MJ0BN3	JX810	BK-130-SD	X	X			X	25-Jun-01	945
US006	Unnamed tributary to Onion Creek, Van Stone Mine	0-3"	01264051	MJ0BN4	JX811	BK-131-SD	X	X			X	25-Jun-01	1315
US007	Van Stone Mine soil	0-4"	01264054	MJ0BN7	JX814	BK-134-SD	X	X		X		25-Jun-01	1445
US008	Van Stone Mine soil	0-6"	01264055	MJ0BN8	JX815	BK-135-SD	X	X		X		25-Jun-01	1500
US009	Van Stone Mine soil	0-8"	01264053	MJ0BN6	JX813	BK-133-SD	X	X		X		25-Jun-01	1300
US010	Unnamed tributary to Onion Creek; Van Stone Mine	0-4"	01264059	MJ0BP2	JX819	BK-139-SD	X	X			X	25-Jun-01	1215
US011	Tributary to Deep Creek, Last Chance Mine	0-10"	01264062	MJ0BP5	JX822	BK-142-SD	X	X			X	26-Jun-01	1615
US012	Deep Creek South Fork	0-1"	01264060	MJ0BP3	JX820	BK-140-SD	X	X			X	26-Jun-01	1230
US013	Unnamed tributary to Deep Creek	0-4"	01264058	MJ0BP1	JX818	BK-138-SD	X	X			X	26-Jun-01	1000
US014	Unnamed tributary to Hunters Creek, Cleveland Mine	0-3"	01264065	MJ0BP8	JX825	TR-147-SD	X	X			X	27-Jun-01	1630

Table 1-2—Sample Analytical Requirements

Station ID	Station Description	Sample Interval (below media surface)	Sample Identification				Analyses					Sample Date	Sample Time
			Regional Tracking #	Inorganic CLP #	Organic CLP #	Internal Sample ID	TAL Metals	Pest/PCB	VOC	SVOC	TOC		
US015	Unnamed tributary to Hunters Creek; Cleveland Mine	0-2"	01264072	MJ0BQ8	JX833	TR-145-SD	X	X			X	27-Jun-01	1515
US016	Unnamed tributary to Hunters Creek; Cleveland Mine	0-5"	01264056	MJ0BN9	JX816	TR-136-SD	X	X			X	27-Jun-01	1430
UW001	Tributary to Tom Bush Creek; Melrose Mine	0"	01264069	MJ0BQ2		BK-151-SW	X					27-Jun-01	930
UW002	Flume Creek-Sullivan Mine	0"	01264067	MJ0BQ0		BK-149-SW	X					28-Jun-01	945
UW003	Flume Creek South Fork	0"	01264074	MJ0BQ6		BK-154-SW	X					28-Jun-01	1055
UW004	Unnamed tributary to Onion Creek; Van Stone Mine	0"	01264052	MJ0BN5		BK-132-SW	X					25-Jun-01	1345
UW005	Tributary to Deep Creek; Last Chance Mine	0"	01264063	MJ0BP6		BK-143-SW	X					26-Jun-01	1600
UW006	Deep Creek South Fork	0"	01264061	MJ0BP4		BK-141-SW	X					26-Jun-01	1245
UW007	Unnamed tributary to Hunters Creek; Cleveland Mine	0"	01264066	MJ0BP9		TR-148-SW	X					27-Jun-01	1645
RW001	Kemmerer Bottle	NA (rinsate)	01204103	MJ08Y5	JX428	RS-001-SW	X	X	X	X		15-May-01	1120
RS001	Bowl and Spoon	NA (rinsate)	01224158	MJ0981	JX556	RS-001-SD	X	X				31-May-01	830
RS002	Dredge Sampler	NA (rinsate)	01224159	MJ0982	JX557	RS-002-SD	X	X				31-May-01	900
RS003	Hand Auger	NA (rinsate)	01234135	MJ0BJ3	JX792	RS-003-SD	X	X				08-Jun-01	800
RS004	Bowl and Spoon	NA (rinsate)	01264071	MJ0BQ4	JX830	R-004-SD	X	X				27-Jun-01	700
TB001	Grand Coulee	NA (trip blank)	01204108		JX547	TB-001-SW			X			14-May-01	11 45
TB002	Grand Coulee	NA (trip blank)	01204109		JX549	TB-002-SW			X			14-May-01	10 00

Notes
CLP Contract Laboratory Program
NA Not applicable
Pest/PCB Chlorinated pesticides and polychlorinated biphenyls
SVOC. Semivolatile organic compound
TAL Metals· Target analyte list metals
TOC. Total organic carbon
VOC. Volatile organic compound

FIGURES



EXPLANATION

Station Location

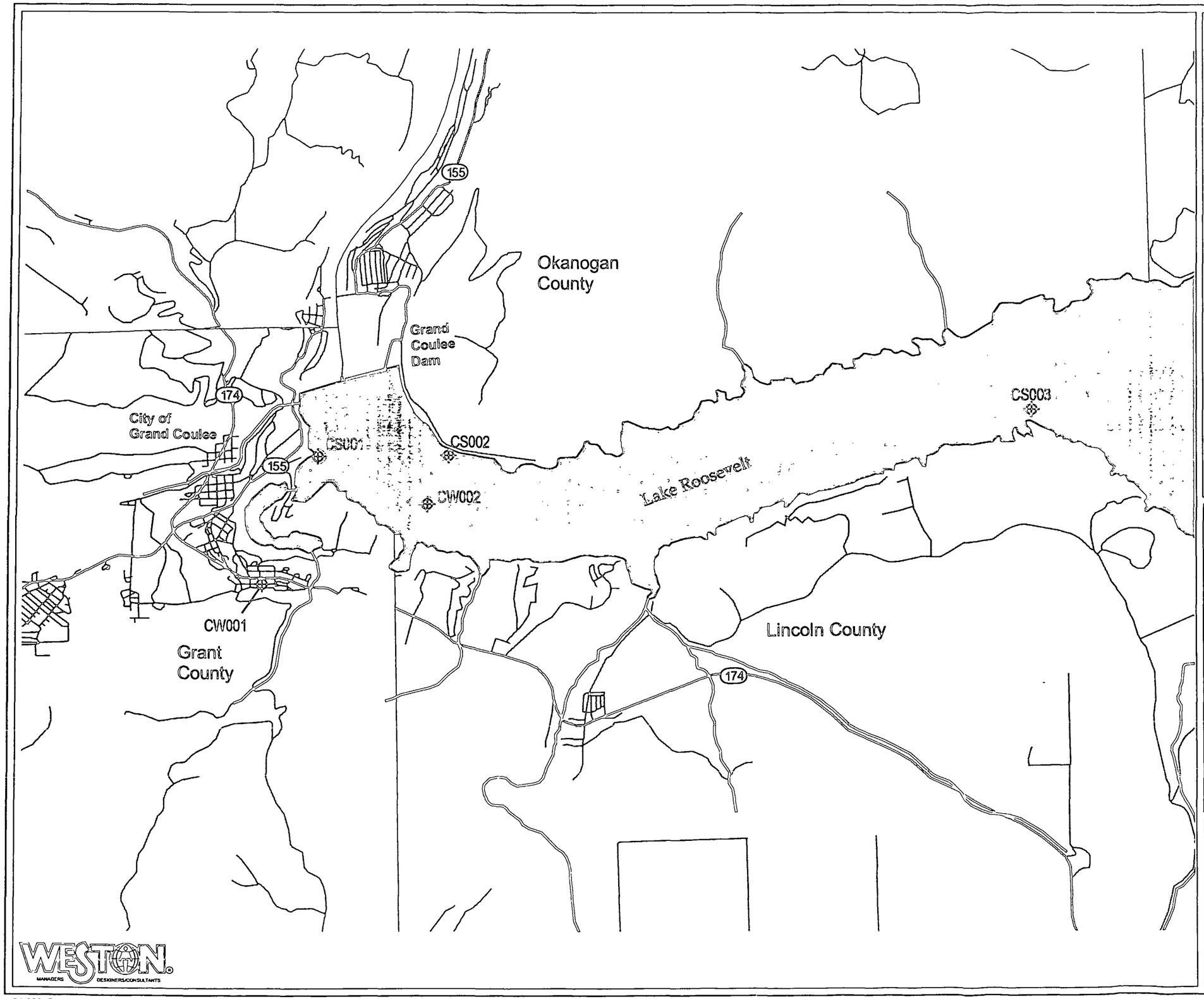
0 5 10
Scale in Miles

Columbia River/ Lake Roosevelt ESI Sample Station Locations Map Index

Figure
1

WESTON
MANAGERS DESIGNERS/CONSULTANTS

01-0381/TR Fig1 ai



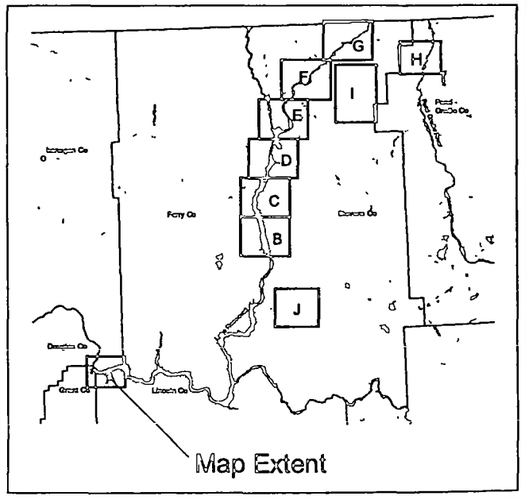
EXPLANATION

- Station Location
- Roads
- Streams
- County Line

N

0 2000 4000

Scale in Feet

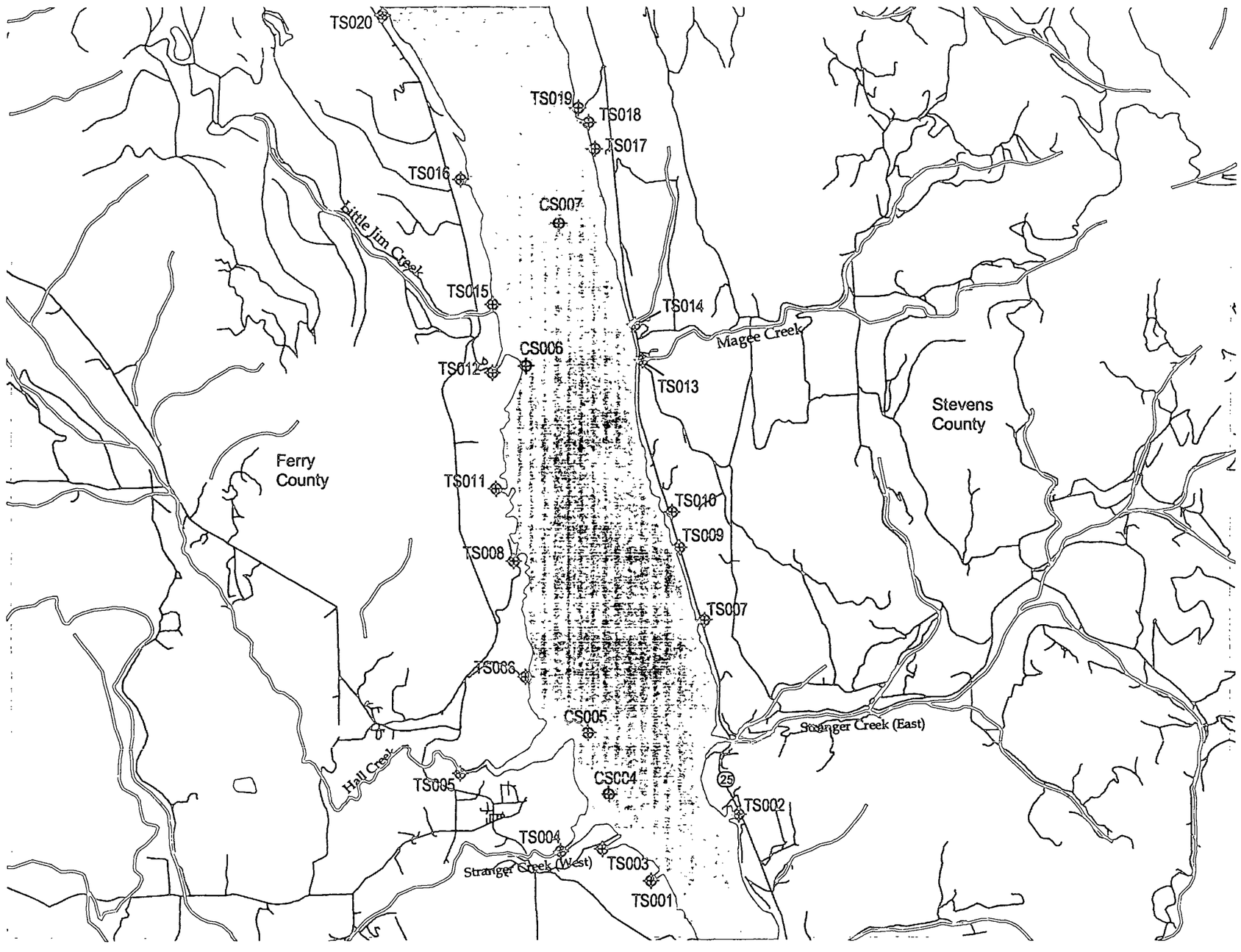


Columbia River/ Lake Roosevelt ESI Sample Station Locations Map A

Figure 1A

WESTON MANAGERS DESIGNERS/CONSULTANTS

01-0381/TR Fig1A ai



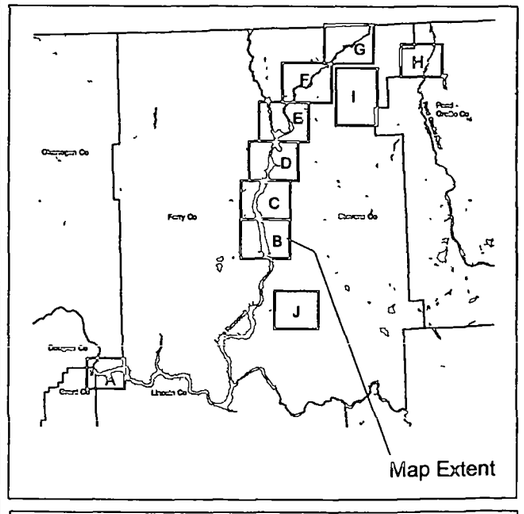
EXPLANATION

- Station Location
- Roads
- Streams
- County Line

N

0 2000 4000

Scale in Feet

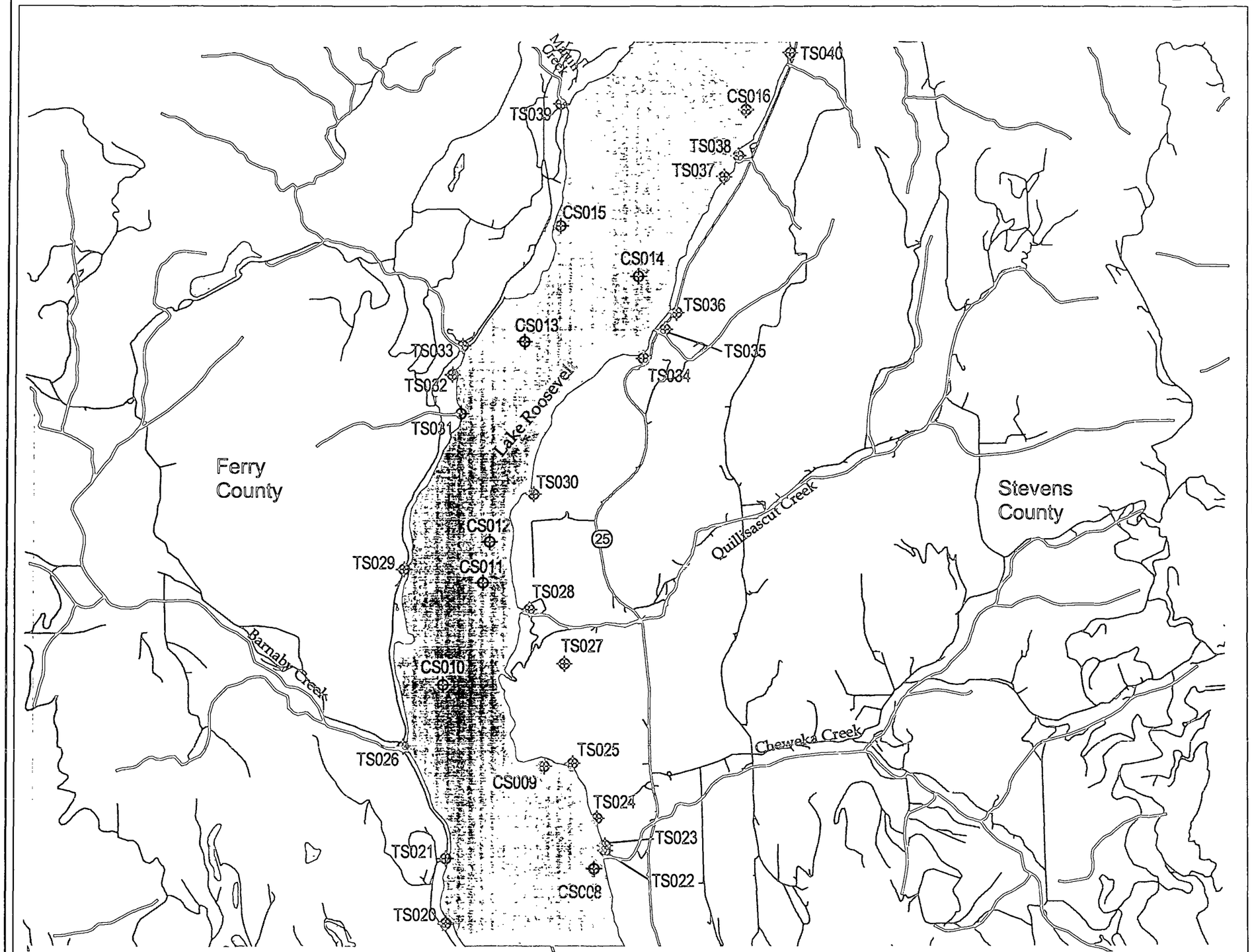


Columbia River/ Lake Roosevelt ESI Sample Station Locations Map B

Figure 1B

WESTON
MANAGERS DESIGNERS/CONSULTANTS

01-0381/TR Fig1B ai



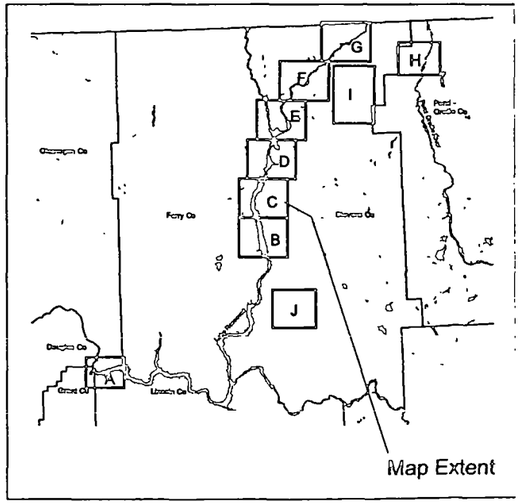
EXPLANATION

- Station Location
- Roads
- Streams
- County Line

N

0 2500 5000

Scale in Feet

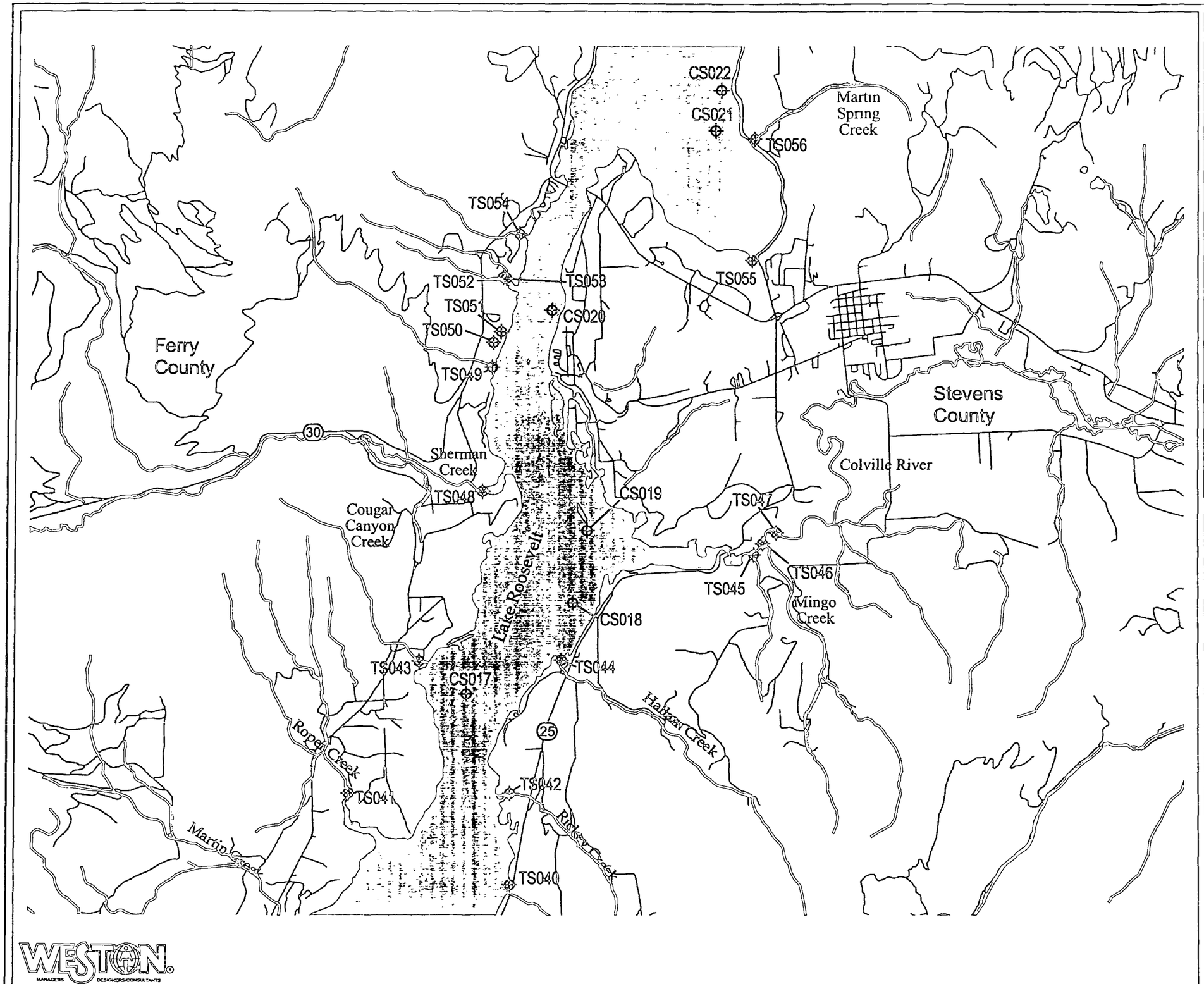


Columbia River/ Lake Roosevelt ESI Sample Station Locations Map C

Figure 1C

WESTON
MANAGERS DESIGNERS/CONSULTANTS

01-0381/TR Fig1C ai



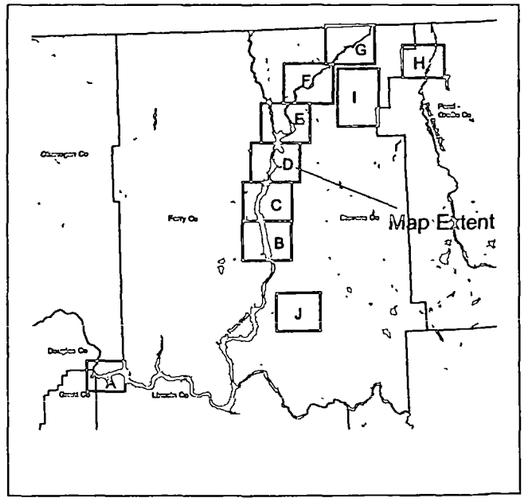
EXPLANATION

- Station Location
- Roads
- Streams
- County Line

N

0 2500 5000

Scale in Feet

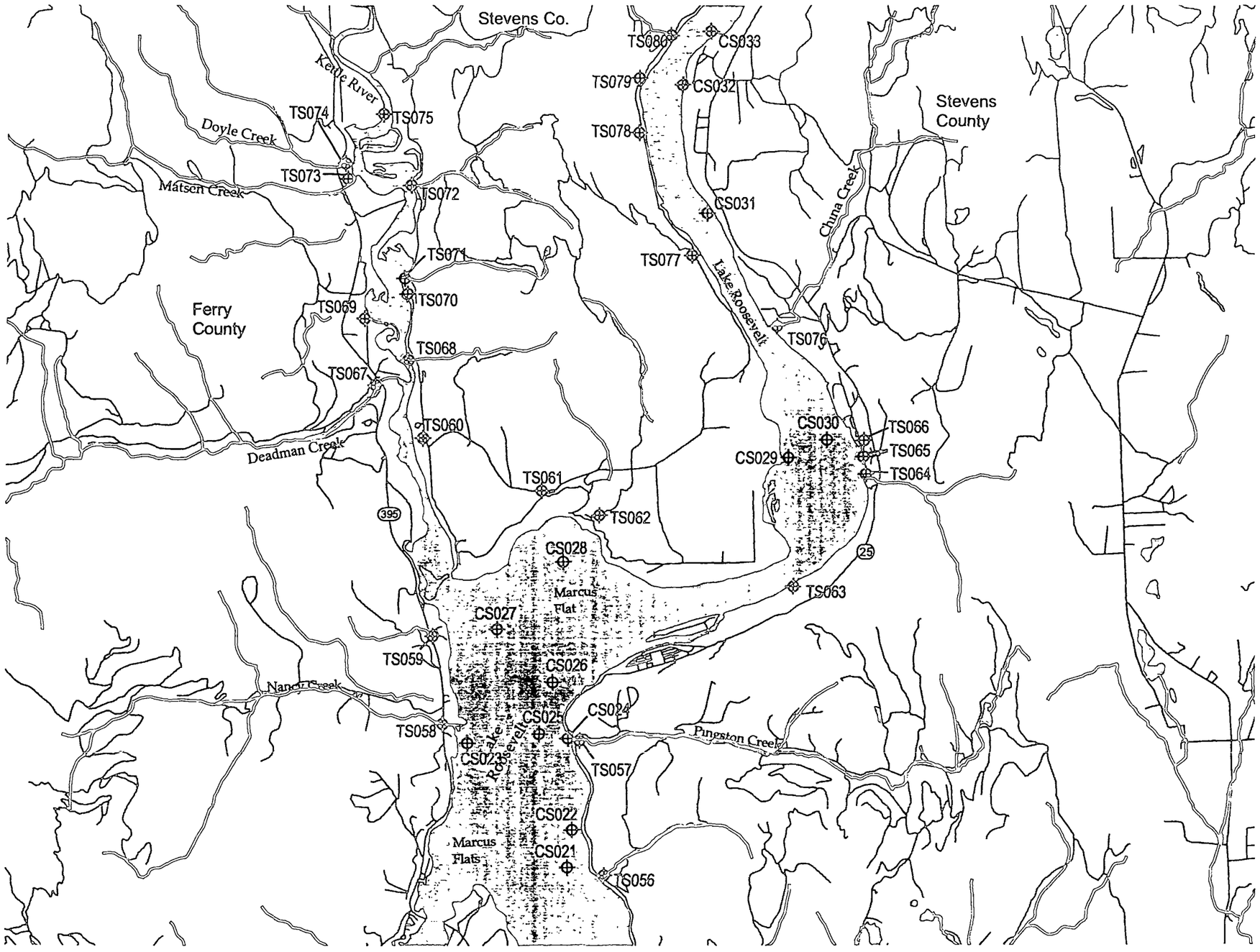


Columbia River/ Lake Roosevelt ESI Sample Station Locations Map D

Figure 1D

WESTON
MANAGERS DESIGNERS/CONSULTANTS

01-0381/TR Fig1D ai



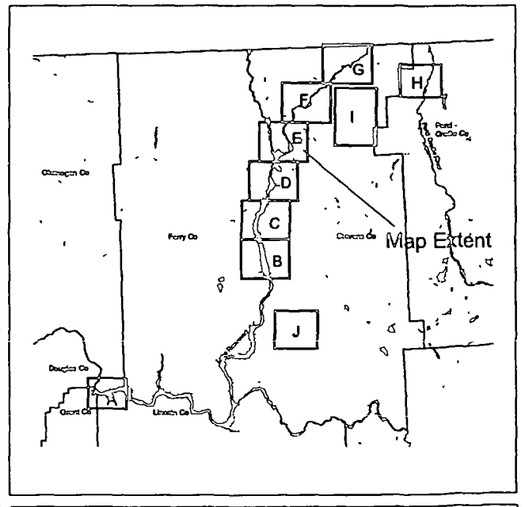
EXPLANATION

- Station Location
- Roads
- Streams
- County Line

N

0 3000 6000

Scale in Feet

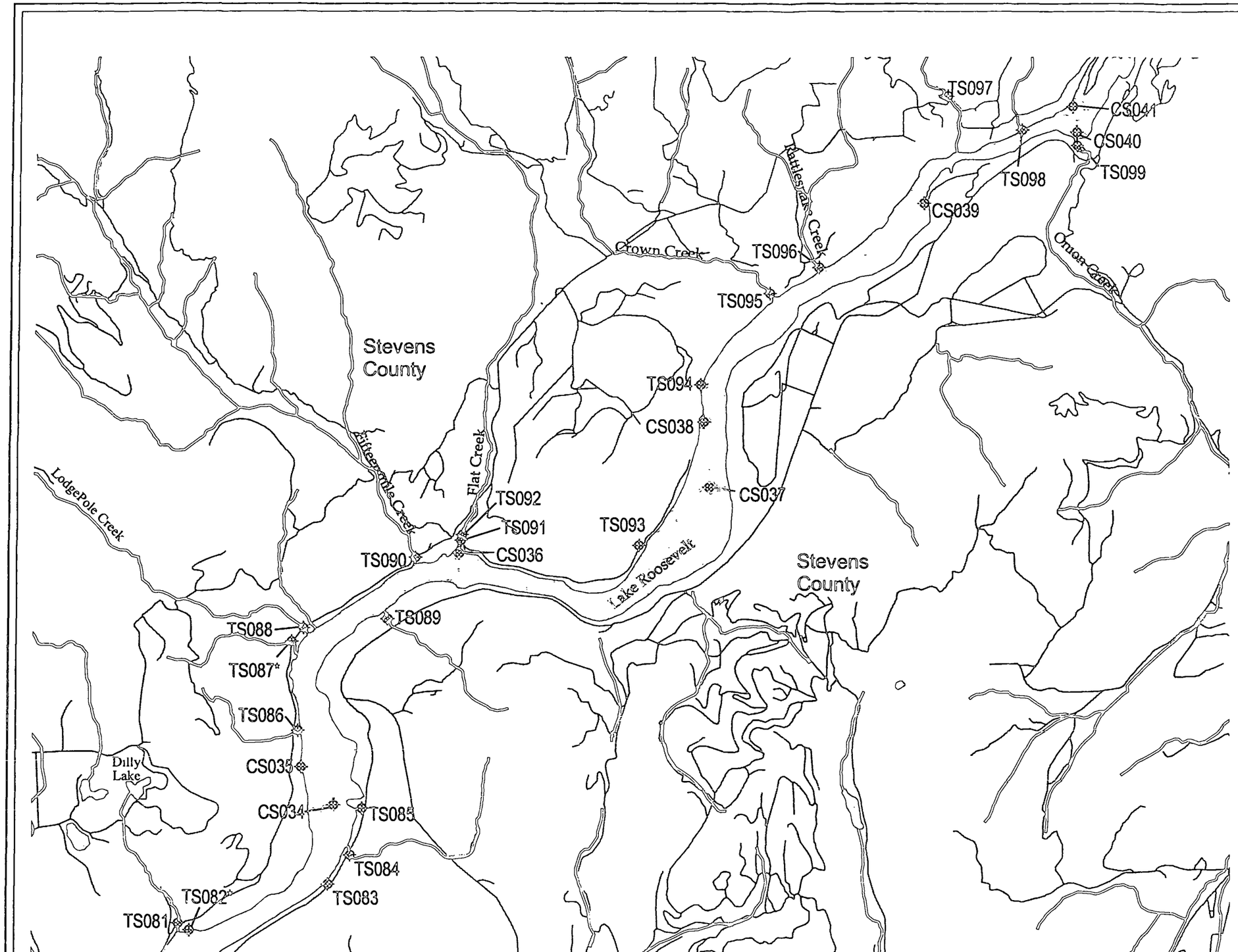


Columbia River/ Lake Roosevelt ESI Sample Station Locations Map E

Figure 1E

WESTON
MANAGERS DESIGNERS/CONSULTANTS

01-0381/TR Fig1E ai



EXPLANATION

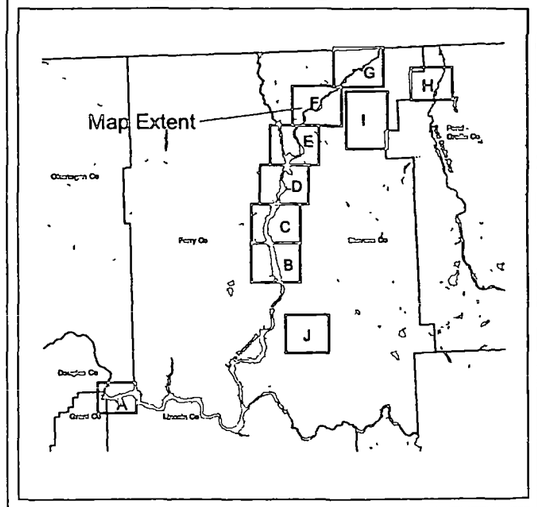
- Station Location
- Roads
- Streams
- County Line

* Location shown is based on uncorrected GPS data; corrected data unavailable.

N

0 2500 5000

Scale in Feet

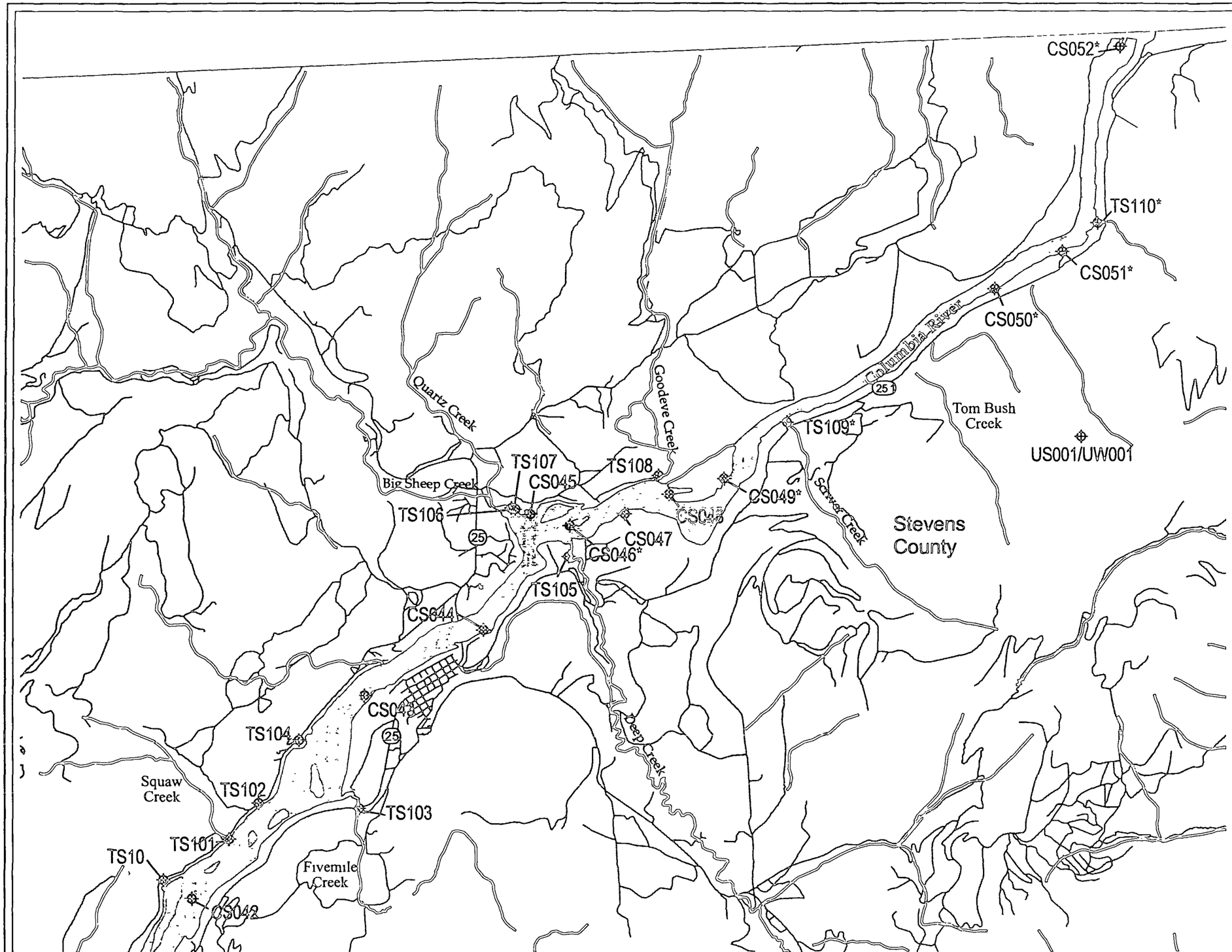


Columbia River/ Lake Roosevelt ESI Sample Station Locations Map F

Figure 1F

WESTON MANAGERS DESIGNERS/CONSULTANTS

01-0381/TR Fig1F ai



EXPLANATION

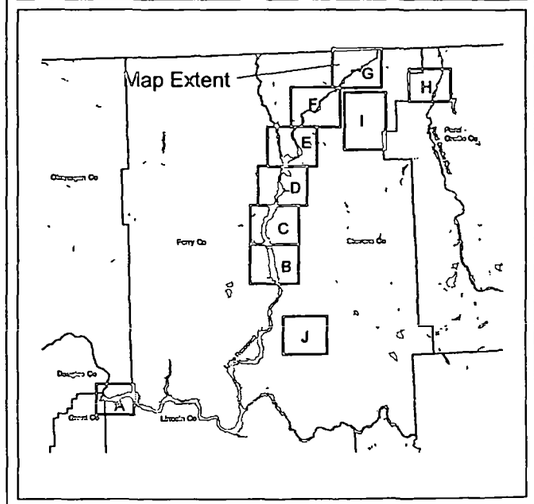
- Station Location
- Roads
- Streams
- County Line

* Location shown is not based on GPS data; Differentially corrected GPS data for this sample is unavailable.

N

0 2500 5000

Scale in Feet

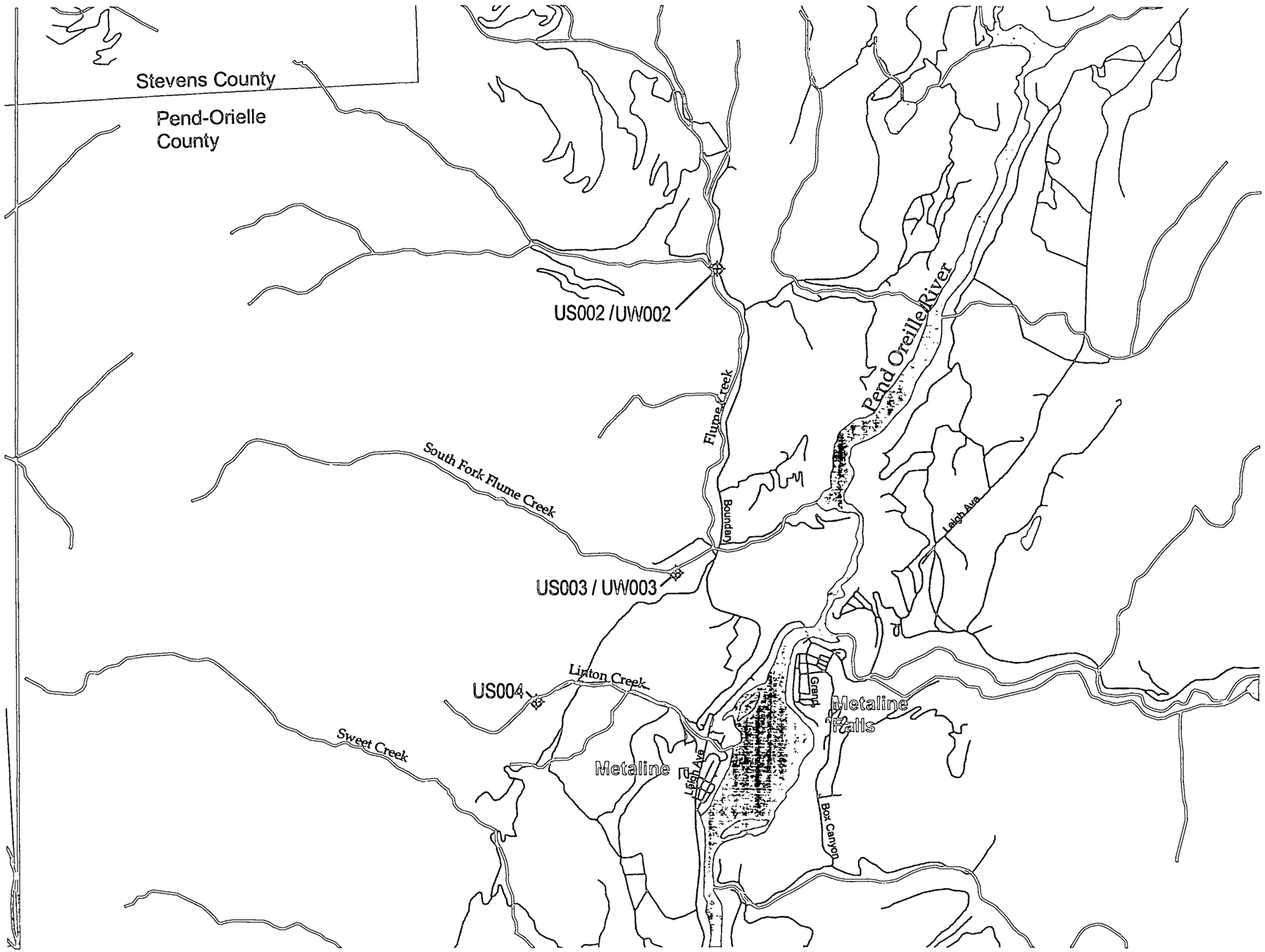


Columbia River/ Lake Roosevelt ESI Sample Station Locations Map G

Figure 1G

WESTON MANAGERS DESIGNERS/CONSULTANTS

01-0381/TR Fig1G.ai



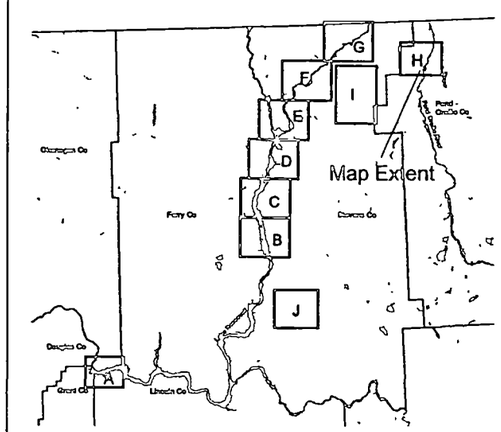
EXPLANATION

- Station Location
- Roads
- Streams
- County Line

N

0 2000 4000

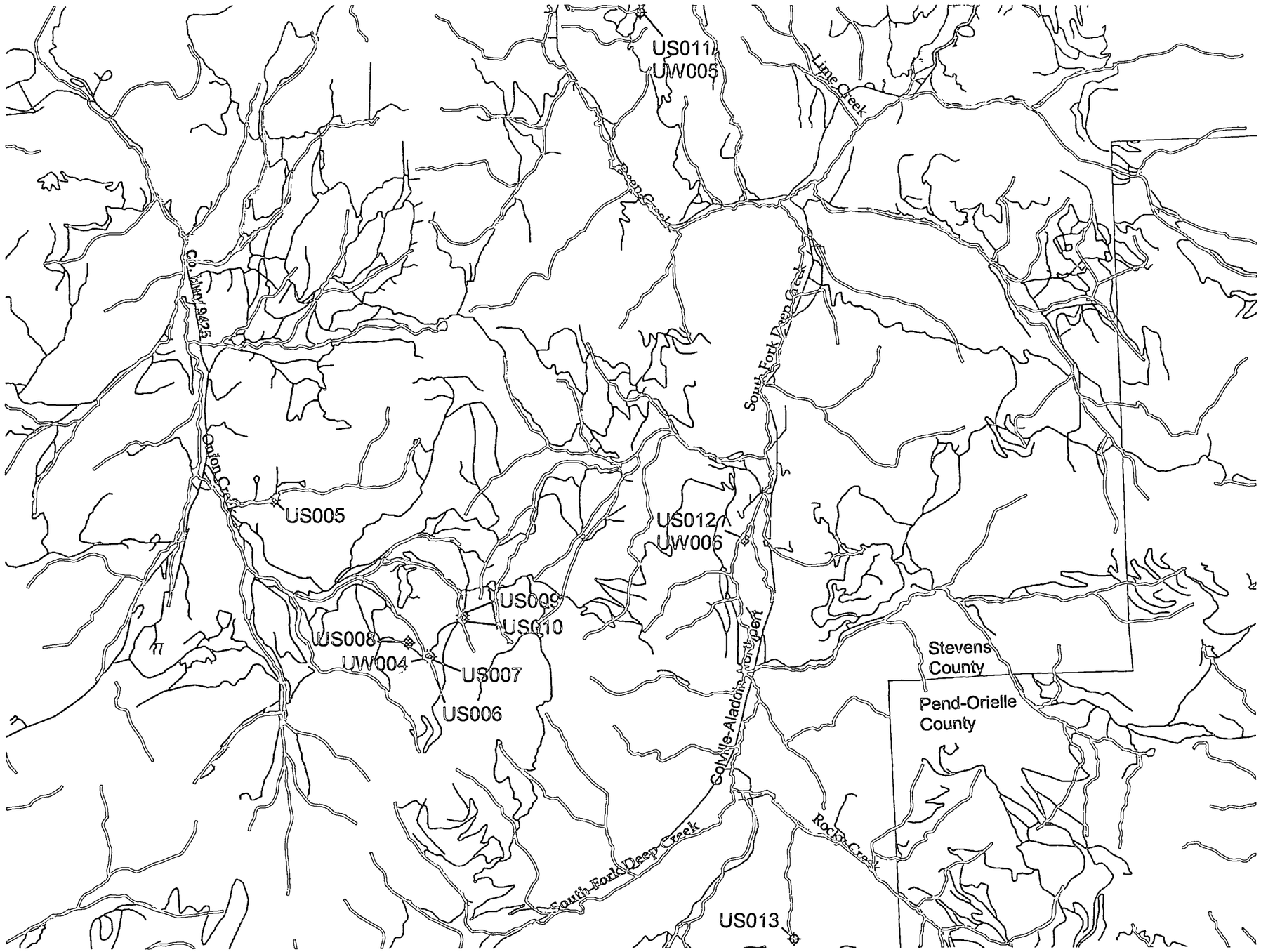
Scale in Feet



Columbia River/ Lake Roosevelt ESI Sample Station Location Map H

Figure 1H

WESTON
MANAGERS DESIGNERS/CONSULTANTS



EXPLANATION

Station Location

Roads

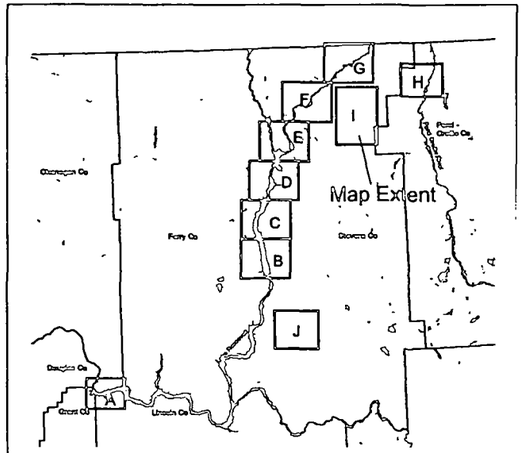
Streams

County Line

N

0 3500 7000

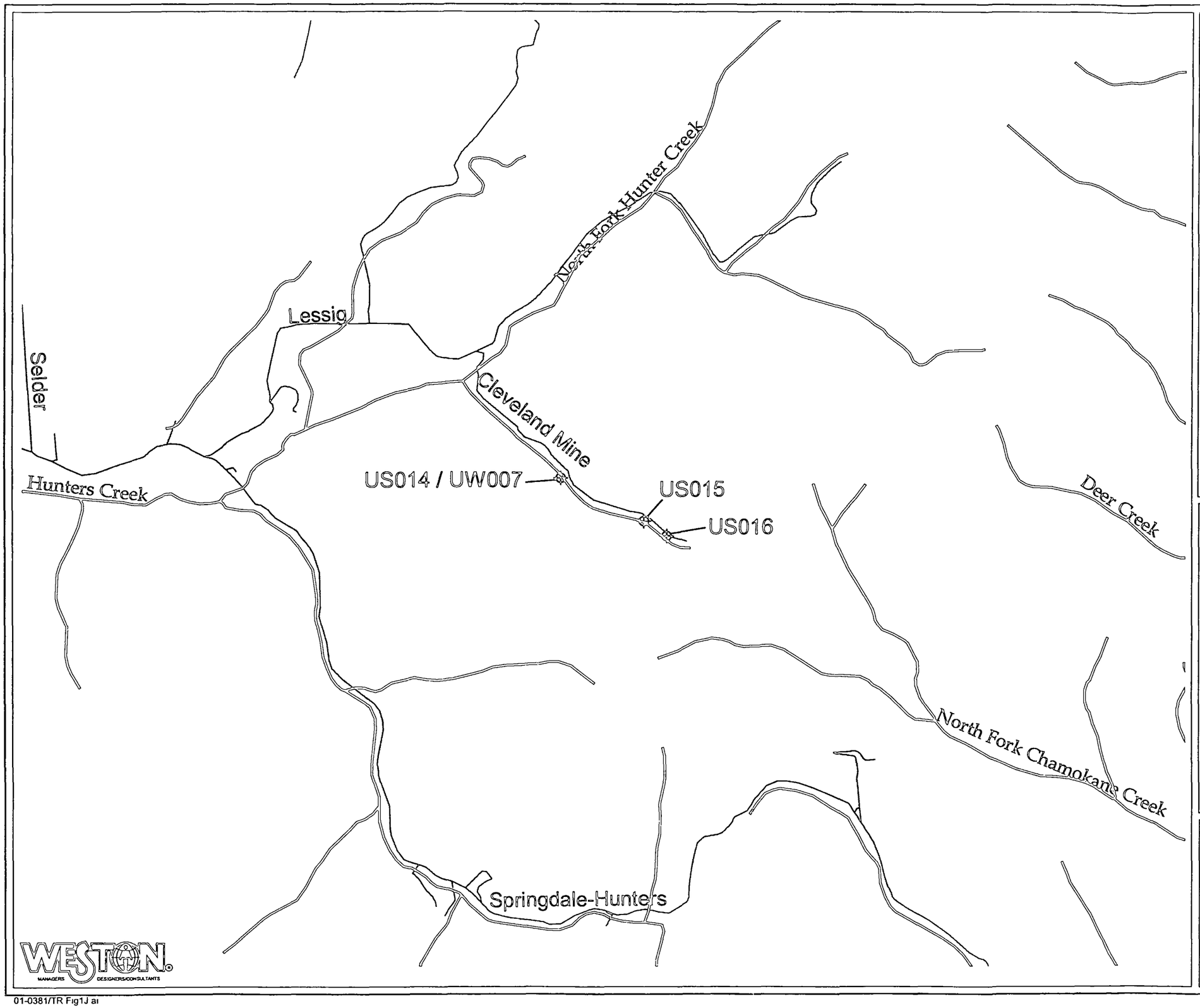
Scale in Feet



Columbia River/ Lake Roosevelt ESI Sample Station Locations Map I

WESTON
MANAGERS DESIGNERS/CONSULTANTS

Figure
11



EXPLANATION

Station Location

Roads

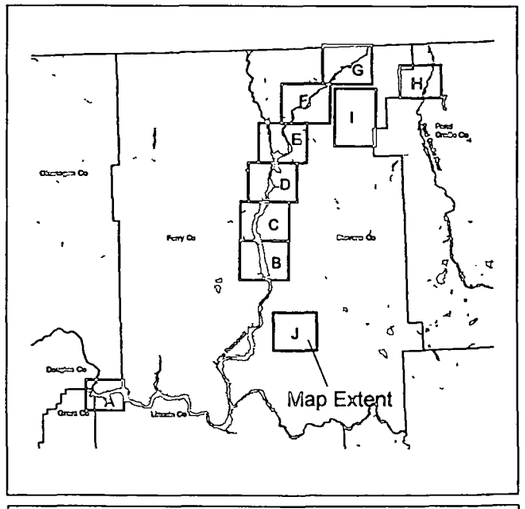
Streams

County Line

N

0 1500 3000

Scale in Feet

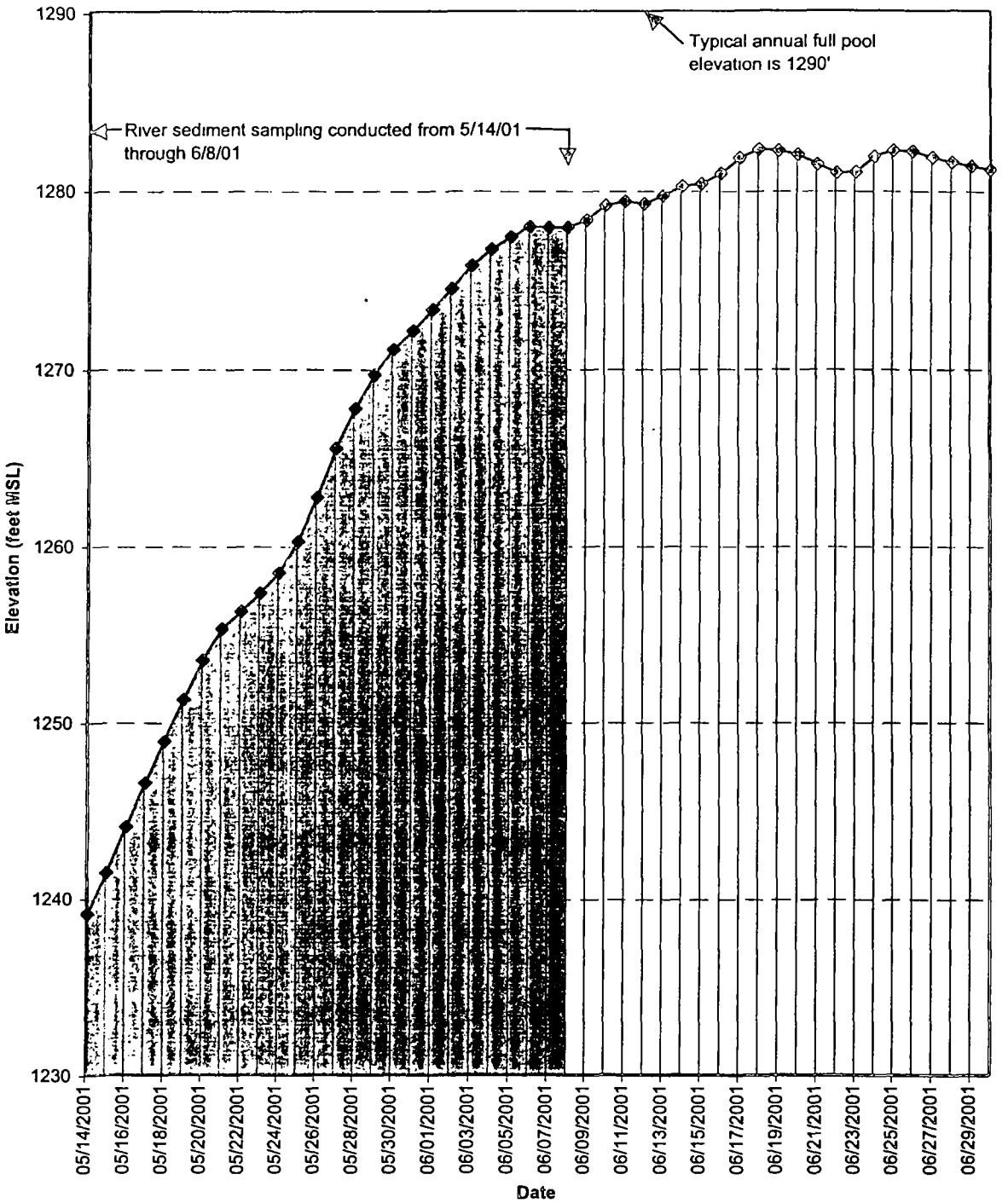


Columbia River/ Lake Roosevelt ESI Sample Station Locations Map J

Figure 1J

WESTON MANAGERS DESIGNERS/CONSULTANTS

01-0381/TR Fig1J ai



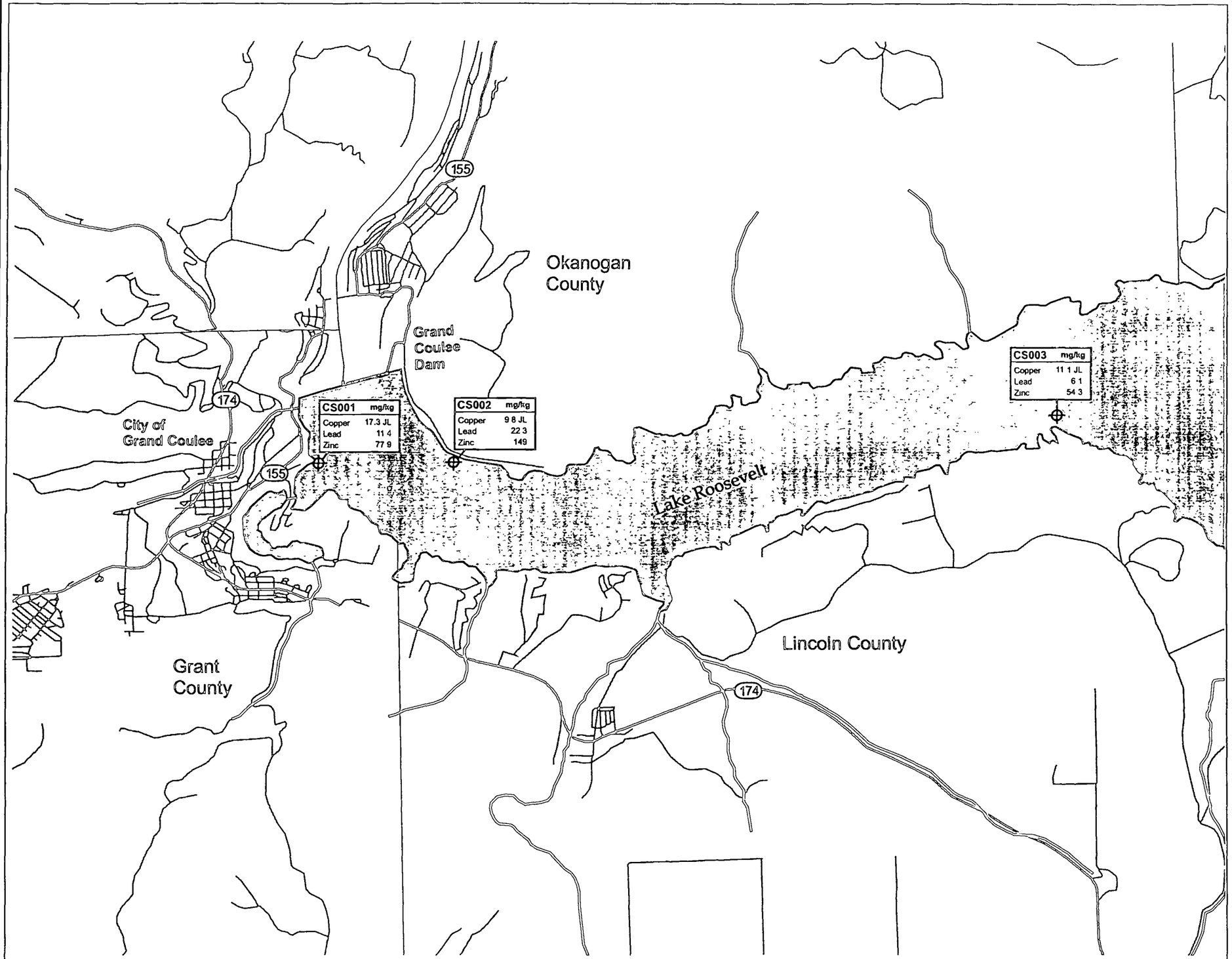
Source. Water level data based on measurements at Grand Coulee Dam, provided by the United States Bureau of Reclamation

Columbia River/Lake Roosevelt ESI
Lake Roosevelt Water Level Elevation (ft MSL)
River Sediment Sampling Period 5/13/01 to 6/08/01

WESTON
MANAGER DESIGNER /CONSULTANTS

Figure 2

01-0381/TR Fig2 ai



EXPLANATION

- Station Location
- Roads
- Streams
- County Line

DATA QUALIFIERS

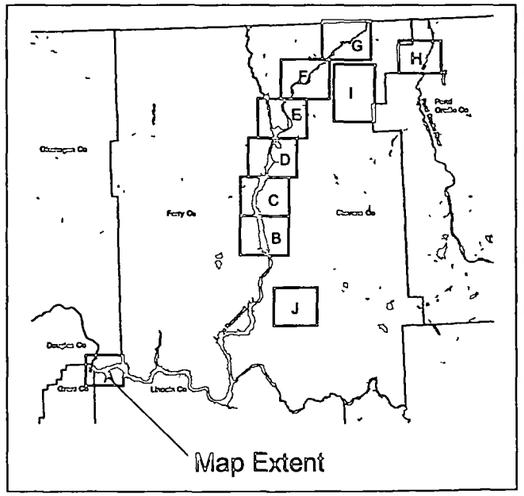
J The analyte was positively identified but the associated numerical value is an estimate

L Low Bias

N

0 2000 4000

Scale in Feet

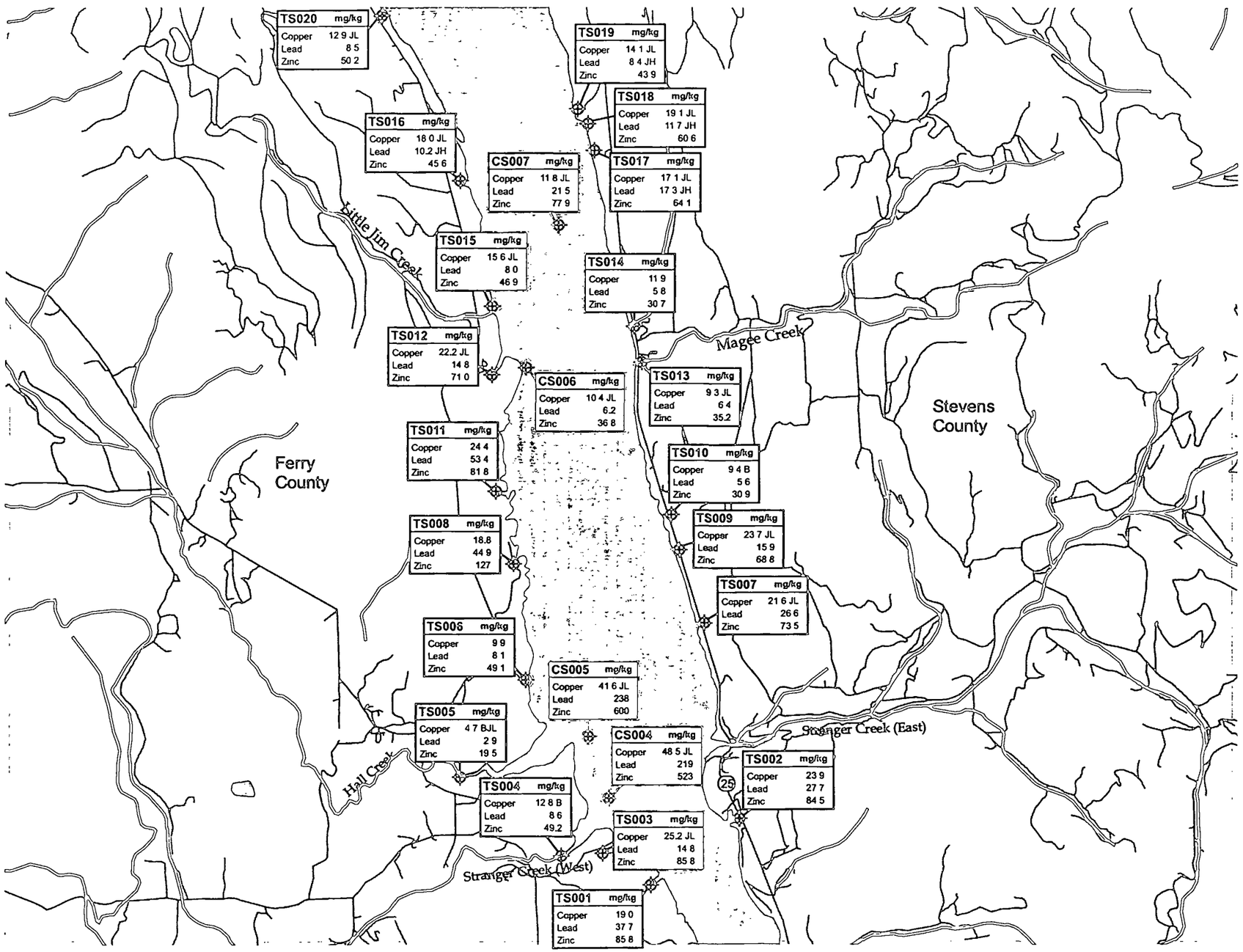


Columbia River/ Lake Roosevelt ESI Copper, Lead, and Zinc Sediment Concentrations Map A

Figure 3A

WESTON MANAGERS DESIGNERS/CONSULTANTS

01-0381/TR Fig3A.ai



EXPLANATION

- Station Location
- Roads
- Streams
- County Line

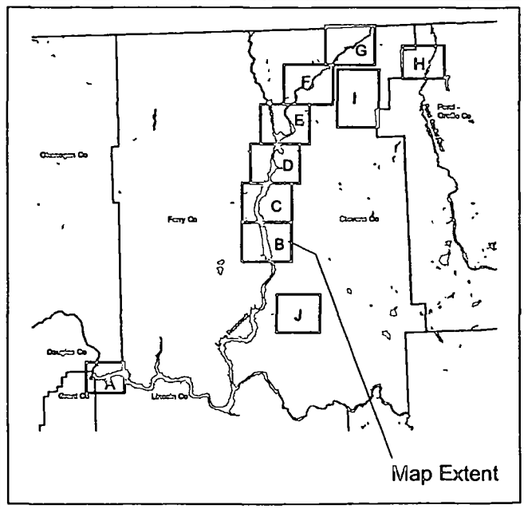
DATA QUALIFIERS

- **J** The analyte was positively identified but the associated numerical value is an estimate.
- **B** Detected concentration is below the method reporting limit/contract required detection limit but is above the instrument detection limit.
- **L** Low Bias
- **H** High Bias

N

0 2000 4000

Scale in Feet

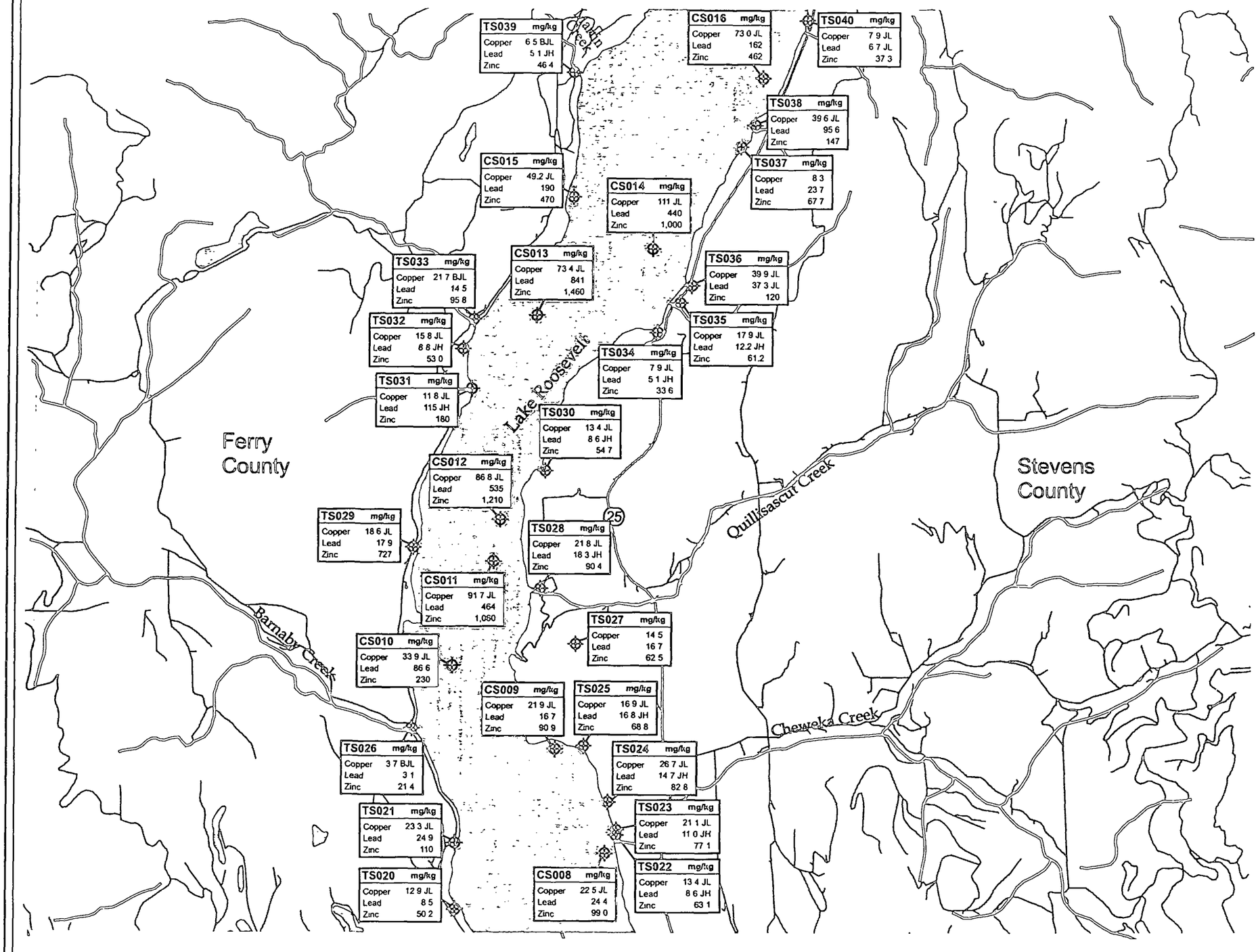


Columbia River/ Lake Roosevelt ESI Copper, Lead, and Zinc Sediment Concentrations Map B

Figure 3B

WESTON
MANAGERS DESIGNERS/CONSULTANTS

01-0381/TR Fig3B ai



EXPLANATION

- Station Location
- Roads
- Streams
- County Line

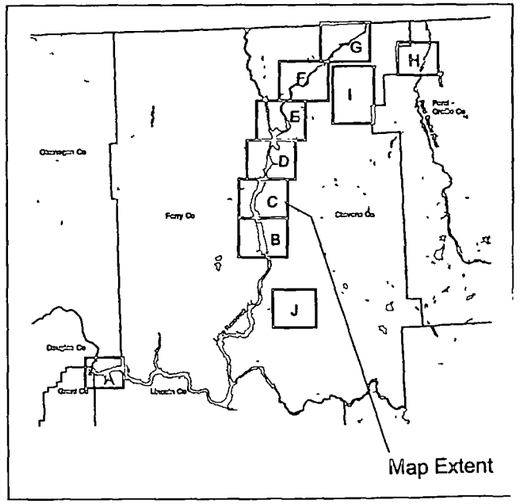
DATA QUALIFIERS

- J The analyte was positively identified but the associated numerical value is an estimate
- B Detected concentration is below the method reporting limit/contract required detection limit but is above the instrument detection limit.
- L Low Bias
- H High Bias

N

0 2500 5000

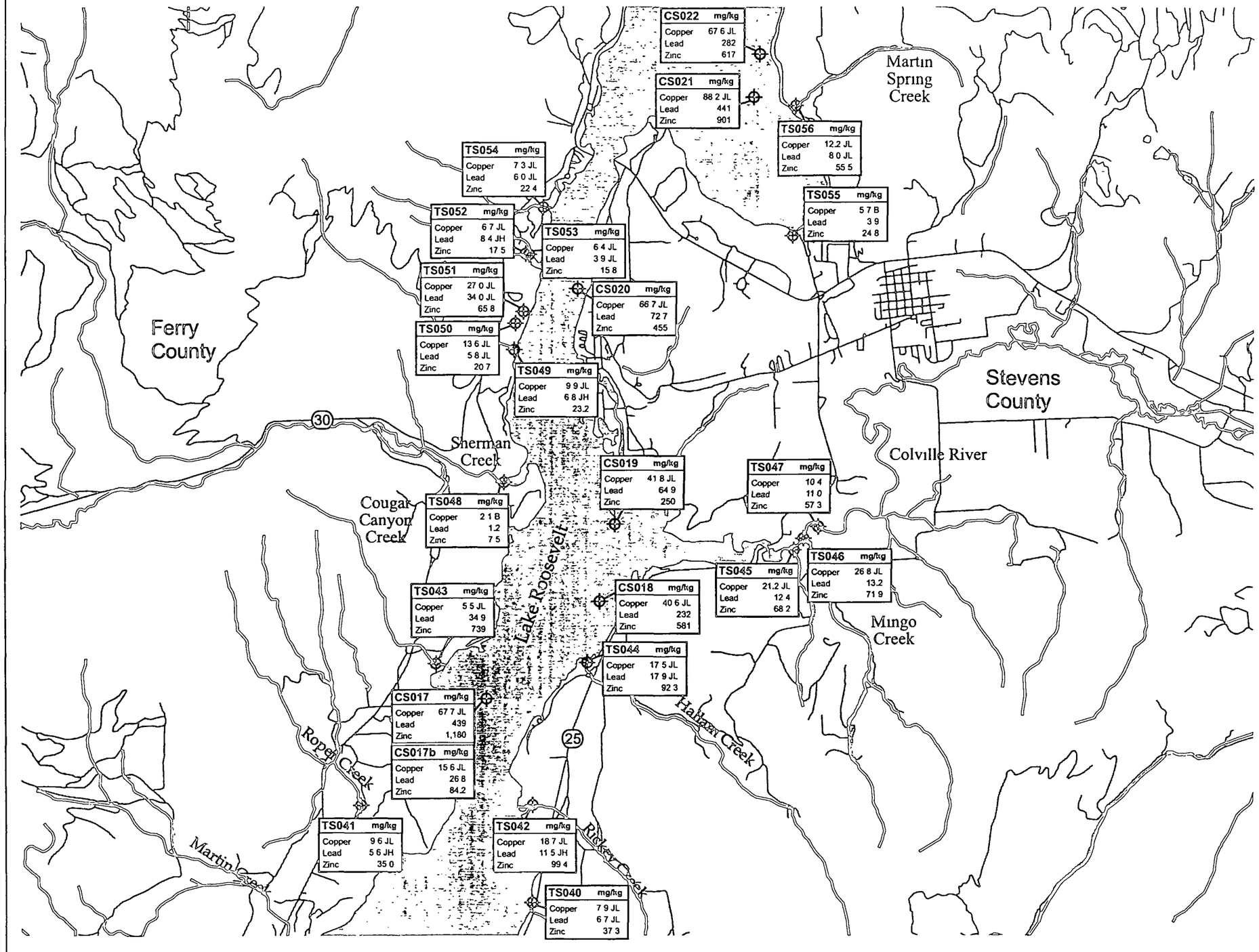
Scale in Feet



WESTON
MANAGERS DESIGNERS/CONSULTANTS

Columbia River/ Lake Roosevelt ESI Copper, Lead, and Zinc Sediment Concentrations Map C

Figure 3C



EXPLANATION

- Station Location
- Roads
- Streams
- County Line

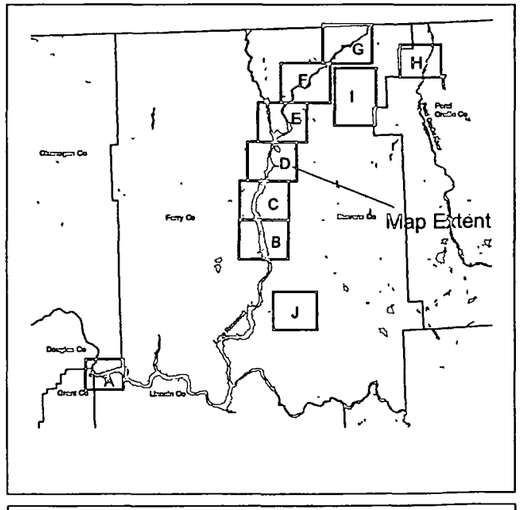
DATA QUALIFIERS

- J The analyte was positively identified but the associated numerical value is an estimate.
- B Detected concentration is below the method reporting limit/contract required detection limit but is above the instrument detection limit.
- L Low Bias
- H High Bias

N

0 2500 5000

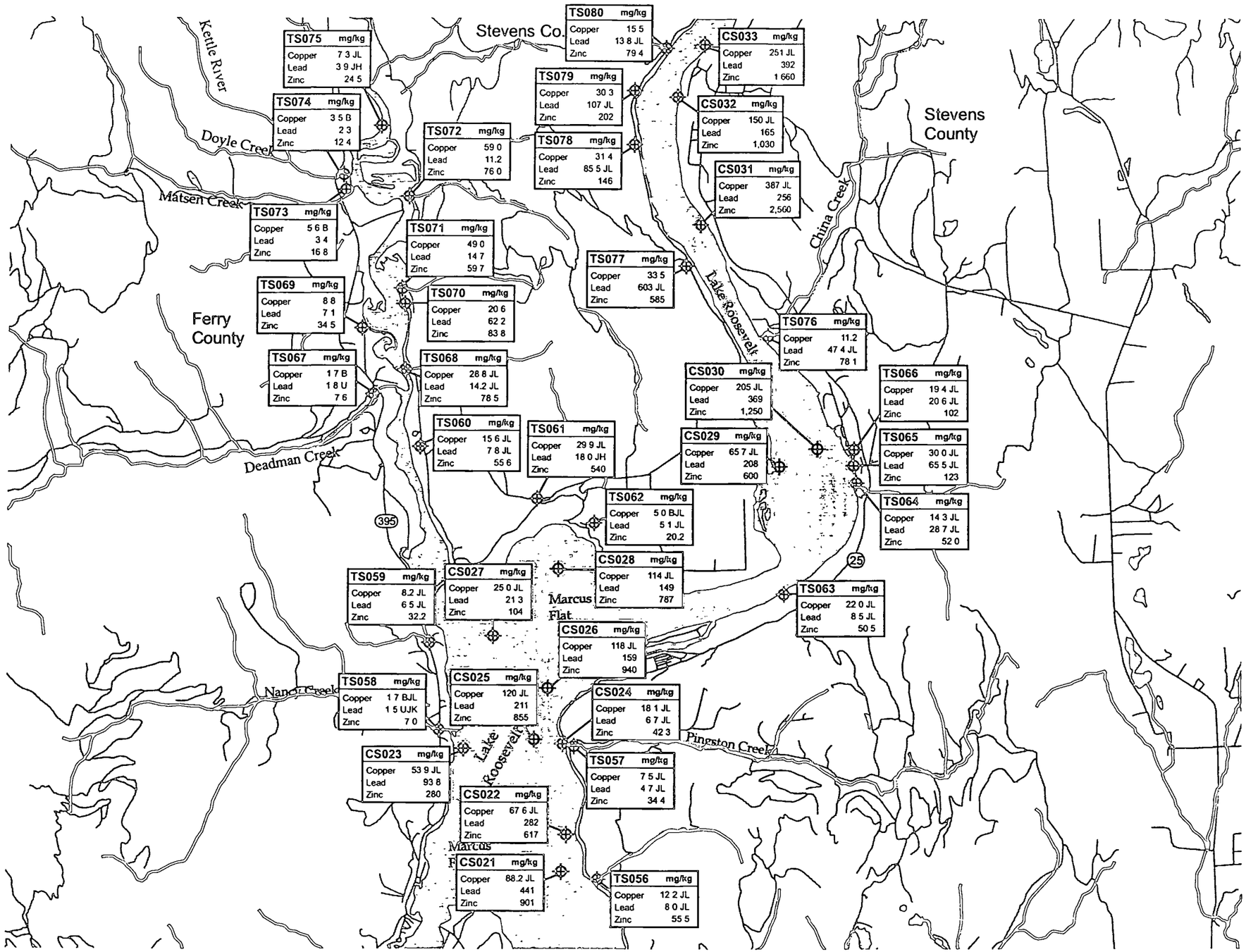
Scale in Feet



Columbia River/ Lake Roosevelt ESI Copper, Lead, and Zinc Sediment Concentrations Map D

Figure 3D

WESTON
MANAGERS DESIGNERS/CONSULTANTS



EXPLANATION

- Station Location
- Roads
- Streams
- County Line

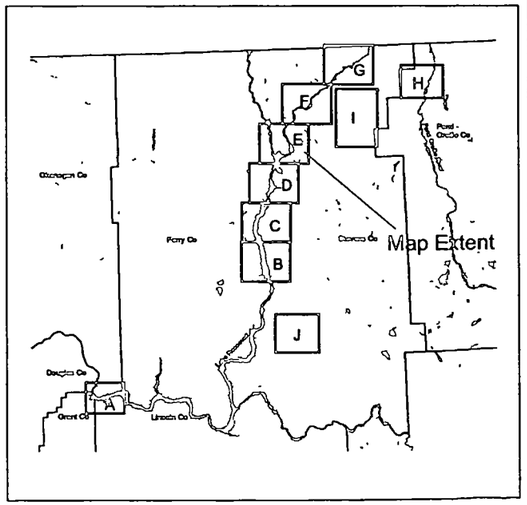
DATA QUALIFIERS

- **J** The analyte was positively identified but the associated numerical value is an estimate.
- **B** Detected concentration is below the method reporting limit/contract required detection limit but is above the instrument detection limit.
- **U** The compound was analyzed for, but not detected
- **H** High Bias
- **K** Unknown Bias
- **L** Low Bias

N

0 3000 6000

Scale in Feet



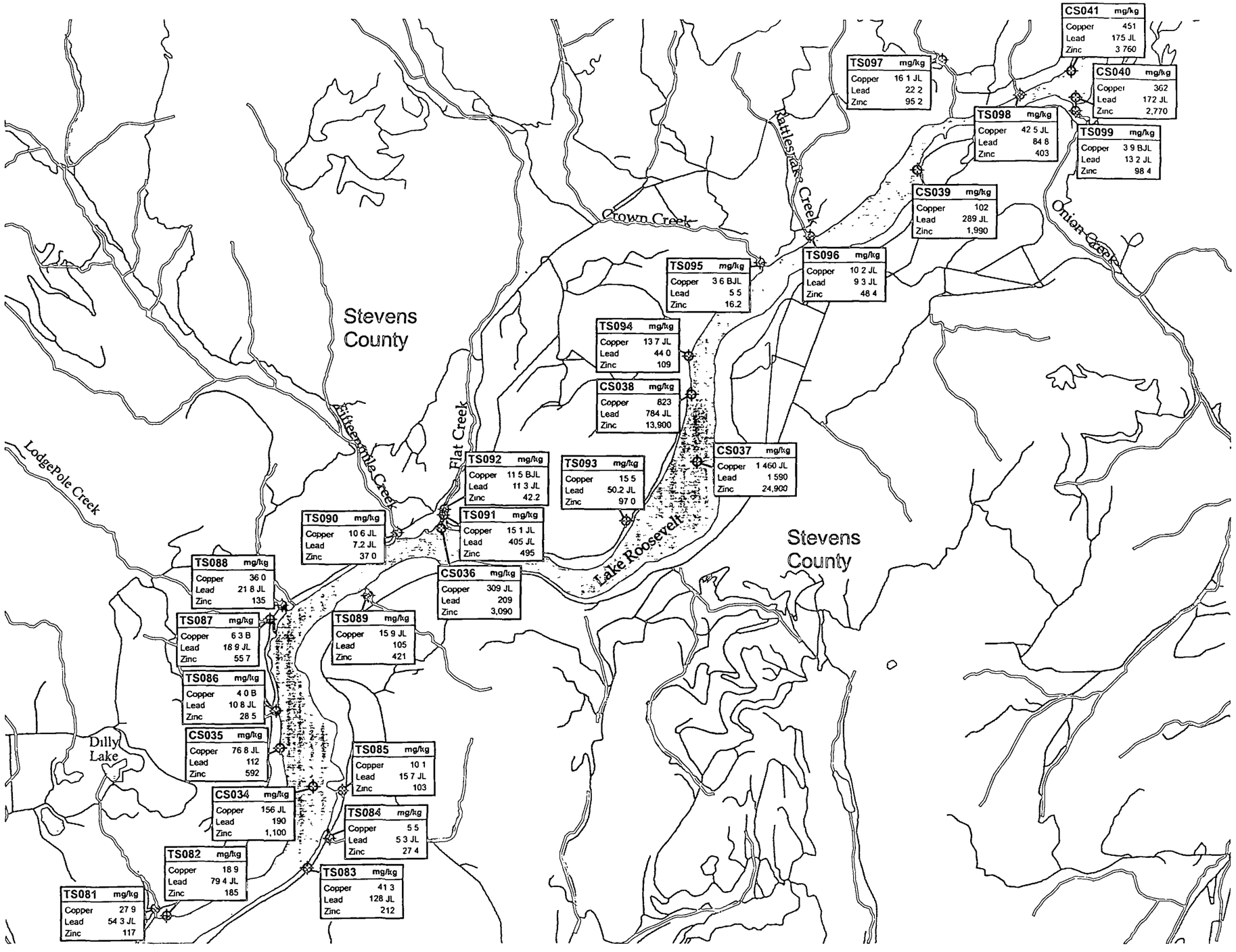
Columbia River/ Lake Roosevelt ESI Copper, Lead, and Zinc Sediment Concentrations Map E

Figure 3E

WESTON

MANAGERS DESIGNERS/CONSULTANTS

01-0381/TR Fig3E ai



EXPLANATION

- Station Location
- Roads
- Streams
- County Line

DATA QUALIFIERS

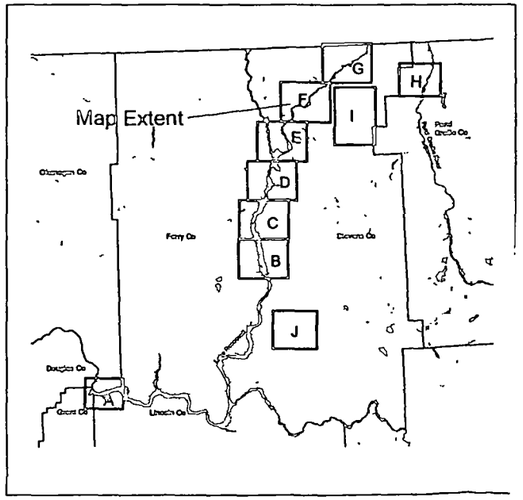
- **J** The analyte was positively identified but the associated numerical value is an estimate.
- **B** Detected concentration is below the method reporting limit/contract required detection limit but is above the instrument detection limit.
- **L** Low Bias

* Location shown is based on uncorrected GPS data; corrected data unavailable.

N

0 2500 5000

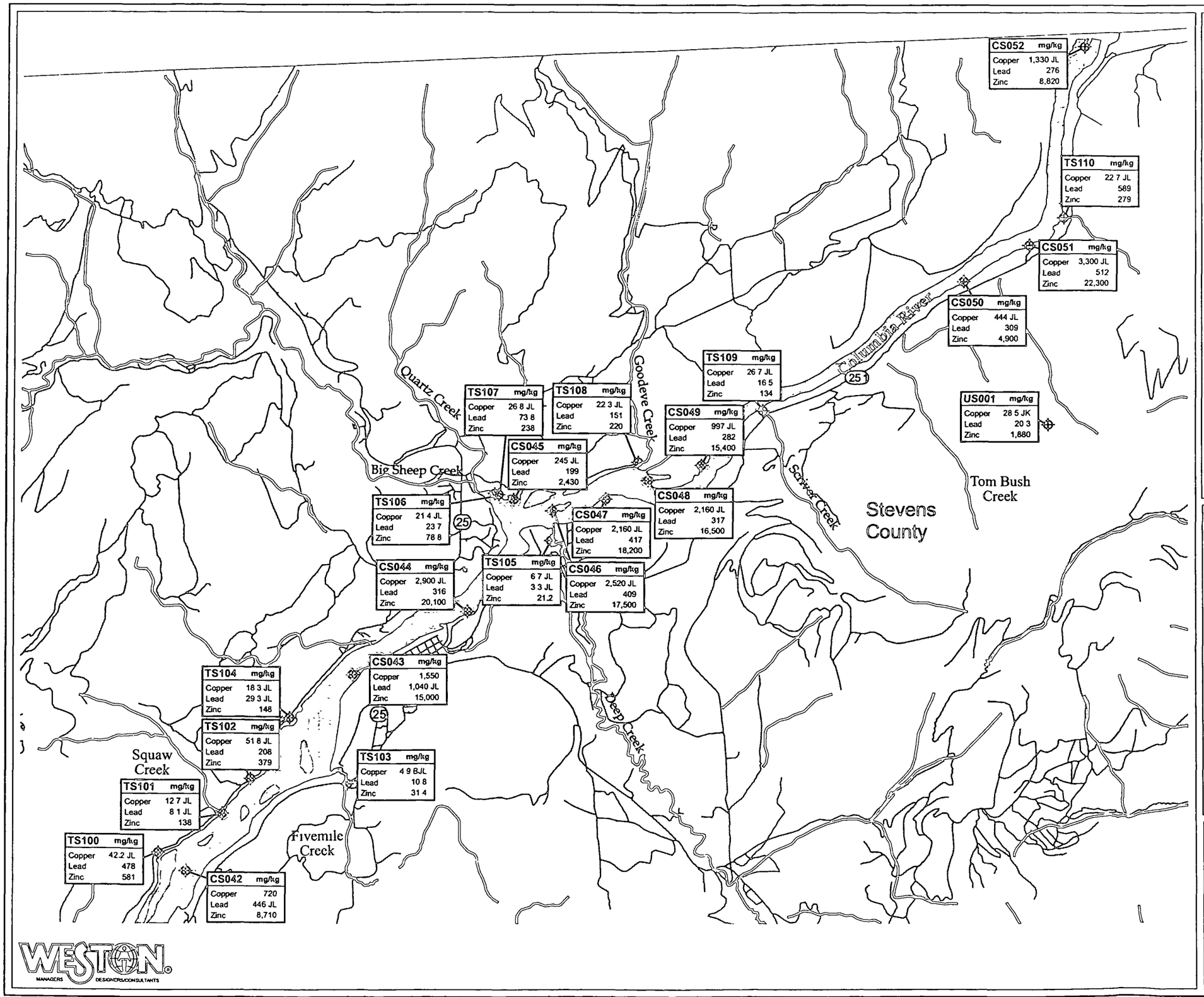
Scale in Feet



Columbia River/ Lake Roosevelt ESI Copper, Lead, and Zinc Sediment Concentrations Map F

Figure 3F

WESTON
MANAGERS DESIGNERS/CONSULTANTS



EXPLANATION

- Station Location
- Roads
- Streams
- County Line

DATA QUALIFIERS

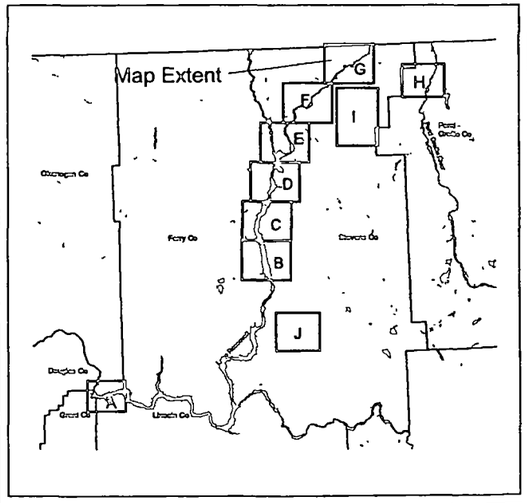
- J The analyte was positively identified but the associated numerical value is an estimate
- B Detected concentration is below the method reporting limit/contract required detection limit but is above the instrument detection limit
- K Unknown Bias
- L Low Bias

* Location shown is not based on GPS data; Differentially corrected GPS data for this sample is unavailable.

N

0 2500 5000

Scale in Feet

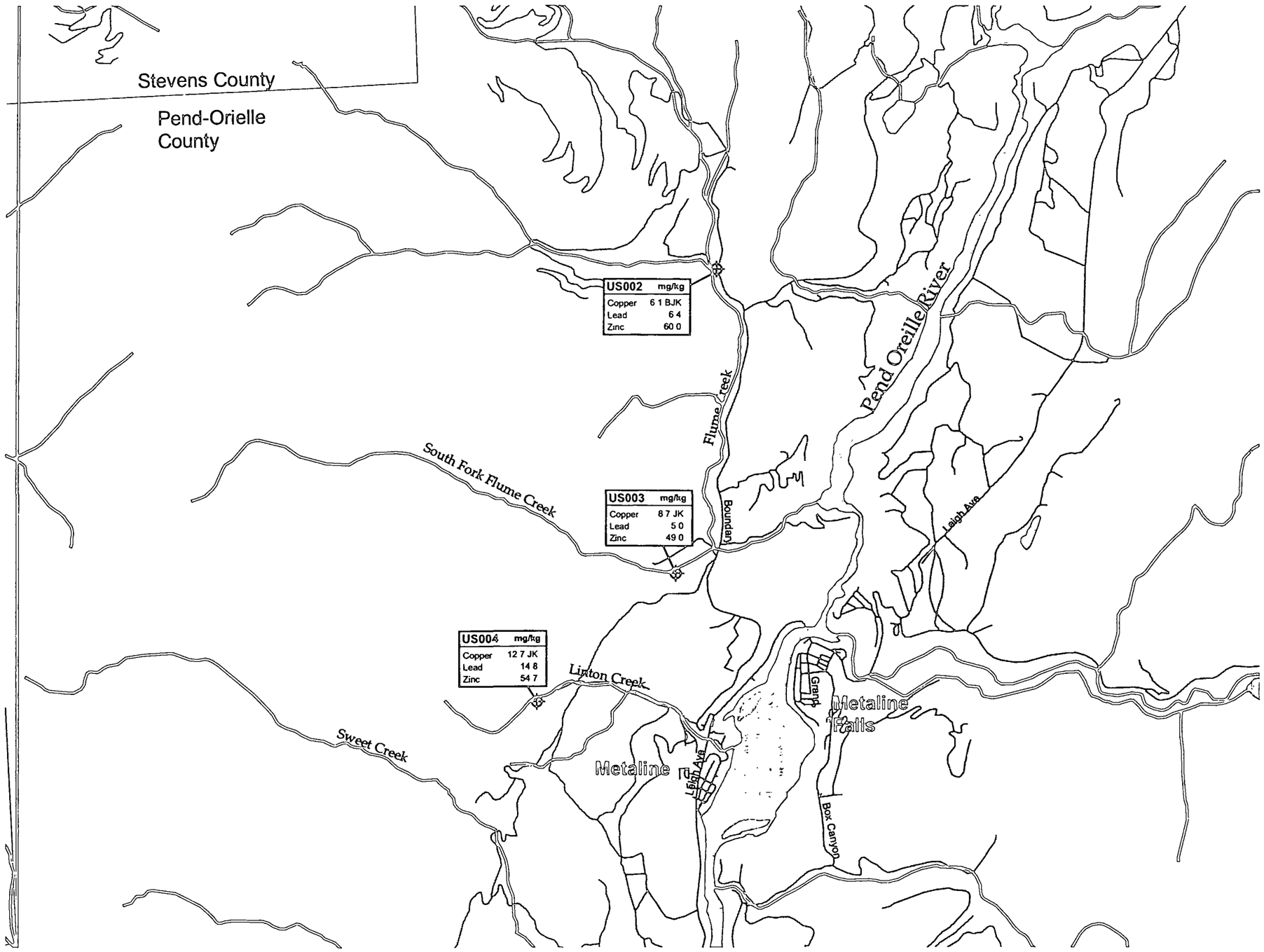


Columbia River/ Lake Roosevelt ESI Copper, Lead, and Zinc Sediment Concentrations Map G

Figure 3G

WESTON MANAGERS DESIGNERS/CONSULTANTS

01-0381/TR Fig3G ai



EXPLANATION

- Station Location
- Roads
- Streams
- County Line

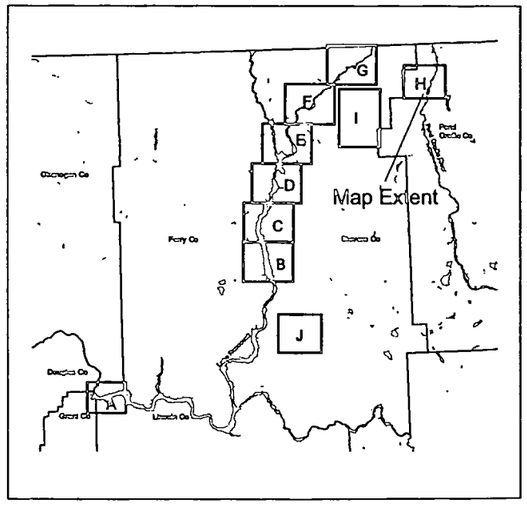
DATA QUALIFIERS

- J The analyte was positively identified but the associated numerical value is an estimate
- B Detected concentration is below the method reporting limit/contract required detection limit but is above the instrument detection limit
- K Unknown Bias

N

0 2000 4000

Scale in Feet



Columbia River/ Lake Roosevelt ESI Copper, Lead, and Zinc Sediment Concentrations Map H

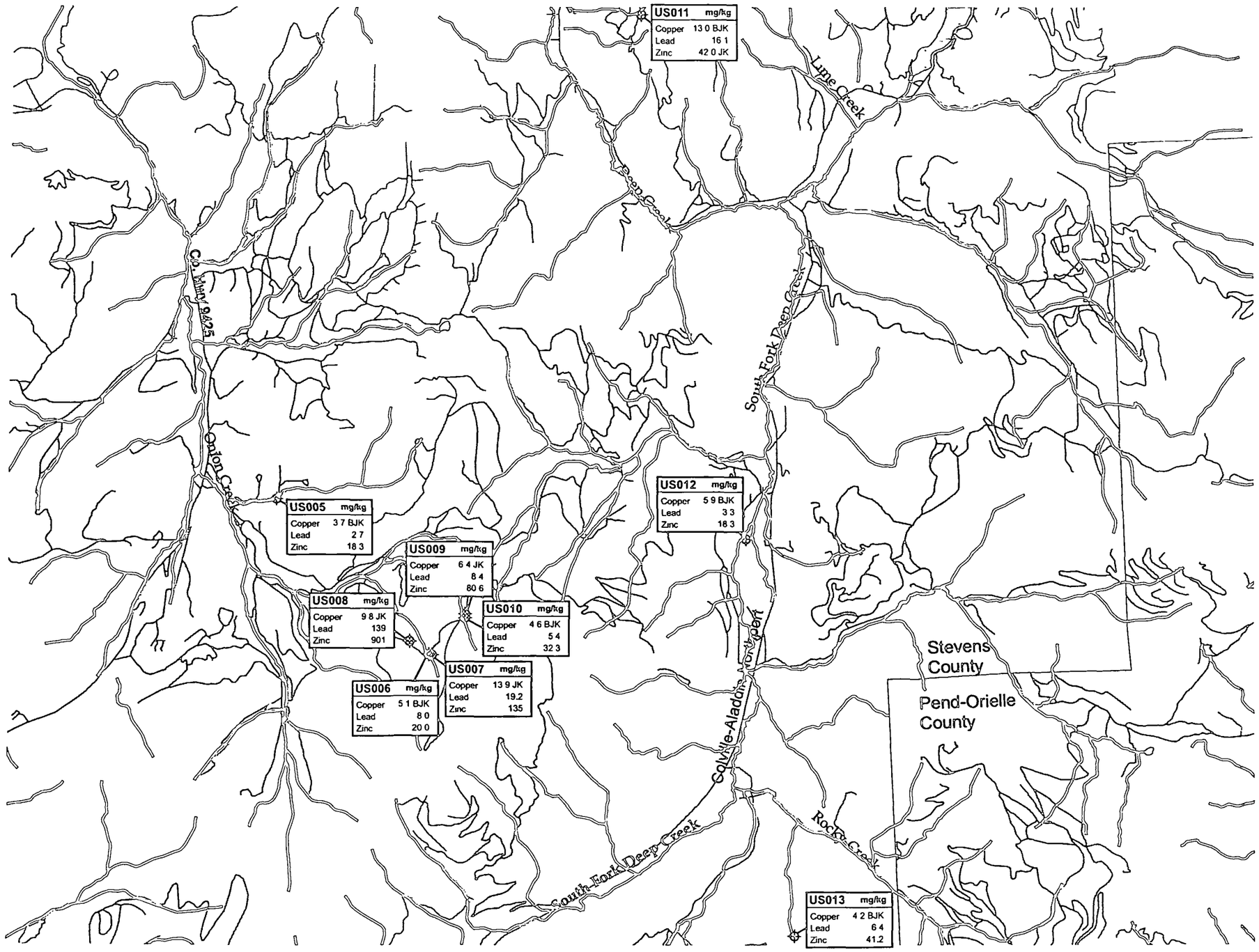
Figure

3H

WESTON

MANAGERS DESIGNERS/CONSULTANTS

01-0381/TR Fig3H ai



EXPLANATION

- Station Location
- Roads
- Streams
- County Line

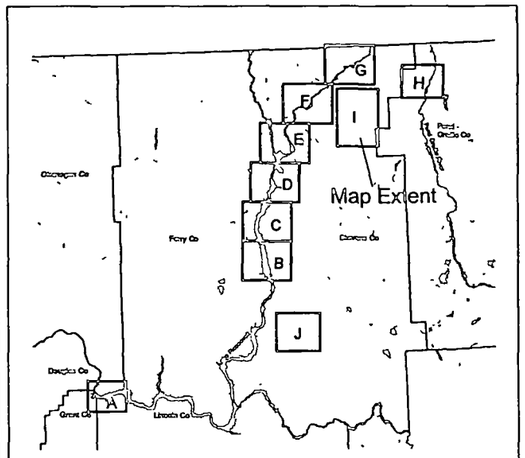
DATA QUALIFIERS

- J The analyte was positively identified but the associated numerical value is an estimate
- B Detected concentration is below the method reporting limit/contract required detection limit but is above the instrument detection limit
- K Unknown Bias

N

0 3500 7000

Scale in Feet

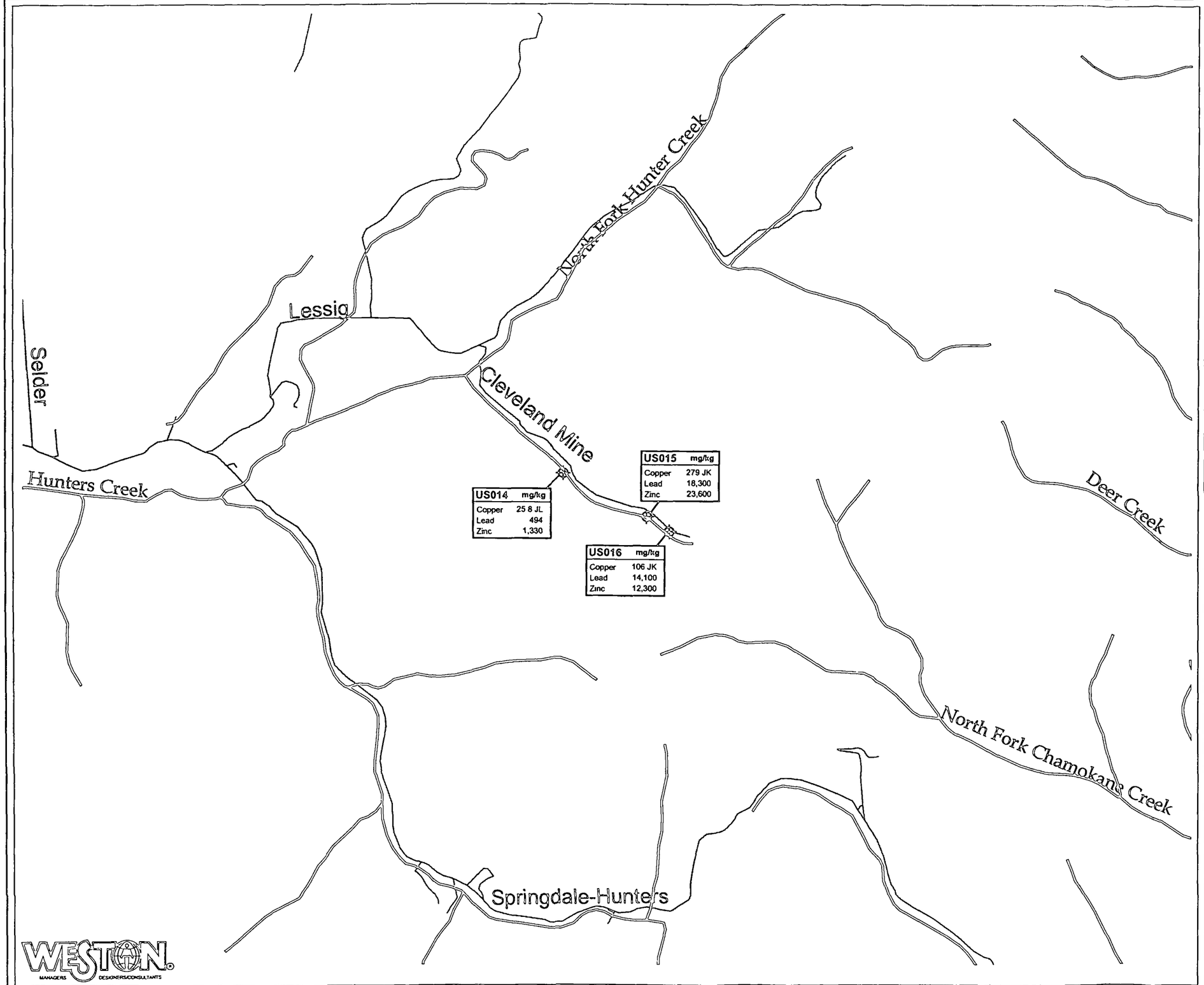


Columbia River/ Lake Roosevelt ESI Copper, Lead, and Zinc Sediment Concentrations Map I

Figure 3I

WESTON MANAGERS DESIGNERS/CONSULTANTS

01-0381/TR Fig3I ai



EXPLANATION

- Station Location
- Roads
- Streams
- County Line

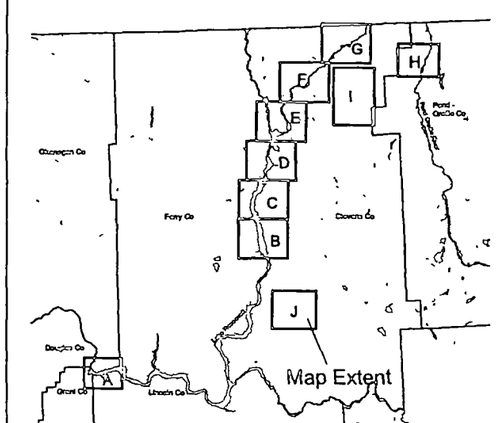
DATA QUALIFIERS

- J The analyte was positively identified but the associated numerical value is an estimate
- K Unknown Bias
- L Low Bias

N

0 1500 3000

Scale in Feet



Columbia River/ Lake Roosevelt ESI Copper, Lead, and Zinc Sediment Concentrations Map J

Figure 3J

WESTON MANAGERS DESIGNERS/CONSULTANTS

01-0381/TR Fig3J ai

APPENDIX A

SAMPLE STATION GPS LOCATIONS

Appendix A—Upper Columbia River/Lake Roosevelt ESI DGPS Data

Station ID	Station Description	Data File	GPS Date	GPS Time	Longitude	Latitude	Distance/ Direction to Sample Location
CW001	Grand Coulee Drinking Water System distribution	q051422a	14-May-01	15:12:32	-118.9961089	47.93332505	
CW002	Lake Roosevelt Grand Coulee Drinking Water Intake	q051519a	15-May-01	12:12:24	-118.9679922	47.9419154	
CS001	Lake Roosevelt Crescent Bay boat ramp	q051501a	14-May-01	18:19:34	-118.9862354	47.94759778	
CS002	Lake Roosevelt North Dam Boat Ramp	q051502a	14-May-01	19:05:58	-118.9642342	47.94736508	
CS003	Lake Roosevelt Plum Point	q051520b	15-May-01	13:23:03	-118.8661507	47.95086836	
CS004	Lake Roosevelt near Inchelium	M051717a	17-May-01	10:12:53	-118.1725243	48.30055232	
CS005	Lake Roosevelt at point south of Hall Creek	M051717b	17-May-01	11:08:06	-118.1763554	48.30913076	
CS006	Lake Roosevelt at Mission Point	M051718b	17-May-01	11:29:56	-118.1867656	48.36033147	
CS007	Lake Roosevelt north of Daisy Station	M051719a	17-May-01	12:17:01	-118.1790535	48.37980781	
CS008	Lake Roosevelt south of Cheweka Creek	M051720a	17-May-01	13:56:37	-118.1834736	48.41597662	
CS009	Lake Roosevelt south of Chalk Grade Point	M051723a	17-May-01	16:07:17	-118.1930954	48.43027213	
CS010	Lake Roosevelt south of Barnaby Island	M051722a	17-May-01	15:46:08	-118.2135052	48.44196518	
CS011	Lake Roosevelt on flats north of Quillisascut Creek	M051723b	17-May-01	16:35:23	-118.2044906	48.45583243	
CS012	Lake Roosevelt on flats north of Quillisascut Creek	M051817a	18-May-01	10:11:39	-118.2027768	48.46142995	
CS013	Lake Roosevelt on flats between French Point Rocks and La Fleur Creek	M051818a	18-May-01	11:07:27	-118.1943002	48.48882027	
CS014	Lake Roosevelt on mid-channel bar east of French Point Rocks	M051819a	18-May-01	12:20:57	-118.1700454	48.49718576	
CS015	Lake Roosevelt north of French Point	M051820a	18-May-01	13:20:07	-118.1860212	48.50445393	
CS016	Lake Roosevelt on flats North of Bradbury Beach	t051821a	18-May-01	14:25:17	-118.1465529	48.51941734	
CS017	Lake Roosevelt on flats fronting Haag Cove	t051822a	18-May-01	15:31:34	-118.1444874	48.55427273	

Appendix A—Upper Columbia River/Lake Roosevelt ESI DGPS Data

Station ID	Station Description	Data File	GPS Date	GPS Time	Longitude	Latitude	Distance/ Direction to Sample Location
CS018	Lake Roosevelt on flats south of Colville River	t051916a	19-May-01	09:05:38	-118.1209358	48.56666331	
CS019	Lake Roosevelt in bay at Colville River mouth	t051917a	19-May-01	10:23:50	-118.1173265	48.57692281	
CS020	Lake Roosevelt south of Boise Cascade Log Boom	t051918a	19-May-01	11:17:13	-118.1232783	48.60848159	
CS021	Lake Roosevelt, Marcus Flats, northwest of Martin Spring Creek	m052117a	21-May-01	10:18:33	-118.0865754	48.63306761	
CS022	Lake Roosevelt, Marcus Flats, southwest of Pingston Creek	m052117b	21-May-01	10:54:01	-118.0851346	48.6386791	
CS023	Lake Roosevelt, Marcus Flats (west bank)	m052118a	21-May-01	11:55:11	-118.108375	48.65239937	
CS024	Marcus Flats, north of Pingston Creek	Q060816a	08-Jun-01	09:38:56	-118.0851656	48.65257778	
CS025	Lake Roosevelt on Marcus Flats west of Pingston Creek	m052119a	21-May-01	12:28:33	-118.0918876	48.65340326	
CS026	Lake Roosevelt, Marcus Flats, south of Marcus Island	m052120d	21-May-01	13:51:47	-118.0882371	48.66118525	
CS027	Lake Roosevelt, Marcus Flats, east of Kamloops	m052120c	21-May-01	13:24:12	-118.100571	48.66951163	
CS028	Lake Roosevelt, Marcus Flats northeast	m052121b	21-May-01	14:32:36	-118.0849062	48.67947102	
CS029	Lake Roosevelt north of Summer Island	m052122a	21-May-01	15:51:59	-118.0324467	48.69400597	
CS030	Lake Roosevelt on flats at Evans Campground	m052123a	21-May-01	16:36:06	-118.0233336	48.69649822	
CS031	Lake Roosevelt east of Snag Cove	m052200b	21-May-01	17:43:31	-118.0491558	48.73141971	
CS032	Lake Roosevelt on flats south of Bossburg	m052217a	22-May-01	10:02:08	-118.0536867	48.75086841	
CS033	Lake Roosevelt on flats north of Bossburg	m052217b	22-May-01	10:54:37	-118.0468477	48.758648	
CS034	Lake Roosevelt on flats south of North Gorge (east bank)	m052220a	22-May-01	13:57:37	-118.0070171	48.78642347	
CS035	Lake Roosevelt on flats south of North Gorge (west bank)	m052218a	22-May-01	11:51:02	-118.0135149	48.79179918	

Station ID	Station Description	Data File	GPS Date	GPS Time	Longitude	Latitude	Distance/ Direction to Sample Location
CS036	Lake Roosevelt east of Flat Creek (north bank)	m052222a1	22-May-01	15:10:53	-117.978723	48.82050073	
CS037	Lake Roosevelt at China Bar	m052223a	22-May-01	16:36:40	-117.9259154	48.82824855	
CS038	Lake Roosevelt near navigation light south of Crown Creek	m052317a	23-May-01	10:46:47	-117.9266419	48.83728583	
CS039	Lake Roosevelt north of Rattlesnake Creek (east bank)	m052318a	23-May-01	11:36:52	-117.8787563	48.8661392	
CS040	Lake Roosevelt north of Onion Creek	m052319a	23-May-01	12:41:11	-117.8462534	48.87497229	
CS041	Upper Columbia River southern tip of island northwest of Onion Creek	m052320a	23-May-01	13:26:19	-117.8468787	48.87851059	
CS042	Upper Columbia River southern tip of island south of Squaw Creek	m052321a	23-May-01	14:20:34	-117.835167	48.88751909	
CS043	Upper Columbia River north of Fivemile Creek	m052322a	23-May-01	15:19:42	-117.797504	48.9143281	
CS044	Upper Columbia River on beach at Northport	M053117a	31-May-01	10:36:08	-117.7721632	48.92262736	
CS045	Upper Columbia River north of Big Sheep Creek	M053119a	31-May-01	12:19:22	-117.7613159	48.93831373	
CS046	Upper Columbia River south of Steamboat Rock	m053121a	31-May-01	NA	-117.7532583	48.93650278	10 feet SE
CS047	Upper Columbia River northeast of Steamboat Rock	M053122a	31-May-01	15:17:03	-117.7415272	48.93783955	
CS048	Upper Columbia River north of Goodeve Creek	M053123a	31-May-01	16:15:58	-117.7323342	48.94028916	
CS049	Upper Columbia River on point bar southwest of Scriver Creek	M060117a	01-Jun-01	10:08:40	-117.7207054	48.94212391	
CS050	Upper Columbia River south of Tom Bush Creek	M060118A	01-Jun-01	NA	-117.6618917	48.96629444	
CS051	Upper Columbia River at "Black Sand Beach"	M060119A	01-Jun-01	NA	-117.647925	48.97103611	
CS052	Upper Columbia River on boulder bar near border	M060121A	01-Jun-01	NA	-117.6354222	48.99799167	
TS001	Unnamed, T32N R37E, Section 8	m060517a	05-Jun-01	10:16:03	-118.1643877	48.28845408	

Station ID	Station Description	Data File	GPS Date	GPS Time	Longitude	Latitude	Distance/ Direction to Sample Location
TS002	Unnamed, Clover Leaf Beach Campground	m060517b	05-Jun-01	10:57:19	-118.1456511	48.29717002	
TS003	Unnamed, T32N R37E, Section 8 (northern tributary)	t060322a	03-Jun-01	15:22:06	-118.1729757	48.29296774	300 feet W
TS004	Stranger Creek (west)	m060518a	05-Jun-01	11:49:08	-118.1829764	48.29285846	
TS005	Hall Creek	t060320a	03-Jun-01	13:39:51	-118.2032307	48.30413505	
TS006	Cobbs Creek	m060520a	05-Jun-01	13:15:41	-118.1885971	48.31719259	100 feet W
TS007	Unnamed, T33N, R37E, Section 28	t060421c	04-Jun-01	14:48:15	-118.151378	48.32425419	
TS008	Unnamed, T33N, R37E, Section 30	m060521a	05-Jun-01	14:01:41	-118.1906981	48.33331945	
TS009	unproposed sampling location	t060500a	04-Jun-01	17:07:37	-118.1559862	48.33447263	20 E
TS010	Unnamed, T33N, R37E, Section 21	t060422a	04-Jun-01	15:41:57	-118.157417	48.33935713	
TS011	Unnamed, T33N, R37E, Section 19	m060522b	05-Jun-01	15:05:27	-118.19292	48.34340185	210 feet upstream
TS012	Unnamed, T33N, R37E, Section 18	t060317b	03-Jun-01	10:52:39	-118.193852	48.35956205	20 feet SW
TS013	Magee Creek	t060419a	04-Jun-01	12:46:57	-118.1625806	48.36059685	
TS014	Jennings Creek	t060421a	04-Jun-01	14:10:01	-118.163853	48.36554478	
TS015	Little Jim Creek	t060317a	03-Jun-01	10:09:21	-118.1931897	48.3681474	300 feet upstream
TS016	Unnamed, T33N R36E, Section 1	m060522c	05-Jun-01	15:46:41	-118.1992424	48.38629585	
TS017	Unnamed, T33N R37E, Section 4	m060523a	05-Jun-01	16:32:58	-118.1711696	48.38987494	20 feet E
TS018	Unnamed, T33N R37E, Section 5	m060616b	06-Jun-01	09:51:13	-118.1722093	48.39352615	
TS019	Unnamed, T34N R37E, Section 32	m060617a	06-Jun-01	10:12:53	-118.174282	48.39556317	
TS020	Unnamed, T34N R36E, Section 36	m060317a	03-Jun-01	10:26:27	-118.2145678	48.40914227	
TS021	Unnamed, T34N R36E, Section 25	m060319a	03-Jun-01	12:17:17	-118.213972	48.41797662	34 feetW, 30 feetN
TS022	Cheweka Creek	m060618a	06-Jun-01	11:38:20	-118.1804793	48.41838184	130 feet upstream
TS023	Unnamed, T34N, R37E, Section 29 (north of Cheweka Creek)	m060619a	06-Jun-01	12:19:30	-118.1810255	48.4191279	6 feet E
TS024	Unnamed, T34N, R37E, Section 29 (NW qtr)	m060619b	06-Jun-01	12:57:55	-118.1825808	48.42289413	
TS025	Unnamed, T34N, R37E, Section 20	m060620a	06-Jun-01	13:30:14	-118.1871371	48.43054423	
TS026	Barnaby Creek	m060320a	03-Jun-01	13:05:40	-118.2221733	48.4336522	
TS027	Rotter Bay Creek	t060418a	04-Jun-01	11:50:25	-118.1881865	48.44430514	
TS028	Quillisascut Creek	m060621a	06-Jun-01	14:49:28	-118.1950141	48.4519532	
TS029	Unnamed, T34N, R36E, Section 11	m060321a	03-Jun-01	14:17:36	-118.2206472	48.45808083	30 feet W
TS030	Unnamed, T34N, R37E, Section 6	m060622a	06-Jun-01	15:13:26	-118.1933508	48.4678232	
TS031	Cuba Canyon Creek	m060622b	06-Jun-01	15:50:23	-118.2079577	48.47924134	

Station ID	Station Description	Data File	GPS Date	GPS Time	Longitude	Latitude	Distance/ Direction to Sample Location
TS032	Unnamed, T35N, R37E, Section 31	m060716a	07-Jun-01	09:17:54	-118.2095575	48.48460456	
TS033	La Fleur Creek	m060322a	03-Jun-01	15:03:37	-118.2072271	48.48854853	5 feet E
TS034	Unnamed, T36N, R37E, Section 32	m060717a	07-Jun-01	10:10:49	-118.1696321	48.48597205	30 feet E
TS035	Unnamed, T36N, R37E, Section 33 (southwest qtr); drains Nettleton Lake	m060922a	09-Jun-01	15:04:17	-118.1648929	48.48984614	
TS036	Unnamed, T35N, R37E, Section 33 (northwest qtr)	m060922b	09-Jun-01	15:57:20	-118.162371	48.49207338	
TS037	Unproposed sampling location	t060416a	04-Jun-01	09:54:36	-118.1517962	48.51021109	100 feet upstream
TS038	Unnamed, T35N, R37E, Section 22 (south of Bradbury campground)	t060417a	04-Jun-01	10:30:01	-118.148486	48.51319364	
TS039	Martin Creek	m060718a	07-Jun-01	11:11:09	-118.1843743	48.52104276	200 feet W
TS040	Unnamed, T35N, R37E, Section 15 (north of Bradbury campground)	m060719a	07-Jun-01	12:38:56	-118.1367045	48.52695478	10 feet S
TS041	Roper Creek	m060718b	07-Jun-01	11:41:47	-118.1706976	48.54066585	
TS042	Rickey Creek	m060720a	07-Jun-01	13:06:51	-118.135959	48.53985776	
TS043	Cougar Canyon Creek	m060417a	04-Jun-01	10:18:45	-118.1545381	48.5591544	
TS044	Hallam Creek	t060622a	06-Jun-01	15:11:35	-118.1237631	48.55857879	
TS045	Unnamed ephemeral tributary west of Mingo Creek	m060501b	04-Jun-01	18:42:01	-118.0814043	48.57265454	
TS046	Mingo Creek	m060501a	04-Jun-01	18:00:23	-118.0794128	48.57414722	
TS047	Colville River	m060500a	04-Jun-01	17:28:04	-118.0763658	48.57566028	
TS048	Sherman Creek	m060418a	04-Jun-01	11:40:00	-118.1394913	48.58308291	
TS049	Unnamed, T36N, R37E, Section 22, SE qtr	m060800a	07-Jun-01	17:16:01	-118.1362962	48.60069248	65 feet W
TS050	Unmapped tributary adjacent to TS051	m061000a	09-Jun-01	17:33:00	-118.1360749	48.60422634	
TS051	Unnamed, T36N, R37E, Section 22, NE qtr	m060722b	07-Jun-01	15:57:36	-118.1344893	48.60572171	
TS052	Unnamed, T36N, R37E, Section 15, SE qtr, western tributary	m060722a	07-Jun-01	15:09:15	-118.1336598	48.61336795	
TS053	Unnamed, T36N, R37E, Section 15, SE qtr, eastern tributary	m060721c	07-Jun-01	14:49:38	-118.1328802	48.61328849	
TS054	Unnamed, T36N, R37E, Section 14, SW qtr	m060721b	07-Jun-01	14:25:01	-118.1289512	48.61919872	200 feet upstream

Station ID	Station Description	Data File	GPS Date	GPS Time	Longitude	Latitude	Distance/ Direction to Sample Location
TS055	Unnamed, ephemeral tributary, T36N, R38E, Section 18, SW qtr	m060421a	04-Jun-01	14:17:30	-118.0795677	48.6153404	200 feet upstream
TS056	Martin Spring Creek	t060700a	06-Jun-01	17:02:54	-118.0782602	48.63163767	30 feet E, 10 feet N
TS057	Pingston Creek	t060622b	06-Jun-01	15:52:21	-118.0825948	48.65214266	
TS058	Nancy Creek	t060621a	06-Jun-01	14:17:52	-118.1139929	48.65541396	5 feet E
TS059	Unnamed ephemeral tributary at T37N, R37E, Section 33	m060923a	09-Jun-01	16:36:07	-118.1155475	48.66880883	
TS060	Unnamed tributary T37N, R37E, Section 16, southwest qtr	t060617a	06-Jun-01	10:01:43	-118.1163399	48.69894892	
TS061	Unnamed ephemeral tributary at T37N, R37E, Section 22	t060619a	06-Jun-01	12:51:45	-118.0893608	48.69034757	10 feet N
TS062	Unnamed, across from Marcus Island T37N, R37E, Section 23	t060618a	06-Jun-01	11:53:06	-118.0761859	48.68646883	50 feet S
TS063	Unnamed ephemeral tributary at T37N, R38E, Section 28	m060900a	08-Jun-01	17:07:50	-118.032529	48.674347	20 feet SE
TS064	Unnamed ephemeral tributary at T37N, R38E, Section 22 (SW qtr)	q060818a	08-Jun-01	11:41:38	-118.014582	48.6910539	
TS065	Unnamed ephemeral tributary at T37N, R38E, Section 22 (NW qtr)	q060819a	08-Jun-01	12:21:07	-118.0151144	48.69373847	
TS066	Unnamed, spring drainage east of Evans Campground peninsula	q060819b	08-Jun-01	12:47:58	-118.0148863	48.69618122	
TS067	Deadman Creek	t060521a	05-Jun-01	14:04:19	-118.1268024	48.70725424	
TS068	Unnamed ephemeral tributary, T37N, R37E, Section 16, northwest qtr	t060617b	06-Jun-01	10:32:21	-118.1191119	48.71083339	
TS069	Unnamed tributary to Kettle River Arm, draining pond near Boyds	t060520a	05-Jun-01	13:26:48	-118.1288285	48.71741605	
TS070	Unnamed ephemeral tributary, T37N, R37E, Section 9, NW qtr, SE qtr	t060522a	05-Jun-01	15:49:53	-118.1187118	48.72085941	10 feet S
TS071	Unnamed ephemeral tributary, T37N, R37E, Section 9, NW qtr, NE qtr	t060523a	05-Jun-01	16:44:01	-118.1188507	48.72315992	120 feet upstream (E)

Station ID	Station Description	Data File	GPS Date	GPS Time	Longitude	Latitude	Distance/ Direction to Sample Location
TS072	Unnamed ephemeral tributary, T37N, R38E, Section 4, NE qtr	t060521b	05-Jun-01	14:59:23	-118.117169	48.73722253	
TS073	Matsen Creek	t060518b	05-Jun-01	11:59:09	-118.1317881	48.73857207	
TS074	Doyle Creek	t060518a	05-Jun-01	11:28:32	-118.1322592	48.74096216	30 feet S
TS075	Kettle River	t060517a	05-Jun-01	10:02:21	-118.1231085	48.74804728	
TS076	China Creek	m052200a	21-May-01	17:18:10	-118.0337611	48.71413716	
TS077	Unnamed tributary south of Snag Cove	t052218a	22-May-01	11:18:25	-118.0528747	48.72516913	
TS078	Unnamed ephemeral tributary at T38N, R37E, Section 36 (SW qtr)	t052220a	22-May-01	13:50:52	-118.0639858	48.74391456	
TS079	Unnamed ephemeral tributary entering river at T38N, R37E,Section 35 (NE qtr)	t052221a	22-May-01	14:57:23	-118.0635258	48.75206898	
TS080	Unnamed tributary directly across from Bossburg, WA	t052223a	22-May-01	16:09:19	-118.0559778	48.75829918	
TS081	Dilly Lake ephemeral tributary	t052300a	22-May-01	17:10:43	-118.0403655	48.77095646	
TS082	Unnamed ephemeral tributary upstream of Dilly Lake ephemeral tributary	t052300b	22-May-01	NA	-118.0381389	48.76994444	
TS083	Unnamed ephemeral tributary at T38N, R38E, Section 21	t052318a	23-May-01	11:03:39	-118.0088445	48.77559496	
TS084	Unnamed ephemeral tributary at T38N, R38E, Section 22	t052319a	23-May-01	12:23:03	-118.0039804	48.77945341	
TS085	Unnamed ephemeral tributary at North Gorge Campground	t052321a	23-May-01	14:09:33	-118.0010716	48.78578034	
TS086	Unnamed ephemeral tributary at T38N, R38E,Section 17 (NW qtr)	t052321b	23-May-01	14:50:14	-118.013923	48.79681448	
TS087	Unnamed ephemeral tributary downstream cf Lodgepole Cr at T38N, R38E,Section 8 (NW qtr)	t052322B	23-May-01	NA	-118.01455	48.80916389	
TS088	Lodgepole Creek	t052323c	23-May-01	16:44:36	-118.0119258	48.81094806	

Station ID	Station Description	Data File	GPS Date	GPS Time	Longitude	Latitude	Distance/ Direction to Sample Location
TS089	Unnamed ephemeral tributary at T38N, R38E, Section 10	m052323a	23-May-01	16:56:54	-117.9942305	48.81178515	
TS090	Fifteenmile Creek	q060823a	08-Jun-01	16:43:39	-117.9878564	48.82014294	
TS091	Unnamed ephemeral tributary at Flat Creek	q060822b	08-Jun-01	16:05:56	-117.9782773	48.8223694	30 feet S
TS092	Flat Creek	q060822a	08-Jun-01	15:04:11	-117.9780477	48.82304915	
TS093	Unnamed ephemeral tributary downstream of China Bar	m052419a	24-May-01	12:19:19	-117.9409649	48.82060811	
TS094	Unnamed ephemeral tributary at T39N, R39E, Section 25 (SW qtr)	m052420a	24-May-01	13:00:14	-117.9270315	48.8424334	
TS095	Crown Creek	m052420b	24-May-01	13:40:53	-117.9118321	48.85459859	
TS096	Rattlesnake Creek	m060818a	08-Jun-01	11:43:53	-117.9011426	48.85789975	
TS097	Unnamed ephemeral tributary downstream from Moses Spring Creek	m052423a	24-May-01	16:19:45	-117.8730999	48.88062481	
TS098	Moses Spring Creek	t052422a	24-May-01	15:51:04	-117.8577589	48.87557936	
TS099	Onion Creek	m060819a	08-Jun-01	12:58:06	-117.8462084	48.87318893	
TS100	Unnamed ephemeral tributary in T39N, R39E, Section 10	t052421b	24-May-01	14:42:25	-117.8409291	48.89026632	
TS101	Squaw Creek	m060917a	09-Jun-01	10:20:11	-117.8269884	48.89546073	
TS102	Unnamed tributary from nearshore ponds	t052421a	24-May-01	14:06:35	-117.8205032	48.90021192	
TS103	Fivemile Creek	t052418a	24-May-01	11:58:44	-117.7995787	48.8988877	
TS104	Bear Creek	m060916a	09-Jun-01	09:45:50	-117.8114682	48.90855778	
TS105	Deep Creek	m060817a	08-Jun-01	10:05:07	-117.7536441	48.93226648	
TS106	Big Sheep Creek	M053120a	31-May-01	13:36:48	-117.7653744	48.93923694	
TS107	Quartz Creek	M053119b	31-May-01	12:51:31	-117.7644435	48.93905546	
TS108	Goodeve Creek	M053122b	31-May-01	15:51:19	-117.734181	48.94296884	12 feet SW
TS109	Scriver Creek	M060117b	01-Jun-01	10:49:00	-117.7034734	48.9503596	6 feet N
TS110	Unnamed tributary NE of Gaging Station	M060120A	01-Jun-01	NA	-117.6398194	48.97556944	
US001 / UW001	Tributary to Tom Bush Creek; Melrose Mine	r062717b	27-Jun-01	10:13:06	-117.6461401	48.9463303	200 feet upstream
US002 / UW002	Flume Creek; Sullivan Mine	r062817a	28-Jun-01	10:00:48	-117.3850122	48.90289118	50 feet SE
US003 / UW002	Flume Creek South Fork	r062817b	28-Jun-01	10:50:08	-117.3932751	48.87175394	
US004	Linton Creek; Oriole Mine	r062820a	28-Jun-01	13:31:47	-117.4157795	48.85920965	30 feet W
US005	Unnamed tributary to Onion Creek; Van Stone Mine	r062516a	25-Jun-01	09:55:36	-117.7936562	48.77948285	

Appendix A—Upper Columbia River/Lake Roosevelt ESI DGPS Data

Station ID	Station Description	Data File	GPS Date	GPS Time	Longitude	Latitude	Distance/ Direction to Sample Location
US006	Unnamed tributary to Onion Creek; Van Stone Mine	r062521a	25-Jun-01	14:08:35	-117.7538496	48.75051462	
US007	Van Stone Mine soil	r062521c	25-Jun-01	14:42:04	-117.7530733	48.75045504	
US008	Van Stone Mine soil	r062522e	25-Jun-01	15:08:32	-117.7588411	48.75304501	
US009	Van Stone Mine soil	r062520a	25-Jun-01	13:13:40	-117.7437501	48.75748945	
US010	Unnamed tributary to Onion Creek; Van Stone Mine	r062519b	25-Jun-01	12:35:37	-117.743635	48.75676136	
UW004	Unnamed tributary to Onion Creek; Van Stone Mine	r062520b	25-Jun-01	13:57:19	-117.7538001	48.75052196	
US011 / UW005	Tributary to Deep Creek; Last Chance Mine	r062623a1	26-Jun-01	16:40:13	-117.6897252	48.86287034	
US012 / UW006	Deep Creek South Fork	r062619a	26-Jun-01	12:26:32	-117.6667266	48.76888098	
US013	Unnamed tributary to Deep Creek	r062617a	26-Jun-01	10:36:50	-117.6578943	48.6975981	180 feet
US014 / UW007	Unnamed tributary to Hunters Creek; Cleveland Mine	r062723a	27-Jun-01	16:30:13	-118.0401963	48.12127929	
US015	Unnamed tributary to Hunters Creek; Cleveland Mine	r062722b	27-Jun-01	15:58:06	-118.0296757	48.11797048	150 feet S
US016	Unnamed tributary to Hunters Creek; Cleveland Mine	r062721a	27-Jun-01	14:19:27	-118.0269789	48.11598579	

No DGPS coordinates available; coordinates shown are uncorrected.
NA: Not available.

APPENDIX B

FIELD SAMPLE RECORD FORMS

WESTON

UPPER COLUMBIA RIVER/LAKE ROOSEVELT ESI (TDD:01-02-0001-A)
SURFACE WATER FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF, HW, NA
Date: 5-15-01 Weather: SUNNY, WARM

Sampling Point Number: SW3 Time: 1120 Depth to Sampling Point: NA
Location Description: upstream of GC intake GPS File: 051519A
Uncorrected Coordinates: 47° 56' 31.19" N 118° 58' 04.27"
Corrected Coordinates:
Access Method: RV Monitor Sampling Method: Kemmerer bottle
Description of Sample (color, turbidity, odor): clear, colorless, no odor
WESTON Sample ID: RS-001-SW CLP #(s): JX428 / MJ08Y5
EPA Tracking Number: 01204103

Sample Container(s)	Quantity	Analysis
40 mL	2	VOC
1L poly	1	Metals
1L Glass	1	SVOC
1L Glass	1	Pest/PCB

Sampling Point Number: SW3 Time: 1130 Depth to Sampling Point: 32'
Location Description: upstream of GC intake GPS File: SAME AS ABOVE
Uncorrected Coordinates: SAME AS ABOVE
Corrected Coordinates:
Access Method: RV MONITOR Sampling Method: Kemmerer bottle
Description of Sample (color, turbidity, odor): clear, colorless, NO ODOR
WESTON Sample ID: CR-003-SW CLP #(s): JX427 / MJ08Y4
EPA Tracking Number: 01204102

Sample Container(s)	Quantity	Analysis
40 mL	2	VOC
1L Poly	1	Metals
1L Glass	2	PEST/PCB
1L GLASS	2	SVOC

Notes: INTAKE @ 1208'; LAKE RDGS. @ ~1240 ∴ intake 32' below sfc. Boat exhaust may have impacted VOAs.

Sampler's Signature:

FATHOMETER 317 DEPTH

photos 4-5 (SF1); photo 4 - samples, starboard side of vessel
photo 5 - likely GC pumphouses, port side of vessel facing S; to show location
photo 6 - RINSATE RS-001-SW
Photo 7-8 - SAMPLING METHOD

UPPER COLUMBIA RIVER/LAKE ROOSEVELT ESI (TDD:01-02-0001-A)
SURFACE WATER FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF/HW
Date: 5-14-01 Weather: Rainy

Sampling Point Number: 1 Time: 1415 Depth to Sampling Point: N/A (pump house)
Location Description: GC Distribution GPS File: QØ51422A
Uncorrected Coordinates: 47° 55' 59.96"
Corrected Coordinates: 118° 59' 45.94"
Access Method: on foot Sampling Method:
Description of Sample (color, turbidity, odor): clear, colorless, NO ODOR
WESTON Sample ID: CR-001-SW CLP #(s): JX425/MJ08Y2
EPA Tracking Number: 01204100

Sample Container(s)	Quantity	Analysis
40 ml	2	VOC
1L poly	1	TAL Metals
1L glass	2	SVOC
1L glass	2	PCB/pest

Sampling Point Number: 1 Time: ~~1428~~ ~~1400~~ SMF 1435 Depth to Sampling Point: N/A (pump house)
Location Description: GC Distribution GPS File: QØ51422A
Uncorrected Coordinates: 47° 55' 59.96"
Corrected Coordinates: 118° 59' 45.94"
Access Method: on foot Sampling Method: spigot
Description of Sample (color, turbidity, odor): clear, colorless, NO ODOR
WESTON Sample ID: CR-002-SW CLP #(s): JX426/MJ08Y3
EPA Tracking Number: 01204101

Sample Container(s)	Quantity	Analysis
40mL	2	VOC
1L poly	1	TAL Metals
1L glass	2	SVOC
1L glass	2	PCB/Pest

Notes: MS/MSD volume

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF NA

Date: 5-14-01 Weather: Rain, breezy

Location Description: North Dam Camp

Uncorrected GPS Coordinates: N 47° 56' 50.75" W 118° 57' 51.07"

Corrected GPS Coordinates:

GPS File Name: Q051502A Sampling Method: Bell-Sfoon

WESTON Sample No: CR-201-SD/CR-202-SD Water Depth to Sediment: N/A - exposed

CLP #s: MJ03Y7/MJ03Y6/JX429/JX430 Photograph: roll: 5 exposure: 3

EPA Tracking No.: ~~01204104~~ 01204104 - 01204105 (field dup.)

Analyses: TAL METALS, TOC, PCB/PEST

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1900	5"	Clayey silt grayish brown, few fine organics No visible slag. Sample material ASA whole ~~silty sand w/ clay~~ ~~sandy silt w/ clay~~ SANDY CLAYEY SILT 30% SAND 70% silt/clay (30% clay 40% silt)

Notes: Med-coarse sandy beach (w/ silt); sample consisted of flakes & fine-gravel material dried on a line on the beach; Beach sand was inadvertently collected ASA w/ F. as * Duplicate collected

GPS file collected @ 19:10 (~ 70 readings)

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: NA, SF

Date: 5-14-01 1800 Weather: cloudy windy

Location Description: CR2 Crescent Bay Camp

Uncorrected GPS Coordinates: N 47° 56' 51.22" W 118° 59' 10.51"

Corrected GPS Coordinates:

GPS File Name: C051501A Sampling Method: hand, scoop

WESTON Sample No: CR-003-SD Water Depth to Sediment: exposed

CLP #s: MJ0848 Photograph: roll: SF1 exposure: 3-12

EPA Tracking No.: 01204106

Analyses: TAL Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1800	~3"	70% Fines; sandy silty clay <5% gravel, 30% sand, 65% silt/clay, brownish gray, few organics; no observed slag (30% silt, 35% clay).

Notes: RS-001-SD collected 1730 from auger rinsate
GPS File @ 1722
18-24" sample abandoned w/ PATI staff personnel.
She made a core sample @ another location
photo 1 - rinsate
photo 2 - sample (sediment)

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF, NA, HW

Date: 5.15.01 Weather: sunny, breezy

Location Description: Plum Point

Uncorrected GPS Coordinates: N 47° 57' 3.13"; W 118° 51' 58.17"

Corrected GPS Coordinates:

\# 122 ← GPS File Name: Q051520A Sampling Method: Hand Auger

WESTON Sample No: CR-004-SD (A) Water Depth to Sediment: NA - exposed

CLP #s: JX432 / MJ08V9 Photograph: roll: SMF1 exposure: 9+10+11+12

EPA Tracking No.: 01204107

Analyses: Pest/PCB, Metals, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1300	3-4"	clayey silt, (30% clay, 70% silt), 100% fines greenish gray, sulfur odor, no observed organics, no observed slag.

Notes: RS-001-SD collected @ 1245 (photo SMF1, 9)
photo #10 - Auger attempt - augered ~ 3" down, felt hard substrate - old deposits. Abandoned core sample, took surface spoon sample ~3-4" depth, trying to stay in recent material (photo sat 1 #11 + 12
Wrong Tracking # on white board in photo 10 - 1 #, corrected for photo 12. Altimiter is recording altitude >1300', clearly wrong. Est. elevation 9' above lake level

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF, HW, NA

Date: 5-17-01 Weather: SUNNY

Location Description: Inchelium, ~~Sample point 3~~ ~~CR-005-SF~~

Uncorrected GPS Coordinates: N 48° 18' 1.71" W 118° 10' 21.58"

Corrected GPS Coordinates:

GPS File Name: M051717A Sampling Method: Petit Ponar

WESTON Sample No: CR-005-SD Water Depth to Sediment: 8'

CLP #s: JX433/MJ08Z0 Photograph: roll: SF 1 exposure: 13-15

EPA Tracking No.: 02061110

Analyses: metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1000	4"	100% Fines; ~~silty clay~~ clay, silt. Greenish brown, no observed organics or slag. "gloppy", saturated. 60% silt, 40% clay

Notes: photo 13 - sample material in dredge
14 - sample material being put into jars.
15 - sample in jars
Lake Roosevelt @ 1246.5. Nilmelt says 1243
GPS serial # 916124

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, JH, HW

Date: 5-17-01 Weather: Overcast

Location Description: S. side of Hall Creek.

Uncorrected GPS Coordinates:

Corrected GPS Coordinates:

GPS File Name: M05 17176 gpf Sampling Method: petit ponar

WESTON Sample No: CR-006-SD Water Depth to Sediment: 3'

CLP #s: TX434/MJ0821 Photograph: roll: 1 exposure: 16

EPA Tracking No.: 01204111

Analyses: metals, TOC, Pest/PCB

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1045	4"	100% fines; ~~silty clay~~ (60% silt, 40% clay), greenish brown, no observed slag or organics. sloppy, saturated some rootlets

Notes: Sample time 1045

Small pieces in size of ponar, discarded

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMT, WT, HW

Date: 5-17-01 Weather: p. sunny, breezy

Location Description: Mission Point (5)

Uncorrected GPS Coordinates: N 48° 1' 36.49" W 118° 11' 12.37"

Corrected GPS Coordinates:

GPS File Name: M051718.B Sampling Method: petit ponte

WESTON Sample No: C2-007-SD Water Depth to Sediment: 12'

CLP #s: JX435 / MJ0822 Photograph: roll: STM1 exposure: 17

EPA Tracking No.: C1204112

Analyses: metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1130	4"	<5% gravel (at most 1/2" long), >90% SAND (med-coarse) <5% silt. no clay. small wood fragment observed ~~no observed slag, no~~ MICA fragments, black particles, not likely slag but some poss.

Notes: Sample time 1130. Sample location near nearest landslide

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: [illegible]

Date: 5-17-01 Weather: Cloudy, breezy

Location Description: North of Dead Shaker (%)

Uncorrected GPS Coordinates: N48° 22' 46.45" W 118° 10' 44.43" 48° 22.77 118° 10.74

Corrected GPS Coordinates:

GPS File Name: M051719A Sampling Method: Petit ponar

WESTON Sample No: CR-008-SD Water Depth to Sediment: 12'

CLP #s: JX436/MJ0823 Photograph: roll: SMF1 exposure: 19

EPA Tracking No.: C1204113

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1230	Ø	No recovery
2	1233	Ø	No recovery
3	1235	1-2"	SILTY CLAY (100% fines) 60% clay, 40% silt, greenish brown (olive brown). No slag, no organics
4	1238	~1"	SAND - med-fine, not enough to retain
5	1241	1"	SAND - med-fine, some black particles (100% sand)
6	1242	Ø	No recovery
7	1245	Ø	No recovery

Notes: Sample time 1230 *COMPOSITE*

Grab 8 1248 -1" SAND med-fine some black or dark particles (100% sand)
Sample very wet - losing material, didn't have time to drain liquid properly after one grab
Sample as a whole ~ 95% sand material

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: [illegible]

Date: 5-17-01 Weather: overcast

Location Description: ~~[illegible]~~ Spring Creek Confluence Creek

Uncorrected GPS Coordinates: N 48° 24' 56.02" W 118° 11' 00.50"

Corrected GPS Coordinates:

GPS File Name: M051720.2 Sampling Method: petit ponar

WESTON Sample No: C2-009-SD Water Depth to Sediment: 30.25"

CLP #s: JX437/MJ0824 Photograph: roll: SMF1 exposure: 20:21

EPA Tracking No.: 01204114

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1400	0	No recovery
2	1402	4"	~~CLAY~~ silty ~~fr~~ sandy w/clay 0% gravel. 60% fine to very fine sand, 30% silt, 10% clay. Olive greenish-gray fine organics and rootlets, twigs. No observed slag. Sulfur odor (slight)

Notes: Original location was in front of landfill area; talk XCE where - get no good intersection for pickup. Moved to E. bank, taking best sed sample.

(W. Bank)

Sample time 14:15

Photo 20 - West Bank

Photo 21 - Sample

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 — Sampling Personnel: SMF NA HW

Date: 5-17-01 — Weather: P. Sunny

Location Description: South of Chalk Pt GRAVEL PT — "Chalk Grade Point"

Uncorrected GPS Coordinates: N 48° 25' 46.07", W 118° 11' 34.93"

Corrected GPS Coordinates:

GPS File Name: MC517237 — Sampling Method: Van Veen Spoon

WESTON Sample No: CR-010-SD — Water Depth to Sediment: NA - Sample

CLP #s: JX438 / MJ0825 — Photograph: roll: SMF 1 exposure: 2223

EPA Tracking No.: 01204115

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1445	7"	Fine-med sand w/ silt-clay ~10% fine sand, ~5% silt, 5% clay. Clay material came from 6-7" bgs: brown, no obvious slag, some organics (small)

Notes: HW / SMF scanned 3 locations w/ XRF. Collected small amount of slag material to analyze after digging back down. We included a sample of "heavy mineral" placer deposits from surf, like the type I observed in other samples (CR-007-SD + CR-008-SD). Decided to take sample behind the slag - all readings similar
photo 22 sample location scanned w/ XRF.
photo 23 sample. GPS reading taken later @ 1600

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: N. Smith HW

Date: 5-17-01 Weather: p. Sunny, breezy

Location Description: Barnaby Island

Uncorrected GPS Coordinates: N 48° 26' 31.05" W 118° 12' 48.44"

Corrected GPS Coordinates:

GPS File Name: M0517 22A Sampling Method: bowl + spoon

WESTON Sample No: LR-011-SD Water Depth to Sediment: N/A exposed

CLP #s: JX439 / MJ08 ZC Photograph: roll: 8mF1 exposure: 24

EPA Tracking No.: 012041116

Analyses: Metals, PCB / Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1547	0.5"	100% Fines, fine silt/clay. Gray. ~~tt~~ No odor or observed slag. rootlets.

Notes: Collected flakes of fine material ~~at~~ after XRF confirmed highest readings at 4 locations (second 2 sites) and in deeper material.

Material was in small depositional deposits in exposed, vegetated plain SE of Barnaby Island, behind ridge between island + river.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SJE, NA, HW

Date: 5-17-01 Weather: cloudy, breezy

Location Description: North of Quillisascut Creek (E BANK)

Uncorrected GPS Coordinates: 48° 27' 19.71" ; 118° 12' 16.55" 48° 27.32'N 118° 12.276'W

Corrected GPS Coordinates:

GPS File Name: M0517238 Sampling Method: petit PONAR

WESTON Sample No: CR-OB-SD Water Depth to Sediment: 7'

CLP #s: MS0827 / JX440 Photograph: roll: SME2 exposure: 1

EPA Tracking No.: 01204117

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1645	2"	Clayey silt; 100% fines. Olive-greenish brown. No odor, no observed slag, no organics observed. (~60% silt, 40% clay) small "flakes" included, indicate recent deposition
2	1654	2"	SAA

Notes: Sample time 1700

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW

Date: 5·18·01 Weather: Sunny

Location Description: Second location (northern) North of Quillisascut Creek

Uncorrected GPS Coordinates: N 48° 27' 41.13" W 118 12' 9.88"

Corrected GPS Coordinates:

GPS File Name: MØ5181 7A Sampling Method: petit ponar

WESTON Sample No: CR-013-SD Water Depth to Sediment: 6.5'

CLP #s: JX441 / MJ0828 Photograph: roll: SMF2 exposure: 2

EPA Tracking No.: 01204118

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1020	3"	100% fines. Clayey silt (40% clay, 60% fine silt) olive-greenish brown, No odor, fine rootlets, No debris No observed slag. Clays also present as small scales or clumps ~1/16" Diam. (Saturated)

Notes: Sample time 1030. Water ~~depth~~ elevation observed yesterday @ NOON @ Grand Coulee was 1236.6' MSL.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 — Sampling Personnel: SMF, NA, HW

Date: 5-18-01 — Weather: Sunny

Location Description: Between La Flow Creek + French Rocks

Uncorrected GPS Coordinates: N 48° 29' 19.83" W 118° 11' 39.55"

Corrected GPS Coordinates:

GPS File Name: M05 18 18 A — Sampling Method: bowl + spoon

WESTON Sample No: CR-01-4-SD — Water Depth to Sediment: NA - exposed

CLP #s: JX442 / M50829 — Photograph: roll: SMF 2 exposure: 3 + 4

EPA Tracking No.: 0120419

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1100	4"	to Clayey silt, <5% gravel (<1"), ~~AVG~~ 2-10% SAND, 30-40% clay, 55->65% silt. Micaceous flakes observed. No odor. grayish brown color. No observed slag. Dry

Notes: Sample location is a dry vegetated mudflat south of French Rocks (photo 3), with a gravel ridge along southern end. Estimated elevation of sample point is ~4' above current water line (~1237). Neil is setting up to scan mudflat and an adjacent shallow depression. Neil also scanned the gravel ridge (fines + sand among cobbles). Readings not as high. Photo 4 - sample

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW

Date: 5-18-01 Weather: p sunny

Location Description: French Rocks Mid-Channel bar

Uncorrected GPS Coordinates: 48° 29' 50.02" 118° 10' 12.44"

Corrected GPS Coordinates:

GPS File Name: M051819A Sampling Method: petit ponar

WESTON Sample No: CR-015-SD Water Depth to Sediment: 20'

CLP #s: JX 443 / MJ0900 Photograph: roll: SMF2 exposure: 5+6

EPA Tracking No.: 01204120

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1221	4"	Silty clay 100% fines (60% clay, 40% silt) olive-greenish brown, no odor, no observed ~~SLAG~~ ~~Apices of slag~~. see note
2	1225	2"	SAA (same as above)
3	1228	2"	SAA

Notes: Sample time 12:30 MS / MSD

Sample appeared in dredge as large "plates" of fine material. ~~1/4 small~~ small (~1/16") reddish brown silty layers w/ poss fine rootlets (look like hairs)

photo 5 - sample grab in dredge

photo 6 - sample in jars (sample time on white board says 12:15; correct sample time 12:30).

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW

Date: 5-18-01 Weather: sunny

Location Description: North of French Lake

Uncorrected GPS Coordinates: N 48° 30' 16.22 W 118° 11' 09.83"

Corrected GPS Coordinates:

GPS File Name: MØ5182ØA Sampling Method: bowl + spoon

WESTON Sample No: CR-016-SD Water Depth to Sediment: NA - exposed

CLP #s: JX 444 / MJØ9Ø1 Photograph: roll: SMF2 exposure: 7+8

EPA Tracking No.: 01204121

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1330	7-8"	Sample 0% gravel 20% clay 40% silt 40% fine ~~sand~~ to very fine sand. Brownish gray. No odor. No slag observed, fine rootlets observed. Dry.

Notes: Neil Anick scanned 3 locations (photo 7).
Sampling area is exposed vegetated mudflat similar to that South of French Lake.
Deposit is ~1" crust of desiccated clay-rich plates. Going down to 8" bgs - alternating betw. thin beds (1" or so) of fine sand - silt - clay-rich material

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 — Sampling Personnel: SMF, NA, HW

Date: 5-18-01 — Weather: Sunny

Location Description: North of Bradbury Beach

Uncorrected GPS Coordinates: N48° 31' 9.98" W 118° 8' 47.63"

Corrected GPS Coordinates:

GPS File Name: ATØ51821A — Sampling Method: bowl + spoon

WESTON Sample No: CL-017-SD — Water Depth to Sediment: NA - exposed

CLP #s: JX445 / MJØ9Ø2 — Photograph: roll: SMF2 exposure: 9-10 + 11

EPA Tracking No.: 01204122

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1430	1"	95 100% fines. Silty clay 55% 60% clay 40% fine silt 5% fine sand-sized mica flakes grayish brown. Dry. NO OBSERVED SLAG rootlets, fine organics + woody fragments. Dry.

Notes: NA scanned 3 locations. Photo 9 - shows him scanning 2nd location, the bare area to left of bucket in photo background is first location (finer sediment).
photo 10 - sampling sfc sed to show depth
photo 11 - sample

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW

Date: 5-18-01 Weather: Sunny

Location Description: HAAG Cove

Uncorrected GPS Coordinates: N 48° 33' 15.47" W 118° 08' 40.23"

Corrected GPS Coordinates:

GPS File Name: TØ51822A Sampling Method: HAND Auger

WESTON Sample No: CR-018-SD1 Water Depth to Sediment: NA - Exposed

CLP #s: JX446/MJØ9Ø3 Photograph: roll SMF2 exposure: 12

EPA Tracking No.: 012 04123

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1530	0-6"	~~0% < 5% Gravel~~ SMF 0% gravel 20% v fine MICACEOUS SAND, 30% clay, 50% silt. Grayish brown. No odor, No observed slag. some rootlets. dry.

Notes: Sample area is exposed vegetated mud flat. Surface comprised of clay rich material, as evidenced by cracking

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW

Date: 5-18-01 Weather: SUNNY

Location Description: HAAG COVE

Uncorrected GPS Coordinates: N 48° 33' 15.47" W 118° 08' 40.23"

Corrected GPS Coordinates:

GPS File Name: T051822A Sampling Method: hand Auger

WESTON Sample No: CR-066-SD Water Depth to Sediment: NA - exposed

CLP #s: JX550 | MJ09E2 Photograph: roll: SMF2 exposure: 13

EPA Tracking No.: 01204124

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1545	18-24"	10% pebbles, 20% ~~v. fine micaceous~~ SMF SAND, 40% silt, 30% clay. Damp. Dark brown, no observed Slag. ~~or organics~~ fine organics.

Notes: Material brought up by auger contained ~30% pebbles that were discarded, up to 1.5".
Sand was present in sample as v. fine micaceous flakes and coarse grains.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW

Date: 5.19.01 Weather: Cloudy, windy

Location Description: Flats south of Colville River

Uncorrected GPS Coordinates: N48° 34' 00.01" W118° 07' 15.30

Corrected GPS Coordinates:

GPS File Name: T051916A Sampling Method: bowl + spoon

WESTON Sample No: CR-019-SD Water Depth to Sediment: NA - exposed

CLP #s: JX447/MJ0904 Photograph: roll: SMF2 exposure: 14

EPA Tracking No.: 01204125

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	0900	7" 6.5"	0% gravel 40% sand 40% silt 20% clay sandy silt w/ clay. Abundant rootlets, dry. No obvious slag; sand does contain black particulates. No odor.

Notes: NA scanned 2 locations on exposed flat, one more vegetated than the other. Pb slightly higher in more veg. area, so took sample there.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW

Date: ~~5-20-01~~ 5-19-01 Weather: Cloudy, windy

Location Description: ~~Flats North of~~ Colville River (*Bay @ Colville River) 48°34.6

Uncorrected GPS Coordinates: N48° 34' 36.69" W118° 7' 2.53" 118°7.04'

Corrected GPS Coordinates:

GPS File Name: T051917A Sampling Method: ~~bowl w/ SMF~~ petit ponar

WESTON Sample No: CL-020-SD Water Depth to Sediment: ~~NA - exposed~~ 44

CLP #s: JX448/MJ0905 Photograph: roll: SMF-2 exposure: 15

EPA Tracking No.: 01204126

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1045	5"	99-100% fines. Clayey silt 0% gravel <1% sand, 60% silt 40% clay. Slight sulfur odor. Dk gray/Dk brownish gray few ~~fr~~ fine rootlets, no observed slag. Material has gelatinous appearance

Notes: *Dry location very high, gravelly. Decided to take dredge sample to collect mud. Also, XRF scan of exposed sediments showed rel. low concentrations.

Sample time 1045.

Some complications w/ GPS; boat GPS read 48° 34.599'
118° 07.073'

Need commented PDOP requirement of SOP not flexible enough for boat drift.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW

Date: 5-19-01 Weather: mostly cloudy

Location Description: South of Boise Cascade Log Boom

Uncorrected GPS Coordinates: N 48° 36' 30.40" W 118° 7' 23.72"

Corrected GPS Coordinates:

GPS File Name: T051918A Sampling Method: petit ponar

WESTON Sample No: CL-023-SD Water Depth to Sediment: 77'

CLP #s: JX451 / MJ0908 Photograph: roll: SMF2 exposure: 16

EPA Tracking No.: 01204127

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	11:18	4"	0% gravel 10% sand 50% silt 40% clay Dark gray, fine rootlets (few) + organics. No observed slag sewage smell.

Notes: Sample collected while boat was directly up against SW corner of log boom area.

Sample time 1130.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, MA, HW

Date: 5-19-01 Weather: cloudy / p sunny / drizzly

Location Description: South of suspected outfall

Uncorrected GPS Coordinates: N 48° 37' 17.78" W 118° 7' 13.00"

Corrected GPS Coordinates:

GPS File Name: TOSINC Sampling Method: petit ponar

WESTON Sample No: CR-067 SD Water Depth to Sediment: 90'

CLP #s: MJ09E3 / JX551 Photograph: roll: SDF 2 exposure: 17-18

EPA Tracking No.: 01204128

Analyses: Metals, PCB/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1153		NO recovery
2	1155		NO recovery (insufficient, fine sand)
3	1158		NO recovery

Notes: insufficient recovery for sample after 2 attempts to 100'

photo 17 → suspected outfall, showing manhole (12:05) @ top of bank, gravel fill extending down bank face.

photo 18 (12:45) - manhole observed marked "sewer" - pic taken from deck U.S. side

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW

Date: 5-21-01 Weather: sunny

Location Description: North of Rt 20/395 bridge

Uncorrected GPS Coordinates: N 48° 37' 38.50" W 118° 06' 50.87"

Corrected GPS Coordinates:

GPS File Name: M052116A Sampling Method: petit ponar

WESTON Sample No: CR-021-SD Water Depth to Sediment: 97'

CLP #s: JX449 / MJ09060 Photograph: roll: SMF2 exposure: F1-20

EPA Tracking No.: 01214100

Analyses: Metals, PCB / Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	0918	∅	No recovery
2	0920	∅	No recovery
3	0921	∅	No recovery

Notes: Consulted w/ Park Svc personnel. Agreed this location is poor sediment sampling location. Abandoned location

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 — Sampling Personnel: SF, AB, SF, NA, AJ, HW

Date: 5/21/01 — Weather: Sunny mid 70's

Location Description: China Creek

Uncorrected GPS Coordinates: N 48°42'51.20" W 118°21'1.8 sec.

Corrected GPS Coordinates:

GPS File Name: M0522004 — Sampling Method: bowl + spoon

WESTON Sample No: TR-001-SD — Water Depth to Sediment: n/a - exposed

CLP #s: MJ0952 — Photograph: roll ~~5~~ 3 exposure: 8, 9 + 10 + 11

EPA Tracking No.: 01214101

Analyses: TAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1715	1 inch	Silt with Sand + Clay ( ) Tan brown, 0 gravel 20% sand 40% silt 20% clay, no odor, no slag, roots + plant material dry

Notes: Photo 8 - Approach to China Creek.
Altimeter indicates 36' above current lake level, ~1' above mean high (?) Altimeter is questionable.
Photo 9 - NA during XRF of "creek bed" SMF
Photo 10 - white board doesn't list photo 10.
Photo 11 - Sample.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, HN, WA, SE, AB

Date: 5-21-01 Weather: Sunny

Location Description: Marcus Flats Northeast of RT 20/395; N of Marcus Spring Creek

Uncorrected GPS Coordinates: N48° 37' 59.31" W 118° 5' 11.77"

Corrected GPS Coordinates:

GPS File Name: M052117A Sampling Method: petit ponar

WESTON Sample No: CR-022-SD Water Depth to Sediment: 13'

CLP #s: JX400 / MT0907 Photograph: roll: SMF2 exposure: 21

EPA Tracking No.: 01214102

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1020	4"	0% gravel <1% sand, 60% silt, 40% clay, olive-greenish brown, no odor, no observed slag or organics

Notes: Sample time 1030

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF, HE, AJ

Date: 5/22/01 Weather: Sunny / clear, wind 70°F

Location Description: Lake Roosevelt near Snag Cove southern Sample

Uncorrected GPS Coordinates: 48° 43' 30.44" 118° 3' 10.32"

Corrected GPS Coordinates:

GPS File Name: T052218H Sampling Method: bowl + spoon

WESTON Sample No: TR002-SD Water Depth to Sediment: NA

CLP #s: MJ 0953 Photograph: roll: SF-1 exposure: 1

EPA Tracking No.: 01214103

Analyses: TAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1045	≈ 1"	0%, 5% sand, 10% silt, 85% organic matter, dark brown, roots, leaves.

Notes: Location was collected above the waterline on a drainage area. Fenced in - sample collected below fence. No depositional environment or obvious streambed present - only the gulley. Collected the top A soil horizon

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW, AB, SF

Date: 5-21-01 Weather: Sunny

Location Description: Marcus Flats, SW of Pingston Creek

Uncorrected GPS Coordinates: N48° 38' 19.35" W118° 5' 6.37"

Corrected GPS Coordinates:

GPS File Name: M052117B Sampling Method: petit ponar

WESTON Sample No: CR-024-SD Water Depth to Sediment: 29

CLP #s: JX452 / MJ0909 Photograph: roll: SMF2 exposure: 22-23

EPA Tracking No.: 01214104

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1045	4"	0% gravel 0% sand 60% silt 40% clay fine organics, slight sulfur odor, no observed slag. Dk olive-greenish gray

Notes: RS-002-SD collected, photo 22 (SMF2) cruise time 1040
1255.3' → reported elevation @ midnight
Sample in dredge appeared brown @ sfc; dk gray w/ v. dark gray streaks below sfc.
sample time 1050

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF, AB, AJ

Date: 5/22/01 AB Weather: Sunny/clear and 70's

Location Description: Flats north of Snag Cove (#8)

Uncorrected GPS Coordinates:

Corrected GPS Coordinates: N 48° 44' 35.12", W 118° 3' 50.36"

GPS File Name: T052220A Sampling Method: bowl

* WESTON Sample No: TB005-SD Water Depth to Sediment: na

CLP #s: ~~MJ0956~~ MJ0954 AB Photograph: roll: 1 exposure: 4

EPA Tracking No.: ~~01214104~~ 01214105 AB

Analyses: TAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1345	≈ 1"	15% gravel, 50% sand, 35% silt, dark brown, no odor, roots & bulbs - small.

Notes: Location above roadway, no distinctive channel, only gully. All grasses & shrubs, stripped the top grass/root layer ≈ ½" and took sample.

* TB-005-SD SMF

SMF 10/25/01 T38N, R37E, Sect 36, SW ¼

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: ~~SM~~, NA, SF, AB, ~~HW~~

Date: 5-21-01 Weather: Sunny

Location Description: Across from Marcus Flats, West Bank

Uncorrected GPS Coordinates: N48° 39' 8.54" W 118° 16' 30.03"

Corrected GPS Coordinates:

GPS File Name: M05 118A Sampling Method: hand + spoon

WESTON Sample No: CR-025-SD Water Depth to Sediment: N/A exposed

CLP #s: JX453/ MJ0910 Photograph: roll: ~~SMF~~ 2 exposure: 24 & 25

EPA Tracking No.: 01214106

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1200	sfc <1/4"	0 % grand 50 % sand 40 % silt ~~SF~~ 10 % clay grayish brown. Dry. No odor, No observed slag. Some organics

Notes: Neal screened ~~1~~ location w/ XRF found highest readings in sfc layer of deposit; took only sfc layer ~1/4" thick

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF, AD, AJ

Date: 5/22/01 Weather: Sunny / clear / mid 70's

Location Description: Access Boomberg (SW)

Uncorrected GPS Coordinates: N 48° 45' 7.64" W 118° 2' 48.68"

Corrected GPS Coordinates:

GPS File Name: T05222 1 A Sampling Method: bowl + spoon

* WESTON Sample No: TB004-SD Water Depth to Sediment: NA

CLP #s: ~~MJ0954~~ MJ0955 AB Photograph: roll: 1 exposure: 5

EPA Tracking No.: ~~01214107~~ 01214107 AB

Analyses: TAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1455	≈ 1"	15% gravel, 50% sand, 35% silt, dark brown, no odor. roots + bone fragments, dry.

Notes: Went above the road. Better defined drainage, no water
→ All grass, top layer of grass roots removed to sample,

* TB-004-SD SMF

SMF 10-25-01 T38N, R37E, Sect. 35, NE¼

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, AM, HW, SE, AB

Date: 5-21-01 Weather: Sunny

Location Description: Marcus Flats, W. of Pingston Creek

Uncorrected GPS Coordinates: N 48° 39' 11.95" W 118° 05' 30.75"

Corrected GPS Coordinates:

GPS File Name: M052119A Sampling Method: petit ponar

WESTON Sample No: CR-026-SD Water Depth to Sediment: 30'

CLP #s: JX454/MJ0911 Photograph: roll: SMF3 exposure: 1-2

EPA Tracking No.: 01214108

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1230	3"	Sample 0% gravel 25% sand 40% silt 35% clay brown. No odor No observed slag. Some fine rootlets olive-greenish brown when homogenized. saturated
2	1243	2.5"	SAA 0% gravel 25% sand 40% silt 35% clay olive-greenish brown. saturated. No odor, no observed slag.

Notes: Sample in dredge - grab 1 - rust colored sfc; algae stained brown, black, rust-colored zones in material. Photo 1
Grab 2 - in dredge more uniform color
Photo 2 - sample; sample time 12:45

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF, MB, AJ

Date: 5/22/01 Weather: sunny / clear / mid 70's

Location Description: Flat - trib across from Bocchaing (#10) west bank

Uncorrected GPS Coordinates: 48° 45' 29.277' 118° 31' 21.39"

Corrected GPS Coordinates: _____

GPS File Name: T0522223A Sampling Method: bowl + spoon

WESTON Sample No: TR 0106-SD Water Depth to Sediment: 2"

CLP #s: MT 0556 Photograph: roll: 1 exposure: 6

EPA Tracking No.: 012141 ~~09 11 [illegible]~~ 09

Analyses: TAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1550	± 1"	trace to 0% gravel, 60% fine sand, 30% silt, 10% clay, mica, some organic debris, no odor or stain.

Notes: Trib has flowing water - hiked up to other side of road. Sampled from a small pool where finer sediments were observed. deep under canopy ⇒ 1341 sample elevation lake level 1334

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00

Sampling Personnel: SF, AW3, AJ

Date: 5/21/01

Weather: sunny/clear mid 70's

Location Description: Flats north of Spring Cove

Uncorrected GPS Coordinates: 48° 44' 38.54" 118, 3' 46.61"

Corrected GPS Coordinates:

GPS File Name: TO522 19A

Sampling Method: hand w/ spoon

WESTON Sample No: TB005-SD

Water Depth to Sediment: N/A

CLP #s: MJ 0956

Photograph: roll: 1 exposure: 2 & 3

EPA Tracking No.: 01214109

Analyses: PAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1210	≈ 1"	15%, 35 sand, 50% silt, Tan brown, no odor, no slag, dry

Notes:

NA → not above high water line - will have to x the road. - will re-sample and make a new sheet - (see attached)

Incorrect sampling location - SNF

Sampler's Signature:

33 Lake level

HH -

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SWF, NA, SF, HW, AB

Date: 5-21-00 Weather: Sunny

Location Description: Marcus Flats, E. of Kamloops

Uncorrected GPS Coordinates: N48° 40' 10.49" W 118° 6' 2.05"

Corrected GPS Coordinates:

GPS File Name: M 05 21 20C Sampling Method: petit ponar

WESTON Sample No: CR-027-SD Water Depth to Sediment: 16'

CLP #s: JX455 / MJ0912 Photograph: roll: SWF3 exposure: 3

EPA Tracking No.: 012 14110

Analyses: Metals, PCB

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1315	Ø	No recovery
2	1320	~~SWF~~ 2"	0% gravel, 35% sand, 40% silt, 25% clay. Olive-greenish brown. Slight sewage odor. Some (few) organic particulates
3	1325	Ø	No recovery — No trip
4	1330	4"	SAA, 35% sand, 40% silt, 25% clay, etc

Notes: wrong exposure # on white board in photo

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: ST, AB, AJ

Date: 5/22/01 Weather: Sunny clear mid 70's

Location Description: Trib downstream from Bingham Lake - southern sample (#11)

Uncorrected GPS Coordinates: N 48° 54' 15.32" 118° 02', 25.465

Corrected GPS Coordinates:

GPS File Name: T05 23 00 A Sampling Method: bowl + spoon

WESTON Sample No: TR007 - SD Water Depth to Sediment: ≈ ½ inch

CLP #s: ~~MJ 0957~~ MJ 0957 AB Photograph: roll: 1 exposure: 7

EPA Tracking No.: ~~01214111~~ 01214111 AB

Analyses: TAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1705	≈ 1"	0% gravel, 30% sand fine, 60 silt, 10% clay lots of organics - leaves, roots, decaying smell.

Notes: Collected in meadow area above road.

(Dilly Lake ephemeral stream - SMF 10-29-01)

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, SF, HW, AB

Date: 5-21-01 Weather: Sunny

Location Description: ~~Across from~~ Marcus Flats NE

Uncorrected GPS Coordinates: N 48° 40' 45.81" W 118° 5' 05.13"

Corrected GPS Coordinates:

GPS File Name: M052121B Sampling Method: petit ponar

WESTON Sample No: CR-028-SD Water Depth to Sediment: 30'

CLP #s: JX456 / MJ0913 Photograph: roll: 8 ~~7~~ 3 exposure: 5

EPA Tracking No.: 01214112

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1425	Ø	No recovery
2	1430	Ø	No recovery
3	1435	Ø	No recovery
4	1437	2"	0% gravel 25% sand 40% silt 35% clay olive-greenish brown. very small black lenses, fine organics, fine rootlet no obvious slag. Slightly gelatinous appearance
5	1445	1"	0% gravel 25% sand 40% silt 35% clay olive-greenish brown. fine rootlets, + woody organics, shell frags.

Notes: Sample time 1445

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF, AD, AJ

Date: 5/22/01 Weather: sunny / clear / mid 70's

Location Description: Trib downstream Colasgo Lake (northern sample) #18

Uncorrected GPS Coordinates: N 48°, 46' 11.80", W 118°, 2' 17.30"

Corrected GPS Coordinates:

GPS File Name: T05230013 ~~T05230013~~ Sampling Method: bowl + spoon

WESTON Sample No: TR08-SD AB Water Depth to Sediment: NA

CLP #s: ~~MJ0959~~ MJ0958AB Photograph: roll: 1 exposure: 8

EPA Tracking No.: ~~012114115~~ 012114113AB

Analyses: TAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1735	≈ 1"	0% to trace gravel, 30%, 30% sand fine, 40% silt, no odor roots, etc.)

Notes: collected above the high water mark, on the bushes, no clear channel or drainage, just a small gravine

Location ~1,000' upstream from Dilly Lake ephemeral tributary

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SW, NA, SF, HW, AB

Date: 5-21-01 Weather: Sunny

Location Description: South of Marcus Island

Uncorrected GPS Coordinates: N 48° 39' 40.38" W 118° 5' 17.95"

Corrected GPS Coordinates:

GPS File Name: M05 2120D Sampling Method: petit ponar

WESTON Sample No: CR-020-SD Water Depth to Sediment: 14"

CLP #s: JX457 / MJ0914 Photograph: roll: Sn-3 exposure: 4

EPA Tracking No.: 01214114

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1352	1"	poor recovery, several plants (discarded)
2	1400	3"	0% gravel 35 % sand 40 % silt 25 % clay Olive-greenish brown. plant material & black organics. saturated. sand includes black particulates. no obvious slag.

Notes: SAMPLE TIME 1415

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF, AB, AJ

Date: 5/23/01 Weather: Sunny / clear / mid 70's

Location Description: East of marble mine

Uncorrected GPS Coordinates: 48° 46' 32.26" 118° 0' 32.01"

Corrected GPS Coordinates:

GPS File Name: T05231.8A Sampling Method: bowl + spoon

WESTON Sample No: TR009-SD Water Depth to Sediment: NA

CLP #s: MJ 0959 Photograph: roll: 1 exposure: 10

EPA Tracking No.: 01214115

Analyses: TAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1100	≈ 2"	0 to trace gravel, 40% sand-fine, 30% organics, 30% fine silt

Notes: Collected the sample up a steep ravine above the road level. ≈ 20 feet above.

Location @ T38N, R38E, Sect. 21, unnamed ephemeral trib SMF 10-2541

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 — Sampling Personnel: SF, AB, AJ

Date: 5/23 — Weather: sunny, clear mid 70s

Location Description: East of marble mines southern trib

Uncorrected GPS Coordinates: 48° 44' 21.32" 118° 00' 55.14"

Corrected GPS Coordinates:

GPS File Name: T052316A — Sampling Method: hand + spoon

WESTON Sample No: TR009-SD — Water Depth to Sediment: NA

CLP #s: MJ 0959 — Photograph: roll: 1 exposure: 9

EPA Tracking No.: 01214155

Analyses: TAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	945	≈ 1"	A horizon mostly decaying material, almost no soil, some fine sand.

Notes: Collected the sample up a steep ravine upstream of culvert above road and railroad tracks ≈ 20' above road level.

Wrong place! - we are still below the high lake level - re collect the sample (see attached sheet).

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 — Sampling Personnel: SMF, NA, HW, AB, RW, AJ

Date: 5-21-01 — Weather: Sunny

Location Description: North of Sanner Island

Uncorrected GPS Coordinates: N 48° 41' 38.48" W 118° 01' 56.71"

Corrected GPS Coordinates:

GPS File Name: M05122A — Sampling Method: hand scoop

WESTON Sample No: CR-030-SD — Water Depth to Sediment: NA - exposed

CLP #s: JX458/MJ0915 — Photograph: roll: SMF3 exposure: 6

EPA Tracking No.: 0121411 SMF 6

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1545	2"	0% gray ~~Sand~~ 30% sand 40% silt 30% clay. Light Brownish gray. Dry, sand is very fine to fine. No apparent slag. rootlets

Notes: Neal scanned 2 areas on vegetated flat

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF, AB, AJ

Date: 5/23/01 Weather: sunny clear mid 80's

Location Description: South of north Grange campground - east bank (#14)

Uncorrected GPS Coordinates: 48° 46' 45.95" 118° 0' 14.37"

Corrected GPS Coordinates:

GPS File Name: T052319A Sampling Method: bowl + spoon

WESTON Sample No: TR010-SD Water Depth to Sediment: NA

CLP #s: MJ 0960 Photograph: roll: 1 exposure: 11

EPA Tracking No.: 01214117

Analyses: TAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1220	≈ 21"	0% gravel, 95% sand, 5% or less silt, light tan brown, no odor, some organics (root, leaves)

Notes: Found the drainage behind the DOT gravel/mount. AREA 21" under the pine needle bed, some small, distinctive drainage.

Unnamed ephemeral tributary @ T38N, R38E, section 22 SAE 10-25-01

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW, AB, SF

Date: 5-21-01 Weather: Sunny

Location Description: Evans Campground

Uncorrected GPS Coordinates: N48° 41' 47.37" W 118° 01' 23.97"

Corrected GPS Coordinates:

GPS File Name: M052123A Sampling Method: Bowl + Spoon

WESTON Sample No: CR-031-SD Water Depth to Sediment: NA - exposed

CLP #s: JX89/MJ0916 Photograph: roll: SMF 3 exposure: 7

EPA Tracking No.: 01214118

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1635	1"	0% gravel 30 % sand 40 % silt 30 % clay light brownish gray. dry. No odor, no apparent slag. rootlets + some plant material from sfc.

Notes: Meal scanned 2 locations on vegetated mud flat

Sample time 1645

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00

Sampling Personnel: SF, AB, AJ

Date: 5/23/01

Weather: sunny / clear / mid 80's

Location Description: Tab A7 north George Campground

Uncorrected GPS Coordinates: 48° 47' 08.98" 118° 0' 3.95"

Corrected GPS Coordinates:

GPS File Name: T052324A

Sampling Method: bowl + spoon

WESTON Sample No: TR011-SD

Water Depth to Sediment: ≈ ½"

CLP #s: MJ 6961

Photograph: roll: 1 exposure: 12

EPA Tracking No.: 01214119

Analyses: TAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1410	≈ ½"	60% ~~silt~~ gravel, 10% sand, 30% silt, trace clay, dark brown organics (roots, plants). no odor.

Notes: Collected sample at small trickle that crossed the road and tracks and fed the wetland area by the entrance of the campground.

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: BMF, NA, SS, HW, AB

Date: 5·21·01 Weather: Sunny, warm (70s)

Location Description: EAST of SNAG COVE

Uncorrected GPS Coordinates: N 48° 43' 53.15" W 118° 02' 57.03"

Corrected GPS Coordinates:

GPS File Name: M05 2200 B Sampling Method: petit ponar

WESTON Sample No: CR·032-SD Water Depth to Sediment: 30'

CLP #s: JX460/MJ0917 Photograph: roll: 8MF3 exposure: 12

EPA Tracking No.: 01214120

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]	Grainsize class
1	1745	2"	strange cotton paper-like material in dredge - Discarded grab	
2	1749	1"	0% gravel/65-70 % SAND 30 % SILT, <5 % clay DARK OLIVE BROWN. SAND IS FINE to v. fine, including black minerals. NO obvious SLAG. fine organic particles	2
3	1752	Ø	NO recovery	
4	1755	1"	SAME AS GRAB #2	2
5	1758	1"	0% gravel, 80 % SAND 20 % SILT 0% CLAY DK olive brown, SAND IS fine to medium, including black minerals NO obvious SLAG fine organic particles.	1

Notes: based on the above percentages, sample estimated @ 70% sand 27% silt, 3% clay

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW

Date: 5.22.01 Weather: Sunny, warm

Location Description: South of Bossburg

Uncorrected GPS Coordinates: N 48° 45' 3.16" W 118° 3' 13.40"

Corrected GPS Coordinates:

GPS File Name: M052217A Sampling Method: petit ponar

WESTON Sample No: CR-033-SD Water Depth to Sediment: 30'

CLP #s: JX461/MJ0918 Photograph: roll: SMF3 exposure: 13-14

EPA Tracking No.: 01214122

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	0938	Ø	~~Insuff~~ No recovery
2	0941	Ø	NO recovery
3	0945	Ø	insuff. recovery
4	1000	1"	0% gravel 30 to 40% sand 60% silt ~~5%~~ 10% clay dry, light grayish brown. fine rootlets. Sand is very fine to fine-grained. No obvious slag, no odor.

Notes: Next to hill. Neal having trouble getting sufficient GPS reception. He suggested we take reading before and after sampling. After 3rd dredge attempt, looked onshore for sampling location. Found some apparently river-deposited seds among cobbles - Neal scanned 2 locations w/ XRF

photo 13 - sample location photo 14 - sample - wrong exposure # (13) on white board. Sample time (1000) not noted

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF, AB, JT

Date: 5/23/01 Weather: sunny / clear / mid 80's

Location Description: Tree downstream of Ledgepole Creek.

Uncorrected GPS Coordinates: 48° 48' 32.8" 118° 0' 52.38" (bad/short fix)

Corrected GPS Coordinates:

GPS File Name: T05 2322 A Sampling Method: bowl + spoon

WESTON Sample No: TR01-B - from road Water Depth to Sediment: NA

CLP #s: MJ 0943 Photograph: roll: SF/1 exposure: 14

EPA Tracking No.: 01214123

Analyses: TAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1555	≈ 1"	10% gravel, 60% fine sand, 30% silt, light tan brown, organics (roots/humus/sticks), dry.

Notes: Location is up the road 210 feet no water - some water seepage at lake level - deep gullies at lake level GPS not stable & short bad reading at location. An attempt on road.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW

Date: 5-22-01 Weather: Sunny, 70s

Location Description: North of Bossburg

Uncorrected GPS Coordinates: N 48° 45' 31.17 W 118° 02' 48.63"

Corrected GPS Coordinates:

GPS File Name: M0522173 Sampling Method: bowl & spoon

WESTON Sample No: CL-034-SD Water Depth to Sediment: N.A - exposed

CLP #s: JX462/MJ0919 Photograph: roll: SMF3 exposure: 15+16

EPA Tracking No.: 01214124

Analyses: TAL Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1052	5"	0% gravel 40% sand 45% silt 15% clay Dry, light grayish brown. No ~~odo~~ slag. rootlets (fine). Sand is very fine to fine.

Notes: Neil scanned 3 locations. Sample location was ~~at~~ w/in ~1' of lake level.

photo 15 - XRF screening ~~& sample location~~

16 - sample

Sample time 1100

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF, AB, AJ

Date: 5/23/01 Weather: sunny / clear / mid 80's

Location Description: Lodgepole Creek

Uncorrected GPS Coordinates: 48° 48' 39.35" 118° 0' 33.19"

Corrected GPS Coordinates:

GPS File Name: T05 23 23 C Sampling Method: bowl + spoon

WESTON Sample No: TR014 - SD Water Depth to Sediment: ≈ 2"

CLP #s: MJ 09 ~~9~~ 64 Photograph: roll: 1 exposure: 15

EPA Tracking No.: 01 ~~21~~ 4125

Analyses: TAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1640	≈ 1"	0% gravel, 60% sand, 35% silt, 5% clay, Dark brown, organics (roots, leaves) no odor.

Notes: location above the road on stream bed - biggest stream so far. Real running water. Collected sediment from a pool where fine sediments were observed

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW

Date: 5-22-01 Weather: Sunny, 70's

Location Description: South of North Gorge (West Bank)

Uncorrected GPS Coordinates: N 48° 47' 30.56" W 118° 00' 48.69"

Corrected GPS Coordinates:

GPS File Name: M0522 518A Sampling Method: bowl & spoon

WESTON Sample No: CR-035-SD Water Depth to Sediment: N/A - exposed

CLP #s: JX463 / MJ0920 Photograph: roll: SMF3 exposure: 17 + 18

EPA Tracking No.: 01 214126

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	12:00	1/4"	5% gravel 30% sand ~~60~~ 55 % silt 10 % clay dry, lightgrayish brown. No slag, fine rootlets, organic present as granules. Sand ranges from v. coarse to mostly fine to fine.

Notes: Sample location ~12-15' above current water level. Location is a terraced bluff. Sample material is thin crust of fine-grained material on top of coarse sand/gravel deposit. (Photo 17).

Sample time 12:00

MS/MSD - SMF 6-18-01

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: [illegible]

Date: 5-24-01 Weather: [illegible]

Location Description: Trib #23: Downstream of China Bar [illegible]

Uncorrected GPS Coordinates: N 48° 49' 14.03" W 117° 56' 27.14

Corrected GPS Coordinates:

GPS File Name: MOS 2419A Sampling Method: bar-scoop

WESTON Sample No: TR017-SD Water Depth to Sediment:

CLP #s: MJ0967 Photograph: roll: [illegible] exposure: 2-3

EPA Tracking No.: 01214127

Analyses: Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1215	20	0% gravel 50% sand 40% silt 10% clay ~~to~~ moist, med-dark brown. Highly organic. no slag.

Notes: Photo 2 - Near sampling spot in channel, lake in background. Trib looks like it hasn't flowed for a long time except for minor contribution from valley walls. Next second 2 locations

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW

Date: 5-22-01 Weather: sunny 70s

Location Description: South of North Gorge (EAST BANK)

Uncorrected GPS Coordinates: N 48° 47' 11.05" W 118° 00' 25.29"

Corrected GPS Coordinates:

GPS File Name: M05 2220A Sampling Method: bowl + spoon

WESTON Sample No: CR-036-SD Water Depth to Sediment: N/A - exposed

CLP #s: JX464 | MJ0921 Photograph: roll: SMF-3 exposure: 19 + 20

EPA Tracking No.: 0121 4128

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1400	1"	0% gravel 30 % sand 40 % silt 25 % clay dry, light grayish brown. Rootlets + small woody fragments. No slag observed. No odor. Sand is very fine to fine.

Notes: Took sfc crust of fine material on vegetated exposed bar ~3' above water level (current) (photo 19) photo 20 - sample

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, SW

Date: 5-23-01 Weather: Sunny, hot

Location Description: chemical stream (point 20 on chart) T38N, R38E Sec 10

Uncorrected GPS Coordinates: N 48° 48' 42.28" W 117° 54' 39.32"

Corrected GPS Coordinates:

GPS File Name: M0523 23A Sampling Method: bowl + spoon

WESTON Sample No: TR-01G-SD Water Depth to Sediment: N/A - dry

CLP #s: 111JC968 Photograph: roll: SMF4 exposure: 23

EPA Tracking No.: C12141201

Analyses: Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1645	2"	1 % gravel 80 % sand 10 % silt 0 % clay highly organic soil. (no slag)

Notes: Alder, willow, and aspen in stream channel ranging from 5-15 yrs old. The said species are generally used as indicators of floodplains. Sample was collected from adjacent sediment passing under current RR tracks, on east side.

SMF 10/25/01 LOCATION DESCRIPTION: T38N, R38E, section 10

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW

Date: 5-22-01 Weather: Sunny, upper 70s

Location Description: ~~North of~~ SMF WEST-EAST Flat Creek

Uncorrected GPS Coordinates: N 48° 49' 14.09" W 117° 58' 43.39"

Corrected GPS Coordinates:

GPS File Name: M05 22 22 A Sampling Method: bowl + spoon

WESTON Sample No: CL-037-SD Water Depth to Sediment: N/A - exposed

CLP #s: MJ ~~4465~~ 0922 SMF / JX465 Photograph: roll: SMF 3 exposure: 21+22, 23+24

EPA Tracking No.: 01214130

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1500	1/4"	0% gravel ~~50~~ 45 % SAND 45 % silt 10 % clay Dry, light grayish brown. No obvious slag, minor organic matter. No odor Sand is very fine - fine
2	1515	2"	<1% gravel 70% sand 30% silt 0% clay Dry to damp, brown.
			Sample as a whole: <1% gravel (as granules) 60% sand 40% silt 41% clay. Sand is v fine to coarse, includes fine sized black glassy particles (poss. slag). Lt brown dry.

Notes: Neil scanned 2 location on West side of creek; we crossed creek + scanned one location on east bar. (photo 21)
Sample consisted of 1/4" crust of fine material that was deposited on a relatively clean fine sand.
Photo 22 - Mouth of Flat Creek, looking downstream
Photo 23 - Boat mooring technique

over

Sampler's Signature:

photo 24 - sample location, sample in jars
IN JARS, exposed suspected slag-containing layer

Neal did scan on underlying sand material, found higher zinc, so I collected that material and dug down to cause cobbles. Found black sand-sized material as well. Possible slag.
Neal did XRF on adjacent location + found very high metal levels.

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SRF, [illegible], [illegible]

Date: 5-24-01 Weather: sunny, hot

Location Description: N 48° 30' 32.99" W 117° 55' 36.85"

Uncorrected GPS Coordinates: TR-018-SD

Corrected GPS Coordinates:

GPS File Name: MOS 24204 Sampling Method: Dewitt spoon

WESTON Sample No: TR-018-SD Water Depth to Sediment: N/A dry

CLP #s: M50969 Photograph: roll: SRF-5 exposure: 4-5

EPA Tracking No.: 01214131

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1300	2-3'	1% gravel (as granules) 40% sand (F-c) 50% silt, 10% clay moist, grayish brown, 20% organics. No slag.

Notes: photo 4 [illegible] left
Meal covered 2 locations
One to 5 -- Simple

Location: T39N, R39E, section 25, SW 1/4 SE 1/4

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 | Sampling Personnel: SMF NA HW

Date: ~~5-22-00~~ 5-22-01 | Weather: Sunny, warm

Location Description: China Bar

Uncorrected GPS Coordinates: N 48° 49' 41.72" W 118° 55' 33.30"

Corrected GPS Coordinates:

GPS File Name: M052223A | Sampling Method: bowl, spoon

WESTON Sample No: CR-038 SD | Water Depth to Sediment: N/A - exposed

CLP #s: JX466 / MJ0923 | Photograph: roll: SM4 exposure: 1-4

EPA Tracking No.: 012141 32

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1630	2"	5% gravel as fine gravel 60% sand 30% silt <5% clay and granules. Sand as v. fine to coarse-grained including fine-med sand-sized slag etc. Slag. Slag .v 1" thick in conc. places

Notes: photo 1 - suspected slag @ China Bar afr. Deposit
Neal samp XRF returned very high readings. Suspected observed release. Black sand-sized material observed widespread throughout several areas of China Bar.
photo 1 + 2 → slag on beach
3+4 - Sample - white board incorrect
Slag layer in photo - 2-3' above water, but site is all elevations

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SWF, NA HW

Date: 5.24-01 Weather: Sunny, hot

Location Description: Crown Creek (trib-#25)

Uncorrected GPS Coordinates: N 48° 51' 16.57" W 117° 54' 42.13"

Corrected GPS Coordinates:

GPS File Name: M05 2420 B Sampling Method: bowl + spoon

WESTON Sample No: TR-019 SD Water Depth to Sediment: 1"

CLP #s: M00970 Photograph: roll: 5 of 5 exposure: 6 of 7

EPA Tracking No.: 01214133

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1345	2"	0% gravel 60 % sand 40 % silt 0 % clay saturated, med grayish brown. ~10% organics no slag

Notes: Collected among rocks ~1" water
photo 6 - sampling
photo 7 - sample
GPS - taken in deep receive setting.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF NA, RW

Date: 05-29-01 Weather: Sunny, cool

Location Description: South of Crown Creek (Bate Cove)

Uncorrected GPS Coordinates: N 48° 50' 14.30" W 117° 55' 30.10"

Corrected GPS Coordinates:

GPS File Name: M052317A Sampling Method: bowl + spoon

WESTON Sample No: CR-001-SD Water Depth to Sediment: NA - exposed

CLP #s: JX467 / MJ0924 Photograph: roll: SMF4 exposure: 5-7

EPA Tracking No.: 0121413-4

Analyses: Metals PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1015	3"	15 % gravel 55 % sand 30 % silt 0 % clay Gravel present as granules + fine gravel. Sand is very fine to v. coarse, including fine sand-size black suspected slag. Dry brown + black. No odor

Notes: did exploratory hand auger ~100' south of light (photo 5) in grassy area, down to ~2'. Some black grains observed among fine sand but not as obvious as among rocks to north and @ Chief Bend site.

Sample point + observed slag @ sfc among boulders

Zinc > 1,000 ppm (XRF)

Photo 6+7 - sample - exposure # not complete on photo 6 white board

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, MW

Date: 5 24 01 Weather: Sunny, hot

Location Description: TR16 #27 Downstream from Moses Spring Creek [illegible]

Uncorrected GPS Coordinates: N48° 52' 50.02" W 117° 52' 23.05"

Corrected GPS Coordinates:

GPS File Name: M052423A Sampling Method: bowl + spoon

WESTON Sample No: TR-020-SD Water Depth to Sediment: NA, exposed

CLP #s: MJ0971 Photograph: roll: SMF-5 exposure: 8, 9, 10 & 11

EPA Tracking No.: 01214135

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1615	3"	0 % gravel 40 % sand 40 % silt 20 % clay Med-dk gray, saturated. Con manure + woody organics + grass. No slag observed.

Notes: 8 - creek from mine
9 - No trespassing signs on upland access pt
10 - sample loc
11 - sample

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMW NA, HW

Date: 5-23-01 Weather: Sunny, hot (upper 70s)

Location Description: NE of Rattlesnake Creek (~~Begin Cove~~ East Bank)

Uncorrected GPS Coordinates: N 48° 51' 58.17" W 117° 52' 43.82"

Corrected GPS Coordinates:

GPS File Name: M0523 18A Sampling Method: hand + spoon

WESTON Sample No: CR-040-SD Water Depth to Sediment: N/A - exposed

CLP #s: TX468/MS0925 Photograph: roll: SMT4 exposure: 8, 9 + 10

EPA Tracking No.: 01214136

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1130	4"	0% GRAVEL 65-70% SAND 30% SILT <5% CLAY dry, grayish brown. Sand is v fine to fine, ~10-20% SLAG. Minor shell material.

Notes: Had accessed ~5 places in this cove. Observed (suspected) slag near north point on beach (photo 9) east of point. Suspected slag in this layer ~1-2" below sfc. (photo 8) another pass slag-containing layer ~4" BGS. Stopped @ 4" BGS so as not to dilute concentration.

More-abundant suspected slag found on rocks @ point. Didn't sample because it is archaeological site (per. Larry Dupuydt). (Photo 10)

Sampler's Signature:

Photo 11 - sample

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: [illegible]

Date: 5/24/01 Weather: [illegible]

Location Description: [illegible] Creek and King [illegible]

Uncorrected GPS Coordinates: 48°42'32.09" 117°51'27.93"

Corrected GPS Coordinates:

GPS File Name: TU52422A Sampling Method: [illegible]

WESTON Sample No: TR [illegible]-SD Water Depth to Sediment: 1

CLP #s: MT 0972 Photograph: roll: SF 1 exposure: 21

EPA Tracking No.: 01214137

Analyses: TAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1530		

Notes: Sample was collected by Al + Adriane - They went down the steep bank to access the water. They collected the sample from the dry stream bed.

Sampler's Signature: [illegible]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NAL, ITW

Date: 5-23-01 Weather: sunny, hot

Location Description: N. of Onion Creek / West of Kaner Slough

Uncorrected GPS Coordinates: N 48° 52' 29.78" W 117° 50' 46.52"

Corrected GPS Coordinates:

GPS File Name: M052319A Sampling Method: bowl - spoon

WESTON Sample No: CR-041-SD Water Depth to Sediment: N/A - exposed

CLP #s: JX469 / MJ0926 Photograph: roll: SMF 4 exposure: 12, 13 + 14

EPA Tracking No.: 01214138

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1245	2"	1% gravel (as granules) 74% sand 25% silt 0% clay. Suspected slag makes up ~1/3 sand material. Sand is brown (light grayish brown) dry. minor shell material.

Notes: Had scanned ~4 locations at one array rocks. One of the locations (near sample loc) was scanned @ 2 depths. Sand material overlies cobble @ ~2" bgs.

photo 12 - site area

photo 13 - ~~sample~~ People preparing to fish to SE of sample pt

photo 14 - sample

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF, RR, HS

Date: 05/24/10 Weather:

Location Description: South of Spokane creek - [illegible] T39N, R39E, Sec 10 [illegible]

Uncorrected GPS Coordinates: 48° 53' 25.[illegible]" 117° [illegible] 27.39"

Corrected GPS Coordinates:

GPS File Name: T05 24 21 R Sampling Method: [illegible]

WESTON Sample No: TR023-SD Water Depth to Sediment: N/A

CLP #s: MJ 0973 Photograph: roll: SP 1 exposure: 20

EPA Tracking No.: 01214139

Analyses: TAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1435	≈ 1.5"	0% gravel, ≈ 60% organics, 30% sand 10% silt, Dark brown, roots, plant material.

Notes: Sample collected upgradient side of road upgradient from the culvert.

Location: T39N, R39E, Sec 10

Sampler's Signature: [illegible]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, NA, HW

Date: 5-23-01 Weather: sunny, hot

Location Description: S tip of Island in South of SQUAW CREEK

Uncorrected GPS Coordinates: N 48° 52' 42.40" W 117° 50' 48.53" (DMDM)

Corrected GPS Coordinates:

GPS File Name: M052320A Sampling Method: bowl + spoon

WESTON Sample No: CR-042-SD Water Depth to Sediment: N/A - exposed

CLP #s: JX470 / MJ0927 Photograph: roll: SMF exposure: 15-16 & 17

EPA Tracking No.: ~~CH02~~ SMF 01214140

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1315	1-3"	<1% gravel (as granules), 90% sand, 10% silt, <1% clay dry, light grayish brown, minor shell material no organics observed. Suspected slag accounts for ~30-35% of sand material

Notes: photo 15 - CR-041-SD site, from across river
XRF is keeping, complaining about the heat.
photo 16 - sample
photo 17 - sample loc. from river ~10' above waterline

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SFIAB, AJ

Date: 05/24/01 Weather:

Location Description: North of Squaw Creek - West bank Unnamed Drainage from Nonsite Basin

Uncorrected GPS Coordinates: 48° 54' 0.6x' 117° 49' 13.77"

Corrected GPS Coordinates:

GPS File Name: TOS2421A Sampling Method: bowl & spoon

WESTON Sample No: TR-024-SD Water Depth to Sediment:

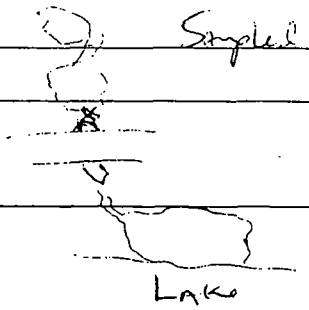
CLP #s: M10974 Photograph: roll: SF1 exposure: 17

EPA Tracking No.: 01214141

Analyses: TA1

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1325	≈ 1"	0% gravel, 20% sand, 80% silt, light tan brown, rotting grasses, no odor.

Notes: Location downstream from the culvert/Road was only 2 to 2 feet above the waterline - no box - wetland to ponds on upstream side of road - Culvert is very high - ponds are dry and are on Fuel property. Collected sample at the toe of the culvert where water might be. Sampled beneath the fence.



Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, MN, HW

Date: 5-23-01 Weather: sunny, hot

Location Description: S. tip of Island South of Swan Creek

Uncorrected GPS Coordinates: N 48° 53' 14.95" W 117° 50' 6.47"

Corrected GPS Coordinates:

GPS File Name: M05232 1A Sampling Method: bowl + spoon

WESTON Sample No: CR-0436D Water Depth to Sediment: NA- exposed

CLP #s: JX 471/MJ0928 Photograph: roll: 4 exposure: 18+19

EPA Tracking No.: 01214142

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1400	1-2"	0% gravel 90% sand 10% silt 0% clay. dry, lt reddish brown. minor organics. blocky, suspected clay material makes up ~50% sand material (med-sand-sized).
			Sand as a whole is very fine to fine to medium.

Notes: Brownish-red stain in wide area of gravel bar, poss. coming from Swan Creek. High metals, incl. low Hg detected @ sampling pt. via XRF. Sampling pt ~10' above water line (photo 18)

Next screened 4 places, we picked highest conc. pt amid red-stained rocks.

Photo 19 - sample - sample time 1400 - whiteboard says exposure 18

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF, AH3, AJ

Date: 07/24/0. Weather: sunny/clear/low 80's

Location Description: Five Mile Creek

Uncorrected GPS Coordinates: 48° 53' 55.95" 117° 47' 58.51"

Corrected GPS Coordinates:

GPS File Name: I052418A Sampling Method: bowl + spoon

WESTON Sample No: TR-025-SD Water Depth to Sediment: ≈12 in

CLP #s: MJ 0975 Photograph: roll: SF1 exposure: 14

EPA Tracking No.: 01214143

Analyses: TAL metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1145		0% trace, 85% sand - fine grained, 15% silt, all white limestone fragments, Tan brown. wet sample. no odor, some (little) organics.

Notes: Looking at creek ~~about~~ (1) upstream from the road. At a small pool at the creek ≈ 15 ft above the culvert

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00

Sampling Personnel: SMF, NA, HW

Date: 5-23-01

Weather: sunny, hot (88)

Location Description: ~~S. top of Island~~ N. of Fivemile Creek

Uncorrected GPS Coordinates: N 48° 54' 51.60" W. 117° 47' 50.98"

Corrected GPS Coordinates:

GPS File Name: M0523 22A

Sampling Method: bowl + ogeer

WESTON Sample No: CR-44-SD

Water Depth to Sediment: NA - exposed

CLP #s: JX472 / MS0929

Photograph: roll: SMF4 exposure: 20 + 21

EPA Tracking No.: 01214144

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1515	2"	10% gravel (fine) 90% fine - med coarse sand (70% suspected slag material). Minor shell material. Damp. no observed organics or odor

Notes: photo 20 - sample area
photo 21 - sample

* location not on an island

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 — Sampling Personnel: SMF, Scott Dibble, HW

Date: 5-31-01 — Weather: Sunny, warm

Location Description: Beach @ Northport

Uncorrected GPS Coordinates: N 48° 55' 21.48" W 117° 46' 19.67"

Corrected GPS Coordinates:

GPS File Name: M053117A — Sampling Method: bowl & spoon

WESTON Sample No: CL-045-SD — Water Depth to Sediment: N/A - exposed

CLP #s: JX473 / MJ0930 — Photograph: roll: SF1 exposure: 22+23

EPA Tracking No.: 01224150

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1045	24"	0% gravel 90-100% sand <10% silt, 0% clay. Fine-med sand. ~70% slag material. Native sand is light brown. Dry. No organics observed. occ small dry clumps of silty v. fine sand - grayish brn.

Notes: Camera - film likely used by Trib team last week (roll # unknown)
Sample time 1045
Sample location ~ ft above current water level (~12.74).
Photo 22 - Scott screening sediment w/ XRF. He screened 3 locations total.
Photo 23 - Sample

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, SD, HW

Date: 5-31-01 Weather: SUNNY, WARM

Location Description: Flats North of Big Sheep Creek

Uncorrected GPS Coordinates: N 48° 56' 17.89" W 117° 45' 40.71"

Corrected GPS Coordinates:

GPS File Name: M053119A Sampling Method: trowel + spoon

WESTON Sample No: CR-0110-SD Water Depth to Sediment: N/A - exposed

CLP #s: JX474/MJ0931 Photograph: roll: SF1, exposure: 25

EPA Tracking No.: 01224151 5-7 1/2 6 21 SB

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1215	3"	0% gravel 80% sand ≤20% silt 0% clay Sand is very fine to fine. Dry, light grayish brown. Suspected black slag particles as fine sand ~20-30% of sand. ~~[illegible]~~ Some Rootlets + other organics. Gravel is granules

Notes: Potential Sampling Loc.; Facing North - SF1, #25

Scott scanned 3 locations

~~SMF [illegible] observed~~ SMF

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, SD, HW

Date: 5-31-01 Weather: sunny, hot

Location Description: Big Sheep Creek

Uncorrected GPS Coordinates: N 48° 50' 21.25" W 117° 45' 55.40"

Corrected GPS Coordinates:

GPS File Name: M053120A Sampling Method: hand + spoon

WESTON Sample No: TR-026-SD Water Depth to Sediment: NA - exposed

CLP #s: JX552 / MJ0974 Photograph: roll: SF1 exposure: 24

EPA Tracking No.: 01224153 SMF 5+6

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1345	2"	10 % gravel (as granules + fine gravel) 50 % sand 40 % silt 0 % clay. Dry, light grayish brown. Sand v. fine to v. coarse. No observed slag. Minor plant material debris.

Notes: SF1 #24 Mouth of Big Sheep Creek

SMF 5 #5 Sample location

#6 Sample

*MS/MSD

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, SD, HW

Date: 5/31/01 Weather: sunny hot

Location Description: ~~Sheep~~ Gunning Creek

Uncorrected GPS Coordinates: N 48° 56' 20.61" W 117° 45' 51.88"

Corrected GPS Coordinates:

GPS File Name: M053129B Sampling Method: bowl + spoon

WESTON Sample No: TR-027-SD Water Depth to Sediment: n/a - dry

CLP #s: MJ0977 Photograph: roll: ~~SF1~~ SMF 6, exposure: ~~2+SMF~~ #2+3+4

EPA Tracking No.: 01224152

Analyses: Metals 6 Bags

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1300	3.4"	10 % gravel 60 % SAND 30 % silt <10 % clay Abundant rootlets + plant material. Dry, grayish brown. gravel present as granules. sand ranges from fine to fine grains. No observed slag. Some mollusc shells.

Notes: SF1, ~~#1 - Mouth of Sheep Creek, facing W/SE~~

SMF6 #2 - setting

SMF6 #3 - sample location - note cobbles + gravel

SMF6 #4 - sample.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, SD, HW

Date: 5-31-01 Weather: Sunny, hot

Location Description: Steamboat Cove

Uncorrected GPS Coordinates: N 48° 56' 11.41" W 117° 45' 11.73"

Corrected GPS Coordinates:

GPS File Name: M053121A Sampling Method: bowl-spoon

WESTON Sample No: CR-047-SD Water Depth to Sediment: N/A - exposed

CLP #s: JX475 / MJ0932 Photograph: roll: ~~SMF-K~~ AB 6 exposure: 17 + 8+9

EPA Tracking No.: 01224154

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1430	1"	5 % gravel 95% sand (>75% is black slag) 0% silt, 0% clay. Minor trace organic material. No odor

Notes: photo 7 - floating slag material
sample collected ~ 10' SE of where G-PS was moored
photo 8 - sample area
photo 9 - sample
Sample location was < 1' above current water level

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMT, SD, HW

Date: 5-31-01 Weather: Sunny, hot

Location Description: Flat NE of Steamboat Rock

Uncorrected GPS Coordinates: N 48° 56' 16.29" W 117° 44' 29.30"

Corrected GPS Coordinates:

GPS File Name: M0531 22A Sampling Method: hand scoop

WESTON Sample No: CR-048-SD Water Depth to Sediment: n/a exposed

CLP #s: JX476 / MJ0933 Photograph: roll: SMT/6 exposure: 10, 11, 12

EPA Tracking No.: 01224155

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1515	1"	<1 % gravel 100 % sand 0% silt 0% clay Native sand is dry, light grayish brown. Slag ≈ 90% of sample. ~~[illegible]~~ No organics in sample.

Notes: Sample location area as approved previously
Sample time 1515
photo #10 - floating slag
collected sfc material both in slag
photo #11 - sample loc
photo 12 - sample
Sample point ~4' above water line

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SNF, SD, HW

Date: 5.31.01 Weather: Sunny, warm

Location Description: Grassene Creek

Uncorrected GPS Coordinates: N 48° 56' 34.84 W 117° 44' 03.13"

Corrected GPS Coordinates:

GPS File Name: M0531225 Sampling Method: bowl + spoon

WESTON Sample No: TR-038-SD Water Depth to Sediment: N/A, Dry

CLP #s: JX553 / MJ0978 Photograph: roll: SNF/6 exposure: 13, 14+15

EPA Tracking No.: 01224156

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1545	4.5"	0 % gravel 50 % sand 40 % silt 10 % clay Moist, DK orange/brown, Abundant roots + plant organics No odor, no observed slag.

Notes: photo 13 - view of River from sampling location
14 - sample location + sample in bowl
GPS recorded ~ 12' NE of sampler loc.
15 - sample

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, SD, HW

Date: 5 31-01 Weather: sunny, hot

Location Description: North of Goodeve Creek

Uncorrected GPS Coordinates: N 48° 30' 25.24" W 117° 43' 50.40"

Corrected GPS Coordinates:

GPS File Name: M053123A Sampling Method: bowl - spoon

WESTON Sample No: CR-049-SD Water Depth to Sediment: N/A - exposed

CLP #s: JX 477 / MJ0934 Photograph: roll: SMF 6 exposure: 16, 17

EPA Tracking No.: 01224157

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1630	~3"	100% v. fine to fine sand ~60-70% slag material

Notes: photo 16 sample area
photo 17 sample

*MS/MSD

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, SD, HW

Date: 6-1-01 Weather: cloudy, warm

Location Description: SW of Spring Creek (Peat bar on W. bank)

Uncorrected GPS Coordinates: N 48° 56' 31.61" W 117° 43' 14.51"

Corrected GPS Coordinates:

GPS File Name: M060117A Sampling Method: bowl + scoop

WESTON Sample No: CR-05A-SD Water Depth to Sediment: NA - exposed

CLP #s: JX478 / MJ0936 Photograph: roll: ~~SMF~~ 6 HB exposure: 18+19+20

EPA Tracking No.: 01224160

Analyses: Metals, Peat, PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	0930	1-2"	0 % gravel 100 % sand 0 % silt 0 % clay. Slag material >70% of sand. No odor, no organics; Native material is light brown. Sample is moist

Notes: Photo 18 - Animal tracks crossing sand bar to river, noting black sand concentration

Scott screened 3 locations, picked 3rd photo 19

Scott altered PDOP setting to 9 because we couldn't get a reading after ~15-20 min

~~NOTE - wrong film roll # (6 instead of 5) on whiteboard~~ HB

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 — Sampling Personnel: SMF, SD, HW

Date: 6-1-01 — Weather: cloudy, cool

Location Description: Sanders Creek

Uncorrected GPS Coordinates: N 48° 57' 01.28" W 117° 42' 12.59"

Corrected GPS Coordinates:

GPS File Name: M0601178 — Sampling Method: hand scoop

WESTON Sample No: TR-029-SD — Water Depth to Sediment: 3"

CLP #s: JX654 / MJ0979 — Photograph: roll: SMF 6 XB exposure: 21-22-23

EPA Tracking No.: 01224161 — 96 XB

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1050	3"	5 % gravel 55 % sand 30 % silt 10 % clay SATURATED, brownish gray. Sand is v. coarse to very fine. Some rootlets - organics. No odor. No slag.

Notes: Small cabin to North of Creek, knocked on door, nobody answered, so proceeded w/ sampling.

photo 21 sample location

22 Sanders Creek sampling area

23 Sample

Scott stood in creek 1-2 meters South of sample loc. to get GPS reading.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, SD, HW

Date: 6-01-01 Weather: cloudy, cool

Location Description: South of Tom Bush Creek

Uncorrected GPS Coordinates: N 48° 57' 58.66" W 117° 39' 42.01"

Corrected GPS Coordinates:

GPS File Name: MCX0118A Sampling Method: bank-spoon

WESTON Sample No: CR-051-SD Water Depth to Sediment: N/A exposed

CLP #s: JX479 / MJ0936 Photograph: roll: SMF 6 exposure: 24 & 25

EPA Tracking No.: 01224162 SMF 7 : 1

Analyses: Metals, Post/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1145	2"	1 % gravel 74% 75 % SAND 25% SILT < 1 % clay gravel is fine cobble and granules, sand is v fine to fine (mostly fine). Small black particulates make up ~ 25% of sample - poss slag

Notes: photo 24 - sampling location area

25 - sample SMF 7 #1 - also sample, extra photo

sample location ~1' above current water line

South Extended time as a medium concentration sample.

~~Note - wrong film roll # (should be 5) on whiteboard SMF~~

(is correct)

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, SD, dw

Date: 06 01 01 Weather: windy, cloudy, cool

Location Description: Black Sand Beach

Uncorrected GPS Coordinates: N 48° 58' 15.73" W 117° 38' 52.53"

Corrected GPS Coordinates:

GPS File Name: M0601 19A Sampling Method: hand-spoon

WESTON Sample No: CR-652-SD Water Depth to Sediment: 1ft - exposed

CLP #s: JX4X0 / MJ0937 Photograph: roll: ~~SMF 6~~ 7 AB exposure: 2-3

EPA Tracking No.: 01224163

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1230	4"	100% SAND (>80% slag) NO ORGANICS, NO ODOR. BLACK w/ minor native sand (brown)

Notes: Scott scouted 1 location due to incoming bad weather
Sample pt ~ 3' above current water line
photo 2- sample
3- Sample Area

(to correct AB) ~~Note: wrong film roll # (7 instead of 6) on whiteboard SMF~~

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, SD, HW

Date: 6-1-01 Weather: cloudy, cool

Location Description: Boulder bar near bridge (S. of rocky island)

Uncorrected GPS Coordinates: N 48° 59' 52.77" W 117° 38' 07.52"

Corrected GPS Coordinates:

GPS File Name: M 060121A Sampling Method: Dow - spoon

WESTON Sample No: CR-053-SD Water Depth to Sediment: N/A - exposed

CLP #s: JX481 / MJ0938 Photograph: roll: 67 exposure: 7+9

EPA Tracking No.: 01224164

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1415	3"	0 % gravel 85 % sand 15 % silt 0 % clay Sand material ~50% black slag particulates as fine sand, somewhat finer than at some downstream points. No organics or odor observed

Notes: (transcribed from field log book 6-2-01)
photo 7 - Scott Quoble near sample location (from offshore). He screened approx. 4 locations. We left him to look @ rocky island to north but decided on gravel bar.
#8 - sample location; #9 = sample (~1' above water level

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 — Sampling Personnel: SMF, SD, HW

Date: 6-1-01 — Weather: cloudy, cool

Location Description: Unnamed trib NE of Fagerty Station

Uncorrected GPS Coordinates: N 48° 58' 32.65" W 117° 38' 23.35"

Corrected GPS Coordinates:

GPS File Name: M0G0120A — Sampling Method: bowl + spoon

WESTON Sample No: TR-030-SD — Water Depth to Sediment: N/A - dry

CLP #s: JX555 / MJ0980 — Photograph: roll: 6 exposure: 4-6

EPA Tracking No.: 01224165 — 7 AB

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1330	8"	~1% gravel 85% sand ~13% silt ~1% clay High organic debris content + peat. No slag observed.

Notes: transcribed from field log book 6-2-01
photo 4 - (dry) trib mouth (from river)
5 - sample location
6 - sample
Afc to ~3" bgs = pine needles (cleared away, sampled ~5" below that.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / AB

Date: 6/3/2001 Weather: OVERCAST 60°F

Location Description: LITTLE JIM CREEK

*Uncorrected GPS Coordinates: N 48°22'05.53" W 118°11'35.68"

Corrected GPS Coordinates:

GPS File Name: T060317A Sampling Method: BOWL / SPOON

WESTON Sample No: TR 070 SD Water Depth to Sediment: 1-2"

CLP #s: MJ09F2 Photograph: roll: SMF 5 exposure: 15

EPA Tracking No.: 01234050

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	935	2 in.	3 (0% GRAVEL / 60% SAND / 40% SILT / 0% CLAY), DARK BROWN, NO ODOR, NO SLAG, TWIGS PINE NEEDLES, NO DEBRIS

Notes: · PHOTO # 15 ROLL 5 TAKEN FACING WEST.
· SAMPLE TAKEN ~10' ABOVE FULL POOL (ELEVATION.)
· SAMPLE TAKEN ~100' ABOVE FULL POOL (DISTANCE)
* GPS READING ~300' FROM SAMPLE LOCATION. DOWNSTREAM, ~50' FROM CONFLUENCE WITH COLUMBIA.

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/AB

Date: 6/3/2001 Weather: OVERCAST ~60°F

Location Description: WEST OF MISSION POINT 84 T33N R39E SECTION 18 SMF

Uncorrected GPS Coordinates: N 48° 21' 34.54" W 118° 11' 37.89" KB

Corrected GPS Coordinates:

GPS File Name: T0603173 Sampling Method: BOWL / SPOON

WESTON Sample No: TR-068-SD Water Depth to Sediment: NO WATER (DRY TRIB.)

CLP #s: MJ09F0 Photograph: roll: SMF 5 exposure: 16

EPA Tracking No.: 01234051

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1045	3"	(0% GRAVEL / 40% FINE SAND / 60% SILT / 0% CLAY), DARK BROWN, NO ODOR OR SLAG, SCATTERED ROOTS, CHARCOAL.

Notes:
- PHOTO R5 E16 TAKEN FACING WEST
- SAMPLE COLLECTED ~ 5' ABOVE FULL POOL ELEVATION
- SAMPLE COLLECTED ~ 150' UPSTREAM OF FULL POOL
- GPS READING TAKEN ~20' NE OF SAMPLE LOCATION.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / AB

Date: 6/3/2001 Weather: OVERCAST 65°F

Location Description: HALL CREEK

Uncorrected GPS Coordinates: N 48° 12' 14.92" W 118° 12' 11.56"

Corrected GPS Coordinates:

GPS File Name: TO60320A Sampling Method: BOWL / SPOON

WESTON Sample No: TR 061 SD Water Depth to Sediment: 1-2"

CLP #s: MJ09E6 / JX559 Photograph: SMF roll: 5 exposure: 17

EPA Tracking No.: 01234052

Analyses: METALS, TOC, PCB/PEST

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1315	1-2"	(0% GRAVEL / 90% F-M SAND / 10% SILT / 0% CLAY), GREYISH BROWN, NO ODOR OR SLAG, SOME MICAS, NO DEBRIS
2	1315	1-2"	" "
3	1315	1-2"	" "

Notes: · PHOTO TAKEN FACING SW
· SAMPLE COLLECTED ~ 5' ABOVE FULL POOL ELEVATION
· SAMPLE COLLECTED ~ 100 UPSTREAM OF FULL POOL LEVEL
·

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/AB

Date: 6/3/2001 Weather: OVERCAST 60°F

Location Description: UNNAMED TRIB T32N, R37E, SEC 8

Uncorrected GPS Coordinates: N 48°17' 34.55" W 118°10' 22.86"

Corrected GPS Coordinates:

GPS File Name: TO60322A Sampling Method: Bowl / SPOON

WESTON Sample No: TR 058 SD Water Depth to Sediment: DRY TRIB

CLP #s: MJ09E4 Photograph: roll: SMF 5 exposure: 18

EPA Tracking No.: 01234053

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1500	2-3"	(0% GRAVEL / 30% FINE SAND / 65% SILT / 0% CLAY), BROWN, NO ODOR OR SLAG NO ORGANICS, NO DEBRIS

Notes:
- PHOTO TAKEN FACING WEST
- SAMPLE COLLECTED ~1' ABOVE FULL POOL ELEVATION
- SAMPLE COLLECTED ~20' UPSTREAM FROM FULL POOL
- GPS READING TAKEN ~300' EAST OF SAMPLE COLLECTION LOCATION.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/AB/HW

Date: 6/4/2001 Weather: OVERCAST 60°F

Location Description: ~~STRANGER CREEK~~ Unnamed T33N R37E Sect 28 SW

Uncorrected GPS Coordinates: N 48° 19' 27.41" W 119° 09' 04.99"

Corrected GPS Coordinates:

GPS File Name: T060421C Sampling Method: Bowl / SPOON

WESTON Sample No: TR 06050 Water Depth to Sediment: DRY TRIB

CLP #s: MJ09E5 / JX55 Photograph: roll: KB1 exposure: 4, 5

EPA Tracking No.: 01234054

Analyses: METALS / PCB/PEST / TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1430	4"	(5% GRAVEL / 75% FINE SAND / 20% SILT / 0% CLAY), LIGHT BROWN, NO ODOR OR SLAG, SCATTERED ROOTS, NO OTHER DEBRIS
2	1430	"	"
3	1430	"	"

Notes:
- PHOTO 4 TAKEN FACING W
- PHOTO 5 TAKEN FACING
- SAMPLE LOCATION ~ 100' UPSTREAM FROM HWY 25.

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / AB / HW

Date: 6/4/2001 Weather: OVERCAST 60°F

Location Description: UNNAMED T33N, R37E, SEC 28 Unproposed Location Grf N-2501

Uncorrected GPS Coordinates: N 48° 20' 04.15" W 118° 09' 21.48"

Corrected GPS Coordinates:

GPS File Name: T0605 00A Sampling Method: BOWL / SPOON

WESTON Sample No: TR 063 SD Water Depth to Sediment: DRY TRIB

CLP #s: MJ09E8 Photograph: roll: KB1 exposure: 8/9

EPA Tracking No.: 01234055

Analyses: METAL

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1645	3"	0% GRAVEL / 100% COARSE AND FINE SAND / 0% SILT / 0% CLAY), BROWN, NO ODOR OR SLAG, OCCASIONAL TWIGS, NO OTHER DEBRIS

Notes: • PHOTO 8 TAKEN FACING E
• PHOTO 9 TAKEN FACING E
• ~~GPS~~ SAMPLE LOCATION ~ 20' E OF HWY 25
• GPS LOCATION ON HWY 25

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: AB / KB / HW

Date: ~~6/3/2001~~ 6/4/2001 KB Weather: LIGHT RAIN: 55°F

Location Description: MAGEE CREEK

Uncorrected GPS Coordinates: N 48° 21' 38.17" W 118° 09' 45.26"

Corrected GPS Coordinates:

GPS File Name: T060419A Sampling Method: SPOON / BOWL

WESTON Sample No: TR067 SD Water Depth to Sediment: 2"

CLP #s: M5096 Photograph: ~~SAMPLE~~ roll: KB 1 exposure: ~~25~~ 1 AB

EPA Tracking No.: 01234056

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1245	4"	(0% GRAVEL / 75% COARSE TO FINE SAND / 25% SILT / 0% CLAY), GREYISH BROWN. NO ODOR OR SLAG, OCCASIONAL ROOTS / TWIGS, NO OTHER DEBRIS

Notes:
- PHOTO ~~SAMPLE~~ 5 ~~25~~ 22 AB TAKEN FACING ~~to~~ NE
- PHOTO KB 1 1 TAKEN FACING W
- SAMPLE LOCATION ≈ 50' UPSTREAM FROM HWY 25

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / AB / HW

Date: ~~6/3/2001~~ 6/4/2001 KB Weather: OVERCAST 60°F

Location Description: JENNINGS CREEK

Uncorrected GPS Coordinates: N 48°21' 55.93" W 118°09' 49.89"

Corrected GPS Coordinates:

GPS File Name: T060421A Sampling Method: BOWL / SPOON

WESTON Sample No: TR 069 SD Water Depth to Sediment: 2"

CLP #s: MJ0971 Photograph: roll: KB 1 exposure: 2, 3

EPA Tracking No.: 01234057

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1400	3"	0% GRAVEL / 90% COARSE TO FINE SAND / 10% SILT / 0% CLAY), LIGHT BROWN, NO ODOR OR SLAG, OCCASIONAL TWIGS, NO OTHER DEBRIS.

Notes: 1 PHOTO 2 TAKEN FACING SE
1 PHOTO 3 TAKEN FACING SE
1 SAMPLE LOCATION ~ 25' UPSTREAM OF HWY 25.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/AB/HW

Date: 6/4/2001 Weather: OVERCAST LOOSE

Location Description: UNNAMED T 33N R 37E ~~S28~~ S21 SNF 10-25-01

Uncorrected GPS Coordinates: N 48° 20' 21.65" W 118° 09' 26.71"

Corrected GPS Coordinates:

GPS File Name: T060422A Sampling Method: BOWL / SPOON

WESTON Sample No: ~~FR063 SO~~ TR065 SO KB Water Depth to Sediment: 1"

CLP #s: MJ09E7 Photograph: roll: KB1 exposure: 6/7

EPA Tracking No.: 01234058

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	~~1515~~ 1550	3"	(20% FINE GRAVEL / 80% FINE, COARSE SAND / 0% SILT / 0% CLAY), BROWN, NO ODOR OR SLAG, SCATTERED ROOTS, NO OTHER DEBRIS.

Notes: * WESTON SAMPLE # SHOULD BE TR065 SO
- PHOTO 6 TAKEN FACING SW
- PHOTO 7 TAKEN FACING NE
- SAMPLE LOCATION ~ 300' UPSTREAM FROM HWY 25.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF SD

Date: 6-3-01 Weather: cloudy, cool (60s)

Location Description: Unnamed Tributary (T34N R36E, Section 30)

Uncorrected GPS Coordinates: N48° 24' 33.23" W 118° 12' 52.23"

Corrected GPS Coordinates:

GPS File Name: M0603 17A Sampling Method: bowl + spoon

WESTON Sample No: RL-075-SD Water Depth to Sediment: 0" (at waterline)

CLP #s: MJ09F4 Photograph: roll: SMF/6 exposure: 10 & 11

EPA Tracking No.: 01234059 7 & 8

Analyses: Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1030	2.5"	0% gravel 10% sand 50% silt 40% clay hydrogen sulfide odor. Dark gray, moist. Some plant material. Deposit was gelatinous, fine-grained to ~2" bgs, then sandy + cobbly. Sand is fine-med grained

Notes: wrong photo #s on white board ("11+12" on board)
photo 10 - sample location undisturbed
11 - Sample
Also, R37E on whiteboard, should be R36E

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, SJD

Date: 6-3-01 Weather: cloudy, 60's

Location Description: Unnamed tributary, T34N, R36E Section 25

Uncorrected GPS Coordinates: N 48° 25' 4.58" W 118° 12' 50.25"

Corrected GPS Coordinates:

GPS File Name: M0600319A Sampling Method: bowl + spoon

WESTON Sample No: TR-076-SD Water Depth to Sediment: Dry

CLP #s: MJ09E5 Photograph: roll: ~~SMF 6~~ 7 AB exposure: 12

EPA Tracking No.: 01234060

Analyses: Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1100	1.5"	0% gravel 20% sand 55% silt 25% clay Dry, light brownish gray. Some plant debris (incl. pine bark) No odor, no slag. Sand is very fine to fine

Notes: photo 12 - sample

GPS reading ~34' E + ~30' S from sample location due to overhead tree canopy.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, SD

Date: 6-3-01 Weather: sunny, 60s

Location Description: Barnaby Creek

Uncorrected GPS Coordinates: N 48° 26' 01.11" W 118° 13' 19.77"

Corrected GPS Coordinates:

GPS File Name: MOC0320A Sampling Method: bowl + spoon

WESTON Sample No: TR-081-SD Water Depth to Sediment: 1-2"

CLP #s: MJ09FC Photograph: roll: SMF/6 exposure: 13+14

EPA Tracking No.: 01234061 TAB

Analyses: Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1300	1-2"	10 % gravel 40 % sand 50 % silt 0 % clay DK brown, saturated, Abundant fine organic particles. No slag. Algae-odor. Gravel is fine, sand is v.fine to v. coarse, mostly fine.

Notes: photo 13- Sample Area
14- Sample, white board is positioned over subaqueous sampling location - where fines were deposited.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SWF, SD

Date: 6-3-01 Weather: cloudy, 60's

Location Description: Unnamed tributary (T34N R 36E, Section 11)

Uncorrected GPS Coordinates: N 48° 27' 29.15" W 118° 13' 14.18"

Corrected GPS Coordinates:

GPS File Name: M060321A Sampling Method: bowl-spoon

WESTON Sample No: TR-OP4-SD Water Depth to Sediment: NA-dry

CLP #s: MJD9FA Photograph: roll: SWF 16 exposure: 15 + 16

EPA Tracking No.: 01234062 7 AB

Analyses: Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1346	1"	~~30~~ 40 % gravel 30 % sand 30 % silt <1 % clay Gravel flat, angular ~ 1/4 - 1/2". Sand is v. fine to v. coarse Small insects. Some organics. No slag. No odor dry, med. gray.

Notes: photo 15 - sample location
16 - sample

GPS reading taken ~30' east of sample location (on roadway)

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SDF, SD

Date: 6-3-01 Weather: sunny, 60's

Location Description: LA Fleur Creek

Uncorrected GPS Coordinates: N 48° 29' 18.601" W 118° 12' 25.98"

Corrected GPS Coordinates:

GPS File Name: M0603 22A Sampling Method: bowl + spoon

WESTON Sample No: TR-088-SD Water Depth to Sediment: 4"

CLP #s: MJ09G1 Photograph: roll: SDF/6 exposure: #17+18

EPA Tracking No.: 01234063 7 AB

Analyses: Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1450	2"	0% gravel 10% sand (v. fine) 80% silt 10% clay Highly organic; v. dark gray brown. Saturated. strong sulfur odor, some insect "shells". No slag. Fine organics, apparently from moss.

Notes: photo 17 - sample
18 - sample area
GPS reading taken ~ 5' West of sample location

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / AB / [illegible]

Date: 6/4/200[illegible] Weather: OVERCAST / LIGHT RAIN [illegible]

Location Description: ROTTOR BAY CREEK

Uncorrected GPS Coordinates: N 48° 26' 51.4[illegible] W 118° 11' 17.4[illegible]"

Corrected GPS Coordinates:

GPS File Name: TUGCA1BA Sampling Method: Bowl / Spoon

WESTON Sample No: TRU 02 SD Water Depth to Sediment: ~1"

CLP #s: MJ09 F7 Photograph: roll: SMF 5 exposure: 23 / 24

EPA Tracking No.: 01234064

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1200	3"	(0% GRAVEL / 35% FINE SAND / 65% SILT / 0% CLAY), DARK BROWN, NO ODOR OR SLAG, SCATTERED TWIGS, NO OTHER DEBRIS

Notes:
- PHOTO 23 TAKEN FACING SE
- PHOTO 24 TAKEN FACING W
- SAMPLE LOCATION ~ 1/2 MILE UPSTREAM OF ROTTOR BAY ON ROTTOR BAY RD.

Sampler's Signature: [illegible]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/AB/SD

Date: 6/6/2001 Weather: OVERCAST ~60°F

Location Description: UNNAMED CREEK T37N R37E SEC 16 SW 1/4

Uncorrected GPS Coordinates: N48° 41' 56.22" W118° 06' 58.88"

Corrected GPS Coordinates:

GPS File Name: T060617A Sampling Method: BOWL/SPOON

WESTON Sample No: TR 113 SD Water Depth to Sediment: DRY TRIB

CLP #s: MJ09F8 Photograph: roll: KB2 exposure: 2/3

EPA Tracking No.: 01234065

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	0900	1"	(15% FINE GRAVEL/75% COARSE AND FINE SAND/10% SILT/0% CLAY), BROWN, NO ODOR OR SLAG, OCASSIONAL PINE NEEDLES, NO OTHER DEBRIS.
			used T060616A GPS file for this location SMF

Notes:
- PHOTO 2 TAKEN FACING SE
- PHOTO 3 TAKEN FACING
- ~1/2" OF ORGANIC MATER (TWIGS, LEAVES) ON TOP OF SEDIMENT.
- SAMPLE COLLECTED ~ 100' DOWN STREAM OF ROADWAY
- GPS FILE T060616A: GATHERED 19 DATA READINGS AT SAMPLE SITE - COULD NOT COLLECT ANY MORE. MOVED TO LOCATION ~50' S OF SAMPLE SITE FOR ~~ABOVE~~ NEW FILE READING.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / AB / SD

Date: 6/5/2001 Weather: OVERCAST 60°F

Location Description: DEADMAN CREEK

Uncorrected GPS Coordinates: N48° 42' 25.94" W 118° 07' 36.07"

Corrected GPS Coordinates:

GPS File Name: T060521A Sampling Method: Bowl / Spoon

WESTON Sample No: TR 114 SD Water Depth to Sediment: 3"

CLP #s: MJ0960 / JX567 Photograph: roll: KB1 exposure: 18/19

EPA Tracking No.: 01234066

Analyses: METAL, PEST/PCB / TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1345	2"	(10% FINE GRAVEL / 90% COARSE TO FINE SAND / 0% SILT / 0% CLAY), BROWN, NO ODOR OR SLAG, OCCASIONAL TWIGS, NO OTHER DEBRIS
2	1345	2"	" SM
3	1345	2"	" SM

Notes: • PHOTO 18 TAKEN FACING W
• PHOTO 19 TAKEN FACING E

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/AB/HW

Date: 6/4/2001 Weather: OVERCAST 60°F

Location Description: ~~TR 090 SD~~ Unnamed Sampling Location SMF, 0.25

Uncorrected GPS Coordinates: N 48° 30' 36.90" W 118° 09' 06.44"

Corrected GPS Coordinates:

GPS File Name: T0604 16A Sampling Method: Bowl / SPOON

WESTON Sample No: TR-090-SD Water Depth to Sediment: DRY TRIB

CLP #s: Photograph: roll: SMF 5 exposure: 19, 20

EPA Tracking No.: 1234067

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	0930	2-4"	(0% GRAVEL, 100% FINE SAND, 0% SILT, 0% CLAY), GREYISH BROWN, NO ODOR OR SLAG, SCATTERED ROOTS, NO DEBRIS.

Notes:
- PHOTO 19 TAKEN FACING SE
- PHOTO 20 TAKEN FACING NW
- SAMPLE COLLECTED ~ 10' ABOVE FULL POOL ELEVATION.
- SAMPLE COLLECTED ~ 50' UPSTREAM OF FULL POOL
- SLAG MATERIAL PRESENT ON BEACH BELOW TRIB. MOUTH. SLAG IS FINE GRAINED SUB ROUNDED, BLACK. MAGNETIC.
- GPS READING TAKEN ~100' DOWNSTREAM OF SAMPLE LOCATION ON BEACH

Sampler's Signature: [signature]

-18-01 SMF - mistaken location - not a defined tributary location.

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / AR / HW

Date: 6/4/2001 Weather: Overcast 60°F

Location Description: N48°30' 47.58" W118°08' 54.75"

Uncorrected GPS Coordinates: Unnamed tributary South of Grassbar Campground

Corrected GPS Coordinates:

GPS File Name: T060417A Sampling Method: Bowl / Spoon

WESTON Sample No: TR-091-SD Water Depth to Sediment: Dry Trib

CLP #s: MJ09G3 / JX560 Photograph: roll: SMF 5 exposure: 21, 22

EPA Tracking No.: 01234068

Analyses: Metals, Pest/PCB's, TOC's

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1030	2-3"	(10% GRAVEL / 70% FINE SAND / 20% SILT / 0% CLAY), BROWN, NO ODOR OR SLAG, SCATTERED ROOTS, NO OTHER DEBRIS
2	1030		"
3	1030		"

Notes:
- PHOTO 21 TAKEN FACING NE
- PHOTO 22 TAKEN FACING SW
- SAMPLE LOCATION ~ 30' ABOVE FULL POOL ELEVATION
- SAMPLE LOCATION ~ 200' UPSTREAM OF FULL POOL.
-

6-18-01 SMF — Sample location was @ trib #92 - Gradling Brook campground

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / SD

Date: 6/7/2001 Weather: SCATTERED CLOUDS 65°F

Location Description: UNNAMED, T35N, R37E, SEC 15 (N OF BRADBURY)

Uncorrected GPS Coordinates: N48° 31' 36.79" W118° 8' 12.22"

Corrected GPS Coordinates:

GPS File Name: M060719A Sampling Method: Bowl / Spoon

WESTON Sample No: TR-094-SD Water Depth to Sediment: DRY TRIB

CLP #s: MJ0966 Photograph: roll: KB3 exposure: 4/5

EPA Tracking No.: 01234071

Analyses: TAL METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1200	3"	(0% GRAVEL / 100% FINE SAND / 0% SILT / 0% CLAY), LIGHT BROWN, NO ODOR OR SLAG, NO ORGANICS, NO OTHER DEBRIS.

Notes: · PHOTO 4 TAKEN FACING SE
· PHOTO 5 TAKEN FACING SE
· GPS LOCATION ~10' N OF SAMPLE LOCATION

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SW-, SD

Date: 6-4-01 Weather: cloudy, cool (50s)

Location Description: Cougar Canyon Creek

Uncorrected GPS Coordinates: N 48° 33' 33.38" W118° 9' 16.49"

Corrected GPS Coordinates:

GPS File Name: M060417A Sampling Method: hand scoop

WESTON Sample No: TC-097-SD Water Depth to Sediment: N/A - Dry

CLP #s: MJ0967 Photograph: roll: SWF/6 exposure: 19-20

EPA Tracking No.: 01234072 TB

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1015	4"	0 % gravel, 70 % sand 30 % silt ~1 % clay. No odor, med. brown dry. Sand is predom. coarse or medium grained. Organics from soil horizon incl. woody frags. & rootlets.

Notes: Pine needles/grass debris 1" over organic mat ~1" thick; over organic soil 1-2", over sand layer.
photo 19 - sample location
20 - sample
Some apparent metal debris noted @ sampling location discovered during sampling (thin metal bands ~1" wide)

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, SD

Date: 6-4-01 Weather: Clear, 50's

Location Description: Sherman Creek

Uncorrected GPS Coordinates: N 48° 34' 59.10" W 118° 08' 22.08"

Corrected GPS Coordinates:

GPS File Name: MOG0418A Sampling Method: bowl & spoon

WESTON Sample No: TR-01X-SD Water Depth to Sediment: 3"

CLP #s: JX562 / MJ096-8 Photograph: roll: SMF4 exposure: 21, 22, 23

EPA Tracking No.: 012340173

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1105	1-2"	20 % gravel 80 % sand <1 % silt 0 % clay Some organics, and very thin sheen occasionally Sand is v. fine to v. coarse, angular-subrounded Gravel primarily as granules, up to ~1 cm. Saturated
			multi-colored grains. No obvious slag, no odor

Notes: Sampler (DS) noted thin film that appeared on water after as he was collecting the sediment

* MS/MSD

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, SD

Date: 6-21-01 Weather: cloudy, cool (50s)

Location Description: Unnamed tributary west of Mungo Creek

Uncorrected GPS Coordinates: N 48° 34' 21.76" W 118° 4' 53.25"

Corrected GPS Coordinates:

GPS File Name: M0605016/ Sampling Method: bowls spoon

WESTON Sample No: TR-105-SD Water Depth to Sediment: N/A - dry

CLP #s: JX564 / MJ09H0 Photograph: roll: SMF 7 exposure: 11-12

EPA Tracking No.: 01234075

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1830	4.7"	1 % gravel <5 % sand 90 % silt 5 % clay Moist, Dark brown. Rootlets, no odor, some woody (bark) debris. Gravel as granules ~ 1cm long. Sample has abundant organic debris. Sand is v fine to fine-grained.

Notes: 4" humus material overlying soil. ~1" humus included in sample.
photo 11 - sample area
12 - sample
PDOP <11 on GPS reading written above. Trees overhead; Exit also got a second reading (M0605016) outside a clearing ~30 ft north of sample loc., but PDOP didn't improve (~10).

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, SD

Date: 6-4-01 Weather: rainy, cool

Location Description: Minnow Creek

Uncorrected GPS Coordinates: N 48° 34' 27.01" W118° 4' 45.79"

Corrected GPS Coordinates:

GPS File Name: M060501A Sampling Method: bowl + spoon

WESTON Sample No: TR-106-SD Water Depth to Sediment: 0" (@ waterline)

CLP #s: JX565 / MJDBJ1 Photograph: roll: SMF/8 exposure: 9+10

EPA Tracking No.: 01234076

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1946	1"-1.5" See over cobbles	<1 % gravel 40 % sand 60 % silt 0 % clay Saturated, med grayish brown. Very slight organic odor. Organic matter incl. rootlets, leaves, + fine organics + woody pieces, twigs.

Notes: photo 9- Sample location
10- Sample

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, SD

Date: 6-4-01 Weather: cloudy, cool 50s

Location Description: Colville River

Uncorrected GPS Coordinates: N 48° 34' 32.45" W 118° 4' 35.00"

Corrected GPS Coordinates:

GPS File Name: M060500A Sampling Method: bowl + spoon

WESTON Sample No: TR-107-SD Water Depth to Sediment: N/A exposed

CLP #s: JX566 / MJ0BJ2 Photograph: roll: SMF 8 exposure: 6 + 7 + 8

EPA Tracking No.: 01234077

Analyses: Metals, Pest / PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1715	1-2"	~1 % gravel 15 % sand 40 % silt ~44 % clay strong sewage odor. Saturated, Very Dark gray. Sand size is generally med- to coarse, but some grains are very coarse. Organic matter incl. rootlets.
			Sample is "sloppy", gelatinous.

Notes: Sample loc. @ waterline. Sediment in layers brown @ sfc, black ½-1" then sandy, overlying ~~small boulders~~ SMF /cobbles.

Photo 6 - sample area

7 - sample

8 - sample

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 — Sampling Personnel: SMF, SD

Date: 6 4 01 — Weather: rainy, cool (50s)

Location Description: Unnamed ephemeral (T30N R38E, Section 18, SW Qtr)

Uncorrected GPS Coordinates: N 48° 30' 55.16" W 118° 4' 46.35"

Corrected GPS Coordinates:

GPS File Name: M06042A1 — Sampling Method: bowl + spoon

WESTON Sample No: TR-108-SD — Water Depth to Sediment: 2-1" (@ waterline)

CLP #s: MJ0BJ3 — Photograph: roll: SMF 7 / SMF 8 exposure: 24 / 1+2+3+4+5

EPA Tracking No.: 01234078

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1300	~~+24~~ SMF 1	0% gravel 90% sand ~5% silt ~5% clay med. brown/grayish brown. saturated. no odor. Sand is very fine to fine. Some fine black particulates, but not obvious slag. Black organic particles also.

Notes: SMF 7 #24 - sample — photo SMF 8 #4 - poss. "placer" deposit in stream bed, in lake

SMF 8 #1 - sample loc. — photo SMF 8 #5 - exposed pipe, poss. assoc'd w/ pump house

SMF 8 #2 - shack downstream a ~40' E. of trib. along edge of floodplain. Shack appeared to contain old pump equipment. Photo SMF 8 #3

(trib is running)

GPS taken ~200' North of sampling point, @ mouth of trib.

Sampler's Signature: [signature]

On sandbar @ mouth of trib w/in lake, noticed "placer" deposits - reddish and black particles. Black particles are glassy; collected some material in a film canister + asked Scott to screen w/ XRF. Similar to deposit sampled + screened by Neal? on the bank the stream "Neal" reported non-supported KEP monitoring on that machine?

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, HW

Date: 10-5-01 Weather: cloudy, cool

Location Description: Unnamed Tributary, T32N R37E, section 8

Uncorrected GPS Coordinates: N 48° W118°

Corrected GPS Coordinates:

GPS File Name: M060517A Sampling Method: ~~Bowl~~ spoon

WESTON Sample No: TR-056-SD Water Depth to Sediment: N/A DRY

CLP #s: MJ0BJ4 Photograph: roll: ~~SMF~~ 8 exposure: ~~13~~

EPA Tracking No.: 01234079

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1000	2"	0% gravel ~5 % sand 90 % silt ~5 % clay Dry, red brown. Rootlets are common. No slag, no odor.

Notes: Sample pt ~400' up trib valley from current lake level. (1277'). Sample loc. vegetated w/ mature pines. Approx. 2' above full pool elevation (at least). Sample pt had ~1" thick layer of pine needles, moss & sfc. which was cleared away prior to sampling. photo 13 - sample. Sample collected + homogenized in sample jar

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF HW

Date: 6-5-01 Weather: Cloudy, 50's

Location Description: Unnamed tide @ Clover Leaf Beach Campground

Uncorrected GPS Coordinates: N 48° 17' 50.02 W 118° 08' 44.22

Corrected GPS Coordinates:

GPS File Name: M0605176 Sampling Method: Spoon

WESTON Sample No: TR-057-SD Water Depth to Sediment: N/A - dry

CLP #s: MJ0BJ5 Photograph: roll: SMF7 exposure: 14-15

EPA Tracking No.: 01234080

Analyses: Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1045	1/2"	0 %gravel <1 % sand 100 % silt % clay Light brown, dry. Organics (rootlets, woody fragments) ~20% of sample.

Notes: location vegetated w/ wild rose bushes + pine trees, + some deciduous trees (photo 14)

photo 15 - sample.

~1" thick layer of pine needles + moss @ sfc - cleared away prior to sampling. Thin layer, 1/2", of unconsol. sed. atop more compact material, likely not stream deposit.

sample collected + homogenized in sample jar.

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 | Sampling Personnel: SMF, HW

Date: 6-5-01 | Weather: cloudy, cool (50s)

Location Description: Stranger Creek West

Uncorrected GPS Coordinates: N48°17'34.61"

Corrected GPS Coordinates: W118°10'58.47"

GPS File Name: M0605I8A | Sampling Method: bowl + spoon

WESTON Sample No: TR-059-SD | Water Depth to Sediment: 3"

CLP #s: JX570 / MJ0BJ6 | Photograph: roll: SMF 7 / 8 HB exposure: 16, 17+18

EPA Tracking No.: 01234081

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1145	3"	0 % gravel 30 % sand 70 % silt <1 % clay Saturated, med brown @ sfc, dk gray to black underneath. Organics in sample include rootlets, twig fragments, insect casings (abundant) as well as fine organics. Moderate "sewage" smell.
			Sampling activity released bubbles of gas from subsfc. Sand is very fine.

Notes: photo 16 - Mouth of Stranger Creek (W) from Lake.
17 - Sample location (foreground) facing S, after sample collection
18 - sample, facing E, w/ location in foreground

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: ~~SMF~~, HW

Date: 6-5-01 Weather: cloudy, 50s

Location Description: Cobbs Creek

Uncorrected GPS Coordinates: N48° 19' 2.10" W118° 11' 18.8"

Corrected GPS Coordinates:

GPS File Name: M0605 20 A Sampling Method: ~~bow~~ spoon

WESTON Sample No: TR-062-SD Water Depth to Sediment: 1"

CLP #s: MJOBJ7 Photograph: roll: ~~SMF-9~~ 8 exposure: 19+20

EPA Tracking No.: 01234082

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1245	1-2"	0% gravel 60% sand 40% silt <1% clay Saturated. Med. grayish brown No odor. Organics (rootlets + wood frags) ↳ ~10% Sand is v. fine to coarse. No slag.

Notes: Sample was collected + homogenized in jar.
photo 19 - sample location prior to sampling
:- (facing W)
20 - sample
Cobbs Cr - very fast-running. Sample loc >5' above MHW line of Lake.
~~GPS reading collected ~ 10' N~~ ~ 100' E of sample loc. due to overgrowth o trees. - collected GPS @ tub mouth @ Lake (elevation (current - 1277'))

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, HW

Date: 10-5-01 Weather: rainy, cool (50s) 11 knots

Location Description: Unnamed T33N, R37E, section 30

Uncorrected GPS Coordinates: N48° 19' 59.81" W 118° 11' 26.38"

Corrected GPS Coordinates:

GPS File Name: M060521A Sampling Method: SPOON

WESTON Sample No: TR-04-SD Water Depth to Sediment: N/A - ~~exposed sed~~ dry

CLP #s: MTOBJ8 Photograph: roll: SMF-8 exposure: 21-22

EPA Tracking No.: C1234C83

Analyses: Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1400	1"	0% gravel 15% sand 85% silt 0% clay Dry, med grayish brown. Organic debris includes rootlets, a twig & woody (bark) fragments. Organics make up roughly 10% of sample. No odor, no slag. Sand is very fine.

Notes: Sample loc ≥4" above MHW of Lake. (photo 21) (facing E)
Sed. sample consisted of ~1" layer of loose material on top of more-consolidated silt deposit.
Pines in area show scorching from fire. Loose carpet of pine needles ~1" thick was cleared from sampling pt prior to collection. Sample was collected & homogenized in sample jar.
photo 22 - sample

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, HW

Date: 6-5-01 Weather: rainy, cool (50s) lt. breeze

Location Description: Unnamed Trib., T33N R37E, section 19

Uncorrected GPS Coordinates: N 48° 20' 36.21 W 118° 11' 34.46

Corrected GPS Coordinates:

GPS File Name: MC6052 2B Sampling Method: Spoon

WESTON Sample No: TR-CC6-SD Water Depth to Sediment: N/A - Dry

CLP #s: MJC6J9 Photograph: roll: SMF-7 exposure: 23-24

EPA Tracking No.: C1234084

Analyses: Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1445	1-2"	0 % gravel 10 % sand 80 % silt 10 % clay. Dry, grayish brown. Organics (rootlets, wood + bark fragments) make up ~ 20% of sample. No odor, visibly sand is very fine.

Notes: Sample location & entire "stream bed" is dry (not running) + overgrown (photo 23 - from sample loc. looking E to Lake)
photo 24. sample was collected + homogenized in jar. Sample loc ~ 3-4' above est. MHW, ~50' upstream.
GPS collected ~200' E of Sample location (downstream)

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, HN

Date: 6-6-01 Weather: mostly cloudy, cool (50s)

Location Description: Unnamed Tributary, T34N, R37E, Section 32

Uncorrected GPS Coordinates: N 48° 23' 44.19" W 118° 10' 27.51"

Corrected GPS Coordinates:

GPS File Name: M0606 17A Sampling Method: spoon

WESTON Sample No: TR-074-SD Water Depth to Sediment: N/A - dry

CLP #s: MJ09F3 Photograph: roll: SMF 7 exposure: 32, 33

EPA Tracking No.: 01234085 8

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1030	2"	20% gravel 65% sand 15% silt 0% clay. Dry, medium grayish brown to dark grayish brown. No odor. no slag. Organics incl. thin woody fragments 1/4" long + rootlets make up ~5% or less of sample material
			Gravel granules up to 1cm long. Sand is predom. v. coarse, but ranges in size from very fine to very coarse.

Notes: Heavy mineral deposits on beach in front of sampling location. Location is overgrown w/ wild roses & cherry trees. Is located near fence line on grassy field (photo 32), on escarpment ~6' above beach, roughly 10' above current water level. Sample was collected + homogenized in sample jar.

photo 32 - fishing on lake observed travelling from this point to Chemeketa Creek (TR-074-SD)

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SME HW

Date: 10-6-01 Weather: p. sunny, cool (60s), breezy

Location Description: Quillisascutt Creek

Uncorrected GPS Coordinates: N 48° 27' 07.05" W 118° 11' 41.93"

Corrected GPS Coordinates:

GPS File Name: MOU0621A Sampling Method: spoon

WESTON Sample No: TR-083-SD Water Depth to Sediment: 2'-3"

CLP #s: MJ09F8 Photograph: roll: SMP8 exposure: 8, 9

EPA Tracking No.: 01234086

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1.	1415	1.5-2"	0 % gravel ~60 % SAND ~40 % SILT <1 % clay Saturated, med. brown. Organic debris incl. woody fragments ~1/4" long + poss rootlets, make up ~5% of sample. Sand is very fine to coarse, primarily fine. No odor, no slag.

Notes: Sample was collected + homogenized in sample jar. photo 8- sample loc. prior to sampling (facing E) photo 9- sample location is ≥5' above MHW

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, HW

Date: 6-6-01 Weather: sunny, warm (70s)

Location Description: Unnamed trib, T34N R37E, section 6

Uncorrected GPS Coordinates: N 48° 28' 04.11 W 118° 11' 36.00"

Corrected GPS Coordinates:

GPS File Name: MOC0622A Sampling Method: SPOON

WESTON Sample No: TR-085-SD Water Depth to Sediment: N/A - DRY

CLP #s: MS0960 Photograph: roll: SMF 87 exposure: 10 + 11

EPA Tracking No.: 01234087

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1515	0.5" below. 1" covering of grass + plant debris	0 % gravel 65 % sand 20 % silt 15 % clay Dry to moist, med. grayish brown - Organic material, incl. rootlets, leaf debris + minor woody material (bark?) ~ 1/4" wide, makes up ~ 20% of sample. Sand is predom. fine, but ranges from very fine to medium.

Notes: photo 10 - trib mouth showing MHW level indicators (logs, debris)

Sample location ~ 4' above MHW; sample material was collected + homogenized in sample jar.

photo 11 - sample

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/AB/SD

Date: 6/6/2001 Weather: OVERCAST 60°F

Location Description: UNNAMED EPHEMERAL T37N R33E SEC 16 NW 1/4

Uncorrected GPS Coordinates: N48°42'38.88" W118°07'8.71"

Corrected GPS Coordinates:

GPS File Name: TO60673 Sampling Method: BOWL / SPOON

WESTON Sample No: TR115 SD Water Depth to Sediment: DRY TRIB

CLP #s: MJ0BK0 Photograph: roll: KB2 exposure: 4/5

EPA Tracking No.: 01234088

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1030	1"	(10% FINE GRAVEL / 75% COARSE TO FINE SAND / 15% SILT / 0% CLAY), BROWN, NO ODOR OR SLAG, OCCASIONAL TWIGS, NO OTHER DEBRIS

Notes: • PHOTO 4 TAKEN FACING E
• PHOTO 5 TAKEN FACING SW

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/AB/JD

Date: 6/5/2001 Weather: OVERCAST 60°F

Location Description: UNNAMED EPHEMERAL T37N, R37E, SEC 9 NW 1/4, SE 1/4

Uncorrected GPS Coordinates: N 48° 43' 15.12" W 118° 7' 07.59"

Corrected GPS Coordinates:

GPS File Name: T060522A Sampling Method: BOWL / SPOON

WESTON Sample No: TR116 SD Water Depth to Sediment: DRY TR113

CLP #s: MJOBK1 Photograph: roll: KB1 exposure: 22/23

EPA Tracking No.: 012340 89

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1530	8"	(0% GRAVEL / 90% FINE SAND / 10% SILT / 0% CLAY), DARK BROWN, NO ODOR OR SLAG, OCCASIONAL TWIGS, NO OTHER DEBRIS.

Notes: PHOTO 22 TAKEN FACING E
PHOTO 23 TAKEN FACING W

B. ~~2"~~ 2-6" OF ORGANIC MATERIAL
• GPS LOCATION ~10' NORTH OF SAMPLE LOCATION

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/AD/SD

Date: 6/5/2001 Weather: OVERCAST 55°F

Location Description: UNNAMED EPHEMERAL; T37N, R37E, Sec 4, NW¼, NE¼

Uncorrected GPS Coordinates: N 48° 43' 23.40" W 118° 7' 7.78"

Corrected GPS Coordinates:

GPS File Name: TU60523A Sampling Method: BOWL / SPOON

WESTON Sample No: TR 117 SD Water Depth to Sediment: DRY TRIB

CLP #s: MJOBK2 Photograph: roll: KB1/KB2 exposure: 24/1

EPA Tracking No.: 01234090

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1600	~2"	(0% GRAVEL / 85% MEDIUM TO FINE SAND / 15% SILT / 0% CLAY), BROWN, NO ODOR OR ~~STAINING~~ SLAG, OCCASIONAL TWIGS, NO OTHER DEBRIS.

Notes: · PHOTO KB1-24 TAKEN FACING W
· PHOTO KB2-1 TAKEN FACING
· GPS LOCATION ~120' DOWNSTREAM (W) OF SAMPLE LOCATION

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / AB / SD

Date: 6 / 5 / 2001 Weather: OVERCAST 60°F

Location Description: UNNAMED EPHEMERAL, T 37N R 30E SEC 4 NE ¼

Uncorrected GPS Coordinates: N 48° 44' 14.03" W 119° 07' 01.96"

Corrected GPS Coordinates:

GPS File Name: TO60521B Sampling Method: BOWL / SPOON

WESTON Sample No: TR 118 SD Water Depth to Sediment: DRY TRIB

CLP #s: MJOBK3 / JX568 Photograph: roll: KB 1 exposure: 20 / 21

EPA Tracking No.: 01234091

Analyses: METALS / PCB / PEST / TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1430	3"	(10% FINE GRAVEL / 90% COARSE TO FINE SAND / 0% SILT / 0% CLAY), BROWN, NO ODOR, SLIGHTLY MAGNETIC POSSIBLY SLAG, OCCASSIONAL TWIGS, NO OTHER DEBRIS.
2	1430	"	" SAME
3	1430	"	" SAME

Notes: • PHOTO 20 TAKEN FACING W
• PHOTO 21 TAKEN FACING
• ~1/2" OF ORGANIC DEBRIS (PINE NEEDLES) ONTOP OF SAMPLE LOCATION

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/AB/SD

Date: 6/5/2001 Weather: OVERCAST 60°F

Location Description: UNNAMED TRIB TO KETTLE RIVER ALM DRAINING ROAD REAR BO

Uncorrected GPS Coordinates: N 48° 43' 02.59" W 118° 07' 43.77"

Corrected GPS Coordinates:

GPS File Name: T060520A Sampling Method: BOWL / SPOON

WESTON Sample No: TR 119 SD Water Depth to Sediment: DRY TR113

CLP #s: MJ0BK4 Photograph: roll: KB1 exposure: 16/17

EPA Tracking No.: 01234 092

Analyses: METAL

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1320		(5% FINE GRAVEL / 95% MEDIUM SAND / 0% SILT / 0% CLAY), LIGHT BROWN, NO ODOR OR SLAG, SCATTERED ROOTS AND TWIGS, NO OTHER DEBRIS.

Notes: PHOTO 16 TAKEN FACING W

PHOTO 17 TAKEN FACING W

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00

Sampling Personnel: KB/ AB/ SD

Date: 6/5/2007

Weather: OVERCAST 60°F

Location Description: MATSEN CREEK

Uncorrected GPS Coordinates: N48° 44' 18.57" W118° 7' 54.30"

Corrected GPS Coordinates:

GPS File Name: T0605181B

Sampling Method: Bowl/Spoon

WESTON Sample No: TR 120 SD

Water Depth to Sediment: 1"

CLP #s: MJOBK5

Photograph: roll: KB 1 exposure: 14/15

EPA Tracking No.: 1234093

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1145	3"	(0% GRAVEL/ 100% FINE-MEDIUM SAND/ 0% SILT/ 0% CLAY), BROWN, NO ODOR OR SLAG, OCCASIONAL ORGANICS, NO OTHER DEBRIS

Notes: • PHOTO 14 TAKEN FACING SE
• PHOTO 15 TAKEN FACING SE
•

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/AB/JD

Date: 6/5/2001 Weather: SCATTERED CLOUDS 60°F

Location Description: DOYLE CREEK

Uncorrected GPS Coordinates: N 48° 44' 27.53" W118° 0' 56.10"

Corrected GPS Coordinates:

GPS File Name: T060518A Sampling Method: BONC/SPOON

WESTON Sample No: TR 121 SD Water Depth to Sediment: 1/2" - 1"

CLP #s: MJ 08K6 Photograph: roll: KB1 exposure: 12/13

EPA Tracking No.: 01234094

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1100	4"-5"	(15% FINE GRAVEL/ 75% FINE AND COARSE SAND/ 10% SILT/ 0% CLAY), GREYISH BROWN, NO ODOR OR SLAG, NO ORGANICS, NO OTHER DEBRIS.

Notes:
- PHOTO 12 TAKEN FACING SE
- PHOTO 13 TAKEN FACING SW
- GPS LOCATION ~ 30' NORTH OF SAMPLE LOCATION.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/AB/SD

Date: 6/5/2001 Weather: SCATTERED CLOUDS 65°F

Location Description: KETTLE RIVER

Uncorrected GPS Coordinates: N 48° 44' 53.11" W 118° 7' 23.35"

Corrected GPS Coordinates:

GPS File Name: T0605 17A Sampling Method: BOWL / SPOON

WESTON Sample No: TR 122 SD Water Depth to Sediment: ~ 1"

CLP #s: MJ0BK7 / JX569 Photograph: roll: KB1 exposure: 10/11

EPA Tracking No.: 01234095

Analyses: METALS / PEST/PCB / TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	945	2"	(0% GRAVEL / 100% FINE TO MEDIUM SAND / 0% SILT / 0% CLAY), LIGHT BROWN, NO ODOR, FINE GRAINED BLACK MAGNETIC MATERIAL - POSSIBLE SLAG, OCCASIONAL TWIGS, NO OTHER DEBRIS
~~2~~	~~945~~	2"	" SAME
~~3~~	~~945~~	2"	" SAME

Notes: • PHOTO 10 TAKEN FACING E

• PHOTO 11 TAKEN FACING SE

•

~~3 Zn 58.0~~

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, HW

Date: 6-5-01 Weather: rainy, cool (50's)

Location Description: Unnamed Tributary (T 33N, R 36E, Section 1)

Uncorrected GPS Coordinates: N48° 23' 10.94" W118° 11' 57.62"

Corrected GPS Coordinates:

GPS File Name: M0605220 Sampling Method: Spoon

WESTON Sample No: TR-0071-SD Water Depth to Sediment: n/a - dry

CLP #s: MJ03K8 Photograph: roll: SMF 7/8 exposure: 25-26-27

EPA Tracking No.: 01234096

Analyses: Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1545	1"	0% gravel ~50 % sand ~50 % silt ~1 % clay Dary. med. grayish brown. Organics incl. rootlets & grass. Lithic components ~ 10% of sample. Sand is v fine to coarse. No odor, no slag

Notes: Sample pt ~ 10' above MHW. Area is grassy.
photo 25 - creek mouth (looking W)
26 - view from sampling pt (looking SE to lake)
27 - sampling
sample was collected & homogenized on site.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 — Sampling Personnel: SMF, HW

Date: 6-5-01 — Weather: Rainy, cool, light breeze (50's)

Location Description: Unnamed trib, T33N R30E, Section 21

Uncorrected GPS Coordinates: N48° 23' 23.55" W 118° 10' 15.97"

Corrected GPS Coordinates:

GPS File Name: M0605 23A — Sampling Method: Ponar

WESTON Sample No: TR-072-SD — Water Depth to Sediment: N/A - dry

CLP #s: MJOBK9 — Photograph: roll: SMF exposure: ~~25~~, 28, 29

EPA Tracking No.: 01234097 — 8 MB

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1630	1"	0 % gravel 20 % sand 80 % silt % clay dry, light grayish brown. Organics, incl. rootlets + woody twig fragments (1/2" or less), make up ~ 10% of material. Sand is very fine. No odor, no slag

Notes: Used GPS to confirm location on map of trib mouth. Trib is dry, vegetated (photo 28). HW marks sampling loc in photo 28, which was taken from MHW line, roughly 8' below sampling point.

photo 29 sample. Sample collected & homogenized in jar. GPS Reading taken ~ 20' W. of sample pt

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SOF, HW

Date: 6-6-01 Weather: cloudy, breezy, 50s

Location Description: Unnamed tributary, T33N, R37E, SECTION 5

Uncorrected GPS Coordinates: N48° 23' 34.8" W118° 10' 20.01"

Corrected GPS Coordinates:

GPS File Name: M0606116B Sampling Method: SPOON

WESTON Sample No: TR-073-SD Water Depth to Sediment: N/A - dry

CLP #s: MJ0BL0 Photograph: roll: ~~SOF~~ 8 AB exposure: 30-31

EPA Tracking No.: 01234098

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	0945	1"	0 % gravel 10 % sand 80 % silt 10 % clay Dry, med. grayish brown. Organic debris, incl. twig fragments + rootlets, makes up ~ 10% of sample. No odor. no slag. Sand is very fine

Notes: Sample loc (photo 30, looking E) is faint drainage trace splitting a grassy field. Sample pt ~ 10' above beach, on escarpment.

Sample collected + homogenized in sample jar.

GPS file M0606161A is base file opened accidentally photo 31 - sample

Heavy mineral 'placer' deposits noted on beach @ this site (incl slag?)

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF

Date: 6-6-01 Weather: Cloudy, light breeze, 50's

Location Description: Chemeketa Creek

Uncorrected GPS Coordinates: N 48° 25' 06.16" W 118° 10' 50.04"

Corrected GPS Coordinates:

GPS File Name: M060618A Sampling Method: bowl & spoon

WESTON Sample No: TR-077-SD Water Depth to Sediment: 1"

CLP #s: MJ0BL1 / JX571 Photograph: roll: ~~SMF 7~~ 8 exposure: 36 + 37

EPA Tracking No.: 01234099

Analyses: Metals, Pest / PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1100	1-2"	0 % gravel 60 % sand 30 % silt 10 % clay Saturated. Med-DK reddish brown. Some rootlets. Sand is very fine to medium. No odor. no slag observed.

Notes: photo 35 - second boat of fishermen observed on way to Chemeketa Creek from south. photo faces SE.
photo 36 - sample loc, looking E
37 - sample
Sample pt ~10' above MHW
* MS / MSD
Chemeketa Creek flowing @ ~0.5 ft/sec.
* GPS reading collected ~130' downstream of sample pt. @ lake shoreline

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SWF, HW

Date: 6/6/01 Weather: Sunny, warm (60s), breezy

Location Description: Unnamed Tributary, North of Chewaka Creek

Uncorrected GPS Coordinates: N48° 25' 08.74" W 118° 10' 52.10"

Corrected GPS Coordinates:

GPS File Name: M060019A Sampling Method: Spoon

WESTON Sample No: TR-078-SD Water Depth to Sediment: 1"

CLP #s: MJOBL2 Photograph: roll: SWF8 exposure: 1+2+3

EPA Tracking No.: 01234100

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1245	1" deep water 1-1.5" bgs	0% gravel ~10 % sand 90 % silt <1 % clay Saturated. Med grayish brown. Organics incl poss roots + leaf debris and fine organic particles. The organic particles are abundant. No odor, No slag
			sand is fine to very fine. Some larger particles of semi-consolidated silt

Notes: Collected + homogenized sample material in jar.
photo 1 - sample loc.
2 - sample loc. taken from apparent MHW line; sample loc. is behind overgrowth in center of photo, ~2' above backpack shown. ~5' above MHW
GPS location recorded ~6' West of sample loc.
Sample shown in photo 3.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, HW

Date: 6-6-01 Weather: Sunny, Cool, breezy (60's)

Location Description: Unnamed tib, T34N, R37E, S29, NW ¼

Uncorrected GPS Coordinates: N 48° 25' 22.53" W 118° 10' 57.10"

Corrected GPS Coordinates:

GPS File Name: M060619B.inf Sampling Method: Spoon

WESTON Sample No: TR-079-SD Water Depth to Sediment: dry

CLP #s: MJOB6 3 Photograph: roll: 8 exposure: 4, 5

EPA Tracking No.: 01234101

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1300	2-3"	<1 % gravel 30 % sand 65 % silt <5 % clay (minor granules) Dry lt brownish gray. Organics incl. rotted + woody fragments make up ~ 15% of sample.
			Sand is very fine-grained. No odor, no slag

Notes: Sample collected + homogenized in sample jar
photo 4- sample area - narrow creek bed (dry)
5- sample

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 — Sampling Personnel: SMF, HW

Date: 6-6-01 — Weather: m-cloudy, cool (60's), breezy

Location Description: Unnamed trib, T34N, R37E, SECTION 20

Uncorrected GPS Coordinates: N 48° 25' 50.05" W 118° 11' 13.84"

Corrected GPS Coordinates:

GPS File Name: M0606 20A — Sampling Method: Spoon

WESTON Sample No: TR 050 SD — Water Depth to Sediment: N/A - dry

CLP #s: M JOBL4 — Photograph: roll: SMF 8 exposure: 6 & 7

EPA Tracking No.: 01234 SMF 102

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1330	5" bgs	0 % gravel 65 % sand 35 % silt 0 % clay Dry, lt. grayish brown. Organic debris incl. bark fragments, rootlets, twig fragments ~ 1" long comprises 40% or more of the sample as a whole. Sand ranges from v. fine to very coarse.

Notes: Sample was collected + homogenized in jar.
photo 6 - sample location - dry creek trace ~4' above MHW line, facing E
photo 7 - sample
sfc incl layer of pine needles + cones ~2-3" thick. Sample collected to ~3" below the sfc debris

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMT, HW

Date: 6/6/01 Weather: mostly cloudy, cool, breezy (60°)

Location Description: Cuba Canyon Creek

Uncorrected GPS Coordinates: N 48° 28' 44.98" W 118° 12' 28.68"

Corrected GPS Coordinates:

GPS File Name: M06006 22B Sampling Method: bowl + spoon

WESTON Sample No: TR-006-SD Water Depth to Sediment: N/A - dry creek

CLP #s: MJDB15/JX572 Photograph: roll: SMT-8-1 exposure: 12+13

EPA Tracking No.: 01234103

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1600	8"	0 % gravel 100 % sand 0 % silt 0 % clay Highly organic, largely moss + other plant debris, like peat moss in appearance. Dry, med-dark grayish brown. Soil odor. no slag. Sand (fine to very fine) is only geologic observed. Sample material overlies cobbles several inches wide.

Notes: Cleared away ~6" of plant debris (pine needles, cones, bark) prior to collecting sample beneath this layer.
photo 12 sample area
13 sample } facing West.
very low density sample material.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / SD

Date: 6/7/2001 Weather: SCATTERED CLOUDS 70°F

Location Description: UNNAMED, T 32N, R 37E, SEC 15 SW 1/4 WESTERN TRIB

Uncorrected GPS Coordinates: N 48° 36' 48.31" W 118° 8' 01.22"

Corrected GPS Coordinates:

GPS File Name: M0606722A Sampling Method: BOWL / SPOON

WESTON Sample No: TR-101-SD Water Depth to Sediment: DRY TR-13

CLP #s: MJOBL6 Photograph: roll: KB3 exposure: 12/13

EPA Tracking No.: 01234104

Analyses: TAL METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1500	4"	(0% GRAVEL / 100% COARSE SAND / 0% SILT / 0% CLAY). BROWN, NO ODOR OR SLAG, SCATTERED ROOTS, NO OTHER DEBRIS, ~3" DOWN A DARK BROWN
			SOIL LAYER WAS ENCOUNTERED. (~~60%~~ 70% FINE SAND / ~~40%~~ 30% SILT). KB

Notes: PHOTO 12 TAKEN FACING NE
PHOTO 13 TAKEN FACING NE

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/ ASB/ SD

Date: 6/6/2001 Weather: SCATTERED CLOUDS 60°F

Location Description: Hawson Creek

Uncorrected GPS Coordinates: N49° 33' 30.71" W118° 07' 25.39"

Corrected GPS Coordinates:

GPS File Name: T060622A Sampling Method: Bowl/ spoon

WESTON Sample No: TR 104 SD Water Depth to Sediment: Dry TRG

CLP #s: MJ0BL8/ JX573 Photograph: roll: KB2 exposure: 13/14

EPA Tracking No.: 01234106 SMF

Analyses: METAL, TOC, PEST/ PCB

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1500	3-4"	0% GRAVEL/ 90% FINE SAND/ 10% SILT/ 0% CLAY, LIGHT BROWN, NO ODOR OR SLAG, OCCASIONAL ROOTS AND WOODY DEBRIS
~~2~~	1500	"	" SMF
~~3~~	1500	"	" SMF

Notes: • PHOTO 13 TAKEN FACING S
• PHOTO 14 TAKEN FACING N

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/ AB/ SD

Date: 6/6/2001 Weather: OVERCAST 60°F

Location Description: MARTIN SPRING CREEK EPHEMERAL

Uncorrected GPS Coordinates: N 48° 37' 53.89" W118° 04' 41.94"

Corrected GPS Coordinates:

GPS File Name: TC060700A Sampling Method: BOWL / SPOON

WESTON Sample No: TR 109 SD Water Depth to Sediment: DRY TRIB

CLP #s: MJ0BL9 / JX574 Photograph: roll: KB 2 exposure: 17/18

EPA Tracking No.: 01234107

Analyses: METALS, TOC, PEST / PCB

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1645	1-1 1/2"	(0% GRAVEL / 80% FINE SAND / 20% SILT / 0% ~~SILT~~ CLAY) LIGHT BROWN, NO ODOR OR SLAG, SCATTERED ROOTS AND WOOD DEBRIS.
~~2~~	1645	"	" SAME
~~3~~	1645	"	" SAME

Notes: PHOTO 17 TAKEN FACING E
PHOTO 18 TAKEN FACING E
GPS LOCATION ~30' W AND ~10' S OF SAMPLE LOCATION

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/AB/SD

Date: 6/6/2001 Weather: OVERCAST 65°F

Location Description: PINKSTON CREEK

Uncorrected GPS Coordinates: N 48° 39' 07.92" W 118° 04' 57.63"

Corrected GPS Coordinates:

GPS File Name: T060622B Sampling Method: BOWL / SPOON

WESTON Sample No: TR110 SD Water Depth to Sediment: 4"

CLP #s: MJ0BM0 / JX791 Photograph: roll: KB2 exposure: 15/16

EPA Tracking No.: 01234108

Analyses: METAL, TOC, PEST/PCB

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1600	2-3"	0% GRAVEL / 80% COARSE TO FINE SAND / 20% SILT / 0% CLAY), GREYISH BROWN / NO ODOR OR SLAG, SCATTERED WOODY DEBRIS.
2	1600	"	" SAME
3	1600	"	" SAME

Notes: PHOTO 15 TAKEN FACING E

PHOTO 16 TAKEN FACING N.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/AB/SD

Date: 6/6/2001 Weather: OVERCAST ~60°F

Location Description: NANCY CREEK

Uncorrected GPS Coordinates: N48° 39' 19.63" W118° 06' 50.34"

Corrected GPS Coordinates:

GPS File Name: T0606211A Sampling Method: Bowl / SPOON

WESTON Sample No: TR ~~104~~ SD KB Water Depth to Sediment: 2"

CLP #s: MJOBM1 Photograph: roll: KB 2 exposure: 11/12

EPA Tracking No.: 01234109

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1400	4"	(0% GRAVEL / 100% MEDIUM TO FINE SAND / 0% SILT / 0% CLAY), GREYISH BROWN, NO ODOR OR SLAG, OCCASIONAL WOODY TWIGS, NO OTHER DEBRIS.

Notes:
- PHOTO 11 TAKEN FACING W
- PHOTO 12 TAKEN FACING SW
- GPS LOCATION ~5' W OF SAMPLE LOCATION.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/AB/SD

Date: 6/6/2001 Weather: OVERCAST 60°F

Location Description: UNNAMED EPHEMERAL STREAM (DOWNSTREAM OF MARCUS ISLAND) T 37N, R 37E, SEC 22

Uncorrected GPS Coordinates: N 48° 41' 25.39" W118° 05' 21.65"

Corrected GPS Coordinates:

GPS File Name: TO 60619A Sampling Method: BAKER / SPOON

WESTON Sample No: TR 123 SD Water Depth to Sediment: DRY TRIB

CLP #s: MJ0BM2 Photograph: roll: KB2 exposure: 8/9/10

EPA Tracking No.: 01234110

Analyses: METAL

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1245	3"	(5% FINE GRAVEL / 90% COARSE TO FINE SAND / 5% SILT / 0% CLAY). DARK BROWN, NO ODOR OR SLAG, OCCASIONAL WOODY TWIG MATERIAL, NO OTHER DEBRIS, VEGETATION COVERING SAMPLE AREA.

Notes: · PHOTO 8 TAKEN FACING SD NUS PHOTO (ACCIDENTAL)
· PHOTO 9 TAKEN FACING NE
· GPS LOCATION ~10' SOUTH OF SAMPLE LOCATION
· PHOTO 10 TAKEN FACING NE

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/AB/SD

Date: 6/6/2007 Weather: ~0% SCATTERED CLOUDS WARM

Location Description: UNNAMED ACROSS FROM MARCUS ISLAND BEGINS IN MUDDLE O

Uncorrected GPS Coordinates: N 48° 41' 11.42" W118° 04' 34.53" T37N R37E SEC 23

Corrected GPS Coordinates:

GPS File Name: T060618A Sampling Method: BOWL / SPOON

WESTON Sample No: TR 124 SD Water Depth to Sediment: 1"

CLP #s: MJOBM3 Photograph: roll: KB 2 exposure: 6/7

EPA Tracking No.: 01234111

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay) Color, Odor, Slag, Organics, Debris, Etc.]
1	1130	6-7"	0% GRAVEL / ~~100%~~ 90% MEDIUM-FINE SAND / 0% SILT / 10% CLAY). DARK BROWN, NO ODOR OR SLAG. FREQUENT WOOD AND CHARCOAL FRAGMENTS, NO OTHER DEBRIS

Notes:
- PHOTO 6 TAKEN FACING SW
- PHOTO 7 TAKEN FACING N
- TRIB RUNS THROUGH COW FREE LARGE AREA – COWS FREQUENT ~~SAREA~~ TRIB.
- MORE SILTY LAYER ~6" DOWN
- GPS LOCATION ~ 50' NORTH OF SAMPLE LOCATION.

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/SD

Date: 6/7/2001 Weather: SCATTERED CLOUDS 65°F

Location Description: UNNAMED, T 35N, R 37E, SEC. 31 DRAINING STACHLY MT

Uncorrected GPS Coordinates: N49° 29' 04.06" W118° 12' 34.59"

Corrected GPS Coordinates:

GPS File Name: M0607160A Sampling Method: BOWL/SPOON

WESTON Sample No: TR 087 SD Water Depth to Sediment: DRY TRIB

CLP #s: MJ0B14 Photograph: roll: KB2 exposure: 19/20

EPA Tracking No.: 01234112

Analyses: METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	0915	~~2"~~ 2"	(5% FINE GRAVEL/80% MEDIUM TO FINE SAND/15% SILT/~~AND~~ 0% CLAY), DARK BROWN, NO ODOR OR SLAG, OCC ASSORTED WOODY DEBRIS.

Notes: PHOTO 19 TAKEN FACING E
PHOTO 20 TAKEN FACING N

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/SD

Date: 6/7/2001 Weather: SCATTERED CLOUDS ~65°F

Location Description: UNNAMED, T 31N, R 37E, SEC. 32

Uncorrected GPS Coordinates: N 48° 29' 09.42" W 118° 10' 10.57"

Corrected GPS Coordinates:

GPS File Name: M060717A Sampling Method: BOWL / SPOON

WESTON Sample No: TR 089 SD Water Depth to Sediment: DRY TRIB

CLP #s: MJOB M5 Photograph: roll: KB2 exposure: 21/22

EPA Tracking No.: 01234113

Analyses: TAL METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1000	3"	(0% GRAVEL / 100% MEDIUM SAND / 0% SILT / 0% CLAY), LIGHT BROWN, NO ODOR OR SLAG, NO ORGANICS, NO OTHER DEBRIS

Notes:
- PHOTO 21 TAKEN FACING S
- PHOTO 22 TAKEN FACING W
- GPS LOCATION ~ 30' W OF SAMPLE LOCATION

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/ SD

Date: 6/7/2001 Weather: SCATTERED CLOUDS ~65°F

Location Description: MARTIN CREEK

Uncorrected GPS Coordinates: N 48° 31' 15.82" W118° 11' 03.60"

Corrected GPS Coordinates:

GPS File Name: M060718A Sampling Method: BIRL/ SPOON

WESTON Sample No: TR 093 SD Water Depth to Sediment: 1-3"

CLP #s: MJOBM6 Photograph: roll: KB 2 exposure: 23/24
KB 3 1

EPA Tracking No.: 01234114

Analyses: TAL METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1030	1-2"	(5% FINE GRAVEL / 95% MEDIUM TO FINE SAND / 0% SILT / 0% CLAY), LIGHT BROWN, NO ODOR OR SLAG, NO ORGANICS OR OTHER DEBRIS.

Notes:
- PHOTO 23 TAKEN FACING E
- PHOTO 24 TAKEN FACING NW
- PHOTO KB 3 1 TAKEN FACING NW
- GPS LOCATION ~ 200' E OF SAMPLE LOCATION

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/SD

Date: 6/7/2001 Weather: SCATTERED CLOUDS 74°F

Location Description: ROPER CREEK

Uncorrected GPS Coordinates: N48° 32' 26.36" W118° 10' 14.49"

Corrected GPS Coordinates:

GPS File Name: M0607101B Sampling Method: Bowl / Spoon

WESTON Sample No: TR-095-SD Water Depth to Sediment: 2"

CLP #s: MJ0BM7 Photograph: roll: KB3 exposure: 2/3

EPA Tracking No.: 01234115

Analyses: TAL METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1130	1-2"	(0% GRAVEL / 60% MEDIUM SAND / 40% SILT / 0% CLAY), BROWN, NO ODOR OR SLAG, NO ORGANICS, NO OTHER DEBRIS

Notes: PHOTO 2 TAKEN FACING S
PHOTO 3 TAKEN FACING S

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / SD

Date: 6/7/2001 Weather: SCATTERED CLOUDS 70°F

Location Description: RICKEY CREEK

Uncorrected GPS Coordinates: N 48° 32' 23.42" W 118° 08' 09.62"

Corrected GPS Coordinates:

GPS File Name: M0600720A Sampling Method: Bowl / SPOON

WESTON Sample No: TR-096-SD Water Depth to Sediment: 1"

CLP #s: MJ0BM8 Photograph: roll: KB3 exposure: 6/7

EPA Tracking No.: 01234116

Analyses: TAL METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1300	1"	(0% GRAVEL / 50% FINE SAND / 50% SILT / 0% CLAY), DARK BROWN, NO ODOR OR SLAG, NO ORGANICS OR OTHER DEBRIS

Notes: PHOTO 6 TAKEN FACING E
PHOTO 7 TAKEN FACING SW

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / SD

Date: 6/7/2001 Weather: SCATTERED CLOUDS, 70°F

Location Description: UNNAMED, T 36N, R 37E, SEC 22 SE 1/4

Uncorrected GPS Coordinates: N48° 36' 02.37" W118° 08' 10.85"

Corrected GPS Coordinates:

GPS File Name: M0608 00A Sampling Method: BOWL / SPOON

WESTON Sample No: TR-099-SD Water Depth to Sediment: DRY TRIB

CLP #s: MJ0BM9 Photograph: roll: KB 3 exposure: 16/17

EPA Tracking No.: 0123417

Analyses: TAL METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1645	2"	(0% GRAVEL / 100% COARSE TO FINE SAND / 0% SILT / 0% CLAY), BROWN, NO ODOR OR SLAG, SCATTERED ROOTS, NO OTHER DEBRIS

Notes: PHOTO 16 TAKEN FACING SE
PHOTO 17 TAKEN FACING W
GPS LOCATION ~65' E OF SAMPLE LOCATION

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / SD

Date: 6/7/2007 Weather: SUNNY 70°F

Location Description: UNNAMED, T36N, R37E, SEC 22 NE 1/4

Uncorrected GPS Coordinates: N 48° 36' 20.83" W118° 8' 4.27"

Corrected GPS Coordinates:

GPS File Name: M0607 22B Sampling Method: BOWL / SPOON

WESTON Sample No: TR-100-SD Water Depth to Sediment: DRY TRIB

CLP #s: MJOBN0 Photograph: roll: KB3 exposure: 14/15

EPA Tracking No.: 01234118

Analyses: TAL METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1600	3"	(0% GRAVEL / 70% MEDIUM TO FINE SAND / 30% SILT / 0% CLAY), DARK BROWN, NO ODOR OR SLAG, OCCASSIONAL ROOTS / PINE NEEDLES, NO OTHER DEBRIS

Notes: PHOTO 14 TAKEN FACING W
PHOTO 15 TAKEN FACING S

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / SD

Date: 6/7/2001 Weather: SUNNY ~70°F

Location Description: UNNAMED, T36N, R37E, SEC 15 SE 1/4 EASTERN TRIB

Uncorrected GPS Coordinates: N48° 36' 48.11" W118° 7' 58.48"

Corrected GPS Coordinates:

GPS File Name: M0607 21C Sampling Method: Brass / Spoon

WESTON Sample No: TR 102 SD Water Depth to Sediment: DRY TRIB

CLP #s: MJ0BN1 Photograph: roll: KB3 exposure: 10/11

EPA Tracking No.: 01234119

Analyses: TAL METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1430	2"	(0% / 85% MEDIUM TO FINE SAND / 15% SILT / 0% CLAY), BROWN, NO ODOR OR SLAG, NO ORGANICS OR OTHER DEBRIS

Notes: PHOTO 10 TAKEN FACING SE
PHOTO 11 TAKEN FACING E
INCREASED PDOP TO 7.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / SD

Date: 6/7/2001 Weather: CLEAR 70°F

Location Description: UNNAMED, T30N, R37E, SEC 14 SW 1/4

Uncorrected GPS Coordinates: N 48° 37' 09.18" W 118° 7' 44.16"

Corrected GPS Coordinates: ~~M0600721B~~

GPS File Name: ~~M0600720B~~ Sampling Method: Bowl / Spoon

WESTON Sample No: TR103-SD Water Depth to Sediment: DRY THIB

CLP #s: MJOBN2 Photograph: roll: KB3 exposure: 8/9

EPA Tracking No.: 01234120

Analyses: TAL METAL

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1400	2"	(0% GRAVEL / 100% COARSE TO FINE SAND / 0% SILT / 0% CLAY), LIGHT BROWN, NO ODOR OR SLAG, NO ORGANICS OR OTHER DEBRIS.

Notes: · PHOTO 8 TAKEN FACING N
· PHOTO 9 TAKEN FACING E
· GPS FILE M0600720B NOT USED - NO MASK DATA POINTS. HAD TO INCREASE PDOP TO 10
· GPS LOCATION ~ 200' DOWNSTREAM ~~AND~~
· GPS FILE M0600721A NOT USED.

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: [illegible], KB

Date: 6-9-01 Weather: cloudy, breezy, warm

Location Description: Tributary #112, unnamed [illegible], T37N, R37E, S33

Uncorrected GPS Coordinates: N 48° 40' 07.67" W 118° 61' 55.99"

Corrected GPS Coordinates:

GPS File Name: M06093A Sampling Method: Scoop

WESTON Sample No: TR-112-01 Water Depth to Sediment: n/a dry

CLP #s: MJC8J1 Photograph: roll: K64 exposure: 10+11

EPA Tracking No.: 01234121

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1645	5"	10 % gravel 70 % sand 10 % silt 10 % clay Mostl. Dark brownish gray. Slight sulfur odor. Gravel is angular pebble. Organics include moderate amt of shell. Sand ranges from v. fine to coarse, predominately fine. No clay

Notes: Sample collected c. homogenized (mixed) prior to jar

7/10/01 10- sample, facing S

11- sample bar, facing S

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB

Date: 6/8/2001 Weather: SUNNY 70°F

Location Description: DEEP CREEK

Uncorrected GPS Coordinates: N48° 55' 56.16" W117°45' 13.38"

Corrected GPS Coordinates:

GPS File Name: M060817A 047 Sampling Method: Probe / SPOON

WESTON Sample No: TR-047-SD Water Depth to Sediment: 5"

CLP #s: JX802 / MJOBK2 Photograph: roll: KB#3 exposure: 18/19

EPA Tracking No.: 01234122

Analyses: TAL METAL / PEST / PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1000	4"	(5% FINE GRAVEL / 15% ~~COARSE~~ MEDIUM SAND, ~~40%~~ 80% FINE SAND / 0% SILT / 0% CLAY), LIGHT BROWN, NO ODOR OR SLAG, OCCASIONAL ROOTS, NO OTHER DEBRIS.
2	1000	4"	" SMF
3	1000	4"	" SMF

Notes: PHOTO 18 TAKEN FACING EAST
PHOTO 19 TAKEN FACING SW

6-9-01 SMF Sample renamed TR-047-SD

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB

Date: 6/8/2001 Weather: SCATTERED CLOUDS W/ RAIN 65°F

Location Description: UNNAMED EPHEMERAL (MINE TRIB #1) T37N, R38E SEC 22 JRL 10/31/01

Uncorrected GPS Coordinates: N 48° 40' 26.80" W 118° 01' 57.71"

Corrected GPS Coordinates:

GPS File Name: M060900A 126 Sampling Method: BIXER / SPOON

WESTON Sample No: TR-037SD Water Depth to Sediment: DRY TRIB

CLP #s: JX803 / MJ08K3 Photograph: roll: KB#3 exposure: 24/25

EPA Tracking No.: 01234123 KB#4 1

Analyses: TAL METALS, PEST / PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1615	4"	(2% FINE GRAVEL / 10% COARSE SAND, 20% MEDIUM SAND, 68% FINE SAND / 0% SILT / 0% CLAY), ~~TAN~~ GREY, NO ODOR
2	1615	"	OR SLAG, FREQUENT PINE NEEDLES, NO OTHER DEBRIS. "
3	1615	"	"

Notes: PHOTO 24 TAKEN FACING NE
PHOTO 25 TAKEN FACING NE - no photo produced
PHOTO KB#4, TAKEN FACING NE
· INCREASED PDOP TO 12 FOR GPS READING
· GPS LOCATION ~ 20' NE NW

6-9-01 SMF - SAMPLE RENAMED TR-126-SD
10-25-01 T37N, R38E, Section 22, SW 1/4 SMF

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, HW

Date: 06-8-06 SMF 01 Weather: sunny, warm (~60's)

Location Description: ~~Shoreline~~ SMF Marcus Flats N of Livingston Creek

Uncorrected GPS Coordinates: N48° 39' 9.31" W118° 5' 6.86"

Corrected GPS Coordinates:

GPS File Name: Q060816A Sampling Method: hand auger, bowl-spoon

WESTON Sample No: CR-062-SD Water Depth to Sediment: 2 feet

CLP #s: JX804/MJOBK4 Photograph: roll: SMF 7 SMF exposure: 14, 15

EPA Tracking No.: 012341214

Analyses: Metals, Pest/PCB, TOC

916122 → GPS Serial #

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	0945	~18"-24"	10 SMF % gravel 48 SMF % sand 45 % silt ~10 % clay gravel up to 1" long; sand fine to very fine. Saturated grayish brown. No odor, no observed slag. Minor organics incl. rootlets

Notes: photo 14 - sample loc. ~30' offshore from current waterline (~2' depth of water)

photo 15 - sample

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, HW

Date: 10-8-01 Weather: Sunny

Location Description: Unnamed ephemeral T37N R38E, Sec 22 (NW¼)

Uncorrected GPS Coordinates: N 48° 41' 07.412" W 118° 0' 54.607"

Corrected GPS Coordinates:

GPS File Name: QA0801A Sampling Method: bowl - spoon

WESTON Sample No: TR-038-SD Water Depth to Sediment: N/A - Dry

CLP #s: JX805 / MJOBK5 Photograph: roll: SMF 7 exposure: 20-21

EPA Tracking No.: 01234125

Analyses: Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	11:30	1"	<1 % gravel 60 % sand 40 % silt <1 % clay ~~Clay~~ soil odor. Grayish dark brown. Organics, including (~~coal~~ clump) rootlets, cones, twig fragments ~1" long 5mm thick. No slag. Sand is very fine to fine

Notes: photo 20 - sample

21 - sample area; sample loc. in foreground, facing E

~~used Ecoark spoon~~ SMF

Sample loc ≥ 3' above MHW

Sample = TR-038-SD

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, HN

Date: 6-8-01 Weather: sunny, hot (upper 70s)

Location Description: E. of Evans Campground Peninsula (Spring)

Uncorrected GPS Coordinates: N 48° 41' 46.23" W 118° 00' 53.56"

Corrected GPS Coordinates:

GPS File Name: Q0008195 Sampling Method: ⅋ spoon

WESTON Sample No: TR-129-SD Water Depth to Sediment: <1"

CLP #s: MJ0BK6 Photograph: roll: SMF7 exposure: 22-23

EPA Tracking No.: 01234126

Analyses: Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1245	1.5"	0% gravel 40% sand 55-60% silt <5% clay Saturated. grayish brown sfc, dk gray beneath H_2S odor. Rootlets included in sample (some) & small worm. Sand is very fine.

Notes: sample material collected & homogenized in jar
photo 22 - sample area, facing east
23 - sample
~~rock decontaminated~~ spoon (non-ded.) SMF

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, HW

Date: 6-8-01 Weather: cloudy, warm (~70°)

Location Description: Unnamed ephemeral @ T37N, R38E, S22 (SW¼)

Uncorrected GPS Coordinates: N48° 41' 27.64 W 118° 0' 53.05"

Corrected GPS Coordinates:

GPS File Name: Q0160818A Sampling Method: bowl-spoon

WESTON Sample No: TR-127-SD SMF TR-037-SD Water Depth to Sediment: N/A - Dry

CLP #s: JX807/MJ0B37 SMF Photograph: roll: SMF-9 exposure: 16-18-19

EPA Tracking No.: 01234127

Analyses: Metals, PCB/Pest, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1120	3.5"	5 % gravel 75 % sand 20 % silt <1 % clay Dry, grayish brown w/ abundant light cream-colored coarse sand and granule particles. Soil odor, no observed slag. Organics, including rootlets, & small woody pieces up to ½"
			thin stick fragments make up ~ 20% of sample material. Gravel as granules. Sand range from

Notes: photo 16 - sad foot showing skin lesions & discoloration in mouth of creek bed.
photo 18 + photo 17 - Sample area - photo is view West to lake from sample loc; ~75-100 m upstream
photo 19 - sample
sample ≥ 4' above HW
~~used decon'd spoon~~ SMF
One small snail shell observed in sample

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 — Sampling Personnel: KB, SMT

Date: 6-9-01 — Weather: Sunny, breezy, warm (70s)

Location Description: Tributary #90 (T38N R37E S 33 SW/4-Drains Nethker, Lake [illegible])

Uncorrected GPS Coordinates: N 48° 29' 23.65" W 118° 09' 53.83"

Corrected GPS Coordinates:

GPS File Name: M0609 22A — Sampling Method: scoop

WESTON Sample No: TR-128-SD — Water Depth to Sediment: N/A-DRY

CLP #s: MJOBK8 — Photograph: roll: KB 4 exposure: 6 of 7

EPA Tracking No.: 01234128

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1500	4"	<1 % gravel 60 % sand ~35 % silt <5 % clay. Moist. Dark grayish brown. No odor. Gravel as granules. Minor amts of plant detritus (<5% of sample) Sand is very fine. No slag

Notes: Sample collected & thoroughly homogenized in jar.
photos 6 - sample loc. facing E
7 - sample, facing E

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 — Sampling Personnel: [illegible], KB

Date: 6-6-01 — Weather: sunny, breezy, warm (70's)

Location Description: TRIBUTARY # 611 (T36N R39E S33 NW¼)

Uncorrected GPS Coordinates: N 48° 29' 31.15" W 118° 9' 44.34"

Corrected GPS Coordinates:

GPS File Name: M0609 22B — Sampling Method: bowl & spoon

WESTON Sample No: TR-129-SD — Water Depth to Sediment: N/A - Dry

CLP #s: IX 793 / MJ0BK9 — Photograph: roll: KB4 exposure: 8-9

EPA Tracking No.: 01234129

Analyses: TAL Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1530	6"	<0.5% gravel 5 ~~15~~ % sand 65 % silt 30 % clay Dry. Grayish brown. Small angular. Organics, incl. rootlets, make up ~10-15% of sample. Soil odor. No slag. Clods of silt included. Sand is very fine.

Notes: photo 8 - from E sample
photo 9 - from E sample location area
Sample loc. is steep bluff area, mossy

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, KB

Date: 6-9-01 Weather: Cloudy, warm (70's)

Location Description: ~~Distributary~~ Adjacent to Tributary 100; Unmapped tributary SMF T35N, R37E, Sec 33 KB 10/3/01

Uncorrected GPS Coordinates: N 48° 34' 15.06" W 119° 08' 09.43"

Corrected GPS Coordinates:

GPS File Name: Moulinaux Sampling Method: ~~trowel~~ spoon

WESTON Sample No: TR-125-SD Water Depth to Sediment: 1"

CLP #s: MJ0BJ4 Photograph: roll: KB4 exposure: 11-12

EPA Tracking No.: 012344 SMF/36

Analyses: TAL Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1730	3"	<1 % gravel 70 % sand 20 % silt 10 % clay Wet, dark gray. No odor. Sand range in size from very coarse to very fine, predom. very fine to med.

Notes: Sample collected + homogenized in jar.
photo 11 - sample, facing SW
12 - area, facing E, taken from sampling point (downstream)

6-10-01 - changed tracking # to -136 SMF

10-25-01 SMF Adjacent to TS051

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, HW

Date: 6-8-01 Weather: cloudy, 70s, breezy, rain

Location Description: Hudson Mills Creek

Uncorrected GPS Coordinates: N 48° 44' 12.64" W 117° 54' 16.6"

Corrected GPS Coordinates:

GPS File Name: Q060823A Sampling Method: bowl + spoon

WESTON Sample No: TC-040 SMF-SD Water Depth to Sediment: 3"

CLP #s: JX745 / MJ0BJ5 Photograph: roll: ~~SMF-8~~ 10 exposure: 4+5

EPA Tracking No.: 01234/115 SMF 37

Analyses: TAL Metals, Pest/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1045	3"	<5 % gravel 85 % sand 10 % silt <1 % clay Saturated. Dark gray/black brown. Organics including rootlets, leaf debris, fine organic particles, insect 'shells' making ≤20% of sample. Gravel as granules. Sand ranges from very coarse (primarily), to very fine. Coarse sand + granules are angular.

Notes: photo 4 - sample area
photo 5 - sample
Sample location - afc layer of plant debris (~1" thick organic layer total) leaves + twigs, and an organic "fluff" layer over coarse sand.

6-10 SMF Tracking # changed to -115

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 | Sampling Personnel: SMF, HW

Date: 6-8-01 | Weather: Sunny, 70s

Location Description: Flat Creek

Uncorrected GPS Coordinates: N 48° 49' 32.36" W 118° 58' 40.28"

Corrected GPS Coordinates:

GPS File Name: Q0608221 | Sampling Method: Bowl + spoon

WESTON Sample No: TR-~~SD~~ SD | Water Depth to Sediment: 1"

CLP #s: JX796/MJ0BJ6 | Photograph: roll: ~~SMF~~ exposure: ~~24-25~~

EPA Tracking No.: C12344~~65~~F 138 | SMF9-24 T SMF10-1 10/31/01

Analyses: Metals, Post/Pos, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1430	1"	0 % gravel 60 % sand ~30 % silt < 10% clay Saturated. Med. brown to dk grayish brown. Organics incl. rootlets, woody fragments <1% of sample, though fine organics are abundant. Sand ranges from
			very fine to very coarse, primarily fine. No odor no slag

Notes: ~~[illegible]~~

Photo ~~SMF #7 - #7~~ SMF9-24 - sample loc (#25)

SMF 10-1

Photo ~~SMF-5-#7~~ - sample

Sample location ≥ 5' above lake (Mike estimate)

6-10 Sample time recorded on labels as 1500 ~~SMF~~

tracking # changed to -138

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB

Date: 6/8/2007 Weather: OVERCAST 65°F

Location Description: RATTLESNAKE CREEK

Uncorrected GPS Coordinates: N48° 51' 28.60" W117° 54' 04.31"

Corrected GPS Coordinates:

GPS File Name: M0608 18A042 Sampling Method: BOWL / SPOON

WESTON Sample No: TR-042-SD Water Depth to Sediment: 4"

CLP #s: MJOBJ7 / JX797 Photograph: roll: KB#3 exposure: 20/21

EPA Tracking No.: 0123447 SMF 139

Analyses: TAL METALS / PEST / PCB / TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1145	5"	(5% FINE GRAVEL / 20% COARSE SAND, 25% MEDIUM SAND, 40% FINE SAND / 10% SILT / 0% CLAY), BROWN, NO ODOR OR SLAG, OCCASIONAL ROOTS, NO OTHER DEBRIS.
2	1145	"	
3	1145	"	

Notes: PHOTO 20 TAKEN FACING NE

PHOTO 21 TAKEN FACING NE

6-9-07 SMF - sample renamed TR-042-SD

6-10-07 SMF - tracking # changed to -139

Sampler's Signature: KB

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB

Date: 6/8/2007 Weather: SCATTERED CLOUDS 70°F

Location Description: ONION CREEK

Uncorrected GPS Coordinates: N48° 52' 23.49" W117° 50' 46.41"

Corrected GPS Coordinates:

GPS File Name: M0608 19A Sampling Method: Bowl / SPOON

WESTON Sample No: TR-043-SD Water Depth to Sediment: 1"

CLP #s: MJ0BJ8 / JX798 Photograph: roll: KB exposure: 22/23

EPA Tracking No.: 0123411 8 SN 140

Analyses: TAL METAL, DEST/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1300	4"	(0% GRAVEL / 2% COARSE SAND, 15% MEDIUM SAND / 80% FINE SAND / 3% SILT / 0% CLAY), DARK BROWN, NO ODOR OR SLAG, OCASSIONAL TWIGS AND ROOTS, NO OTHER DEBRIS.
SNF ~~2~~	~~1300~~	~~4"~~	"
SNF ~~3~~	~~1500~~	~~4"~~	"

Notes: PHOTO 22 TAKEN FACING E
PHOTO 23 TAKEN FACING E

6-9 Sample renamed TR-043-SD SNF
6-10 Tracking number changed to -140 SNF

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF / EB

Date: 6/4/2001 Weather: OVERCAST 65°F

Location Description: SQUAW CREEK

Uncorrected GPS Coordinates: N 48° 53' 43.72" W 117° 49' 37.22"

Corrected GPS Coordinates:

GPS File Name: M0604917A, 044 Sampling Method: BOOM / SPOON

WESTON Sample No: TR-~~040~~-SD Water Depth to Sediment: 2"

CLP #s: MJ0B59 / JX799 Photograph: roll: KB4 exposure: 4/5

EPA Tracking No.: ~~01234119~~ 01234141

Analyses: METALS, PCB/PESTS, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1030	1-4"	(3% FINE GRAVEL / 10% COARSE SAND, 50% MEDIUM SAND, 27% FINE SAND / 10% SILT / 0% CLAY), BROWN, NO ODOR OR SLAG, 1% LEAF DEBRIS, MOSS,
~~2~~ SW	~~1030~~	"	THIN TWIG FRAGMENTS, NO OTHER DEBRIS "
~~3~~ SW	~~1030~~	"	"

Notes: PHOTO 4 TAKEN FACING NW
PHOTO 5 TAKEN FACING SE.
• CHANGED EPA TRACKING # FROM 01234119 TO 01234141

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SF / KB

Date: 10/9/2001 Weather: OVERCAST ~65°F

Location Description: BEAR CREEK

Uncorrected GPS Coordinates: N 48°54' 31.00" W 117°48' 41.45"

Corrected GPS Coordinates:

GPS File Name: M0609 16 A / 045 KB Sampling Method: BOWL / SPOON

WESTON Sample No: TR-~~047~~-SD Water Depth to Sediment: DRY TRIB

CLP #s: MJOBK0 / JX 800 Photograph: roll: KB4 exposure: 2/3

EPA Tracking No.: ~~01234120~~ 01234142 KB

Analyses: METALS, PEST/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	0930	2"	1% FINE GRAVEL / 70% FINE SAND / ~~10%~~ 25% SILT / ~~10%~~ 5%, DARK BROWN. ~~SO~~ NO ODOR OR SLAG, SCATTERED ROOTS. SMALL PLANTS 1% OF SAMPLE, NO OTHER DEBRIS.
SF 2	0930	"	"
SF 3	0930	"	"

Notes: · PHOTO 2 TAKEN FACING NW
· PHOTO 3 TAKEN FACING NW
· MS / MSD
· CHANGED EPA TRACKING # FROM 01234120 TO 01234142 KB

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: SMF, HW

Date: 6-8-01 Weather: cloudy, 70s

Location Description: Ephemeral trib @ mouth of Hart Creek

Uncorrected GPS Coordinates: N48° 49' 20.34" W117° 58' 41.17"

Corrected GPS Coordinates:

* GPS File Name: Q0608 22B Sampling Method: Spoon

WESTON Sample No: TR-~~23G~~ 127 SMF SD Water Depth to Sediment: N/A - dry

CLP #s: MJ0B52 Photograph: roll: SMF exposure: 2-3

EPA Tracking No.: 01234 ~~125~~ SMF 143

Analyses: Metals

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1545	6"	0 % gravel 70 % sand ~30 % silt <1 % clay Moist soil. Med brown. No odor, no slag Organic incl. rootlets + humus material (fine) make up ~50 % of sample

Notes: Sample collected + thoroughly homogenized in single jar.

photo 2 - sample

3 - sample area

Trib is dry, channel indistinct, many branches. We chose a likely low trace of a pow channel

* position collected ~ 30' SMF North of sample location.

Sampler's Signature:

6-10- Tracking # change to -143

[illegible] TR-127-SD 6-8-01 SMF

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / RW

Date: 6/25/2001 Weather:

Location Description: UNNAMED S20 T38N R40E SW 1/4

Uncorrected GPS Coordinates: N 48° 46' 46.12" W 117° 47' 37.25"

Corrected GPS Coordinates:

GPS File Name: R0625 16A Sampling Method: Bowl / SPOON

WESTON Sample No: BK-130-SD Water Depth to Sediment: 1 1/2" - 2"

CLP #s: JX810/MJOBN3 Photograph: roll: ~~KB#4~~ exposure: 6/7

EPA Tracking No.: 01264050 ~~SMF #10 13~~ KB5 - 6/7 10/31/01

Analyses: TAL METALS / PEST/PCB / TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	0945	3"	3% FINE GRAVEL / 5% COARSE SAND, 57% MEDIUM SAND, 25% FINE SAND / 10% SILT / 0% CLAY) DARK BROWN, NO ODOR, SLAG, ORGANICS, OR OTHER DEBRIS.

Notes: PHOTO 6 TAKEN FACING NW

PHOTO 7 TAKEN FACING E

Unnamed tributary to Onion Creek SMF 10-25-01 Van Stone Mine

~~Tributary to Tom Bush Creek SMF 10-25-01 SMF~~

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: EB / RW

Date: 6/25/07 Weather: OVERCAST 60F

Location Description: UNNAMED S34 T38N R40E SW 1/4

Uncorrected GPS Coordinates: N48° 45' 01.716" W117° 45' 13.89"

Corrected GPS Coordinates:

GPS File Name: R0062521A Sampling Method: Bucket / SPOON

WESTON Sample No: BK.131.SD Water Depth to Sediment: 2"

CLP #s: JX911 / MJ0BN4 Photograph: roll: ~~EB#4~~ exposure: 14/15

EPA Tracking No.: 01264051 ~~SAME #3 EB~~ KB5 14/15 W/31/01

Analyses: TAL METALS / PEST/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1315	3"	(10% FINE GRAVEL / 30% COARSE SAND, ~~50%~~ 45% MEDIUM SAND, 10% FINE SAND / 5% SILT / 0% CLAY), GREYISH BROWN, NO
			ODOR, SLAG, ORGANICS, OR OTHER DEBRIS.

Notes: PHOTO 14 TAKEN FACING NE
PHOTO 15 TAKEN FACING NE

* SAMPLE TIMES WRITTEN AND RECORDED AS 1315 → ACTUAL TIME 1415.

Unnamed tributary to Onion Creek - Van Stone Mine SMF 6-25-01

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / RW

Date: 6/25/01 Weather: OVERCAST 60°F

Location Description: UNNAMED S 34 T 30N R 40E SW/4

Uncorrected GPS Coordinates: N45° 45" 01.95" W117° 45' 13.69"

Corrected GPS Coordinates:

GPS File Name: R0625203 Sampling Method: 1 L POLY

WESTON Sample No: BK-132-SW Water Depth to Sediment: —

CLP #s: MJ03N5 Photograph: roll: ~~KB#4~~ K-5-5 exposure: 12/13

EPA Tracking No.: 01264052 ~~SMEITT~~ KB

Analyses: TAL METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1345	—	WATER SAMPLE COLLECTED IN 1 L POLY.

Notes: PHOTO 12 TAKEN FACING NE
PHOTO 13 TAKEN FACING NW

· STREAM RATE ESTIMATED AT ~~Z~~ 19 KB AL / MIN

Unnamed tributary to Onion Creek - Via Stevenson Mine SAF 10-25-01

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / RL

Date: 10/25/2001 Weather: OVERCAST 60°F

Location Description: S 34 T 32N R 40E, SW 1/4 10/31/01

Uncorrected GPS Coordinates: N 48°45' 27.15" W 117°44' 37.48"

Corrected GPS Coordinates:

GPS File Name: RUL520A Sampling Method: Bowl / Spoon

WESTON Sample No: BK-133-SD Water Depth to Sediment: —

CLP #s: JX813 / MJ013N6 Photograph: roll: ~~KB#4~~ exposure: 10/11

EPA Tracking No.: 012644053 ~~SMP 8/25~~

Analyses: TAL METALS / PEST / PCB / SVOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
	1300		(0% GRAVEL / 5% COARSE SAND, 0% MEDIUM SAND, 75% FINE SAND / 20% SILT / 0% CLAY) BROWN.
			NO ODOR, SLAG, OCCASIONAL ROOTS, NO OTHER DEBRIS.

Notes: PHOTO 10 TAKEN FACING SW
PHOTO 11 TAKEN FACING SW
• SAMPLE TAKEN WAS A SOIL SAMPLE NOT ASSOCIATED WITH ANY TRIBUTARY.
• MS/MSD FOR SVOC.

Van Stone Mine soil gmf 10-25-01

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / DW

Date: 6/25/07 Weather: SUNNY 65°F

Location Description: S34 T32N R40E SW 1/4

Uncorrected GPS Coordinates: N48° 45' 01.49" W117° 45' 11.16"

Corrected GPS Coordinates:

GPS File Name: R0625210 Sampling Method: BOWL / SPOON

WESTON Sample No: 13K · 134 · SD Water Depth to Sediment: —

CLP #s: JX814 / MJ0BN7 Photograph: roll: ~~KB~~ #4 exposure: 16/17

EPA Tracking No.: 012640054

Analyses: PEST/PCB/ SVOC, TAL METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1445	4"	(0% GRAVEL / ~~37~~ 0% COARSE SAND, 20% MEDIUM SAND, 30% FINE SAND / 40% SILT / 10% CLAY). BROWN, NO ODOR, NO SLAG, SCATTERED ROOTS, NO OTHER DEBRIS.

Notes: PHOTO 16 TAKEN FACING NW
PHOTO 17 TAKEN FACING NW

• SAMPLE COLLECTED IS A SOIL SAMPLE NOT ASSOCIATED WITH ANY TRIBUTARY OR STREAM.

Van Stone Mine soil SMF 6-25-07

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/RW

Date: 10/25/01 Weather: OVERCAST 60°F

Location Description: S 33 T 30N R 40E SE 1/4

Uncorrected GPS Coordinates: N48°45' 10.78" W117°45' 31.78"

Corrected GPS Coordinates:

GPS File Name: P0602522E Sampling Method: Bowl / Spoon

WESTON Sample No: BK-135-SD Water Depth to Sediment: —

CLP #s: MJ0BN8 / JX015 Photograph: roll: ~~KB#4~~ exposure: 18/19

EPA Tracking No.: 01264055 ~~SALT 605 CBF~~ 6-5

Analyses: TAL METALS / PEST / PCB / SVOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1500	6"	(0% GRAVEL / 0% COARSE SAND, 0% MEDIUM SAND, 75% FINE SAND / 20% SILT / 5% CLAY) REDISH BROWN, NO ODOR OR SLAG, OCCASSIONAL ROOTS, NO OTHER DEBRIS

Notes: PHOTO 18 TAKEN FACING NW
PHOTO 19 TAKEN FACING NW

SOIL ~~SE~~ SAMPLE, NOT ASSOCIATED WITH ANY TRIBUTARY OR STREAM.

Van Stone Mine soil 10-25-01

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / [illegible]

Date: 6/27/01 Weather: Sunny ~ 60 F

Location Description: UNNAMED S9 T30N R37E NE 1/4

Uncorrected GPS Coordinates: N 48° 06' 57.53" W 118° 01' 37.56"

Corrected GPS Coordinates:

GPS File Name: R0627721A Sampling Method: Ponar

WESTON Sample No: TR-136-SD Water Depth to Sediment: 3"

CLP #s: TX 8161 / [illegible] Photograph: roll: KB 8 exposure: 7/10

EPA Tracking No.: 01264056 6 AB

Analyses: TAL METALS, PEST/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1430	5"	(10% FINE GRAVEL / 15% COARSE SAND, 45% MEDIUM SAND, 25% FINE SAND / 5% SILT / 0% CLAY),
			BROWN, NO ODOR OR SLAG, NO ORGANICS OR OTHER DEBRIS.

Notes: PHOTO 9 TAKEN FACING E
PHOTO 10 TAKEN FACING SE

Unnamed tributary to Hunter's Creek, Cleveland Mine Site 6/27/01

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/RW

Date: 6/26/01 Weather: OVERCAST 65°F

Location Description: ~~DEG~~ UNNAMED S20T37N R41E NE 1/4

Uncorrected GPS Coordinates: N48° 41' 51.00" W117° 39' 28.39"

Corrected GPS Coordinates:

GPS File Name: R062617A Sampling Method: Bucket / Spoon

WESTON Sample No: BK-138-SD Water Depth to Sediment: 8"-10"

CLP #s: JX818/MJ0BP1 Photograph: roll: ~~KB#4~~ 105 exposure: 20/21 ~~Bucket~~ 23

EPA Tracking No.: 01264058

Analyses: TAL METALS, PEST/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1000	4"	(~~15%~~ 5% FINE GRAVEL/10% COARSE SAND, 10% MEDIUM SAND, 40% FINE SAND/ 5% SILT/0% CLAY) BROWN, NO ODOR,
			NO SLAG, NO ORGANICS OR ANY OTHER DEBRIS.

Notes: PHOTO 20 TAKEN FACING W
PHOTO 21 TAKEN FACING N

GPS LOCATION ~ ~~130m~~ 180' ABOVE ROAD.

Tributary to Deep Creek gpf 10.20.01

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / RW

Date: 6/25/2001 Weather: OVERCAST 60°F

Location Description: UNNAMED S34 T30N R40E SW/4 NB 10/3/01

Uncorrected GPS Coordinates: N 49°45'24.25" W117°44'37.20"

Corrected GPS Coordinates:

GPS File Name: P0025198 Sampling Method: Bowl / SPOON

WESTON Sample No: BK-139-SD Water Depth to Sediment: 2"

CLP #s: JX919 / MJ013P2 Photograph: roll: ~~1-151~~ #4 exposure: 8/9

EPA Tracking No.: 01264054 SAMF 8 ~~1-3~~ K05

Analyses: TAL METALS / PEST / PCB / TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1215	3"-4"	(15% FINE GRAVEL / ~~25~~ 45% COARSE SAND, 30% ~~FINE~~ MEDIUM SAND, 10% FINE SAND // 0% SILT / 0% CLAY) BROWN, NO
			ODOR OR SLAG OR ORGANICS OR ANY OTHER DEBRIS

Notes: PHOTO 8 TAKEN FACING S
PHOTO 9 TAKEN FACING E

Tributary to Canyon Creek, Van Stone Mine [illegible]

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / [illegible]

Date: 6/26/07 Weather: OVERCAST ~65°F

Location Description: SOUTH FORK DEEP CREEK S29 T38N R41E NW1/4

Uncorrected GPS Coordinates: N48° 46' ~~0.795~~ 07.95" W117° 39' 59.86"

Corrected GPS Coordinates:

GPS File Name: R062619A Sampling Method: Bowl / Spoon

WESTON Sample No: BK.140.SD Water Depth to Sediment: 3-4"

CLP #s: JX820 / MJ0BP3 Photograph: roll: ~~KB#4~~ exposure: 22/23

EPA Tracking No.: 012640060 KBS ~~SESALE~~ KB

Analyses: TAL METAL, PEST/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1230	1"	(0% FINE GRAVEL / 10% COARSE SAND, 50% MEDIUM SAND, 35% FINE SAND / 5% SILT / 0% CLAY), BROWN NO ODOR, NO SLAG, NO ORGANICS, NO OTHER DEBRIS.

Notes: PHOTO 22 TAKEN FACING N
PHOTO 23 TAKEN FACING N

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/ RW

Date: 6/26/01 Weather: OVERCAST ~65°F

Location Description: SOUTH FORK DEEP CREEK S29 T38N R41E NW 1/4

Uncorrected GPS Coordinates: N48°46'07.95" W117°39' 59.86"

Corrected GPS Coordinates:

GPS File Name: R0626 19A Sampling Method: 1 L POLY

WESTON Sample No: BK-141-SW Water Depth to Sediment: —

CLP #s: ~~01264001~~ MJ0BP4 KB Photograph: roll: ~~KB#4~~ exposure: 24/25

EPA Tracking No.: 01264001 KB ~~GEORGE~~ KB

Analyses: TAL METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1245	—	WATER

Notes: PHOTO 24 TAKEN FACING N
PHOTO 25 TAKEN FACING N

~~CO LOCATED~~ SAME WATER SAMPLE WITH BK-140-SD
GPS COORDINATES AND FILE ARE THE
SAME AS ABOVE.
SAMPLE PRESERVED WITH HNO_3 TO A pH of 2

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/RL

Date: 6/26/01 Weather: OVERCAST ~60°F

Location Description: UNNAMED S30 T39N R41E NW 1/4

Uncorrected GPS Coordinates: N 48° 01' 46.37" W 117° 41' 23.13"

Corrected GPS Coordinates:

GPS File Name: R0626023A Sampling Method: BOWL / SPOON

WESTON Sample No: BK-142-SD Water Depth to Sediment: 2"

CLP #s: JX822 / MJOBP5 Photograph: roll: KD ~~5~~ 6 exposure: 3/4

EPA Tracking No.: 01264062

Analyses: TAL METALS, PEST/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1615	8"-10"	(0% GRAVEL / 0% SAND / 95% SILT / 5% CLAY). DARK BROWN, SLIGHT ORGANIC ODOR, NO SLAG, 25% ORGANIC MATERIAL -
			ROOTS, LEAVES, NO OTHER DEBRIS. TOP 2" OF SEDIMENT WAS ~~ENTIRE~~ PREDOMINANTLY ORGANIC MATTER - SUCH
			AS LEAVES. AND WAS NOT INCLUDED
			IN SAMPLE.

Notes: PHOTO 3 TAKEN FACING N

PHOTO 4 TAKEN FACING N

Tributary to Deep Creek; East Channel inlet. 6/26/01

Sampler's Signature: [signature]

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/RW

Date: 10/26/01 Weather: OVERCAST 60°F

Location Description: UNNAMED S 30 T 39N R 41E NW 1/4

Uncorrected GPS Coordinates: N 48° 52' 46.37" W 117° 41' 23.13"

Corrected GPS Coordinates:

GPS File Name: R0626623A Sampling Method: 1 L POLY

WESTON Sample No: BK-143-SW Water Depth to Sediment: —

CLP #s: MJ0BP6 Photograph: roll: KB/5 exposure: 1/2

EPA Tracking No.: 01264063 6 AB

Analyses: TAL METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1600	—	WATER SAMPLE

Notes: PHOTO 1 TAKEN FACING N
PHOTO 2 TAKEN FACING N

WATER SAMPLE ~~COLOCATED~~ SAME WITH BK-14230
SAMPLE PRESERVED WITH HNO_3 TO A pH of 2

50 SEC/LITRE
Tributary to Deep Creek; LAST CHANCE MINE SAF 10-25-01

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/ RW

Date: 6/27/01 Weather: OVERCAST 60°F

Location Description: UNNAMED S9 ~~T~~ T30N R37E NE1/4

Uncorrected GPS Coordinates: N 48° 07' 16.45" W 118° 02' 24.90"

Corrected GPS Coordinates:

GPS File Name: R0627 23A Sampling Method: BOWL/SPOON

WESTON Sample No: TR.147.SD Water Depth to Sediment: 5"

CLP #s: JX825/MJ0BP8 Photograph: roll: KB 6 AB exposure: 13/14

EPA Tracking No.: 01264065

Analyses: TAL METALS PEST/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1630	3"	(5% FINE GRAVEL / 15% COARSE SAND, 35% MEDIUM SAND, 40% FINE SAND / 5% SILT / 0% CLAY), BROWN,
			NO ODOR OR SLAG. NO ORGANICS OR OTHER DEBRIS.

Notes: PHOTO 13 TAKEN FACING W

PHOTO 14 TAKEN FACING W

~~COLOCATED~~ SPF WITH SURFACE WATER SAMPLE TR 148 SW

~~1L/20 SEC~~

Tributary to Hawkins Creek, Cleveland Mine

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/ RW

Date: 6/27/01 Weather: OVERCAST 60°F

Location Description: UNNAMED S9 T30N R37E NE 1/4

Uncorrected GPS Coordinates: N 48° 07' 16.45" W 118° 02' 24.90"

Corrected GPS Coordinates:

GPS File Name: R0627 23A Sampling Method: IC POLY

WESTON Sample No: TR-148-SW Water Depth to Sediment: –

CLP #s: MJ0BP9 Photograph: roll: KB5 exposure: 15/16

EPA Tracking No.: 012604066 KB

Analyses: TAL METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1645	–	SURFACE WATER

Notes: PHOTO 15 TAKEN FACING W
PHOTO 16 TAKEN FACING W

~~COLLOCATED~~ SAMPLE WITH SEDIMENT SAMPLE
TR 147 SD

Tributary to Hunters Creek
Cleveland Mine Site

IC / 20 SEC

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB / RW

Date: 10/27/01 Weather: OVERCAST ~60°F

Location Description: UNNAMED S 22 T 40 R41E SW 1/4

Uncorrected GPS Coordinates: N 49° 56' 46.79" W 117° 30' 46.03"

Corrected GPS Coordinates:

GPS File Name: R0627178 Sampling Method: Bowl / Spoon

WESTON Sample No: BK-150-SD Water Depth to Sediment: 1"

CLP #s: JX827 / MJ0BQ1 Photograph: roll: KB6 exposure: 5/6

EPA Tracking No.: 072640668

Analyses: TAL METALS, PEST / PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	0900	3"	(10% FINE GRAVEL / 20% COARSE SAND, 40% MEDIUM SAND, 25% FINE SAND / 5% SILT / 0% CLAY) BROWN
			WITH LIGHTER CLASTS, NO ODOR OR SLAG OR OTHER DEBRIS, OCCASSIONAL WOODY DEBRIS (~5%)

Notes: PHOTO 5 TAKEN FACING S
PHOTO 6 TAKEN FACING N

~~GPS LOCATION OF~~ WATER SAMPLE BK / S1 SW

GPS LOCATION AT CONFLUENCE OF ADIT DISCHARGE AND STREAM. SAMPLE LOCATION ~ 200' UPSTREAM
DISREGARD GPS FILE R0627177A

Sampler's Signature:

TRIBUTARY to Tom Bush Creek; Melrose Mine SW 10-25-01

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KB/RW

Date: 10/27/01 Weather: OVERCAST - 60°F

Location Description: UNNAMED S28 T40N R41E SW 1/4

Uncorrected GPS Coordinates: N 48° 56' 46.79" W 117° 38' 46.03"

Corrected GPS Coordinates:

GPS File Name: R06271713 Sampling Method: 1 L Poly

WESTON Sample No: BK 151 SW Water Depth to Sediment:

CLP #s: MJ0BQ2 Photograph: roll: KB6 exposure: 7/8

EPA Tracking No.: 01264069

Analyses: TAL METALS

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	0930	–	SURFACE WATER SAMPLE

Notes: PHOTO 7 TAKEN FACING S
PHOTO 8 TAKEN FACING N
~~COLLECTED~~ SEDIMENT WITH A SAMPLE BK 150 SD

GPS LOCATION AT CONFLUENCE OF MINE ADIT DISCHARGE AND STREAM. SAMPLE LOCATION ~ 200' UPSTREAM. DISREGARD GPS FILE R0627171A

Sampler's Signature:

TRIBUTARY to Tom Bush Creek; Melton Mine SAF 10-25-01

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: KBJ/ RW

Date: 6/27/01 Weather: OVERCAST 60°F

Location Description: PARKING LOT OF CHOICE COMFORT INN

Uncorrected GPS Coordinates:

Corrected GPS Coordinates:

GPS File Name: Sampling Method: WATER COLLECTED FROM DECON BOWL/ SPOON

WESTON Sample No: R-004-SD Water Depth to Sediment:

CLP #s: JX830/MJ0B94 Photograph: roll:_____ exposure: _____

EPA Tracking No.: 0126407I

Analyses: TAL METALS, PEST/PCB, SVOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
	0700	—	←

Notes: RINSATE BLANK OF DECONED SPOON AND BOWL

Sampler's Signature:

WESTON

UPPER COLUMBIA/LAKE ROOSEVELT ESI (TDD: 01-02-0001-A)

SURFACE SEDIMENT FIELD SAMPLING RECORD

Project Number: 12644.001.002.0101.00 Sampling Personnel: RBJ / RW

Date: 6/28/07 Weather: OVERCAST 60°F

Location Description: SOUTH FORK FLUME CREEK

Uncorrected GPS Coordinates: N48° 52' 18.47" W117° 23' 35.88"

Corrected GPS Coordinates:

GPS File Name: R0628173 Sampling Method: BOWL/SPOON

WESTON Sample No: BK.153.SD Water Depth to Sediment: 8-12"

CLP #s: JX831 / MJOBQ5 Photograph: roll: KB5 exposure: 22/23

EPA Tracking No.: 0126073 6 KB

Analyses: TAL METALS, PEST/PCB, TOC

Grab #	Time	Penetration Depth	Sample Material Physical Description [Grain Size (% gravel/sand/silt/clay), Color, Odor, Slag, Organics, Debris, Etc.]
1	1045	3-4"	(5% FINE GRAVEL / 15% COARSE SAND, 40% MEDIUM SAND, 35% FINE SAND / 5% SILT / 0% CLAY) GREYISH BROWN, NO ODOR OR SLAG, NO ORGANICS OR OTHER DEBRIS.

Notes: PHOTO 22 TAKEN FACING NW
PHOTO 23 TAKEN FACING NW

~~COLOCATED~~ WITH SURFACE WATER SAMPLE BK.154.SW.

Sampler's Signature: [signature]

APPENDIX C

XRF SCREENING RESULTS REPORT

received 8-6-01

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

July 25, 2001

MEMORANDUM

SUBJECT: Field Screening Metals Results for the Upper Columbia River - Lake and Tributary Area Analyses

FROM: Gerald H. Dodo
USEPA

TO: Mark Ader
USEPA

cc: Susan Fitzgerald
Weston

Attached to this memo are the field screening analysis results for lead, zinc, and copper acquired by ESAT for 125 samples at the Upper Columbia River lake and tributary areas. This work was performed under site account code 01T10P50102D106XLA00. The samples were analyzed in-situ using a Niton XL-723. Reference sample analyses were performed during each day of sample analyses using NIST SRM 2710 and SRM 2711. The reference sample results were within 20% of the stated true value except for zinc from the SRM 2711 analyses for 05/23/01 and 05/31/01 which were low. The SRM 2710 analyses results for zinc on these two days were acceptable, however, the concentration is much higher for this sample. The reported zinc results ~~for~~ sample analyses performed on 05/23/01 and 05/31/01 may be biased low if <5000 mg/kg. All results were qualified F, acquired by a field screening method.

If you have any questions, please contact me at (360)871-8728.

Summary of XRF Screening Results
Lake Roosevelt Lake and Tributary Study

XLNo	Sample ID	Date/Time	Results in mg/Kg Pb	Zn	Cu
37	1204115	5/17/01	< 25	< 165	< 450
38	1204115	5/17/01	26	< 105	< 300
39	1204115	5/17/01	42	< 210	< 615
40	1204115	5/17/01	41	< 117	< 315
41	1204115 Sampled	5/17/01	29	< 93	< 255
42	1204116	5/17/01	60	< 255	< 705
44	1204116 Sampled	5/17/01	95	216	< 93
45	1204116	5/17/01	74	143	< 165
51	1204119 Sampled	5/18/01	424	823	< 330
52	1204119	5/18/01	236	472	< 210
53	1204119	5/18/01	108	218	< 255
55	1204121	5/18/01	224	480	< 195
56	1204121	5/18/01	185	387	< 300
57	1204121 Sampled	5/18/01	194	522	< 144
58	1204121	5/18/01	28	< 165	< 465
60	1204122 Sampled	5/18/01	163	460	< 540
61	1204122	5/18/01	88	155	< 405
62	1204122	5/18/01	161	425	< 465
63	1204122	5/18/01	110	196	< 285
65	1204123	5/18/01	242	616	< 540
66	1204123	5/18/01	225	597	< 615
67	1204123 Sampled	5/18/01	223	640	< 375
69	1204125	5/19/01	96	226	< 128
70	1204125 Sampled	5/19/01	126	187	< 270
74	1204126 no sample	5/19/01	28	74	< 110
76	1204126 no sample	5/19/01	< 27	< 165	< 450
90	1214106	5/21/01	25	< 144	< 405
91	1214106	5/21/01	49	< 121	< 330
94	1214106	5/21/01	43	< 225	< 615
94	1214106	5/21/01	43	< 225	< 615
96	1214106 Sampled	5/21/01	196	474	< 375
98	1214116	5/21/01	238	666	< 147
99	1214116 Sampled	5/21/01	298	712	< 495
100	1214116	5/21/01	331	764	< 450
101	1214116	5/21/01	317	765	< 225
103	1214118 Sampled	5/21/01	361	1130	< 285

XLNo	Sample ID	Date/Time	Pb	Zn	Cu
104	1214118	5/21/01	250 F	571 F	< 750 F
106	1214101	5/21/01	47	< 115	< 300
107	1214101 Sampled	5/21/01	73	< 540	< 1500
113	1214122 Sampled	5/22/01	172	851	< 240
114	1214122	5/22/01	146	946	< 142
117	1214124	5/22/01	319	< 585	< 1650
118	1214124	5/22/01	249	902	< 390
119	1214124 Sampled	5/22/01	240	1060	< 270
122	1214126	5/22/01	121	589	< 165
123	1214126 Sampled	5/22/01	173	543	< 180
124	1214126	5/22/01	94	243	< 585
126	1214128	5/22/01	185	1230	< 345
127	1214128 Sampled	5/22/01	220	1250	< 465
128	1214128	5/22/01	159	1250	< 420
130	1214130	5/22/01	156	1100	< 225
131	1214130	5/22/01	176	< 465	< 1304
132	1214130	5/22/01	95	537	< 144
133	1214130	5/22/01	125	675	< 255
134	1214130	5/22/01	123	660	< 150
136	1214130	5/22/01	111	1050	< 145
137	1214130	5/22/01	122	896	< 330
138	1214130	5/22/01	118	1090	< 195
139	1214130 Sampled	5/22/01	508	6339	< 765
142	1214132	5/22/01	705	13299	1270
143	1214132 Sampled	5/22/01	1510	20698	1320
144	1214132	5/22/01	736	15194	1300
149	1214134	5/23/01	174	763	< 165
150	1214134	5/23/01	201	624	< 975
151	1214134	5/23/01	192	705	< 630
152	1214134	5/23/01	215	808	< 180
153	1214134	5/23/01	205	1050	< 315
154	1214134	5/23/01	103	< 390	< 1080
155	1214134	5/23/01	245	1819	< 195
156	1214134 Sampled	5/23/01	1080	12998	< 915
158	1214136	5/23/01	268	1500	< 1020
159	1214136	5/23/01	331	< 885	< 2549
160	1214136	5/23/01	250	1050	< 615
161	1214136 Sampled	5/23/01	326	3949	< 645
162	1214136	5/23/01	360	3440	< 210
164	1214138	5/23/01	94	488	< 195

XLNo	Sample ID	Date/Time	Pb	Zn	Cu
165	1214138 Sampled	5/23/01	169 F	2539 F	< 375 F
166	1214138	5/23/01	144	1170	< 225
167	1214138	5/23/01	79	593	< 270
168	1214138	5/23/01	227	1690	< 510
170	1214140	5/23/01	170	2650	274
171	1214140	5/23/01	192	2189	< 270
173	1214140 Sampled	5/23/01	189	3478	319
175	1214142	5/23/01	97	1040	< 270
175	1214142	5/23/01	97	1040	< 270
177	1214142 Sampled	5/23/01	349	4509	377
178	1214142	5/23/01	446	5427	460
179	1214142	5/23/01	153	3539	656
181	1214142	5/23/01	234	5658	773
183	1214144	5/23/01	301	7046	784
184	1214144 Sampled	5/23/01	611	8838	935
186	1214129	5/23/01	97	494	< 95
192	1214127	5/24/01	53	117	< 142
193	1214127	5/24/01	47	92	< 126
195	1214131	5/24/01	75	225	< 123
196	1214131	5/24/01	186	237	< 270
211	1224150	5/31/01	221	12896	1460
212	1224150 sampled	5/31/01	443	19699	< 2549
213	1224150	5/31/01	330	15898	1939
215	1224151	5/31/01	210	1420	< 180
216	1224151 sampled	5/31/01	190	2229	264
217	1224151	5/31/01	211	2120	170
218	1224151	5/31/01	189	2189	< 142
221	1224154	5/31/01	262	7770	962
222	1224154 sampled	5/31/01	281	12096	1570
224	1224155	5/31/01	328	11200	1140
225	1224155 sampled	5/31/01	300	13990	1659
228	1224157	5/31/01	229	11098	1650
229	1224157 sampled	5/31/01	346	12698	1440
236	1224160	6/1/01	203	5968	1180
237	1224160	6/1/01	337	9818	1470
238	1224160	6/1/01	200	10400	1380
239	1224160 sampled	6/1/01	411	16691	2450

XLNo	Sample ID	Date/Time	Pb	Zn	Cu
241	1224161	6/1/01	20 F	145 F	< 98 F
243	1224162 sampled	6/1/01	317	3179	317
244	1224162	6/1/01	260	2269	260
245	1224162	6/1/01	387	2850	397
247	1224163	6/1/01	198	16691	2469
249	1224165	6/1/01	523	934	< 89
251	1224164	6/1/01	142	2810	476
252	1224164	6/1/01	161	3229	348
253	1224164 sampled	6/1/01	260	5450	757
254	1224164	6/1/01	360	4560	772
255	1224164	6/1/01	193	4240	554
256	1224164	6/1/01	166	3170	524

APPENDIX D

CONTACT LOG

Appendix D—Upper Columbia River/Lake Roosevelt ESI Contact Log

Name	Agency/Company	Phone Number
Dwayne D'Andrea	BC boat guide	250/365-4238
Alan Woo	BC Hydro	604/528-7769
Julia Beatty	BC MELP	250/354-6750
Patti Stone	CCT	509/634-2415
Steve Tromly	CCT	(509)634-2696
Dennis Francis	City of Grand Coulee	509/631-0289
	Columbia Power Corp	250/365-8585
Leatta Dahlhoff	E&E	206/624-9537 (ext. 239)
Mark Brady	Environ. Int'l	206/525-3362
Mark Ader	EPA	206/553-1808
Monica Tonel	EPA	206/553-0323
Ginna Grepo-Grove	EPA	206/553-1632
Matt Gubitosa	EPA	206/553-5294
Phil Wong	EPA	
Laura Castrilli	EPA	206/553-4323
Chris Hall	EPA	206/553-0521
David Terpening	EPA	206/553-6905
Andy Hess	EPA	360/871-8711
Niel Amick	ESAT	360/871-8787
Craig Sprankle	Grand Coulee Public Affairs Officer	509/633-9503
Lonnie Johnson	Seattle City Light: Boundary Dam Operations Head	509/446-3083
Kimberly Hayes	Sentinel	256/534-9800, ext. 22
Cindy Hendrickson	U.S. Army Corps of Engineers	503/808-3945
Al Johnson	U.S. Forest Service	(541) 782-2283
Ray Dupuydt	National Parks Service, archaeologist	509/738-6266 (ext. 114)
Scott Hevner	National Parks Service, Natural Resources	509/738-6266 (ext. 105)
Gil Bortleson	USGS (retired)	(253) 428-3600
Mark Munn	USGS	253/428-3600 (ext. 2686)
Gig LeBret	National Parks Service	509/738-6266
Frank Anderson	National Parks Service	509/633-9441 ext. 132
Dan Mason	National Parks Service	509/633-9441
Dan Egal	West Kootenay Power	250/368-0508

APPENDIX E

CHAIN-OF-CUSTODY FORMS
AND
DATA VALIDATION REPORTS

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29469

1. Project Code: TEC-774A
2. Region No.: 10
Sampling Co.: ROY F. WESTON
4. Date Shipped: 6/26/01
Carrier: FEDEX

Account Code: 01T10P50102D106XLA00
Sampler (Name): KEVIN BROOM
Airbill Number: 8245 2414 7207

Site Name: COLUMBIA RIVER / LAKE ROOSEVELT
Sampler Signature: [signature]
5. Ship To: MITREM CORPORATION
175 METRO CENTER BOULEVARD
WARWICK, RI 02886
401 732 3400
ATTN: AGNES NG

City, State: KETTLE FALLS, WA
Site Spill ID: 6X
Op Unit: 00

3. Purpose**
Lead: [X] SF [ ] PRP [ ] ST [ ] FED [ ] BZ
Early Action: [ ] IA [ ] PA [ ] REM [ ] RI [ ] SI [X] ESI
Long-Term Action: [ ] RIFS [ ] RD [ ] RA [ ] O&M

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. PE-water
7. PE-soil
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Ice only
6. CH3OH
7. Other (specify in Column D)
N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Field Spike, D = Field Duplicate, R = Rinsate, PE = Perform Eval.)
JX810	5	L	G	5			1	01264050	BK-130-SD	6/25/01 0945	MJ0BN3	KS	—
JX811	5	L	G	5			1	01264051	BK-131-SD	6/25/01 1315	MJ0BN4	KS	—
JX813	5	L	G	5		1	1	01264053	BK-133-SD	6/25/01 1300	MJ0BN6 KS	KS	MS/MSD
JX814	5	L	G	5		1	1	01264054	BK-134-SD	6/25/01 1445	MJ0BN7	KS	—
JX815	5	L	G	5		1	1	01264055	BK-135-SD	6/25/01 1500	MJ0BN8	KS	—
JX819	5	L	G	5			1	01264059	BK-139-SD	6/25/01 1215	MJ0BP2	KS	—

Shipment for Case Complete? (Y/N) Y
Page 1 of 1

VOA MS/MSD Required? Y/N Sample #:
BNA MS/MSD Required? Y/N Sample #: JX813
Pest/PCB MS/MSD Required? Y/N Sample #:

Additional Sampler Signatures: Ross R. Wilson
Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	6/26/01 0730				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

ALL GRAB SOIL/SEDIMENT SAMPLES COLLECTED

EPA Form 9110-2 (2/99)
CLASS-99-001

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29469

1. Project Code	2. Account Code	3. Region No.	Sampling Co.	5. Date Shipped	Carrier
TEC-774A	01T10P50102D106X	10	ROY F WESTON	6/27/01	FEDEX

Regional Information: 10

Sampler (Name): KEVIN BROOM

Airbill Number: 8245 2414 7218

Non-Superfund Program

Sampler Signature: [signature]

6. Ship To: DATACHEM LABORATORIES, 960 WEST LEVOY DRIVE, SALT LAKE CITY, UT 84123, 801 266 7700, ATTN: BRENT STEPHENS

Site Name: COLUMBIA RIVER / LAKE ROOSEVELT

City, State: KETTLE FALLS WA

Site Spill ID: 6X

4. Purpose*: Lead [X] SF [ ] PRP [ ] ST [ ] FED; Early Action [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [X] ESI; Long-Term Action [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

7. Matrix (Enter in Column A): 1. Surface Water, 2. Ground Water, 3. Leachate, 4. Field, 5. Soil/Sediment, 6. Oil (High only), 7. Waste (High only), 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl, 2. HNO3, 3. NaOH, 4. H_2SO_4, 5. $K_2CR_2O_7$, 6. Ice only, 7. Other (specify in Column D), N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc. Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	J Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform Eval., — = Not a QC Sample)
MJOBN3	5	L	G	6		1						01264050	BK-130-SD	6/25/01 0945	JX810	KB	—
MJOBN4	5	L	G	6		1						01264051	BK-131-SD	6/25/01 1315	JX811	KB	—
MJOBN5	1	L	G	2		1						01264052	BK-132-SW	6/25/01 1345	—	KB	—
MJOBN6	5	L	G	6		1						01264053	BK-133-SD	6/25/01 1300	JX813	KB	—
MJOBN7	5	L	G	6		1						01264054	BK-134-SD	6/25/01 1445	JX814	KB	—
MJOBN8	5	L	G	6		1						01264055	BK-135-SD	6/25/01 1500	JX815	KB	—
MJOBP2	5	L	G	6		1						01264059	BK-139-SD	6/25/01 1215	JX819	KB	—
MJOBP1	5	L	G	6		1						01264058	BK-138-SD	6/26/01 1000	JX818	KB	—
MJOBP3	5	L	G	6		1						01264060	BK-140-SD	6/26/01 1230	JX820	KB	—
MJOBP5	5	L	G	6		1						01264062	BK-142-SD	6/26/01 1615	JX822	KB	—

Shipment for Case Complete? (Y/N): Y

Page 1 of 2

Sample(s) to be Used for Laboratory QC:

Additional Sampler Signatures: [signature]

Chain of Custody Seal Number(s):

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	6/26/01 2130				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

ALL GRAB SOIL/SEDIMENT SAMPLES

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

391060

A21-012-13 REV

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29469

1. Project Code: TEC-774A
2. Region No.: 10
Sampling Co.: ROY F WESTON
4. Date Shipped: 6/27/01
Carrier: FEDEX

Account Code: 01T10P50102D106XLA00
Sampler (Name): KEVIN BROOM
Airbill Number: 8245 2414 7192

Site Name: COLUMBIA RIVER / LAKE ROOSEVELT
Sampler Signature: [signature]
5. Ship To: MITKEM CORPORATION
175 METRO CENTER BOULEVARD
WARWICK, RI 02886
401 732 3400
ATTN: AGNES NG

City, State: KETTLE FALLS, WA
Site Spill ID: 6X
Op Unit: 00

3. Purpose**
Lead: [X] SF [ ] PRP [ ] ST [ ] FED [ ] BZ
Early Action: [ ] IA [ ] PA [ ] REM [ ] RI [ ] SI [X] EST
Long-Term Action: [ ] RIFS [ ] RD [ ] RA [ ] O&M

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. PE-water
7. PE-soil
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Ice only
6. CH3OH
7. Other (specify in Column D)
N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field Spike D = Field Duplicate R = Rinsate PE = Perform Eval.)
JX818	5	L	G	5			1	01264058	BK.138.SD	6/26/01 1000	MJ0BP1	KS	—
JX820	5	L	G	5			1	01264060	BK.140.SD	6/26/01 1230	MJ0BP3	KS	—
JX822	5	L	G	5			1	01264062	BK.142.SD	6/26/01 1615	MJ0BP5	KS	—

Shipment for Case Complete? (Y/N) Y
Page 1 of 1
VOA MS/MSD Required? Y/N Sample #:
BNA MS/MSD Required? Y/N Sample #:
Pest/PCB MS/MSD Required? Y/N Sample #:
Additional Sampler Signatures: [signature]
Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	6/26/01 2200				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

ALL GRAB SOIL/SEDIMENT SAMPLES

EPA Form 9110-2 (2/99)

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions
CLASS-99-001-C

291023

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29469

1. Project Code: TEC-774A	2. Account Code: 0TT10P50102D106XLA00	3. Region No.: 10	Sampling Co.: ROY F. WESTON	5. Date Shipped: 6/27/01	Carrier: FED EX
Regional Information: 10		Sampler (Name): KEVIN BLOOM		Airbill Number: 8245 2414 7218	
Non-Superfund Program		Sampler Signature: [signature]		6. Ship To: DATACHEM LABORATORIES	
Site Name: COLUMBIA RIVER/LAKE ROOSEVELT		4. Purpose*: Lead ☑ SF ☐ PRP ☐ ST ☐ FED; Early Action ☐ CLEM ☐ PA ☐ REM ☐ RI ☐ SI ☑ ESI; Long-Term Action ☐ FS ☐ RD ☐ RA ☐ O&M ☐ NPLD		960 WEST LEVOY DRIVE SALT LAKE CITY, UT 84123 801 266 7700 ATTN: BRENT STEPHENS	
City, State: KETTLE FALLS, WA	Site Spill ID: 6X				

7. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc. Low Med High	C Sample Type: Comp/Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform Eval., — = Not a QC Sample)
MJOBP4	1	L	G	6		1						01264001	BK-141-SW	6/26/01 1245	—	KB	—
MJOBP6	1	L	G	6		1						01264063	BK-143-SW	6/26/01 1600	—	KB	—

Shipment for Case Complete? (Y/N): Y

Page 2 of 2

Sample(s) to be Used for Laboratory QC:

Additional Sampler Signatures: [signature]

Chain of Custody Seal Number(s):

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	6/26/01 2130				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

391060

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29469

1. Project Code: TEC-774A
2. Region No.: 10
Sampling Co.: ROY F WESTON
4. Date Shipped: 6/28/01
Carrier: FEDEX

Account Code: 01T10P50102D106XLA00
Sampler (Name): KEVIN BROOM
Airbill Number: 8245 1981 8601

Site Name: COLUMBIA RIVER/ LAKE ROOSEVELT
Sampler Signature:
5. Ship To: MITKEM CORPORATION
175 METRO CENTER BOULEVARD
WARWICK, RI 02886
401 732 3400
ATTN: AGNES NG

City, State: KETTLE FALLS, WA
Site Spill ID: 6X
Op Unit: 00

3. Purpose**
Lead: ☑ SF ☐ PRP ☐ ST ☐ FED ☐ BZ
Early Action: ☐ IA ☐ PA ☐ REM ☐ RI ☐ ~~SI~~ ☑ ESI
Long-Term Action: ☐ RIFS ☐ RD ☐ RA ☐ O&M

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. PE-water
7. PE-soil
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Ice only
6. CH3OH
7. Other (specify in Column D)
N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other: RINSATE	B Conc.: Low Med	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/ PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field Spike D = Field Duplicate R = Rinsate PE = Perform Eval.)
JX827	5	L	G	5			1	01264068	BK.150.SD	6/27/01 0900	MJ0BQ1	KB	—
JX816	5	L	G	5			1	01264056	TR.136 SD	6/27/01 1430	MJ0BN9	KB	MS/MSD
13 JX833	5	L	G	5			1	01264064	TR.145 SD	6/27/01 1515	MJ0BQ8	KB	—
JX825	5	L	G	5			1	01264065	TR.147 SD	6/27/01 1630	MJ0BP8	KB	—
JX830	8	L	G	5			1	01264071	R.004.SD	6/27/01 0700	MJ0BQ4	KB	R

Shipment for Case Complete? (Y/N): Y
Page 1 of 1

VOA MS/MSD Required? Y/N Sample #:
BNA MS/MSD Required? Y/N Sample #:
Pest/PCB MS/MSD Required? Y/N Sample #: JX816

Additional Sampler Signatures:
Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6/28/01 2300				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)
CLASS-99-001

ALL GRAB SOIL/SEDIMENT SAMPLES COLLECTED [illegible] BOTTOM SURFACE [illegible]

291024

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29469

1. Project Code	TEC-774A
2. Account Code	0T10P5010 2D10 6XLA00
3. Region No.	10
Sampling Co.	W.F. WESTON
5. Date Shipped	6/29/01
Carrier	FED EX
Regional Information	10
Sampler (Name)	KEVIN BLOOM
Airbill Number	8245 1981 8597
Non-Superfund Program	
Sampler Signature	
6. Ship To:	DATACHEM LABORATORIES, 960 WEST LEVOY DRIVE, SALT LAKE CITY, UT 84123, 801 266 7700, ATTN: BRENT STEPHENS
Site Name	COLUMBIA RIVER / LAKE ROOSEVELT
City, State	KETTLE FALLS, WA
Site Spill ID	6X
4. Purpose*	Lead: SF, PRP, ST, FED; Early Action: CLEM, PA, REM, RI, SL, ESI; Long-Term Action: FS, RD, RA, O&M, NPLD

7. Matrix (Enter in Column A): 1. Surface Water, 2. Ground Water, 3. Leachate, 4. Field, 5. Soil/Sediment, 6. Oil (High only), 7. Waste (High only), 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl, 2. HNO3, 3. NaOH, 4. H_2SO_4, 5. $K_2CR_2O_7$, 6. Ice only, 7. Other (specify in Column D), N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc. Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform Eval., — = Not a QC Sample)
MJOBQ1	5	L	G	6		1						01264068	BK-150-SD	6/27/01 0900	JX827	KS	—
MJOBQ2	1	L	G	2		1						01264069	BK-151-SW	6/27/01 0930	—	KS	—
MJOBN9	5	L	G	6		1						01264056	TR-136-SD	6/27/01 1430	JX816	KS	MS/MSD
MJOBQ8	5	L	G	6		1						01264072	TR-145-SD	6/27/01 1515	JX8303	KS	—
MJOBP8	5	L	G	6		1						01264065	TR-147-SD	6/27/01 1630	JX825	KS	—
MJOBP9	1	L	G	2		1						01264066	TR-148-SW	6/27/01 1645	—	KS	—
MJOBQ4	8	L	G	2		1						01264071	R-004-SD	6/27/01 0700	JX830	KS	R
MJOBQ3	5	L	G	6		1						01264070	BK-152-SD	6/28/01 0930	JX829	KS	—
MJOBQ0	1	L	G	2		1						01264067	BK-149-SW	6/28/01 0945	—	KS	—
MJOBQ6	1	L	G	2		1						01264074	BK-154-SW	6/28/01 1055	—	KS	—

Shipment for Case Complete? (Y/N)	Page 1 of 2	Sample(s) to be Used for Laboratory QC: MJOBN9	Additional Sampler Signatures: Robert R. Wile
Chain of Custody Seal Number(s)			

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6/28/01 2305				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

ALL GRAB SOIL/SEDIMENT SAMPLES COLLECTED

201067

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29469

1. Project Code	2. Account Code	3. Region No.	Sampling Co.	5. Date Shipped	Carrier
TEC-774A	01T10P50102D106XLA00	10	ROY F. WESTON	6/29/01	FEDEX

Regional Information: 10
Sampler (Name): KEVIN BLOOM
Airbill Number: 8245 1981 8597
Non-Superfund Program
Sampler Signature:
6. Ship To: DATACHEM LABORATORIES, 960 WEST LEVOY DRIVE, SALT LAKE CITY, UT 84123, 801 266 7700, ATTN: BRENT STEPHENS
Site Name: COLUMBIA RIVER/LAKE ROOSEVELT
City, State: KETTLE FALLS, WA
Site Spill ID: 6X
4. Purpose*: Lead: SF, PRP, ST, FED; Early Action: CLEM, PA, REM, RI, SI, ESI; Long-Term Action: FS, RD, RA, O&M, NPLD

7. Matrix (Enter in Column A): 1. Surface Water, 2. Ground Water, 3. Leachate, 4. Field, 5. Soil/Sediment, 6. Oil (High only), 7. Waste (High only), 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl, 2. HNO3, 3. NaOH, 4. H_2SO_4, 5. $K_2CR_2O_7$, 6. Ice only, 7. Other (specify in Column D), N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc. Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform Eval., — = Not a QC Sample)
MJ0B05	5	L	G	6		1						01264073	BK-153-SD	6/28/01 1095	JX831	KS	—
MJ0B07	5	L	G	6		1						01264075	BK-155-SD	6/28/01 1300	JX832	KS	—

Shipment for Case Complete? (Y/N): Y
Page 2 of 2
Sample(s) to be Used for Laboratory QC:
Additional Sampler Signatures: Ross R. Wilson
Chain of Custody Seal Number(s):

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6/28/01 2305				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

391065

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29469

1. Project Code: TEC-774 A
2. Region No.: 10
Sampling Co.: ROY F. WESTON
4. Date Shipped: 6/29/01
Carrier: FEDEX

Account Code: OIT/OP50102D106XLA00
Sampler (Name): KEVIN BROOM
Airbill Number: 8245 1981 8314

Site Name: COLUMBIA RIVER / LAKE ROOSEVELT
Sampler Signature:
5. Ship To: MITKEM CORPORATION
175 METRO CENTER BOULEVARD
WARWICK, RI 02886
401 732 3400
ATTN: AGNES NG

City, State: KETTLE FALLS, WA
Site Spill ID: 6X
Op Unit: 00

3. Purpose**
Lead: [x] SF [ ] PRP [ ] ST [ ] FED [ ] BZ
Early Action: [ ] IA [ ] PA [ ] REM [ ] RI [ ] SI [x] ESI
Long-Term Action: [ ] RIFS [ ] RD [ ] RA [ ] O&M

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. PE-water
7. PE-soil
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Ice only
6. CH3OH
7. Other (specify in Column D)
N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field Spike D = Field Duplicate R = Rinsate PE = Perform Eval.)
JX829	5	L	G	5			1	01264070	BK.152.SD	6/28/01 0930	MJDBQ3	KS	—
JX831	5	L	G	5			1	01264073	BK.153.SD	6/28/01 1045	MJDBQ5	KS	—
JX832	5	L	G	5			1	01264075	BK.155.SD	6/28/01 1300	MJDBQ7	KS	—

Shipment for Case Complete? (Y/N) Y
Page 1 of 1
VOA MS/MSD Required? Y/N Sample #:
BNA MS/MSD Required? Y/N Sample #:
Pest/PCB MS/MSD Required? Y/N Sample #:
Additional Sampler Signatures: Ross R. Wilson
Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6/28/01 2300				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

ALL GRAB SOIL/SEDIMENT SAMPLES COLLECTED BETWEEN 0"-6" BELOW GROUND SURFACE

EPA Form 9110-2 (2/99)
CLASS-99-001

201005

nca™
North Creek Analytical, Inc.
Environmental Laboratory Network
www.ncalabs.com

11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244 (425) 420-9200 FAX [illegible]9210
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FAX 906-9210
20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: ROY F. WESTON

REPORT TO: PAUL SWIFT

ADDRESS: 190 QUEEN ANNE AVE N, STE 200
SEATTLE, WA 98109

PHONE: 206. 521. 7600 FAX: 206 521 7601

INVOICE TO: SAME AS CLIENT

P.O. NUMBER:

PROJECT NAME: COLUMBIA RIVER / LAKE ROOSEVELT

PROJECT NUMBER: 12644.001.002.0101.00

SAMPLED BY: KEVIN BROOM

TURNAROUND REQUEST in Business Days*

Organic & Inorganic Analyses: 10 | 7 | 5 | 4 | 3 | 2 | 1 | <1 (STD.)

Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | <1 (STD.)

OTHER — Please Specify

*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TOC - EPA Sw 9060	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. 01264050	6/25/01 0945	X	S	1	—	
2. 01264051	6/25/01 1315	X	S	1	—	
3. 01264059	6/25/01 1215	X	S	1	—	
4. 01264060	6/26/01 1230	X	S	1	—	
5. 01264062	6/26/01 1615	X	S	1	—	
6. 01264058	6/26/01 1000	X	S	1	—	
7. 01264068	6/27/01 0900	X	S	1	—	
8. 01264056	6/27/01 1430	X	S	1	MS/MSD	
9. 01264064 72	6/27/01 1515	X	S	1	—	
10. 01264065	6/27/01 1630	X	S	1	—	
11. 01264070	6/28/01 0930	X	S	1	—	
12. 01264073	6/28/01 1045	X	S	1	—	
13. 01264075	6/28/01 1300	X	S	1	—	
14.						
15.						

RELINQUISHED BY:	DATE: 6/28/01	RECEIVED BY:	DATE:
PRINT NAME: KEVIN BROOM FIRM: WESTON	TIME: 2315	PRINT NAME: FIRM:	TIME:
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS: AIRBILL # 8245 2414 7229

TEMP:

PAGE 1 OF 1

COC REV 3/99

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

Case No: 29276
DAS No:

R

Region:	10	Date Shipped:	5/15/2001
Project Code:	TEC-774A	Carrier Name:	FedEx
Account Code:	01T10P50102D106XLA00	Airbill:	824524146900
CERCLIS ID:	WASFN1002171	Shipped to:	Liberty Analytical 501 Madison Avenue Cary NC 27513 (919) 379-4080
Spill ID:			
Site Name/State:	Columbia River/Lake Roosevelt & Tributaries		
Project Leader:	Susan FitzGerald		
Action:	Expanded Site Investigation/RI		
Sampling Co:	Roy F. Weston, Inc.		

Chain of Custody Record

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

Sampler Signature:

ORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE	STATION LOCATION	SAMPLE COLLECT DATE/TIME	INORGANIC SAMPLE No.	QC Type
JX425	Municipal Water Supply	/G	BNA (21), PEST (21), VOA (21)	01204100 (1)	CR001SW			–
JX426	Municipal Water Supply	/G	BNA (21), PEST (21), VOA (21)	01204101 (1)	CR002SW			Field Duplicate

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

BNA = CLP TCL Semivolatiles, PEST = CLP TCL Pesticide/PCBs, VOA = CLP TCL Volatiles

TR Number: 10-413203084-051501-0003

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Contract Laboratory Analytical Services Support, 2000 Edmund Halley Dr., Reston, VA. 20191-3436 Phone 703/264-9348 Fax 703/264-9222

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

Case No: 29276
DAS No:

R

Region:	10	Date Shipped:	5/15/2001	Chain of Custody Record	Sampler Signature:
Project Code:	TEC-774A	Carrier Name:	FedEx	Relinquished By (Date / Time)	Received By (Date / Time)
Account Code:	01T10P50102D106XLA00	Airbill:	824524146895	1	
CERCLIS ID:	WASFN1002171	Shipped to:	Sentinel Inc. 116 Washington Street, NE Huntsville AL 35801 (256) 534-9800	2	
Spill ID:				3	
Site Name/State:	Columbia River Inorganics/WA			4	
Project Leader:	Susan FitzGerald				
Action:	Expanded Site Investigation/RI				
Sampling Co:	Roy F. Weston, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	QC Type
MJ08Y2	Municipal Water Supply	/G	TM (21)	01204100 (1)	CR001SW			–
MJ08Y3	Municipal Water Supply	/G	TM (21)	01204101 (1)	CR002SW			Field Duplicate
MJ08Y4	Municipal Water Supply	/G	TM (21)	01204102 (1)	CR003SW			–
MJ08Y5	Municipal Water Supply	/G	TM (21)	01204108 (1)	RS001SW			Rinsate
~~MJ09E0~~	~~Sediment~~	~~/G~~	~~TM (21)~~	~~01204109 (1)~~	~~RS001SD~~			~~Rinsate~~

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

TM = CLP TAL Total Metals

TR Number: 10-413203084-051501-0004

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Contract Laboratory Analytical Services Support, 2000 Edmund Halley Dr., Reston, VA. 20191-3436 Phone 703/264-9348 Fax 703/264-9222

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A
2. Region No.: 10
Sampling Co.: RF Weston
4. Date Shipped: 5/16/01
Carrier: Fedex
Account Code: 01T10P50102D106XLA00
Sampler (Name): Heather Williams
Airbill Number: 8245 2414 6910
Site Name: Columbia River/ Lake Roosevelt
Sampler Signature: Heath Williams
5. Ship To: Liberty Analytical, 501 Madison Ave, Cary, NC 27513, (919) 379-4100, ATTN: Alice Evans
City, State: Kettle WA
Site Spill ID: 6X
Op Unit: 00

3. Purpose**: Lead: [X] S&F, [ ] PRP, [ ] ST, [ ] FED, [ ] BZ; Early Action: [ ] IA, [ ] PA, [ ] REM, [ ] RI, [ ] SI, [X] SSI; Long-Term Action: [ ] RIFS, [ ] RD, [ ] RA, [ ] O&M

6. Matrix (Enter in Column A): (1) Surface Water, 2. Ground Water, 3. Leachate, 4. Field QC, 5. Soil/Sediment, 6. PE-water, 7. PE-soil, 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl, 2. HNO3, 3. NaHSO4, 4. H2SO4, (5.) Ice only, 6. CH3OH, 7. Other (specify in Column D), N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 (21) VOA	TA (circle one) PR* 7 14 (21) BNA	TA (circle one) PR* 7 14 (21) Pest/PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Field Spike, D = Field Duplicate, R = Rinsate, PE = Perform Eval)
JX428	SW	L	G	5	2	1	1	01204103	RS-001-SW	5/15/01 1120	MJ08Y5	HW	R
JX427	SW	L	G	5	2	—	—	01204102	CR-003-SW	5/15/01 1130	MJ08Y4	HW	—
JX429	SD	L	G	5	—	—	1	01204104	CR-001-SD	5/14/01 1900	MJ08Y6	HW	—
~~JX430~~	~~SD~~	~~L~~	~~G~~	~~5~~	~~—~~	~~—~~	~~1~~	~~01204105~~	~~CR-002-SD~~	~~5/14/01 1905~~	~~MJ08Y7~~	~~HW~~	~~D~~
JX431	SD	L	G	5	—	—	1	01204106	CR-003SD	5/14/01 1800	MJ08Y8	HW	—
JX432	SD	L	G	5	—	—	1	01204107	CR-004-SD	5/15/01 1300	MJ08Y9	HW	—

Shipment for Case Complete? (Y/N) Y
Page 1 of 2
VOA MS/MSD Required? Y/N Y Sample #:
BNA MS/MSD Required? Y/N Y Sample #:
Pest/PCB MS/MSD Required? Y/N Y Sample #:
Additional Sampler Signatures:
Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Heath Williams	5/16/01 1200				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)

CLASS-99-001

391002

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A
2. Region No.: 10
Sampling Co.: RF Weston
4. Date Shipped: 5/16/01
Carrier: Fedex

Account Code: 01T10P50102D106XLA00
Sampler (Name): Heather Williams
Airbill Number: 8245 2414 6910

Site Name: Columbia River/ Lake Roosevelt
Sampler Signature: Heather Williams
5. Ship To: Liberty Analytical, 501 Madison Ave, Cary, NC 27513, (919) 379-4100, ATTN: Alice Evans

City, State: Kettle Falls, WA
Site Spill ID: 6X
Op Unit: 00

3. Purpose**
Lead: [X] SF [ ] PRP [ ] ST [ ] FED [ ] BZ
Early Action: [ ] IA [ ] PA [ ] REM [ ] RI [ ] SI [X] ESI
Long-Term Action: [ ] RIFS [ ] RD [ ] RA [ ] O&M

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. PE-water 7. PE-soil 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. CH3OH 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/ PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field Spike D = Field Duplicate R = Rinsate PE = Perform Eval.)
JX427	SW	L	G	5	—	2	2	0204102	CR-003SW	5/15/01 1130	MJ08X4	HW	—

Shipment for Case Complete? (Y/N) Y
Page 2 of 2
VOA MS/MSD Required? Y/N Sample #:
BNA MS/MSD Required? Y/N Sample #:
Pest/PCB MS/MSD Required? Y/N Sample #:
Additional Sampler Signatures
Chain of Custody Seal Number(s)

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Heather Williams	5/16/01 1200				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)

CLASS-99-001

391003

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A	2. Region No.: 10	Sampling Co.: Roy F Weston	4. Date Shipped: 5/18/01
Carrier: Fedex			
Account Code: OT 01T10P50102D106XLA00	Sampler (Name): Susan FitzGerald	Airbill Number: 8245 2414 6921	
Site Name: Columbia River/ Lake Roosevelt	Sampler Signature: [signature]	5. Ship To: Liberty Analytical, 501 Madison Ave, Cary, NC 27513, (919) 379-4100, ATTN: Alice Evans	
City, State: Kettle Falls, WA	Site Spill ID: 6X	Op Unit: 00	

3. Purpose**: Lead [X] SF [ ] PRP [ ] ST [ ] FED [ ] BZ; Early Action [ ] IA [ ] PA [ ] REM [ ] RI [ ] SI [X] ESI; Long-Term Action [ ] RIFS [ ] RD [ ] RA [ ] O&M

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. PE-water 7. PE-soil 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. CH3OH 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field Spike D = Field Duplicate R = Rinsate PE = Perform Eval.)
JX433	5	L	G	5			1	01204110	CR-005-SD	5/17/01 1000	MJ08Z0	SMF	—
JX434	5	L	G	5			1	01204111	CR-006-SD	5/17/01 1045	MJ08Z1	SMF	—
JX435	5	L	G	5			1	01204112	CR-007-SD	5/17/01 1130	MJ08Z2	SMF	—
JX436	5	L	G	5			1	01204113	CR-008-SD	5/17/01 1230	MJ08Z3	SMF	—
JX437	5	L	G	5			1	01204114	CR-009-SD	5/17/01 1415	MJ08Z4	SMF	—
JX438	5	L	G	5			1	01204115	CR-010-SD	5/17/01 1445	MJ08Z5	SMF	—
JX439	5	L	G	5			1	01204116	CR-011-SD	5/17/01 1600	MJ08Z6	SMF	—
JX440	5	L	G	5			1	01204117	CR-012-SD	5/17/01 1700	MJ08Z7	SMF	—

Shipment for Case Complete? (Y/N): Y | Page 1 of 1

VOA MS/MSD Required? Y/N Sample #:
BNA MS/MSD Required? Y/N Sample #:
Pest/PCB MS/MSD Required? Y/N Sample #:

Additional Sampler Signatures:

Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	5/17/01 20:30				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)

CLASS-99-001

391006

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A
2. Region No.: 10
Sampling Co.: Roy F Weston
4. Date Shipped: 5/21/01
Carrier: Fedex
Account Code: 01T10P50102D106X LA00
Sampler (Name): Susan FitzGerald
Airbill Number: 8245 2414 6943
Site Name: Columbia River / Lake Roosevelt
Sampler Signature:
5. Ship To: Liberty Analytical, 501 Madison Ave, Cary, NC 27513, (919) 379-4100
ATTN: Alice Evans
City, State: Kettle Falls, WA
Site Spill ID: 6X
Op Unit: 00

3. Purpose**
Lead: [X] ST [ ] PRP [ ] ST [ ] FED [ ] BZ
Early Action: [ ] IA [ ] PA [ ] REM [ ] RI [ ] SI [X] DSI
Long-Term Action: [ ] RIFS [ ] RD [ ] RA [ ] O&M

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. PE-water 7. PE-soil 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. CH3OH 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field Spike D = Field Duplicate R = Rinsate PE = Perform Eval.)
JX441	5	L	G	5			1	01204118	CR-013-SD	5/18/01 1030	MJ0878	SMF	—
JX442	5	L	G	5			1	01204119	CR-014-SD	5/18/01 1100	MJ0879	SMF	—
JX443	5	L	G	5			1	01204120	CR-015-SD	5/18/01 1230	MJ0900	SMF	MS/MSD
JX444	5	L	G	5			1	01204121	CR-016-SD	5/18/01 1330	MJ0901	SMF	—
JX445	5	L	G	5			1	01204122	CR-017-SD	5/18/01 1430	MJ0902	SMF	—
JX446	5	L	G	5			1	01204123	CR-018-SD	5/18/01 1530	MJ0903	SMF	—
JX550	5	L	G	5			1	01204124	CR-066-SD	5/18/01 1545	MJ0952	SMF	—
JX447	5	L	G	5			1	01204125	CR-019-SD	5/19/01 900	MJ0904	SMF	—
JX448	5	L	G	5			1	01204126	CR-020-SD	5/19/01 1045	MJ0905	SMF	—
JX451	5	L	G	5			1	01204127	CR-023-SD	5/19/01 1130	MJ0908	SMF	—

Shipment for Case Complete? (Y/N) Y
Page 1 of 1
VOA MS/MSD Required? Y/N Y Sample #:
BNA MS/MSD Required? Y/N Y Sample #:
Pest/PCB MS/MSD Required? Y/N Y Sample #: JX443
Additional Sampler Signatures:
Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	5/22/01 21:45				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)

CLASS-99-001

391008

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code: TEC-7144 01T10P50102D1000LA00	2. Account Code	3. Region No.: 10	Sampling Co.: Roy F. Weston	5. Date Shipped: 5/18/01	Carrier: Fedex
Regional Information: 10		Sampler (Name): Susan Fitzgerald		Airbill Number: 8245 2414 6932	
Non-Superfund Program		Sampler Signature: [signature]		6. Ship To: Sentinel 116 Washington St., NE Huntsville, AL 35801 (256) 534-9800 ATTN: Kimberly Hayes	
Site Name: Columbia River/Lake Roosevelt		4. Purpose* Lead: SF, PRP, ST, FED; Early Action: CLEM, PA, REM, RI, SI, ES; Long-Term Action: FS, RD, RA, O&M, NPLD			
City, State: Kettle Falls, WA	Site Spill ID: 6X				

7. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval. — = Not a QC Sample)
MJ0870	5	L	G	6		1						01204110	CR-005-SD	5/17/01 1000	JX433	SMF	—
MJ0871	5	L	G	6		1						01204111	CR-006-SD	5/17/01 1045	JX434	SMF	—
MJ0872	5	L	G	6		1						01204112	CR-007-SD	5/17/01 1130	JX435	SMF	—
MJ0873	5	L	G	6		1						01204113	CR-008-SD	5/17/01 1330	JX436	SMF	—
MJ0874	5	L	G	6		1						01204114	CR-009-SD	5/17/01 1415	JX437	SMF	—
MJ0875	5	L	G	6		1						01204115	CR-010-SD	5/17/01 1445	JX438	SMF	—
MJ0876	5	L	G	6		1						01204116	CR-011-SD	5/17/01 1600	JX439	SMF	—
MJ0877	5	L	G	6		1						01204117	CR-012-SD	5/17/01 1700	JX440	SMF	—
MJ0846	5	L	G	6		1						01204104	CR-001-SD	5/14/01 1900	JX429	SMF	—
MJ0848	5	L	G	6		1						01204106	CR-003-SD	5/14/01 1800	JX431	SMF	—

Shipment for Case Complete? (Y/N): Y | Page 1 of 3 | Sample(s) to be Used for Laboratory QC: MJ0900 | Additional Sampler Signatures: Heath Wilug | Chain of Custody Seal Number(s):

Should be 1230

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	5-20-01 21:45				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

392282

A21-012-13 REV

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code	2. Account Code	3. Region No.	Sampling Co.	5. Date Shipped	Carrier
TEC-774A	0IT10P50102D10	10	Roy F Weston	5/21/01	Fedex

Regional Information	Sampler (Name)	Airbill Number
10	Susan FitzGerald	8245 2414 6932

Non-Superfund Program	Sampler Signature	6. Ship To:
Columbia River/Lake Roosevelt	[signature]	Sentinel

Site Name: Columbia River/Lake Roosevelt

4. Purpose*: Lead SF, PRP, ST, FED; Early Action CLEM, PA, REM, RI, SI, ESI; Long-Term Action FS, RD, RA, O&M, NPLD

116 Washington St NE
Huntsville, AL 35801
(256) 534-9800
ATTN: Kimberly Hayes

City, State: Kettle Falls, WA
Site Spill ID: 6X

7. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform Eval, — = Not a QC Sample)
MJ08Y9	5	L	G	6		1						01204107	CR-004-SD	5/15/01 1300	JX432	SMF	—
MJ0878	5	L	G	6		1						01204118	CR-013-SD	5/18/01 1630	JX441	SMF	—
MJ0879	5	L	G	6		1						01204119	CR-014-SD	5/18/01 1100	JX442	SMF	—
MJ0900	5	L	G	6		1						01204120	CR-015-SD	5/18/01 1230	JX443	SMF	MS/MSD
MJ0901	5	L	G	6		1						01204121	CR-016-SD	5/18/01 1330	JX444	SMF	—
MJ0902	5	L	G	6		1						01204122	CR-017-SD	5/18/01 1430	JX445	SMF	—
MJ0903	5	L	G	6		1						01204123	CR-018-SD	5/18/01 1530	JX446	SMF	—
MJ09E2	5	L	G	6		1						01204124	CR-066-SD	5/18/01 1545	JX550	SMF	—
MJ0904	5	L	G	6		1						01204125	CR-019-SD	5/19/01 900	JX447	SMF	—
MJ0905	5	L	G	6		1						01204126	CR-020-SD	5/19/01 1045	JX448	SMF	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
Y	2 of 3	MJ0900	[signature]	

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	5-20-01 21:45				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

A21-012-13 REV

392283

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A01T10P5N102D106X1Am	2. Account Code	3. Region No.: 10	Sampling Co.: Roy F Weston	5. Date Shipped: 5/21/01	Carrier: Fedex
Regional Information: 10		Sampler (Name): Susan FitzGerald		Airbill Number: 8245 2414 6932	
Non-Superfund Program		Sampler Signature: [signature]		6. Ship To: Sentinel	
Site Name: Columbia River/Lake Roosevelt		4. Purpose* Lead: ☒ Ref ☐ PRP ☐ ST ☐ FED; Early Action: ☐ CLEM ☐ PA ☐ REM ☐ RI ☐ SI ☒ ESI; Long-Term Action: ☐ FS ☐ RD ☐ RA ☐ O&M ☐ NPLD		116 Washington St. NE Huntsville, AL 35801 (256) 534-9900 ATTN: Kimberly Hayes	
City, State: Kettle Falls, WA	Site Spill ID: 6X				

7. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval. — = Not a QC Sample)
MJ0908	5	L	G	6		1						01204127	CR.023.50	5/19/01 1130	DX451	SMF	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
Y	3 of 3	MJ0900	[signature]	

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	5-20-01 21:45				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

392284

A21-012-13 REV

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A
2. Region No.: 10
Sampling Co.: Ray F Weston
4. Date Shipped: 5/21/01
Carrier: Fedex
Account Code: 01T10P50102D106XLA00
Sampler (Name): Susan Fitzgerald
Airbill Number: 8245 2414 6954
Site Name: Columbia River/ Lake Roosevelt
Sampler Signature:
5. Ship To: Liberty Analytical, 501 Madison Ave, Cary, NC 27513, (919) 379-4100, ATTN: Alice Evans
City, State: Kettle Falls, WA
Site Spill ID: 6X
Op Unit: 00

3. Purpose**: Lead [X] SP [ ] PRP [ ] ST [ ] FED [ ] BZ; Early Action [ ] IA [ ] PA [ ] REM [ ] RI [ ] SI [X] EI; Long-Term Action [ ] RIFS [ ] RD [ ] RA [ ] O&M

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. PE-water 7. PE-soil 8. Other (specify in Column A)
7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. CH3OH 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/ PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field Spike D = Field Duplicate R = Rinsate PE = Perform Eval.)
~~JX449~~	~~5~~	~~L~~	~~G~~	~~5~~			~~1~~	~~0121410~~	~~RS-002-SD~~	~~5/21/01 1030~~	~~MJ0906~~	~~SMF~~	~~R~~
JX450	5	L	G	5			1	0121402	CR-022-SD	5/21/01 1030	MJ0907	SMF	—
JX452	5	L	G	5			1	0121404	CR-024-SD	5/21/01 1050	MJ0909	SMF	—
JX453	5	L	G	5			1	0121406	CR-025-SD	5/21/01 1200	MJ0910	SMF	—
JX454	5	L	G	5 DW			1	0121408	CR-026-SD	5/21/01 1245	MJ0911	SMF	—
JX455	5	L	G	5			1	0121410	CR-027-SD	5/21/01 1330	MJ0912	SMF	—
JX457	5	L	G	5			1	0121414	CR-029-SD	5/21/01 1415	MJ0914	SMF	—
JX456	5	L	G	5			1	0121412	CR-028-SD	5/21/01 1445	MJ0913	SMF	—
JX458	5	L	G	5			1	0121416	CR-030-SD	5/21/01 1545	MJ0915	SMF	—
JX459	5	L	G	5			1	0121418	CR-031-SD	5/21/01 1645	MJ0916	SMF	—

Shipment for Case Complete? (Y/N): Y
Page 1 of 2
VOA MS/MSD Required? Y/N Sample #:
BNA MS/MSD Required? Y/N Sample #:
Pest/PCB MS/MSD Required? Y/N Sample #:
Additional Sampler Signatures:
Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	5-21-01 2115				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)

CLASS-99-001

391007

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A
2. Region No.: 10
Sampling Co.: Roy F. Weston
4. Date Shipped: 5/22/01
Carrier: Fedex
Account Code: 01T10P50102D106X1A00
Sampler (Name): Susan Fitzgerald
Airbill Number: 8245 2414 ~~6954~~ 6954
Site Name: Columbia River / Lake Roosevelt
Sampler Signature:
5. Ship To: Liberty Analytical, 501 Madison Ave, Cary NC 27513, (919) 379-4100, ATTN: Alice Evans
City, State: Kettle Falls, WA
Site Spill ID: 6X
Op Unit: 00

3. Purpose**
Lead: [X] SF [ ] PRP [ ] ST [ ] FED [ ] BZ
Early Action: [ ] IA [ ] PA [ ] REM [ ] RI [ ] SI [X] ESI
Long-Term Action: [ ] RIFS [ ] RD [ ] RA [ ] O&M

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. PE-water
7. PE-soil
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Ice only
6. CH3OH
7. Other (specify in Column D)
N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Field Spike, D = Field Duplicate, R = Rinsate, PE = Perform Eval.)
JX460	5	L	G	5			1	01214120	CR.032.SD	5/21/01 1800	MJ0917	SMF	—

Shipment for Case Complete? (Y/N)
Page 2 of 2
VOA MS/MSD Required? Y/N Sample #:
BNA MS/MSD Required? Y/N Sample #:
Pest/PCB MS/MSD Required? Y/N Sample #:
Additional Sampler Signatures:
Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	5/21/01 2115				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)

CLASS-99-001

391009

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A
2. Region No.: 10
Sampling Co.: Ray F Weston
4. Date Shipped: 5/23/01
Carrier: Fedex

Account Code: 0T10P50102D106XLA00
Sampler (Name): Susan FitzGerald
Airbill Number: 8245 2414 7365

Site Name: Columbia River/ Lake Roosevelt
Sampler Signature:
5. Ship To: Liberty Analytical, 501 Madison Ave, Cary, NC 27513, (919) 379-4100, ATTN: Alice Evans

3. Purpose**: Lead [X] SF, [ ] PRP, [ ] ST, [ ] FED, [ ] BZ; Early Action [ ] IA, [ ] PA, [ ] REM, [ ] RI, [ ] SI, [X] SSI; Long-Term Action [ ] RIFS, [ ] RD, [ ] RA, [ ] O&M

City, State: Kettle Falls, WA
Site Spill ID: 10X
Op Unit: 00

6. Matrix (Enter in Column A): 1. Surface Water, 2. Ground Water, 3. Leachate, 4. Field QC, 5. Soil/Sediment, 6. PE-water, 7. PE-soil, 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl, 2. HNO3, 3. NaHSO4, 4. H2SO4, 5. Ice only, 6. CH3OH, 7. Other (specify in Column D), N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med.	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/ PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Field Spike, D = Field Duplicate, R = Rinsate, PE = Perform Eval.)
JX461	5	L	G	5			1	01214122	CR-033-SD	5/22/01 10:00	MJ0918	SMF	—
JX462	5	L	G	5			1	01214124	CR-034-SD	5/22/01 1100	MJ0919	SMF	—
JX463	5	L	G	5			1	01214126	CR-035-SD	5/22/01 1200	MJ0920	SMF	MS/MSD
JX464	5	L	G	5			1	01214128	CR-036-SD	5/22/01 1400	MJ0921	SMF	
JX465	5	L	G	5			1	01214130	CR-037-SD	5/22/01 1500	MJ0922	SMF	—
JX466	5	L	G	5			1	01214132	CR-038-SD	5/22/01 1630	MJ0923	SMF	—

Shipment for Case Complete? (Y/N) Y
Page 1 of 1
VOA MS/MSD Required? Y/N Sample #:
BNA MS/MSD Required? Y/N Sample #:
Pest/PCB MS/MSD Required? Y/N Sample #: JX463
Additional Sampler Signatures: Heath Wing
Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	5-22-01 2215				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)
CLASS-99-001

391010

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A	2. Region No.: 10	Sampling Co.: Roy F Weston	4. Date Shipped: 5/24/01 Carrier: Fedex
Account Code: 01T10P50102D106XLA00	Sampler (Name): Susan FitzGerald		Airbill Number: 8245 2414 7354
Site Name: Columbia River/ Lake Roosevelt	Sampler Signature:		5. Ship To: Liberty Analytical Attn: 501 Madison Ave Cary, NC 27513 (919) 379-4100 ATTN: Alice Evans
City, State: Kettle Falls WA	Site Spill ID: 6K	Op Unit: 00	

3. Purpose**: Lead [X] BF, [ ] PRP, [ ] ST, [ ] FED, [ ] BZ; Early Action [ ] IA, [ ] PA, [ ] REM, [ ] RI, [ ] SI, [X] SSI; Long-Term Action [ ] RIFS, [ ] RD, [ ] RA, [ ] O&M

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. PE-water 7. PE-soil 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. CH3OH 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/ PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field Spike D = Field Duplicate R = Rinsate PE = Perform Eval.)
JX467	5	L	G	5			1	01214134	CR-039-SD	5/23/01 1015	MJ0924	SMF	—
JX468	5	L	G	5			1	01214136	CR-040-SD	5/23/01 1130	MJ0925	SMF	—
JX469	5	L	G	5			1	01214138	CR-041-SD	5/23/01 1245	MJ0926	SMF	—
JX470	5	L	G	5			1	01214140	CR-042-SD	5/23/01 1330	MJ0927	SMF	—
JX471	5	L	G	5			1	01214142	CR-043-SD	5/23/01 1400	MJ0928	SMF	—
JX472	5	L	G	5			1	01214144	CR-044-SD	5/23/01 1515	MJ0929	SMF	—

Shipment for Case Complete? (Y/N) Y

Page 1 of 1

VOA MS/MSD Required? Y/N Y Sample #:
BNA MS/MSD Required? Y/N Y Sample #:
Pest/PCB MS/MSD Required? Y/N Y Sample #:

Additional Sampler Signatures:

Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	5-24-01 0752				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)

CLASS-99-001

391011

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code	2. Account Code	3. Region No.	Sampling Co.	5. Date Shipped	Carrier
TEC-774A	0T10P50102D06X100	10	Roy F. Weston	5/25/01	Fedex

Regional Information: 10

Sampler (Name): Susan Fitzgerald

Airbill Number: 8245 2414 6976

Non-Superfund Program

Sampler Signature:

6. Ship To: Sentinel, 116 Washington St NE, Huntsville, AL 35801, (256) 534-9800, ATTN: Kimberly Hayes

Site Name: Columbia River/Lake Roosevelt

City, State

Site Spill ID

4. Purpose*: Lead [X] SF [ ] PRP [ ] ST [ ] FED

Early Action: [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [X] ESI

Long-Term Action: [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

7. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval. — = Not a QC Sample)
MJ0974	5	L	G	6		1						01214141	TR-024-SD	5/24/01 1325	—	SMF	—
MJ0975	5	L	G	6		1						01214143	TR-025-SD	5/24/01 1145	—	SMF	—
MJ0967	5	L	G	6		1						01214127	TR-017-SD	5/24/01 1215	—	SMF	—
MJ0969	5	L	G	6		1						01214131	TR-018-SD	5/24/01 1300	—	SMF	—
MJ0970	5	L	G	6		1						01214133	TR-019-SD	5/24/01 1345	—	SMF	—
MJ0971	5	L	G	6		1						01214135	TR-020-SD	5/24/01 1615	—	SMF	MS/MSD

Shipment for Case Complete? (Y/N): N

Page 1 of 1

Sample(s) to be Used for Laboratory QC: ~~MJ0920, MJ0906~~ MJ0971

Additional Sampler Signatures:

Chain of Custody Seal Number(s):

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	5-24-01 2100				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

292288

A21-012-13 REV

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code	2. Account Code	3. Region No.	Sampling Co.	5. Date Shipped	Carrier
TEC-774A	0TT1095010207106KLA00	10	Roy F Weston	5/25/01	Fedex

Regional Information	Sampler (Name)	Airbill Number
10	Susan FitzGerald	8245 2414 7332
Non-Superfund Program	Sampler Signature	6. Ship To: Sentinel
Site Name: Columbia River/Lake Roosevelt	4. Purpose* Lead: SF, PRP, ST, FED; Early Action: CLEM, PA, REM, RI, SI, ESI; Long-Term Action: FS, RD, RA, O&M, NPLD	116 Washington St. NE, Huntsville, AL 35801, (256) 534-9800, ATTN: Kimberly Hayes
City, State: Kettle Falls, WA	Site Spill ID: 6X	

7. Matrix (Enter in Column A): 1. Surface Water, 2. Ground Water, 3. Leachate, 4. Field, 5. Soil/Sediment, 6. Oil (High only), 7. Waste (High only), 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl, 2. HNO3, 3. NaOH, 4. H_2SO_4, 5. $K_2CR_2O_7$, 6. Ice only, 7. Other (specify in Column D), N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform Eval, — = Not a QC Sample)
MJ0929	5	L	G	6		1						01214144	CR.044.SD	5/23/01 1515	JX472	SM	—
MJ0968	5	L	G	6		1						01214129	TR.016.SD	5/23/01 1645	—	SM	—
MJ0959	5	L	G	6		1						01214115	TR.009.SD	5/23/01 1100	—	SM	—
MJ0960	5	L	G	6		1						01214117	TR.010.SD	5/23/01 1220	—	SM	—
MJ0961	5	L	G	6		1						01214119	TR.011.SD	5/23/01 1410	—	SM	—
MJ0962	5	L	G	6		1						01214121	TR.012.SD	5/23/01 1445	—	SM	—
MJ0963	5	L	G	6		1						01214123	TR.013.SD	5/23/01 1555	—	SM	—
MJ0964	5	L	G	6		1						01214125	TR.014.SD	5/23/01 1640	—	SM	—
MJ0972	5	L	G	6		1						01214137	TR.022.SD	5/24/01 1530	—	SM	—
MJ0973	5	L	G	6		1						01214139	TR.023.SD	5/24/01 1425	—	SM	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
Y	1 of 1	MJ0970, MJ0908		

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	5-24-01 2100				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

392297

A21-012-13 REV

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code	2. Account Code	3. Region No.	Sampling Co.	5. Date Shipped	Carrier
TEC-774A	01T1OP50102D10	X4A10 10	Roy F. Weston	5/25/01	Fedex

Regional Information	Sampler (Name)	Airbill Number
10	Susan FitzGerald	8245 2414 7310

Non-Superfund Program	Sampler Signature	6. Ship To:
	[signature]	Sentinel

Site Name: Columbia River/Lake Roosevelt

City, State: Kettle Falls, WA

Site Spill ID: 6X

4. Purpose*
Lead: [X] SF [ ] PRP [ ] ST [ ] FED
Early Action: [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI
Long-Term Action: [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

6. Ship To: Sentinel
116 Washington St. NE
Huntsville AL 35801
(256) 534-9800
ATTN: Kimberly Hayes

7. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

8. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval. — = Not a QC Sample)
MJ0955	5	L	G	6		1						01214107	TR-004-SD	5/22/01 1455	—	[illegible]	—
MJ0956	5	L	G	6		1						01214109	TR-006-SD	5/22/01 1550	—	[illegible]	—
MJ0957	5	L	G	6		1						01214111	TR-007-SD	5/22/01 1705	—	[illegible]	—
MJ0958	5	L	G	6		1						01214113	TR-008-SD	5/22/01 1735	—	[illegible]	—
MJ0953	5	L	G	6		1						01214103	TR-002-SD	5/22/01 1045	—	[illegible]	—
MJ0924	5	L	G	6		1						01214134	CR-039-SD	5/23/01 1015	JX467	[illegible]	—
MJ0925	5	L	G	6		1						01214136	CR-040-SD	5/23/01 1130	JX468	[illegible]	—
MJ0926	5	L	G	6		1						01214138	CR-041-SD	5/23/01 1245	JX469	[illegible]	—
MJ0927	5	L	G	6		1						01214140	CR-042-SD	5/23/01 1330	JX470	[illegible]	—
MJ0928	5	L	G	6		1						01214142	CR-043-SD	5/23/01 1400	JX471	[illegible]	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
Y	1 of 1	MJ0920, MJ0900	[signature]	

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	5-24-01 2100				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

392287

A21-012-13 REV

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A	2. Account Code: 01110P50b2D16GX	3. Region No.: 10	Sampling Co.: Roy F Weston	5. Date Shipped: 5/25/01	Carrier: Fedex
Regional Information: 10		Sampler (Name): Susan FitzGerald		Airbill Number: 8245 2414 7321	
Non-Superfund Program		Sampler Signature: [signature]		6. Ship To: Sentinel	
Site Name: Columbia River/Lake Roosevelt		4. Purpose* Lead: SF, PRP, ST, FED; Early Action: CLEM, PA, REM, RI, SI, ESI; Long-Term Action: FS, RD, RA, O&M, NPLD		116 Washington St. NE, Huntsville, AL 35801, (256) 534-9800	
City, State: Kettle Falls, WA	Site Spill ID: 6X			ATTN: Kimberly Hayes	

7. Matrix (Enter in Column A): 1. Surface Water, 2. Ground Water, 3. Leachate, 4. Field, 5. Soil/Sediment, 6. Oil (High only), 7. Waste (High only), 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl, 2. HNO3, 3. NaOH, 4. H_2SO_4, 5. $K_2CR_2O_7$, 6. Ice only, 7. Other (specify in Column D), N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc.: Low Med High	C Sample Type: Comp/ Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform Eval., — = Not a QC Sample)
MJ0952	5	L	G	6		1						012141 01	TR-001-SD	5/21/01 1715	—	SMF	—
MJ0917	5	L	G	6		1						012141 20	CR-032-SD	5/21/01 1800	JX460	SMF	—
MJ0918	5	L	G	6		1						012141 22	CR-033-SD	5/22/01 1000	JX461	SMF	—
MJ0919	5	L	G	6		1						012141 24	CR-034-SD	5/22/01 1100	JX462	SMF	—
~~MJ0952~~	~~5~~	~~L~~	~~G~~	~~6~~		~~1~~						~~012141 03~~	~~TR-002-SD~~	~~5/21/01 1645~~	—		—
MJ0920	5	L	G	6		1						012141 26	CR-035-SD	5/22/01 1200	JX463	SMF	MS/MSD
MJ0921	5	L	G	6		1						012141 28	CR-036-SD	5/22/01 1400	JX464	SMF	—
MJ0922	5	L	G	6		1						012141 30	CR-037-SD	5/22/01 1500	JX465	SMF	—
MJ0923	5	L	G	6		1						012141 32	CR-038-SD	5/22/01 1630	JX466	SMF	—
MJ0954	5	L	G	6		1						012141 05	TR-005-SD	5/22/01 1345	—	SMF	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
Y	1 of 1	MJ0920, MJ0906	[signature]	

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	5-4-01 2100				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

392285

A21-012-13 REV

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A	2. Account Code: 01T10P501029060	3. Region No.: 10	Sampling Co.: Roy F Weston	5. Date Shipped: 5/25/01	Carrier: Fedex
Regional Information: 10		Sampler (Name): Susan FitzGerald		Airbill Number: 8245 2414 7343	
Non-Superfund Program		Sampler Signature: [signature]		6. Ship To: Sentinel	
Site Name: Columbia River/Lake Roosevelt		4. Purpose* Lead: [X] BF, [ ] PRP, [ ] ST, [ ] FED; Early Action: [ ] CLEM, [ ] PA, [ ] REM, [ ] RI, [ ] SI, [X] ES; Long-Term Action: [ ] FS, [ ] RD, [ ] RA, [ ] O&M, [ ] NPLD		116 Washington St. NE Huntsville, AL 35801 (256) 534-9800 ATTN: Kimberly Hayes	
City, State: Kettle Falls, WA	Site Spill ID: 6X				

7. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval — = Not a QC Sample)
~~MJ0906~~	~~5~~	~~L~~	~~G~~	~~6~~		~~1~~						~~01214100~~	~~RS.002.SD~~	~~5/21/01 1030~~	~~JX449~~	~~SMF~~	~~R~~
MJ0907	5	L	G	6		1						01214102	CR.022.SD	5/21/01 1030	JX450	SMF	—
MJ0909	5	L	G	6		1						01214104	CR.024.SD	5/21/01 1050	JX452	SMF	—
MJ0910	5	L	G	6		1						01214106	CR.025.SD	5/21/01 1200	JX453	SMF	—
MJ0911	5	L	G	6		1						01214108	CR.026.SD	5/21/01 1245	JX454	SMF	—
MJ0912	5	L	G	6		1						01214110	CR.027.SD	5/21/01 1330	JX455	SMF	—
MJ0914	5	L	G	6		1						~~01214114~~ 01214114	CR.029.SD	5/21/01 1415	JX457	SMF	—
MJ0913	5	L	G	6		1						01214112	CR.028.SD	5/21/01 1445	JX456	SMF	—
MJ0915	5	L	G	6		1						01214116	CR.030.SD	5/21/01 1545	JX458	SMF	—
MJ0916	5	L	G	6		1						01214118	CR.031.SD	5/21/01 1645	JX459	SMF	—

Shipment for Case Complete? (Y/N): Y	Page 1 of 1	Sample(s) to be Used for Laboratory QC: MJ0906, ~~MJ0920~~	Additional Sampler Signatures: [signature]	Chain of Custody Seal Number(s)

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	5-24-01 2100				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

202296

A21-012-13 REV

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11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244 (425) 420-9200 FAX 420-9210
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FAX 906-9210
20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT Work Order #:

CLIENT: Roy F Weston
REPORT TO: Heather Williams
ADDRESS: 190 Queen Anne Ave N, Suite 200 Seattle, WA 98109
PHONE: (206) 521-7613 FAX: (206) 521-7601

INVOICE TO: SAME as Client
P.O. NUMBER:

PROJECT NAME: Columbia River/Lake Roosevelt
PROJECT NUMBER: 126111.001.002.001.00
SAMPLED BY: Susan FitzGerald

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: 10 | 7 | 5 | 4 | 3 | 2 | 1 | < 1 (STD.)
Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | < 1 (STD.)
OTHER Please Specify
*Turnaround Requests less than standard may incur Rush Charges

REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TOC EPA 415.1	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. 01214~~23~~32	5/22/01 1630	X	S	1	—	
2. 01214134	5/23/01 1015	X	S	1	—	
3. 01214136	5/23/01 1130	X	S	1	—	
4. 01214138	5/23/01 1245	X	S	1	—	
5. 01214140	5/23/01 1330	X	S	1	—	
6. 01214142	5/23/01 1400	X	S	1	—	
7. 01214144	5/23/01 1515	X	S	1	—	
8. 01204104	5/14/01 1900	X	S	1	—	
9. 01204106	5/14/01 1800	X	S	1	—	
10. 01204107	5/15/01 1300	X	S	1	—	
11. 01204110	5/17/01 1000	X	S	1	—	
12. 01204111	5/17/01 1045	X	S	1	—	
13. 01204112	5/17/01 1130	X	S	1	—	
14. 01204113	5/17/01 1230	X	S	1	—	
15. 01204114	5/17/01 1415	X	S	1	—	

RELINQUISHED BY: [signature]	DATE: 5-25-01	RECEIVED BY:	DATE:
PRINT NAME: SUSAN FITZGERALD FIRM: ROY F WESTON	TIME: 0700	PRINT NAME: FIRM:	TIME:
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS: Airbill #: 8245 2414 6998
TEMP:

COC REV 3/99 PAGE 1 OF 1

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Environmental Laboratory Network
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11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244 (425) 420-9200 FAX [illegible]
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FAX 906-9210
20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: Ray F Weston
REPORT TO: Heather Williams
ADDRESS: 190 Queen Anne Ave N, Ste 200
Seattle, WA 98109
PHONE: (206) 521-7613 FAX: (206) 571-7601

INVOICE TO: Same as client
P.O. NUMBER:

PROJECT NAME: Columbia River/Lake Roosevelt
PROJECT NUMBER: 12614.001.002.0101.00
SAMPLED BY: Susan FitzGerald

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: 10 | 7 | 5 | 4 | 3 | 2 | 1 | <1 (STD.)
Petroleum Hydrocarbon Analyses: 5 (STD.) | 4 | 3 | 2 | 1 | <1
OTHER — Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TPH - EPA 8100-M	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. 01204115	5/17/01 1445	X	S	1	—	
2. 01204116	5/17/01 1600	X	S	1	—	
3. 01204117	5/17/01 1700	X	S	1	—	
4. 01204118	5/18/01 1030	X	S	1	—	
5. 01204119	5/18/01 1100	X	S	1	—	
6. 01204120	5/18/01 1230	X	S	1	MS/MSD	
7. 01204121	5/18/01 1330	X	S	1	—	
8. 01204122	5/18/01 1430	X	S	1	—	
9. 01204123	5/18/01 1530	X	S	1	—	
10. 01204124	5/18/01 1545	X	S	1	—	
11. 01204125	5/19/01 900	X	S	1	—	
12. 01204126	5/19/01 1045	X	S	1	—	
13. 01204127	5/19/01 1130	X	S	1	—	
14.						
15.						

RELINQUISHED BY: [signature]	DATE: 5/21/01	RECEIVED BY:	DATE:
PRINT NAME: Susan Fitzgerald FIRM: [illegible]	TIME: 0800	PRINT NAME: FIRM:	TIME:
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS: Airbill # 8245 2414 7601

TEMP:

COC REV 3/99

PAGE OF

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East 11115 Montgomery, Suite B, Spokane, WA 99206-4776 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FAX 906-9210
20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: Roy F Weston
REPORT TO: Heather Williams
ADDRESS: 190 Queen Anne Ave N, Suite 200
Seattle, WA 98109
PHONE: (206) ~~789~~ 521.7613 FAX (206) 521.7601
PROJECT NAME: Columbia River/Lake Roosevelt
PROJECT NUMBER: ~~1542~~ 12644.001.002.0101.004
SAMPLED BY: Susan FitzGerald

INVOICE TO: Same As Client
P.O. NUMBER:

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: 10 (STD.) | 7 | 5 | 4 | 3 | 2 | 1 | <1
Petroleum Hydrocarbon Analyses: 5 (STD.) | 4 | 3 | 2 | 1 | <1
OTHER Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TOC-EPA SW-846 9060M	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. 0121410 2	5/21/01 1030	X	S	1	—	
2. 0121410 4	5/21/01 1050	X	S	1	—	
3. 0121410 6	5/21/01 1200	X	S	1	—	
4. 0121410 8	5/21/01 1245	X	S	1	—	
5. 0121410 10	5/21/01 1330	X	S	1	—	
6. 0121412	5/21/01 1445	X	S	1	—	
7. 0121414	5/21/01 1415	X	S	1	—	
8. 0121416	5/21/01 1545	X	S	1	—	
9. 0121418	5/21/01 1645	X	S	1	—	
10. 0121420	~~5/21~~ 5/21/01 1800	X	S	1	—	
11. 0121422	5/22/01 1000	X	S	1	—	
12. 0121424	5/22/01 1100	X	S	1	—	
13. 0121426	5/22/01 1200	X	S	1	—	
14. 0121428	5/22/01 1400	X	S	1	—	
15. 0121430	5/22/01 1500	X	S	1	—	

RELINQUISHED BY:	DATE: 5/25/01	RECEIVED BY:	DATE:
PRINT NAME: Susan FitzGerald FIRM: Roy F Weston	TIME: 0800	PRINT NAME: FIRM:	TIME:
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS: Airbill # 8245.2414.6987

TEMP:

COC REV 3/99

PAGE 1 OF 1

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A
2. Region No.: 10
Sampling Co.: Roy F Weston
4. Date Shipped: 6/1/01
Carrier: Fedex
Account Code: 01T10P50102D106XLA00
Sampler (Name): Susan Fitzgerald
Airbill Number: 8245 2414 7045
Site Name: Columbia River/ Lake Roosevelt
Sampler Signature:
5. Ship To: Liberty Analytical, 501 Madison Ave, Cary, NC 27513, (919) 379-4100, ATTN: Alice Evans
City, State: Kettle Falls, WA
Site Spill ID: 6X
Op Unit: 00

3. Purpose**: Lead: SF, PRP, ST, FED, BZ; Early Action: IA, PA, REM, RI, SI, FSI; Long-Term Action: RIFS, RD, RA, O&M

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. PE-water 7. PE-soil 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. CH3OH 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other: Rinsate	B Conc.: Low Med	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/ PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field Spike D = Field Duplicate R = Rinsate PE = Perform Eval.)
JX473	5	H	G	5			1	01224150	CR.045.SD	5/31/01 1045	MJ0930	SMF	—
JX474	5	M	G	5			1	01224151	CR.046.SD	5/31/01 1215	MJ0931	SMF	—
JX552	5	L	G	5			1	01224153	TR.026.SD	5/31/01 1345	MJ0976	SMF	MS/MSD
JX475	5	H	G	5			1	01224154	CR.047.SD	5/31/01 1430	MJ0932	SMF	—
JX476	5	H	G	5			1	01224155	CR.048.SD	5/31/01 1515	MJ0933	SMF	—
JX553	5	L	G	5			1	01224156	TR.028.SD	5/31/01 1545	MJ0978	SMF	—
JX477	5	H	G	5			1	01224157	CR.049.SD	5/31/01 1630	MJ0934	SMF	MS/MSD
JX556	8	L	G	5			1	01224158	RS.001.SD	5/31/01 830	MJ0981	SMF	R
JX557	8	L	G	5			1	01224159	RS.002.SD	5/31/01 900	MJ0982	SMF	R

Shipment for Case Complete? (Y/N): Y
Page 1 of 1
VOA MS/MSD Required? Y/N Sample #:
BNA MS/MSD Required? Y/N Sample #:
Pest/PCB MS/MSD Required? Y/N Sample #: JX552/JX477
Additional Sampler Signatures:
Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	5-31-01 22 30				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)

CLASS-99-001

391012

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A
2. Region No.: 10
Sampling Co.: Roy F Weston
4. Date Shipped: 6-2-01
Carrier: Fedex

Account Code: OTT10P50102D106XLA
Sampler (Name): Susan FitzGerald
Airbill Number: 8245 2414 7300

Site Name: Columbia River / Lake Roosevelt
Sampler Signature:
5. Ship To: Liberty Analytical, 501 Madison Ave, Cary, NC 27513, (919) 379-4100, ATTN: Alice Evans

City, State: Kettle Falls, WA
Site Spill ID: 6X
Op Unit: 00

3. Purpose**: Lead [X] SF [ ] PRP [ ] ST [ ] FED [ ] BZ; Early Action [ ] IA [ ] PA [ ] REM [ ] RI [ ] SI [X] ESI; Long-Term Action [ ] RIFS [ ] RD [ ] RA [ ] O&M

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. PE-water 7. PE-soil 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. CH3OH 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field Spike D = Field Duplicate R = Rinsate PE = Perform Eval.)
JX554	5	L	G	5			1	01224161	TR029.SD	6/1/01 1100	MJ0979	SMF	—
JX555	5	L	G	5			1	01224165	TR.030.SD	6/1/01 1330	MJ0980	SMF	—
JX478	5	H	G	5			1	01224160	CR050.SD	6/1/01 930	MJ0935	SMF	—
JX479	5	M	G	5			1	01224162	CR.051.SD	6/1/01 1145	MJ0936	SMF	—
JX480	5	H	G	5			1	01224163	CR.052.SD	6/1/01 1230	MJ0937	SMF	—
JX481	5	H	G	5			1	01224164	CR.053.SD	6/1/01 1415	MJ0938	SMF	—
JX559	5	L	G	5			1	01234052	TR.061.SD	6/3/01 1315	MJ0956	SMF	—

Shipment for Case Complete? (Y/N) Y
Page 1 of 1
VOA MS/MSD Required? Y/N N Sample #:
BNA MS/MSD Required? Y/N N Sample #:
Pest/PCB MS/MSD Required? Y/N N Sample #:
Additional Sampler Signatures:
Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6-3-01				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6-3-01 2100				
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)

CLASS-99-001

391013

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A	2. Account Code: 01T10P501020100XAM	3. Region No.: 10	Sampling Co.: Roy F Weston	5. Date Shipped: 6/4/01	Carrier: Fedex
Regional Information: 10		Sampler (Name): Susan FitzGerald		Airbill Number: 8245 2414 7067	
Non-Superfund Program		Sampler Signature: [signature]		6. Ship To: Sentinel	
Site Name: Columbia River/Lake Roosevelt		4. Purpose*: Lead [X] RF [X] PRP [ ] ST [ ] FED; Early Action [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [X] SSI; Long-Term Action [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD		116 Washington St. NE, Huntsville, AL 35801, (256) 534-9800, ATTN: Kimberly Hayes	
City, State: Kettle Falls, WA	Site Spill ID: 6X				

7. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other: rinsate	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval. — = Not a QC Sample)
MJ0981	8	L	G	2		1						01224158	RS.001.SD	5/31/01 830	JX556	SMF	R
MJ0982	8	L	G	2		1						01224159	RS.002.SD	5/31/01 900	JX557	SMF	R
MJ0930	5	H	G	6		1						01224150	CR.045.SD	5/31/01 1045	JX473	SMF	—
MJ0931	5	M	G	6		1						01224151	CR.046.SD	5/31/01 1215	JX474	SMF	—
MJ0977	5	L	G	6		1						01224152	TR.027.SD	5/31/01 1300	—	SMF	—
MJ0976	5	L	G	6		1						01224153	TR.026.SD	5/31/01 1345	JX552	SMF	MS/MSD
MJ0932	5	H	G	6		1						01224154	CR.047.SD	5/31/01 1430	JX475	SMF	—
MJ0933	5	H	G	6		1						01224155	CR.048.SD	5/31/01 1515	JX476	SMF	—
MJ0978	5	L	G	6		1						01224156	TR.028.SD	5/31/01 1545	JX553	SMF	—
MJ0934	5	H	G	6		1						01224157	CR.049.SD	5/31/01 1630	JX477	SMF	MS/MSD

Shipment for Case Complete? (Y/N)	Page 1 of 1	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
Y		MJ0981, MJ0982, MJ0976, MJ0934	[signature]	

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	6-3-01 2100				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

A21-012-13 REV

392086

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A	2. Account Code: 07T0P50102D10XL400	3. Region No.: 10	Sampling Co.: Roy F Weston	5. Date Shipped: 6/4/01	Carrier: Fedex
Regional Information: 10		Sampler (Name): Susan FitzGerald		Airbill Number: 8245 2414 7295	
Non-Superfund Program		Sampler Signature		6. Ship To: Sentinel	
Site Name: Columbia River/Lake Roosevelt		4. Purpose* Lead: [X] SI [ ] PRP [ ] ST [ ] FED; Early Action: [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [X] BSI; Long-Term Action: [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD		116 Washington St. NE Huntsville, AL 35801 (256) 534-9800 ATTN: Kimberly Hayes	
City, State: Kettle Falls, WA	Site Spill ID: 6X				

7. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc. Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval. — = Not a QC Sample)
MJ09E6	5	L	G	6		1						01234052	TR.061.SD	6/3/01 1315	JX559	SMF	—
MJ09E4	5	L	G	6		1						01234053	TR.058.SD	6/3/01 1500	—	SMF	—
MJ09F0	5	L	G	6		1						01234051	TR.068.SD	6/3/01 ~~1045~~ 1055	—	SMF	—
MJ09F2	5	L	G	6		1						01234050	TR.070.SD	6/3/01 935	—	SMF	—
~~MJ09G1~~						~~1~~											
MJ09G1	5	L	G	6		1						01234063	TR.088.SD	6/3/01 1450	—	SMF	—

Shipment for Case Complete? (Y/N)	Page 1 of 1	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
Y				

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6-3-01 2100				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

392291

A21-012-13 REV

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code	2. Account Code	3. Region No.	Sampling Co.	5. Date Shipped	Carrier
TEC:774A10TnP5010ZD10&X4A00		10	Ray F Weston	6/4/01	Fedex

Regional Information: 10

Sampler (Name): Susan FitzGerald

Airbill Number: 8245 2414 7078

Non-Superfund Program

Sampler Signature:

6. Ship To: Sentinel
116 Washington St. NE
Huntsville, AL 35801
(256) 534.9800
ATTN: Kimberly Hayes

Site Name: Columbia River / Lake Roosevelt

City, State: Kettle Falls, WA

Site Spill ID: 6X

4. Purpose*
Lead: [X] SF [ ] PRP [ ] ST [ ] FED
Early Action: [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [X] BSI
Long-Term Action: [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

7. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

8. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval. — = Not a QC Sample)
MJ0935	5	H	G	6		I						01224160	CR.050.SD	6/1/01 930	JX478	SMF	—
MJ0979	5	L	G	6		I						01224161	TR.029.SD	6/1/01 1100	JX554	SMF	—
MJ0936	5	M	G	6		I						01224162	CR.051.SD	6/1/01 1145	JX479	SMF	—
MJ0937	5	H	G	6		I						01224163	CR.052.SD	6/1/01 1230	JX480	SMF	—
MJ0938	5	H	G	6		I						01224164	CR.053.SD	6/1/01 1415	JX481	SMF	—
MJ0980	5	L	G	6		I						01224165	TR.030.SD	6/1/01 1330	JX555	SMF	—
MJ09F4	5	L	G	6		I						01234059	TR.075.SD	6/3/01 1030	—	SMF	—
MJ09F5	5	L	G	6		I						01234060	TR.076.SD	6/3/01 1100	—	SMF	—
MJ09F6	5	L	G	6		I						01234061	TR.081.SD	6/3/01 1300	—	SMF	—
MJ09F9	5	L	G	6		I						01234062	TR.084.SD	6/3/01 1345	—	SMF	—

Shipment for Case Complete? (Y/N) Y

Page 1 of 1

Sample(s) to be Used for Laboratory QC:

Additional Sampler Signatures:

Chain of Custody Seal Number(s):

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6-3-01 2100				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

392290

A21-012-13 REV

nca™
North Creek Analytical, Inc.
Environmental Laboratory Network
www.ncalabs.com

11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244 (425) 420-9200 FAX 420-9210
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FAX 906-9210
20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383 9310 FAX 382-7588

CHAIN OF CUSTODY REPORT Work Order #:

CLIENT: Roy F Weston
REPORT TO: ~~Hello~~ Paul Swift
ADDRESS: 190 Queen Anne Ave N, Suite 200 Seattle, WA 98109
PHONE: (206) 521-7600 FAX: (206) 521-7601
PROJECT NAME: Columbia River/Lake Roosevelt
PROJECT NUMBER: 12644.001.002.0101.00
SAMPLED BY: Susan Fitzgerald

INVOICE TO: Same as client
P.O. NUMBER:

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: 10 (STD.) 7 5 4 3 2 1 <1
Petroleum Hydrocarbon Analyses: 5 (STD.) 4 3 2 1 <1
OTHER Please Specify
*Turnaround Requests less than standard may incur Rush Charges

REQUESTED ANALYSES: TOC - EPA 415.1 (SW-846 9060)

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TOC	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. 01224150	5/31/01 1045	X	S	1	—	
2. 01224151	5/31/01 1215	X	S	1	—	
3. 01224153	5/31/01 1345	X	S	1	MS/MSD	
4. 01224154	5/31/01 1430	X	S	1	—	
5. 01224155	5/31/01 1515	X	S	1	—	
6. 01224156	5/31/01 1545	X	S	1	—	
7. 01224157	5/31/01 1630	X	S	1	MS/MSD	
8. 01224160	6/1/01 930	X	S	1	—	
9. 01224161	6/1/01 1100	X	S	1	—	
10. 01224162	6/1/01 1145	X	S	1	—	
11. 01224163	6/1/01 1230	X	S	1	—	
12. 01224164	6/1/01 1415	X	S	1	—	
13. 01224165	6/1/01 1330	X	S	1	—	
14. 01234052	6/3/01 1315	X	S	1	—	
15.			S			

RELINQUISHED BY: [signature] DATE: 6-3-01
PRINT NAME: Susan FitzGerald FIRM: RF Weston TIME: 2:00
RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:
RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS: Airbill #: 8245 2414 7056
TEMP:

COC REV 3/99

nca™
North Creek Analytical, Inc.
Environmental Laboratory Network
www.ncalabs.com

11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244 (425) 420-9200 FAX [illegible]210
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FAX 906-9210
20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT Work Order #:

CLIENT: Roy F Weston
REPORT TO: Paul Swift
ADDRESS: 190 Queen Anne Ave N., Ste 200
PHONE: (206) 521-7600 FAX:

INVOICE TO: same as client
P.O. NUMBER:

PROJECT NAME: Columbia River / Lake Roosevelt
PROJECT NUMBER: 12644.001.002.0101.00
SAMPLED BY: Susan FitzGerald

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: 10 | 7 | 5 | 4 | 3 | 2 | 1 | <1 (STD.)
Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | <1 (STD.)
OTHER Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME		TOC-EPA 547-8/4 90.0											MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. 01234068	6/4/01	1030	X											S	1	—	
2. 01234054	6/4/01	1430	X											S	1	—	
3. 01234073	6/4/01	1105	X											S	1	MS/MSD	
4. 01234075	6/4/01	1830	X											S	1	—	
5. 01234077	6/4/01	1715	X											S	1	—	
6. 01234076	6/4/01	1745	X											S	1	—	
7. 01234081	6/5/01	1145	X											S	1	—	
8. 01234066	6/5/01	1345	X											S	1	—	
9. 01234091	6/5/01	1430	X											S	1	—	
10. 01234095	6/5/01	945	X											S	1	—	
11. 01234103	6/6/01	1600	X											S	1	—	
12. 01234099	6/6/01	1100	X											S	1	MS/MSD	
13. 01234106	6/6/01	1500	X											S	1	—	
14. 01234107	6/6/01	1645	X											S	1	—	
15. 01234108	6/6/01	1600	X											S	1	—	

RELINQUISHED BY: [signature] DATE: 6/11/01
PRINT NAME: Susan FitzGerald FIRM: Roy F Weston TIME: 2100
RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:
RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS: Airbill # 0245 2414 7240
TEMP:

COC REV 3/99

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A	2. Region No.: 10	Sampling Co.: Roy F Weston	4. Date Shipped: 6/5/01
Carrier: Fedex	Account Code: 01T10P5C102D1C6X4400	Sampler (Name): Susan Fitzgerald	Airbill Number: 8245 2414 7090
Site Name: Columbia River/ Lake Roosevelt	Sampler Signature: [signature]	5. Ship To: Liberty Analytical, 501 Madison Ave, Cary, NC 27513, (919) 379.4100, ATTN: Alice Evans	
City, State: Kettle Falls, WA	Site Spill ID: 6X	Op Unit: 00	

3. Purpose**: Lead: [X] SF, [ ] PRP, [ ] ST, [ ] FED, [ ] BZ; Early Action: [ ] IA, [ ] PA, [ ] REM, [ ] RI, [ ] SI, [X] PSI; Long-Term Action: [ ] RIFS, [ ] RD, [ ] RA, [ ] O&M

6. Matrix (Enter in Column A): 1. Surface Water, 2. Ground Water, 3. Leachate, 4. Field QC, 5. Soil/Sediment, 6. PE-water, 7. PE-soil, 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl, 2. HNO3, 3. NaHSO4, 4. H2SO4, 5. Ice only, 6. CH3OH, 7. Other (specify in Column D), N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Field Spike, D = Field Duplicate, R = Rinsate, PE = Perform Eval.)
JX558	5	L	G	5			1	01234054	TR.060.SD	6/4/01 1430	MJ09E5	SMF	—
JX560	5	L	G	5			1	01234068	TR.091.SD	6/4/01 1030	MJ09G3	SMF	—
~~JX~~	~~5~~		~~G~~	~~5~~				~~01234054~~					
JX564	5	L	G	5			1	01234075	TR.105.SD	6/4/01 1830	MJ09H0	SMF	—
JX562	5	L	G	5			1	01234073	TR.098.SD	6/4/01 1105	MJ09G8	SMF	MS/MSD
JX566	5	L	G	5			1	01234077	TR.107.SD	6/4/01 1715	MJ0BJ2	SMF	—
JX565	5	L	G	5			1	01234076	TR.106.SD	6/4/01 1745	MJ0BJ1	SMF	—

Shipment for Case Complete? (Y/N): Y | Page 1 of 1

VOA MS/MSD Required? Y/N Sample #:
BNA MS/MSD Required? Y/N Sample #:
Pest/PCB MS/MSD Required? Y/N Sample #: JX562

Additional Sampler Signatures: [signature]

Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	6-4-01 2200				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)

CLASS-99-001

391050

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code	2. Account Code	3. Region No.	Sampling Co.	5. Date Shipped	Carrier
TEC-T14A	01T6P5010ZD06V4100	10	Ray F Weston	6/5/01	Fedex

Regional Information: 10

Sampler (Name): Susan Fitzgerald

Airbill Number: 8245 2414 7089

Non-Superfund Program

Sampler Signature:

6. Ship To: Sentinel, 116 Washington St. NE, Huntsville, AL 35801, (256) 534-9800, ATTN: Kimberly Hayes

Site Name: Columbia River/Lake Roosevelt

City, State: Kettlefalls, WA

Site Spill ID: 6X

4. Purpose*: Lead: SF, PRP, ST, FED; Early Action: CLEM, PA, REM, RI, SI, ESI; Long-Term Action: FS, RD, RA, O&M, NPLD

7. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform Eval, — = Not a QC Sample)
MJ09E5	5	L	G	6		1						01234054	TR.060.SD	6/4/01 1430	X558		—
MJ09G3	5	L	G	6		1						01234068	TR.091.SD	6/4/01 1630	X560		—
MJ09H0	5	L	G	6		1						01234075	TR.105.SD	6/4/01 1830	X564		—
MJ09G8	5	L	G	6		1						01234073	TR.098.SD	6/4/01 1105	X562		MS/MSD
MJ0BJ2	5	L	G	6		1						01234077	TR.107.SD	6/4/01 1715	X566		—
MJ0BJ1	5	L	G	6		1						01234076	TR.106.SD	6/4/01 1745	X565		—
MJ09E8	5	L	G	6		1						01234055	TR.063.SD	6/4/01 1645	—		—
MJ09E9	5	L	G	6		1						01234056	TR.067.SD	6/4/01 1245	—		—
MJ09G7	5	L	G	6		1						01234072	TR.097.SD	6/4/01 1015	—		—
MJ0BJ3	5	L	G	6		1						01234078	TR.108.SD	6/4/01 1300	—		—

Shipment for Case Complete? (Y/N): Y

Page 1 of 1

Sample(s) to be Used for Laboratory QC: MJ09G8

Additional Sampler Signatures:

Chain of Custody Seal Number(s):

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6/4/01 2200				
	6-4-01 2230				

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

392292

A21-012-13 REV

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A
2. Region No.: 10
Sampling Co.: Roy F Weston
4. Date Shipped: 6/6/01
Carrier: FedEx

Account Code: 01T0P50102D106X1400
Sampler (Name): Susan FitGerald
Airbill Number:

Site Name: Columbia River/ Lake Roosevelt
Sampler Signature:
5. Ship To: Liberty Analytical, 501 Madison Ave, Cary NC 27513, 919/379-4100, ATTN: Alice Evans

City, State: Little Falls, WA
Site Spill ID: 6X
Op Unit: 00

3. Purpose**: Lead [X] SF, [ ] PRP, [ ] ST, [ ] FED, [ ] BZ; Early Action [ ] IA, [ ] PA, [ ] REM, [ ] RI, [ ] SI, [X] ESI; Long-Term Action [ ] RIFS, [ ] RD, [ ] RA, [ ] O&M

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. PE-water 7. PE-soil 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. CH3OH 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp/ Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/ PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field Spike, D = Field Duplicate, R = Rinsate, PE = Perform Eval.)
JX570	5	L	G	5			1	01234081	TR-059-SD	6/5/01 1145	MJ0BJ6	SAF	—
JX568	5	L	G	5			1	01234091	TR-118-SD	6/5/01 1430	MJ0BK3	SAF	—
JX569	5	L	G	5			1	01234095	TR-122-SD	6/5/01 945	MJ0BK7	SAF	—
JX567	5	L	G	5			1	01234066	TR-114-SD	6/5/01 1345	MJ09G0	SAF	—

Shipment for Case Complete? (Y/N): N
Page 1 of 1
VOA MS/MSD Required? Y/N Sample #:
BNA MS/MSD Required? Y/N Sample #:
Pest/PCB MS/MSD Required? Y/N Sample #:
Additional Sampler Signatures:
Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)

CLASS-99-001

391014

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A	2. Account Code: 01T10P50102D106X4900	3. Region No.: 10	Sampling Co.: Ray F Weston	5. Date Shipped: 6/6/01	Carrier: Fedex
Regional Information: 10		Sampler (Name): Susan FitzGerald		Airbill Number: 8245 2414 7104	
Non-Superfund Program		Sampler Signature: [signature]		6. Ship To: Sentinel	
Site Name: Columbia River/Lake Roosevelt		4. Purpose* Lead: ☒ ST, ☐ PRP, ☐ ST, ☐ FED; Early Action: ☐ CLEM, ☐ PA, ☐ REM, ☐ RI, ☐ SI, ☒ BSI; Long-Term Action: ☐ FS, ☐ RD, ☐ RA, ☐ O&M, ☐ NPLD		116 Washington St. NE Huntsville, AL 35801 (256) 534-9800 ATTN: Kimberly Hayes	
City, State: Kettle Falls, WA	Site Spill ID: 6X				

7. Matrix (Enter in Column A): 1. Surface Water, 2. Ground Water, 3. Leachate, 4. Field, 5. Soil/Sediment, 6. Oil (High only), 7. Waste (High only), 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl, 2. HNO3, 3. NaOH, 4. H_2SO_4, 5. $K_2CR_2O_7$, 6. Ice only, 7. Other (specify in Column D), N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc.: Low Med High	C Sample Type: Comp/ Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform Eval., — = Not a QC Sample)
MJ09G2	5	L	G	6		1						01234067	TR.090.SD	6/4/01 930	—	SMF	—
MJ09F7	5	L	G	6		1						01234064	TR.082.SD	6/4/01 1700	—	SMF	—
MJ09E7	5	L	G	6		1						01234058	TR.065.SD	6/4/01 1550	—	SMF	—
MJ09F1	5	L	G	6		1						01234057	TR.069.SD	6/4/01 1400	—	SMF	—
MJOBJ4	5	L	G	6		1						01234079	TR.056.SD	6/5/01 1000	—	SMF	—
MJOBJ5	5	L	G	6		1						01234080	TR.057.SD	6/5/01 1045	—	SMF	—
MJOBJ6	5	L	G	6		1						01234081	TR.059.SD	6/5/01 1145	JX570	SMF	—
MJOBJ7	5	L	G	6		1						01234082	TR.062.SD	6/5/01 1245	—	SMF	—
MJOBJ8	5	L	G	6		1						01234083	TR.064.SD	6/5/01 1400	—	SMF	—
MJOBJ9	5	L	G	6		1						01234084	TR.066.SD	6/5/01 1445	—	SMF	—

Shipment for Case Complete? (Y/N)	Page 1 of 1	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
Y			[signature]	

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	6-5-01 1930				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

392293

A21-012-13 REV

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code	2. Account Code	3. Region No.	Sampling Co.	5. Date Shipped	Carrier
TEC774A	DITIOP50b2D1064A00	10	Roy F. Weston	6/6/01	FedEx

Regional Information	Sampler (Name)	Airbill Number
10	Susan FitzGerald	8245 2414 7126
Non-Superfund Program	Sampler Signature	6. Ship To:
		Sentinel

Site Name: Columbia River/Lake Roosevelt
City, State: Little Falls, WA
Site Spill ID: 6X

4. Purpose*: Lead [X] SF [ ] PRP [ ] ST [ ] FED; Early Action [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [X] ESI; Long-Term Action [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

116 Washington St. NE
Huntsville, AL 35801
(256) 534-9800
ATTN: Kimberly Hayes

7. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc. Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval. — = Not a QC Sample)
MJOBK7	5	L	G	6		1						01234095	TR-122-SD	6/5/01 945	JX569	SM	—
MJOBK2	5	L	G	6		1						01234090	TR-117-SD	6/6/01 1600	—	SM	—
MJOBK3	5	L	G	6		1						01234091	TR-118-SD	6/5/01 1430	JX568	SM	—
MJOBK9	5	L	G	6		1						01234097	TR-072-SD	6/5/01 1630	—	SM	—
* MJOBG0	5	L	G	6		1						01234066	TR-114-SD	6/5/01 1345	JX567	SM	—
MJOBP8	5	L	G	6		1						01234096	TR-071-SD	6/5/01 1545	—	SM	—
MJOBK1	5	L	G	6		1						01234089	TR-116-SD	6/5/01 1530	—	SM	—
MJOBK6	5	L	G	6		1						01234094	TR-121-SD	6/5/01 1100	—	SM	—
MJOBK5	5	L	G	6		1						01234093	TR-120-SD	6/5/01 1145	—	SM	—
MJOBK4	5	L	G	6		1						01234092	TR-119-SD	6/5/01 1320	—	SM	—

Shipment for Case Complete? (Y/N)	Page 1 of 1	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6-5-01 2000				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

39229

A21-012-13 REV

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A
2. Region No.: 10
Sampling Co.: Roy F Weston
4. Date Shipped: 6/7/01
Carrier: Fed Ex

Account Code: 01T10P50102D106XLA00
Sampler (Name): Susan FitzGerald
Airbill Number: 8245 2414 7262

Site Name: Columbia River / Lake Roosevelt
Sampler Signature:
5. Ship To: Liberty Analytical, 501 Madison Ave, Cary, N.C 27513, 919/379-4100, ATTN: Alice Evans

City, State: Kettle Falls, WA
Site Spill ID: 6X
Op Unit:

3. Purpose**
Lead: SF, PRP, ST, FED, BZ
Early Action: IA, PA, REM, RI, SI, ESI
Long-Term Action: RIFS, RD, RA, O&M

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. PE-water 7. PE-soil 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. CH3OH 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field Spike D = Field Duplicate R = Rinsate PE = Perform Eval.)
JX571	5	L	G	5			1	01234099	TR.077.SD	6/6/01 1100	MJOBL1	SW	MS/MSD
JX572	5	L	G	5			1	01234103	TR.086.SD	6/6/01 1600	MJOBL5	SW	—
JX791	5	L	G	5			1	01234108	TR.110.SD	6/6/01 1600	MJOBM0	KB	—
JX574	5	L	G	5			1	01234107	TR.109.SD	6/6/01 1645	MJOBL9	KB	—
JX573	5	L	G	5			1	01234106	TR.104.SD	6/6/01 1500	MJOBL8	KB	—

Shipment for Case Complete? (Y/N) Y
Page 1 of 1
VOA MS/MSD Required? Y/N Sample #:
BNA MS/MSD Required? Y/N Sample #:
Pest/PCB MS/MSD Required? Y/N Sample #: JX571
Additional Sampler Signatures:
Chain of Custody Seal Number(s)

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6/6/01 1700				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6/6/01 1900				
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)

CLASS-99-001

391015

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code	2. Account Code	3. Region No.	Sampling Co.	5. Date Shipped	Carrier
TEG-714A	01TOP501025106X4800	10	Roy F Weston	6/6/01	Fedex

Regional Information: 10

Sampler (Name): Susan Fitzgerald

Airbill Number: 8245 2414 7284

Non-Superfund Program

Sampler Signature: [signature]

6. Ship To: Sentinel
116 Washington St. NE
Huntsville, AL 35801
(256) 534-9800
ATTN: Kimberly Hayes

Site Name: Columbia River / Lake Roosevelt

City, State: Kettle Falls, WA

Site Spill ID: 6X

4. Purpose*
Lead: ☒ SI, ☐ PRP, ☐ ST, ☐ FED
Early Action: ☐ CLEM, ☐ PA, ☐ REM, ☐ RI, ☐ SI, ☒ DSI
Long-Term Action: ☐ FS, ☐ RD, ☐ RA, ☐ O&M, ☐ NPLD

7. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

8. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform Eval, — = Not a QC Sample)
													TR-077-SD				
MJOBL4	5	L	G	6		1						01234099	~~01234099~~	6/6/01 1100	JX571	~~SW~~	MS/MSD
MJOBL5	5	L	G	6		1						01234103	TR-086-SD	6/6/01 1600	JX572	~~SW~~	—
MJ09F3	5	L	G	6		1						01234085	TR-074-SD	6/6/01 1030	—	~~SW~~	—
MJ09F8	5	L	G	6		1						01234086	TR-083-SD	6/6/01 1415	—	~~SW~~	—
MJ09G0	5	L	G	6		1						01234087	TR-085-SD	6/6/01 1515	—	~~SW~~	—
MJOBL0	5	L	G	6		1						01234098	TR-073-SD	6/6/01 945	—	~~SW~~	—
MJOBL2	5	L	G	6		1						01234100	TR-078-SD	6/6/01 1215	—	~~SW~~	—
MJOBL3	5	L	G	6		1						01234101	TR-079-SD	6/6/01 1300	—	~~SW~~	—
MJOBL4	5	L	G	6		1						01234102	TR-080-SD	6/6/01 1330	—	~~SW~~	—
MJOBM2	5	L	G	6		1						01234110	TR-123-SD	6/6/01 1245	—		—

Shipment for Case Complete? (Y/N): Y

Page 1 of 1

Sample(s) to be Used for Laboratory QC: MJOB4

Additional Sampler Signatures: [signature]

Chain of Custody Seal Number(s):

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	6/6/01 1930				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

392295

A21-012-13 REV

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A	2. Account Code: 0T10PSD10Z0106XA00	3. Region No.: 10	Sampling Co.: ROY F WESTON	5. Date Shipped: 6/8/01	Carrier: FED EX.
Regional Information: 10		Sampler (Name): KEVIN BROOM		Airbill Number: 8245 2414 7230	
Non-Superfund Program		Sampler Signature: [signature]		6. Ship To: SENTINEL	
Site Name: COLUMBIA RIVER/LAKE ROOSEVELT		4. Purpose* Lead: [X] SF [ ] PRP [ ] ST [ ] FED; Early Action: [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [X] ESI; Long-Term Action: [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD		116 WASHINGTON ST NE HUNTSVILLE, AL 35801 (256) 534-9800 ATTN: KIMBERLY HAYES	
City, State: KETTLE FALLS, WA	Site Spill ID: 6X				

7. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval — = Not a QC Sample)
MJOBM4	5	L	G	6		1						01234112	TR087SD	6/7/01/0915	—	KB	—
MJOBM5	5	L	G	6		1						01234113	TR089SD	6/7/01/1600	—	KB	—
MJOBM6	5	L	G	6		1						01234114	TR093SD	6/7/01/1030	—	KB	—
MJOBM7	5	L	G	6		1						01234115	TR095SD	6/7/01/1130	—	KB	—
MJOBM8	5	L	G	6		1						01234116	TR096SD	6/7/01/1300	—	KB	—
MJOBM9	5	L	G	6		1						01234117	TR099SD	6/7/01/1645	—	KB	—
MJOBN0	5	L	G	6		1						01234118	TR100SD	6/7/01/1600	—	KB	—
MJOBN1	5	L	G	6		1						01234119	TR102SD	6/7/01/1430	—	KB	—
MJOBN2	5	L	G	6		1						01234120	TR103SD	6/7/01/1400	—	KB	—
MJOBL6	5	L	G	6		1						01234104 KB	TR104SD	6/7/01/1500	—	KB	—

Shipment for Case Complete? (Y/N)	Page 1 of 1	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures 101	Chain of Custody Seal Number(s)
Y			[signature]	

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	6/7/01 2100				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

A21-012-13 REV

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29276

1. Project Code: TEC 774A
2. Region No.: 10
Sampling Co.: Roy F Weston
4. Date Shipped: 6/11/01
Carrier: FedEx

Account Code: 0TT10P50102D106XLA00
Sampler (Name): Susan FitzGerald
Airbill Number: 8245 2414 7137

Site Name: Columbia River / Lake Roosevelt
Sampler Signature:
5. Ship To: Liberty Analytical, 501 Madison Ave, Cary, NC 27513, (919) 379-4100, ATTN: Alice Evans

City, State: Kettle Falls, WA
Site Spill ID: 6X
Op Unit: 00

3. Purpose**: Lead: SF, PRP, ST, FED, BZ; Early Action: IA, PA, REM, RI, ES; Long-Term Action: RIFS, RD, RA, O&M

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. PE-water 7. PE-soil 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. CH3OH 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other: Rinsate	B Conc.: Low Med	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field Spike D = Field Duplicate R = Rinsate PE = Perform Eval)
JX792	8	L	G	2				01234135	RS.003.SD	6/8/01 800	MJOBJ3		R
JX795	5	L	G	5				01234137	TR.046.SD	6/8/01 1645	MJOBJ5		—
JX803	5	L	G	5				01234123	TR.126SD	6/8/01 1615	MJOBK3		—
JX805	5	L	G	5				01234125	TR.038.SD	6/8/01 1130	MJOBK5		—
JX804	5	L	G	5				01234124	TR.062.SD	6/8/01 945	MJOBK4		—
JX802	5	L	G	5				01234122	TR.047.SD	6/8/01 1000	MJOBK2		—
JX798	5	L	G	5				01234140	TR.043.SD	6/8/01 1300	MJOBJ8		—
JX796	5	L	G	5				01234138	TR.041.SD	6/8/01 1500	MJOBJ6		—
JX797	5	L	G	5				01234139	TR.042.SD	6/8/01 1145	MJOBJ7		—
JX807	5	L	G	5				~~01234140~~	~~TR.043.SD~~	~~6/8/01 1300~~	MJOBK7		—
								01234127	TR.031.SD	6/8/01 1120			

Shipment for Case Complete? (Y/N): Y
Page 1 of 1

VOA MS/MSD Required? Y/N Sample #:
BNA MS/MSD Required? Y/N Sample #:
Pest/PCB MS/MSD Required? Y/N Sample #:

Additional Sampler Signatures:

Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6/11/01 1700				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)

CLASS-99-001

291019

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A
2. Region No.: 10
Sampling Co.: ROY F. WESTON
4. Date Shipped: 6/11/01
Carrier: FEDEX

Account Code: 01 T10P50102D106XLA00
Sampler (Name): SUSAN FITZGERALD
Airbill Number: 8245 2414 7160

Site Name: Columbia River / LAKE ROOSEVELT
Sampler Signature:
5. Ship To: LIBERTY ANALYTICAL
501 MADISON AVE
CARY, NC 27513
~~SMP~~ 919/379.4100
ATTN: ALICE EVANS

City, State: Kettle Falls, WA
Site Spill ID: 6Y
Op Unit: 00

3. Purpose**
Lead: [X] SF [ ] PRP [ ] ST [ ] FED [ ] BZ
Early Action: [ ] IA [ ] PA [ ] REM [ ] RI [ ] SI [X] ESI
Long-Term Action: [ ] RIFS [ ] RD [ ] RA [ ] O&M

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. PE-water
7. PE-soil
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Ice only
6. CH3OH
7. Other (specify in Column D)
N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 VOA	TA (circle one) PR* 7 14 21 BNA	TA (circle one) PR* 7 14 21 Pest/PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field Spike D = Field Duplicate R = Rinsate PE = Perform Eval.)
JX793	5	L	G	5			1	01234129	TR-129-SD	6/9/01 1530	MJOBK9	SMF	—
JX800	5	L	G	5			1	01234142	TR-045-SD	6/9/01 0930	MJOBK0	SMF	MS/MSD
JX799	5	L	G	5			1	01234141	TR-044-SD	6/9/01 1030	MJOBJ9	SMF	—

Shipment for Case Complete? (Y/N): Y
Page 1 of 1
VOA MS/MSD Required? Y/N Sample #:
BNA MS/MSD Required? Y/N Sample #:
Pest/PCB MS/MSD Required? Y/N Sample #: JX 800
Additional Sampler Signatures:
Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6/11/01 1700				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)

CLASS-99-001

391020

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code: TEC-774A	2. Account Code:	3. Region No.: 10	Sampling Co.: Roy F Weston	5. Date Shipped: 6/11/01	Carrier: Fedex
Regional Information: 10		Sampler (Name): Susan Fitzgerald		Airbill Number: 8245 2414 7170	
Non-Superfund Program		Sampler Signature: [signature]		6. Ship To: Sentinel	
Site Name: Columbia River/Lake Roosevelt		4. Purpose*: Lead [X] SF [X] PRP [ ] ST [ ] FED; Early Action [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [X] ESI; Long-Term Action [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD		116 Washington St. NE Huntsville, AL 35801 (256) 534-9890 ATTN: Kimberly Hayes	
City, State: Kettle Falls, WA	Site Spill ID: 6X				

7. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval — = Not a QC Sample)
MJOBK9	5	L	G	6								01234 1~~19~~ 141	TR.044.SD	6/9/01 1030	JX799	[illegible]	—
MJOBK0	5	L	G	6								01234 1~~28~~ 142	TR.045SD	6/9/01 930	JX800	[illegible]	MS/MSD
MJOBK9	5	L	G	6								01234 129	TR.129.SD	6/9/01 1530	JX793	[illegible]	—
MJOBK8	5	L	G	6								01234 128	TR.128SD	6/9/01 1500	—	[illegible]	—
MJOBJ1	5	L	G	6								01234 121	TR.112SD	6/9/01 1645	—	[illegible]	—
MJOBJ4	5	L	G	6								01234 1~~24~~ 136	TR.125.SD	6/9/01 1730	—	[illegible]	—

Shipment for Case Complete? (Y/N)	Page 1 of 1	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
		MJOBK0	[signature]	

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	6-11-01 1700				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

A21-012-13 REV

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 29276

1. Project Code	2. Account Code	3. Region No.	Sampling Co.	5. Date Shipped	Carrier
TEG 774A	6TT10P50102 D1060X1000	10	Roy F Weston	6/11/01	Fedex

Regional Information: 10

Sampler (Name): Susan Fitzgerald

Airbill Number: 8245 2414 7159

Non-Superfund Program

Sampler Signature:

6. Ship To: Sentinel
116 Washington St NE
Huntsville, AL 35801
(256) 534-9800
ATTN: Kimberly Hayes

Site Name: Columbia River/Lake Roosevelt

City, State: Kettle Falls, WA

Site Spill ID: 6X

4. Purpose*
Lead: ☒ SF, ☐ PRP, ☐ ST, ☐ FED
Early Action: ☐ CLEM, ☐ PA, ☐ REM, ☐ RI, ☐ SI, ☒ ESI
Long-Term Action: ☐ FS, ☐ RD, ☐ RA, ☐ O&M, ☐ NPLD

7. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

8. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other:	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval — = Not a QC Sample)
MJOBJ5	5	L	G	6		1						01234 ~~115~~ 137	TR·040·SD	6/8/01 1645	JX795	SNF	—
MJOBJ6	5	L	G	6		1						01234 ~~116~~ 138	TR·041·SD	6/8/01 1500	JX796	SNF	—
MJOBK4	5	L	G	6		1						01234124	CR·062SD	6/8/01 945	JX804	SNF	—
MJOBK5	5	L	G	6		1						01234125	TR·038·SD	6/8/01 1130	JX805	SNF	—
MJOBK6	5	L	G	6		1						01234126	TR·039·SD	6/8/01 1245	—	SNF	—
MJOBK7	5	L	G	6		1						01234127	TR·037·SD	6/8/01 1120	JX807	SNF	—
MJOBJ7	5	L	G	6		1						01234 ~~117~~ 139	TR·042·SD	6/8/01 1145	JX797	LB	—
MJOBJ8	5	L	G	6		1						01234 ~~118~~ 140	TR·043SD	6/8/01 1300	JX798	LB	—
MJOBK2	5	L	G	6		1						01234122	TR·047·SD	6/8/01 1000	JX802	LB	—
MJOBK3	5	L	G	6		1						01234123	TR·126·SD	6/8/01 1615	JX803	LB	—

Shipment for Case Complete? (Y/N): Y

Page 1 of 1

Sample(s) to be Used for Laboratory QC:

Additional Sampler Signatures:

Chain of Custody Seal Number(s):

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6-11-01 1700				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

A21-012-13 REV

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

392299

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

6-11-01

Case No. 29276

1. Project Code: TEC-774A	2. Account Code: 01T10P5CK2D10GXL400	3. Region No.: 10	Sampling Co.: Ray F Weston	5. Date Shipped: 6/4/01	Carrier: FedEx
Regional Information: 10		Sampler (Name): Kevin Broom		Airbill Number: 8245 2414 7273 7251	
Non-Superfund Program		Sampler Signature:		6. Ship To: Sentinel	
Site Name: Columbia River/Lake Roosevelt		4. Purpose* Lead: [X] SF [ ] PRP [ ] ST [ ] FED; Early Action: [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [X] ESI; Long-Term Action: [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD		116 Washington St. NE Huntsville, AL 35801 (256) 534-9900 ATTN: Kimberly Hays	
City, State: Kettle Falls, WA	Site Spill ID: CX				

7. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

8. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 7) Other: Rinsate	B Conc.: Low Med High	C Sample Type: Comp/Grab	D Preservative (from Box 8) Other:	E — RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low Only: NO_2/NO_3	Fluoride	High Only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval — = Not a QC Sample)
MJOBL8	5	L	G	6		1						01234106	TR-104-SD	6/6/01 1500	JX573	KB	—
MJOBL9	5	L	G	6		1						01234107	TR-109-SD	6/6/01 1645	JX574	KB	—
MJOBM0	5	L	G	6		1						01234108	TR-110-SD	6/6/01 1600	JX791	KB	—
MJO9F8	5	L	G	6		1						01234068~~5~~	TR-113-SD	6/6/01 900	—	KB	—
MJOBM1	5	L	G	6		1						01234109	TR-111-SD	6/6/01 1400	—	KB	—
→ MJOBK0	5	L	G	6		1						01234088	TR-115-SD ~~TR-118-SD~~	6/6/01 1030	—	KB	—
MJOBM3	5	L	G	6		1						01234111	TR-124-SD	6/6/01 1130	—	KB	—
MJ09G6	5	L	G	6		1						01234071	TR-094-SD	6/7/01 1200	—	KB	—
MJOBJ3	8	L	G	2		1						01234~~133~~135	RS-003-SD	6/8/01 800	JX792	MF	R
MJOBJ2	5	L	G	6		1						01234~~142~~143	TR-127-SD	6/8/01 1545	—	MF	—

Shipment for Case Complete? (Y/N)	Page 1 of 1	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
Y		~~MJOBJ3~~ MF		

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6/11/01 1700				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

A21-012-13 REV

Distribution: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (8/99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

292296

nca™
North Creek Analytical, Inc.
Environmental Laboratory Network
www.ncalabs.com

11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244 (425) 420-9200 FAX [illegible]10
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FAX 906-9210
20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: Roy F Weston
REPORT TO: Paul Swift
ADDRESS: 190 Queen Anne Ave N., Ste 200 Seattle, WA 98109
PHONE: (206) 521-7600 FAX: (206) 521-7601
PROJECT NAME: Columbia River/Lake Roosevelt
PROJECT NUMBER: 126414.001.002.0101.00
SAMPLED BY: Susan FitzGerald

INVOICE TO: Same as client
P.O. NUMBER:

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: 10 | 7 | 5 | 4 | 3 | 2 | 1 | <1 (STD.)
Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | <1 (STD.)
OTHER — Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TOC-EPA 532-6060A	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. 01234127	6/8/01 1120	X	S	1	—	
2. 01234125	6/8/01 1130	X	S	1	—	
3. 01234124	6/8/01 945	X	S	1	—	
4. 01234122	6/8/01 1000	X	S	1	—	
5. 01234123	6/8/01 1615	X	S	1	—	
6. 01234129	6/9/01 1530	X	S	1	—	
7. 01234137	6/8/01 1645	X	S	1	—	
8. 01234138	6/8/01 1500	X	S	1	—	
9. 01234139	6/8/01 1145	X	S	1	—	
10. 01234140	6/8/01 1300	X	S	1	—	
11. 01234141	6/9/01 1030	X	S	1	MS/MSD	
12. 01234142	6/9/01 ~~1530~~ 930	X	S	1	—	
13.						
14.						
15.						

RELINQUISHED BY: [signature] DATE: 6/12/01
PRINT NAME: Heather Williams FIRM: Roy F Weston TIME: 10:30
RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:
RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS: ~~Airbill #: 8245 2414 7148~~ Will Pickup @ Weston 6-12-01
TEMP:
COC REV 3/99
PAGE 1 OF 1

ENVIRONMENTAL SERVICES ASSISTANCE TEAMS - WESTERN ZONE

LOCKHEED MARTIN
TECHNOLOGY SERVICES GROUP

ESAT Region 10
Lockheed Martin
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: August 15, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Organic Analysis of Samples from the Upper Columbia River Lake Roosevelt/Mines Sites. Case: 29469 SDG: JX810

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1144
TDN: 1051
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 1 water (rinsate) and 16 soil samples collected from the above referenced site has been completed. All samples were analyzed for Pest/PCB and three for SVOA and in accordance with the USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Organic Analyses (OLM04.2) by Mitkem Corp. of Warwick, RI.

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the USEPA CLP SOW for Organic Analysis (OLM04.2), the USEPA CLP National Functional Guidelines for Organic Data Review (10/99) and the Region 10 Guidelines for CLP Data Review.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

All of the samples met the method and technical (40 CFR 136) required holding times for all analyses with the exception of Pest/PCB sample JX830 (rinsate). Sample JX830 was extracted 8 days from the sample collection date which only slightly exceeded the technical holding time of 7 days for water and was not qualified on this basis. The Holding Times Summary listing the pertinent collection, extraction, and analysis dates is attached at the end of this validation report.

Instrument Performance - Acceptable

All of the GC and GC/MS systems met the SOW specified technical acceptance criteria prior to sample analyses, i.e., GC/MS performance checks, GC performance checks, retention times, response factors, and calibrations. The systems remained stable throughout the course of analyses. Instrument blanks were all clean and there were no indications of carry-over.

Initial Calibrations - Acceptable

One SVOA and one Pest/PCB initial calibration was performed. The initial calibrations met the SOW technical acceptance criteria.

Continuing Calibration Verification (CCVs) Standards

All of the CCVs met the criteria for frequency of analysis, the minimum response factor, the retention time and the percent differences (%Ds) criteria with the following exceptions:

- The %Ds for the following SVOA compounds exceeded the QC limits and the associated results were qualified accordingly:

Date/Time of Analysis	Compound	%D	Qualifier Detect/Non-detect
7/19/01 (1454)	4-chloroaniline	-26.0	None
	hexachlorocyclopentadiene	-30.8	J/UJ
	bis(2-ethylhexyl)phthalate	135	J/none
	3,3'-dichlorobenzidine	37.5	J/none

Compound Quantitation and Detection Limits - Acceptable

All of the samples were analyzed at the contract required quantitation limits (CRQLs). Target compounds that were detected at concentrations less than the CRQLs were qualified as estimated, "J". All of the reported results were adjusted for sample amounts analyzed.

Blanks - Acceptable

No target analytes were detected in any of the method or instrument blanks.

Analytical Sequence - Acceptable

All of the standards, blanks, samples, and QC samples were analyzed in accordance with the SOW specified analytical sequence.

Surrogate Spikes - Acceptable

All of the SVOA surrogate spike recoveries met the applicable QC criteria.

All of the Pest/PCB surrogate spike recoveries met the applicable QC criteria (30-150%).

Matrix Spike/Matrix Spike Duplicate (MS/MSD) - Acceptable

SVOA sample JX813 was utilized for MS/MSD analyses. The criteria for frequency of analysis, recoveries and RPDs were met with the following exception: Pentachlorophenol in JX813MS had a recovery of 110% which only slightly exceeded the upper recovery criteria of 109%. None of the data were qualified on this basis.

Pest/PCB sample JX816 was utilized for MS/MSD analyses. The criteria for frequency of analysis, recoveries an RPDs were met.

Internal Standards - Acceptable

The acceptance criteria for internal standards (IS) are ±30 seconds for retention time (RT) shifts and -50% to +100% of the IS area as compared to the IS RT and area of the daily continuing calibration standard. All of the SVOA GC/MS analyses met the IS area and retention time shift criteria.

Compound Identification

All of the compounds detected in the GC/MS analyses were within the retention time windows, met the USEPA spectral matching criteria and were judged to be acceptable.

Single component pesticides and aroclors were qualified as follows: where %Ds (between two column concentrations) >30% but ≤60% - detected results were qualified as estimated, "J"; %Ds >60% with concentrations >CRQL - results were qualified as tentatively identified at the estimated concentration , "JN"; %Ds >60% with concentrations <CRQL - results were qualified as non-detects, "U"; %Ds >400% - results were qualified as non-detects with raised quantitation limit if >CRQL. The "P" qualifiers applied by the laboratory were crossed-out by the reviewer.

Tentatively Identified Compounds

Peaks that were detected in the samples at areas >10% of the internal standards and were not part of the target compound lists were identified as tentatively identified compounds (TICs). TICs that were both found in the sample and in the associated method blank(s) were qualified as unusable, "R." Peaks that were identified as common laboratory contaminants, solvent preservatives, column bleed or aldol condensation products were qualified as unusable, "R". The rest of the peaks identified as TICs were qualified "NJ", tentatively identified at an estimated concentration.

Laboratory Contact

The laboratory was contacted by Region 10 concerning the following items:

The JX816MSD portion of FORM III PEST-2 (pg. 168) does not agree with the JX816MSD FORM I or raw data (pg. 401-404). It appears that the % solids was left out of the calculations for the results presented on the FORM III.

Overall Assessment

The total number of SVOA data points was 195. Three (1.5%) were qualified as estimated due to continuing calibrations and three (1.5%) were qualified as estimated because the analyte concentrations were below the CRQL. All others were qualified as non-detected, "U".

The total number of Pest/PCB data points was 476. All were qualified as non-detected, "U".

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

Data Qualifiers

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
JN	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

Holding Time Summary - Case 29469 SDG: JX810

Sample Number	Collection Date	VTSR*	SVOA Extraction	SVOA Analysis	Pest/PCB Extraction	Pest/PCB Analysis
JX810	6/25/01	6/27/01	NA	NA	7/05/01	7/12/01
JX811	6/25/01	6/27/01	NA	NA	7/05/01	7/12/01
JX813	6/25/01	6/27/01	7/07/01	7/19/01	7/05/01	7/12/01
JX814	6/25/01	6/27/01	7/07/01	7/19/01	7/05/01	7/12/01
JX815	6/25/01	6/27/01	7/07/01	7/19/01	7/05/01	7/12/01
JX816	6/27/01	6/29/01	NA	NA	7/05/01	7/13/01
JX818	6/26/01	6/28/01	NA	NA	7/05/01	7/12/01
JX819	6/25/01	6/27/01	NA	NA	7/05/01	7/12/01
JX820	6/26/01	6/28/01	NA	NA	7/05/01	7/12/01
JX822	6/26/01	6/28/01	NA	NA	7/05/01	7/13/01
JX825	6/27/01	6/29/01	NA	NA	7/05/01	7/13/01
JX827	6/27/01	6/29/01	NA	NA	7/05/01	7/13/01
JX829	6/28/01	7/02/01	NA	NA	7/05/01	7/13/01
JX830	6/27/01	6/29/01	NA	NA	7/05/01	7/16/01
JX831	6/28/01	7/02/01	NA	NA	7/05/01	7/13/01
JX832	6/28/01	7/02/01	NA	NA	7/05/01	7/13/01
JX833	6/27/01	6/29/01	NA	NA	7/05/01	7/13/01

*VTSR - Verified time of sample receipt in the laboratory
NA - Not available

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX813

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373003

Sample wt/vol: 30.3 (g/mL) G Lab File ID: S2C1255

Level: (low/med) LOW Date Received: 06/27/01

% Moisture: 19 Decanted: (Y/N) N Date Extracted: 07/07/01

Concentrated Extract Volume: 500 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.9 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	400	U
108-95-2	Phenol	400	U
111-44-4	bis(2-Chloroethyl)Ether	400	U
95-57-8	2-Chlorophenol	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	2,2'-oxybis(1-Chloropropane)	400	U
98-86-2	Acetophenone	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-di-n-propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
111-91-1	bis(2-Chloroethoxy)methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
105-60-2	Caprolactam	400	U
59-50-7	4-Chloro-3-Methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U JK
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	1000	U
92-52-4	1,1'-Biphenyl	400	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	1000	U
131-11-3	Dimethylphthalate	400	U
606-20-2	2,6-Dinitrotoluene	400	U
208-96-8	Acenaphthylene	400	U
99-09-2	3-Nitroaniline	1000	U
83-32-9	Acenaphthene	400	U

CP 8-14-01

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX813

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373003

Sample wt/vol: 30.3 (g/mL) G Lab File ID: S2C1255

Level: (low/med) LOW Date Received: 06/27/01

% Moisture: 19 Decanted: (Y/N) N Date Extracted: 07/07/01

Concentrated Extract Volume: 500 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.9 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1000	U
100-02-7	4-Nitrophenol	1000	U
132-64-9	Dibenzofuran	400	U
121-14-2	2,4-Dinitrotoluene	400	U
84-66-2	Diethylphthalate	400	U
86-73-7	Fluorene	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
100-01-6	4-Nitroaniline	1000	U
534-52-1	4,6-Dinitro-2-methylphenol	1000	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
1912-24-9	Atrazine	400	U
87-86-5	Pentachlorophenol	1000	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
86-74-8	Carbazole	400	U
84-74-2	Di-n-butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	220	J Q
91-94-1	3,3'-Dichlorobenzidine	400	U
56-55-3	Benzo(a)anthracene	400	U
218-01-9	Chrysene	400	U
117-81-7	bis(2-Ethylhexyl)phthalate	400	U
117-84-0	Di-n-octylphthalate	400	U
205-99-2	Benzo(b)fluoranthene	400	U
207-08-9	Benzo(k)fluoranthene	400	U
50-32-8	Benzo(a)pyrene	400	U
193-39-5	Indeno(1,2,3-cd)pyrene	400	U
53-70-3	Dibenzo(a,h)anthracene	400	U
191-24-2	Benzo(g,h,i)perylene	400	U

(1) - Cannot be separated from Diphenylamine

VP 8-14-01

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JX813

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373003

Sample wt/vol: 30.3 (g/mL) G Lab File ID: S2C1255

Level: (low/med) LOW Date Received: 06/27/01

% Moisture: 19 Decanted: (Y/N) N Date Extracted: 07/07/01

Concentrated Extract Volume: 500 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.9 Extraction: (Type) SONC

Number TICs found: 19

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	13.85	170	JN
2.	UNKNOWN	14.07	1500	JN
3.	UNKNOWN	15.38	550	JN
4. 57-10-3	HEXADECANOIC ACID	16.41	100	NJ
5.	UNKNOWN	17.22	87	JN
6. 19407-28-4	PHENANTHRENE, 1,2,3,4,4A,9,1	17.30	530	NJ
7. 6765-39-5	1-HEPTADECENE	17.72	110	NJ
8.	UNKNOWN	17.94	290	JN
9.	UNKNOWN	18.34	170	JN
10.	UNKNOWN	18.38	510	JN
11.	UNKNOWN	18.75	82	JN
12. 511-15-9	2-PHENANTHRENOL, 4B,5,6,7,8,	18.99	2100	NJ
13. 511-15-9	2-PHENANTHRENOL, 4B,5,6,7,8,	19.21	4900	NJ
14. 638-66-4	OCTADECANAL	19.93	110	NJ
15.	UNKNOWN	20.08	260	JN
16.	UNKNOWN	20.59	360	JN
17.	UNKNOWN	22.33	150	JN
18.	UNKNOWN	23.25	390	JN
19. 83-47-6	.GAMMA.-SITOSTEROL	26.08	2400	NJ
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CP 8-14-01

FORM I SV-TIC OLM04.2

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX814

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373004

Sample wt/vol: 30.8 (g/mL) G Lab File ID: S2C1253

Level: (low/med) LOW Date Received: 06/27/01

% Moisture: 26 Decanted: (Y/N) N Date Extracted: 07/07/01

Concentrated Extract Volume: 500 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.2 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	430	U
108-95-2	Phenol	430	U
111-44-4	bis(2-Chloroethyl)Ether	430	U
95-57-8	2-Chlorophenol	430	U
95-48-7	2-Methylphenol	430	U
108-60-1	2,2'-oxybis(1-Chloropropane)	430	U
98-86-2	Acetophenone	430	U
106-44-5	4-Methylphenol	430	U
621-64-7	N-Nitroso-di-n-propylamine	430	U
67-72-1	Hexachloroethane	430	U
98-95-3	Nitrobenzene	430	U
78-59-1	Isophorone	430	U
88-75-5	2-Nitrophenol	430	U
105-67-9	2,4-Dimethylphenol	430	U
111-91-1	bis(2-Chloroethoxy)methane	430	U
120-83-2	2,4-Dichlorophenol	430	U
91-20-3	Naphthalene	430	U
106-47-8	4-Chloroaniline	430	U
87-68-3	Hexachlorobutadiene	430	U
105-60-2	Caprolactam	430	U
59-50-7	4-Chloro-3-Methylphenol	430	U
91-57-6	2-Methylnaphthalene	430	U
77-47-4	Hexachlorocyclopentadiene	430	U JK
88-06-2	2,4,6-Trichlorophenol	430	U
95-95-4	2,4,5-Trichlorophenol	1100	U
92-52-4	1,1'-Biphenyl	430	U
91-58-7	2-Chloronaphthalene	430	U
88-74-4	2-Nitroaniline	1100	U
131-11-3	Dimethylphthalate	430	U
606-20-2	2,6-Dinitrotoluene	430	U
208-96-8	Acenaphthylene	430	U
99-09-2	3-Nitroaniline	1100	U
83-32-9	Acenaphthene	430	U

OP 8-14-01

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX814

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373004

Sample wt/vol: 30.8 (g/mL) G Lab File ID: S2C1253

Level: (low/med) LOW Date Received: 06/27/01

% Moisture: 26 Decanted: (Y/N) N Date Extracted: 07/07/01

Concentrated Extract Volume: 500 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.2 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1100	U
100-02-7	4-Nitrophenol	1100	U
132-64-9	Dibenzofuran	430	U
121-14-2	2,4-Dinitrotoluene	430	U
84-66-2	Diethylphthalate	430	U
86-73-7	Fluorene	430	U
7005-72-3	4-Chlorophenyl-phenylether	430	U
100-01-6	4-Nitroaniline	1100	U
534-52-1	4,6-Dinitro-2-methylphenol	1100	U
86-30-6	N-Nitrosodiphenylamine (1)	430	U
101-55-3	4-Bromophenyl-phenylether	430	U
118-74-1	Hexachlorobenzene	430	U
1912-24-9	Atrazine	430	U
87-86-5	Pentachlorophenol	1100	U
85-01-8	Phenanthrene	430	U
120-12-7	Anthracene	430	U
86-74-8	Carbazole	430	U
84-74-2	Di-n-butylphthalate	430	U
206-44-0	Fluoranthene	430	U
129-00-0	Pyrene	430	U
85-68-7	Butylbenzylphthalate	130	J Q
91-94-1	3,3'-Dichlorobenzidine	430	U
56-55-3	Benzo(a)anthracene	430	U
218-01-9	Chrysene	430	U
117-81-7	bis(2-Ethylhexyl)phthalate	56	J Q
117-84-0	Di-n-octylphthalate	430	U
205-99-2	Benzo(b)fluoranthene	430	U
207-08-9	Benzo(k)fluoranthene	430	U
50-32-8	Benzo(a)pyrene	430	U
193-39-5	Indeno(1,2,3-cd)pyrene	430	U
53-70-3	Dibenzo(a,h)anthracene	430	U
191-24-2	Benzo(g,h,i)perylene	430	U

(1) - Cannot be separated from Diphenylamine

CP 8-14-01

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JX814

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373004

Sample wt/vol: 30.8 (g/mL) G Lab File ID: S2C1253

Level: (low/med) LOW Date Received: 06/27/01

% Moisture: 26 Decanted: (Y/N) N Date Extracted: 07/07/01

Concentrated Extract Volume: 500 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.2 Extraction: (Type) SONC

Number TICs found: 11

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.51	130	JN
2. 475-20-7	1,4-METHANOAZULENE, DECAHYDR	11.34	250	NJ
3.	UNKNOWN	11.68	100	JN
4.	UNKNOWN	15.41	440	JN
5. 19407-28-4	PHENANTHRENE, 1,2,3,4,4A,9,1	17.30	260	NJ
6. 511-15-9	2-PHENANTHRENOL, 4B,5,6,7,8,	19.00	1000	NJ
7. 511-15-9	2-PHENANTHRENOL, 4B,5,6,7,8,	19.20	2400	NJ
8.	UNKNOWN	19.32	1900	JN
9.	UNKNOWN	20.11	420	JN
10.	UNKNOWN	22.14	260	JN
11.	UNKNOWN	22.33	190	JN
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FORM I SV-TIC. OLM04.2

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX815

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373005

Sample wt/vol: 30.5(g/mL) G Lab File ID: S2C1254

Level: (low/med) LOW Date Received: 06/27/01

% Moisture: 28 Decanted: (Y/N) N Date Extracted: 07/07/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 07/19/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.2 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	450	U
108-95-2	Phenol	450	U
111-44-4	bis(2-Chloroethyl)Ether	450	U
95-57-8	2-Chlorophenol	450	U
95-48-7	2-Methylphenol	450	U
108-60-1	2,2'-oxybis(1-Chloropropane)	450	U
98-86-2	Acetophenone	450	U
106-44-5	4-Methylphenol	450	U
621-64-7	N-Nitroso-di-n-propylamine	450	U
67-72-1	Hexachloroethane	450	U
98-95-3	Nitrobenzene	450	U
78-59-1	Isophorone	450	U
88-75-5	2-Nitrophenol	450	U
105-67-9	2,4-Dimethylphenol	450	U
111-91-1	bis(2-Chloroethoxy)methane	450	U
120-83-2	2,4-Dichlorophenol	450	U
91-20-3	Naphthalene	450	U
106-47-8	4-Chloroaniline	450	U
87-68-3	Hexachlorobutadiene	450	U
105-60-2	Caprolactam	450	U
59-50-7	4-Chloro-3-Methylphenol	450	U
91-57-6	2-Methylnaphthalene	450	U
77-47-4	Hexachlorocyclopentadiene	450	U JK
88-06-2	2,4,6-Trichlorophenol	450	U
95-95-4	2,4,5-Trichlorophenol	1100	U
92-52-4	1,1'-Biphenyl	450	U
91-58-7	2-Chloronaphthalene	450	U
88-74-4	2-Nitroaniline	1100	U
131-11-3	Dimethylphthalate	450	U
606-20-2	2,6-Dinitrotoluene	450	U
208-96-8	Acenaphthylene	450	U
99-09-2	3-Nitroaniline	1100	U
83-32-9	Acenaphthene	450	U

8-14-01

1D
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX815

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373005

Sample wt/vol: 30.5(g/mL) G Lab File ID: S2C1254

Level: (low/med) LOW Date Received: 06/27/01

% Moisture: 28 Decanted: (Y/N) N Date Extracted: 07/07/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 07/19/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.2 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1100	U
100-02-7	4-Nitrophenol	1100	U
132-64-9	Dibenzofuran	450	U
121-14-2	2,4-Dinitrotoluene	450	U
84-66-2	Diethylphthalate	450	U
86-73-7	Fluorene	450	U
7005-72-3	4-Chlorophenyl-phenylether	450	U
100-01-6	4-Nitroaniline	1100	U
534-52-1	4,6-Dinitro-2-methylphenol	1100	U
86-30-6	N-Nitrosodiphenylamine (1)	450	U
101-55-3	4-Bromophenyl-phenylether	450	U
118-74-1	Hexachlorobenzene	450	U
1912-24-9	Atrazine	450	U
87-86-5	Pentachlorophenol	1100	U
85-01-8	Phenanthrene	450	U
120-12-7	Anthracene	450	U
86-74-8	Carbazole	450	U
84-74-2	Di-n-butylphthalate	450	U
206-44-0	Fluoranthene	450	U
129-00-0	Pyrene	450	U
85-68-7	Butylbenzylphthalate	450	U
91-94-1	3,3'-Dichlorobenzidine	450	U
56-55-3	Benzo(a)anthracene	450	U
218-01-9	Chrysene	450	U
117-81-7	bis(2-Ethylhexyl)phthalate	450	U
117-84-0	Di-n-octylphthalate	450	U
205-99-2	Benzo(b)fluoranthene	450	U
207-08-9	Benzo(k)fluoranthene	450	U
50-32-8	Benzo(a)pyrene	450	U
193-39-5	Indeno(1,2,3-cd)pyrene	450	U
53-70-3	Dibenzo(a,h)anthracene	450	U
191-24-2	Benzo(g,h,i)perylene	450	U

(1) - Cannot be separated from Diphenylamine

CP 8-14-01

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JX815

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373005

Sample wt/vol: 30.5 (g/mL) G Lab File ID: S2C1254

Level: (low/med) LOW Date Received: 06/27/01

% Moisture: 28 Decanted: (Y/N) N Date Extracted: 07/07/01

Concentrated Extract Volume: 500 (uL) Date Analyzed: 07/19/01

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.2 Extraction: (Type) SONC

Number TICs found: 28

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	10.84	120	JN
2.	UNKNOWN	11.51	150	JN
3.	UNKNOWN	11.62	92	JN
4.	UNKNOWN	11.90	98	JN
5.	UNKNOWN	12.98	160	JN
6.	UNKNOWN	13.85	260	JN
7.	UNKNOWN	14.07	2200	JN
8.	UNKNOWN	15.11	110	JN
9.	UNKNOWN	15.29	120	JN
10.	UNKNOWN	15.38	1100	JN
11.	UNKNOWN	16.02	130	JN
12. 57-10-3	HEXADECANOIC ACID	16.39	180	NJ
13. 19407-28-4	PHENANTHRENE, 1,2,3,4,4A,9,1	17.30	640	NJ
14.	UNKNOWN	17.42	160	JN
15.	UNKNOWN	17.95	150	JN
16.	UNKNOWN	18.34	150	JN
17.	UNKNOWN	18.38	310	JN
18.	UNKNOWN	19.00	3400	JN
19. 511-15-9	2-PHENANTHRENOL, 4B,5,6,7,8,	19.21	5300	NJ
20.	UNKNOWN	19.32	4200	JN
21. 638-66-4	OCTADECANAL	19.92	140	NJ
22.	UNKNOWN	20.09	460	JN
23.	UNKNOWN	20.36	380	JN
24. 15372-53-9	PODOCARPA-8,11,13-TRIENE-1,3	20.68	380	NJ
25. 511-05-7	9(1H)-PHENANTHRENONE, 2,3,4,	21.30	360	NJ
26.	UNKNOWN	22.14	300	JN
27.	UNKNOWN	22.33	360	JN
28. 83-47-6	.GAMMA.-SITOSTEROL	26.21	1900	NJ
29.				
30.				

OP 8-14-0

FORM I SV-TIC. OLM04.2

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX810

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373001

Sample wt/vol: 30.8 (g/mL) G Lab File ID: E4A8361F

% Moisture: 39 Decanted: (Y/N) N Date Received: 06/27/01

Extraction: (Type) SONC Date Extracted: 07/05/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/12/01

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.8 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.7	U
319-85-7	beta-BHC	2.7	U
319-86-8	delta-BHC	2.7	U
58-89-9	gamma-BHC (Lindane)	2.7	U
76-44-8	Heptachlor	2.7	U
309-00-2	Aldrin	2.7	U
1024-57-3	Heptachlor epoxide	2.7	U
959-98-8	Endosulfan I	2.7	U
60-57-1	Dieldrin	5.3	U
72-55-9	4,4'-DDE	5.3	U
72-20-8	Endrin	5.3	U
33213-65-9	Endosulfan II	5.3	U
72-54-8	4,4'-DDD	5.3	U
1031-07-8	Endosulfan sulfate	5.3	U
50-29-3	4,4'-DDT	5.3	U
72-43-5	Methoxychlor	27	U
53494-70-5	Endrin ketone	5.3	U
7421-93-4	Endrin aldehyde	5.3	U
5103-71-9	alpha-Chlordane	2.7	U
5103-74-2	gamma-Chlordane	2.7	U
8001-35-2	Toxaphene	270	U
12674-11-2	Aroclor-1016	53	U
11104-28-2	Aroclor-1221	110	U
11141-16-5	Aroclor-1232	53	U
53469-21-9	Aroclor-1242	53	U
12672-29-6	Aroclor-1248	53	U
11097-69-1	Aroclor-1254	53	U
11096-82-5	Aroclor-1260	53	U

CP
8-15-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX811

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373002

Sample wt/vol: 30.4 (g/mL) G Lab File ID: E4A8362F

% Moisture: 18 Decanted: (Y/N) N Date Received: 06/27/01

Extraction: (Type) SONC Date Extracted: 07/05/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/12/01

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.7 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	4.0	U
72-55-9	4,4'-DDE	4.0	U
72-20-8	Endrin	4.0	U
33213-65-9	Endosulfan II	4.0	U
72-54-8	4,4'-DDD	4.0	U
1031-07-8	Endosulfan sulfate	4.0	U
50-29-3	4,4'-DDT	4.0	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	4.0	U
7421-93-4	Endrin aldehyde	4.0	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	40	U
11104-28-2	Aroclor-1221	81	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	40	U
11096-82-5	Aroclor-1260	40	U

CP 8-15-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX813

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373003

Sample wt/vol: 30.1(g/mL) G Lab File ID: E4A8363F

% Moisture: 19 Decanted: (Y/N) N Date Received: 06/27/01

Extraction: (Type) SONC Date Extracted: 07/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/12/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.9 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	4.1	U
33213-65-9	Endosulfan II	4.1	U
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.1	U
7421-93-4	Endrin aldehyde	4.1	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	82	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	41	U
11096-82-5	Aroclor-1260	41	U

CP 8-15-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX814

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373004

Sample wt/vol: 30.1(g/mL) G Lab File ID: E4A8364F

% Moisture: 26 Decanted: (Y/N) N Date Received: 06/27/01

Extraction: (Type) SONC Date Extracted: 07/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/12/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	2.3	U
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	2.3	U
1024-57-3	Heptachlor epoxide	2.3	U
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.4	U
72-55-9	4,4'-DDE	4.4	U
72-20-8	Endrin	4.4	U
33213-65-9	Endosulfan II	4.4	U
72-54-8	4,4'-DDD	4.4	U
1031-07-8	Endosulfan sulfate	4.4	U
50-29-3	4,4'-DDT	4.4	U
72-43-5	Methoxychlor	23	U
53494-70-5	Endrin ketone	4.4	U
7421-93-4	Endrin aldehyde	4.4	U
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	2.3	U
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	44	U
11104-28-2	Aroclor-1221	90	U
11141-16-5	Aroclor-1232	44	U
53469-21-9	Aroclor-1242	44	U
12672-29-6	Aroclor-1248	44	U
11097-69-1	Aroclor-1254	44	U
11096-82-5	Aroclor-1260	44	U

CP
8-15-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX815

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373005

Sample wt/vol: 30.2(g/mL) G Lab File ID: E4A8365F

% Moisture: 28 Decanted: (Y/N) N Date Received: 06/27/01

Extraction: (Type) SONC Date Extracted: 07/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/12/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	2.3	U
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	2.3	U
1024-57-3	Heptachlor epoxide	2.3	U
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.6	U
72-55-9	4,4'-DDE	4.6	U
72-20-8	Endrin	4.6	U
33213-65-9	Endosulfan II	4.6	U
72-54-8	4,4'-DDD	4.6	U
1031-07-8	Endosulfan sulfate	4.6	U
50-29-3	4,4'-DDT	4.6	U
72-43-5	Methoxychlor	23	U
53494-70-5	Endrin ketone	4.6	U
7421-93-4	Endrin aldehyde	4.6	U
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	2.3	U
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	46	U
11104-28-2	Aroclor-1221	92	U
11141-16-5	Aroclor-1232	46	U
53469-21-9	Aroclor-1242	46	U
12672-29-6	Aroclor-1248	46	U
11097-69-1	Aroclor-1254	46	U
11096-82-5	Aroclor-1260	46	U

CP
8-15-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX816

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373013

Sample wt/vol: 30.5 (g/mL) G Lab File ID: E4A8376F

% Moisture: 16 Decanted: (Y/N) N Date Received: 06/29/01

Extraction: (Type) SONC Date Extracted: 07/05/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/13/01

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.8 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	3.9	U
72-55-9	4,4'-DDE	3.9	U
72-20-8	Endrin	3.9	U
33213-65-9	Endosulfan II	3.9	U
72-54-8	4,4'-DDD	3.9	U
1031-07-8	Endosulfan sulfate	3.9	U
50-29-3	4,4'-DDT	3.9	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	3.9	U
7421-93-4	Endrin aldehyde	3.9	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	39	U
11104-28-2	Aroclor-1221	78	U
11141-16-5	Aroclor-1232	39	U
53469-21-9	Aroclor-1242	39	U
12672-29-6	Aroclor-1248	39	U
11097-69-1	Aroclor-1254	39	U
11096-82-5	Aroclor-1260	39	U

8-15-01

1E
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX818

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373009

Sample wt/vol: 30.5(g/mL) G Lab File ID: E4A8367F

% Moisture: 15 Decanted: (Y/N) N Date Received: 06/28/01

Extraction: (Type) SONC Date Extracted: 07/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/12/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.9 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	3.8	U
72-55-9	4,4'-DDE	3.8	U
72-20-8	Endrin	3.8	U
33213-65-9	Endosulfan II	3.8	U
72-54-8	4,4'-DDD	3.8	U
1031-07-8	Endosulfan sulfate	3.8	U
50-29-3	4,4'-DDT	3.8	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	3.8	U
7421-93-4	Endrin aldehyde	3.8	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	78	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	38	U
11096-82-5	Aroclor-1260	38	U

UP 8-15-01

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX819

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373006

Sample wt/vol: 30.2(g/mL) G Lab File ID: E4A8366F

% Moisture: 22 Decanted: (Y/N) N Date Received: 06/27/01

Extraction: (Type) SONC Date Extracted: 07/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/12/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.2	U
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.2	U
72-55-9	4,4'-DDE	4.2	U
72-20-8	Endrin	4.2	U
33213-65-9	Endosulfan II	4.2	U
72-54-8	4,4'-DDD	4.2	U
1031-07-8	Endosulfan sulfate	4.2	U
50-29-3	4,4'-DDT	4.2	U
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.2	U
7421-93-4	Endrin aldehyde	4.2	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	42	U
11104-28-2	Aroclor-1221	85	U
11141-16-5	Aroclor-1232	42	U
53469-21-9	Aroclor-1242	42	U
12672-29-6	Aroclor-1248	42	U
11097-69-1	Aroclor-1254	42	U
11096-82-5	Aroclor-1260	42	U

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX820

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373010

Sample wt/vol: 30.5(g/mL) G Lab File ID: E4A8368F

% Moisture: 20 Decanted: (Y/N) N Date Received: 06/28/01

Extraction: (Type) SONC Date Extracted: 07/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/12/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	4.1	U
33213-65-9	Endosulfan II	4.1	U
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.1	U
7421-93-4	Endrin aldehyde	4.1	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	82	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	41	U
11096-82-5	Aroclor-1260	41	U

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX822

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373011

Sample wt/vol: 30.1 (g/mL) G Lab File ID: E4A8369F

% Moisture: 90 Decanted: (Y/N) N Date Received: 06/28/01

Extraction: (Type) SONC Date Extracted: 07/05/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/13/01

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.2 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	17	U
319-85-7	beta-BHC	17	U
319-86-8	delta-BHC	17	U
58-89-9	gamma-BHC (Lindane)	17	U
76-44-8	Heptachlor	17	U
309-00-2	Aldrin	17	U
1024-57-3	Heptachlor epoxide	17	U
959-98-8	Endosulfan I	17	U
60-57-1	Dieldrin	33	U
72-55-9	4,4'-DDE	33	U
72-20-8	Endrin	33	U
33213-65-9	Endosulfan II	33	U
72-54-8	4,4'-DDD	33	U
1031-07-8	Endosulfan sulfate	33	U
50-29-3	4,4'-DDT	33	U
72-43-5	Methoxychlor	170	U
53494-70-5	Endrin ketone	33	U
7421-93-4	Endrin aldehyde	33	U
5103-71-9	alpha-Chlordane	17	U
5103-74-2	gamma-Chlordane	17	U
8001-35-2	Toxaphene	1700	U
12674-11-2	Aroclor-1016	330	U
11104-28-2	Aroclor-1221	670	U
11141-16-5	Aroclor-1232	330	U
53469-21-9	Aroclor-1242	330	U
12672-29-6	Aroclor-1248	330	U
11097-69-1	Aroclor-1254	330	U
11096-82-5	Aroclor-1260	330	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX825

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373015

Sample wt/vol: 30.6 (g/mL) G Lab File ID: E4A8380F

% Moisture: 24 Decanted: (Y/N) N Date Received: 06/29/01

Extraction: (Type) SONC Date Extracted: 07/05/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/13/01

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4 Sulfur Cleanup: (Y/N) Y

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.2	U
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.3	U
72-55-9	4,4'-DDE	4.3	U
72-20-8	Endrin	4.3	U
33213-65-9	Endosulfan II	4.3	U
72-54-8	4,4'-DDD	4.3	U
1031-07-8	Endosulfan sulfate	4.3	U
50-29-3	4,4'-DDT	4.3	U
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.3	U
7421-93-4	Endrin aldehyde	4.3	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	43	U
11104-28-2	Aroclor-1221	86	U
11141-16-5	Aroclor-1232	43	U
53469-21-9	Aroclor-1242	43	U
12672-29-6	Aroclor-1248	43	U
11097-69-1	Aroclor-1254	43	U
11096-82-5	Aroclor-1260	43	U

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8-15-01

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX827

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373012

Sample wt/vol: 30.5(g/mL) G Lab File ID: E4A8375F

% Moisture: 36 Decanted: (Y/N) N Date Received: 06/29/01

Extraction: (Type) SONC Date Extracted: 07/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 07/13/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.9 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.6	U
319-85-7	beta-BHC	2.6	U
319-86-8	delta-BHC	2.6	U
58-89-9	gamma-BHC (Lindane)	2.6	U
76-44-8	Heptachlor	2.6	U
309-00-2	Aldrin	2.6	U
1024-57-3	Heptachlor epoxide	2.6	U
959-98-8	Endosulfan I	2.6	U
60-57-1	Dieldrin	5.1	U
72-55-9	4,4'-DDE	5.1	U
72-20-8	Endrin	5.1	U
33213-65-9	Endosulfan II	5.1	U
72-54-8	4,4'-DDD	5.1	U
1031-07-8	Endosulfan sulfate	5.1	U
50-29-3	4,4'-DDT	5.1	U
72-43-5	Methoxychlor	26	U
53494-70-5	Endrin ketone	5.1	U
7421-93-4	Endrin aldehyde	5.1	U
5103-71-9	alpha-Chlordane	2.6	U
5103-74-2	gamma-Chlordane	2.6	U
8001-35-2	Toxaphene	260	U
12674-11-2	Aroclor-1016	51	U
11104-28-2	Aroclor-1221	100	U
11141-16-5	Aroclor-1232	51	U
53469-21-9	Aroclor-1242	51	U
12672-29-6	Aroclor-1248	51	U
11097-69-1	Aroclor-1254	51	U
11096-82-5	Aroclor-1260	51	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX830

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) WATER Lab Sample ID: 81373016

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E4A8407F

% Moisture: _____ Decanted: (Y/N) ___ Date Received: 06/29/01

Extraction: (Type) CONT Date Extracted: 07/05/01

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 07/16/01

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX833

Lab Name: MITKEM CORPORATION Contract: 68W99076

Lab Code: MITKEM Case No.: 29469 SAS No.: _____ SDG No.: JX810

Matrix: (soil/water) SOIL Lab Sample ID: 81373014

Sample wt/vol: 30.3 (g/mL) G Lab File ID: E4A8379F

% Moisture: 21 Decanted: (Y/N) N Date Received: 06/29/01

Extraction: (Type) SONC Date Extracted: 07/05/01

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 07/13/01

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.7 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	4.1	U
33213-65-9	Endosulfan II	4.1	U
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.1	U
7421-93-4	Endrin aldehyde	4.1	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	84	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	41	U
11096-82-5	Aroclor-1260	41	U

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ENVIRONMENTAL SERVICES ASSISTANCE TEAM

received 8-6-01 SM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: June 27, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt site. Case: 29276 SDG: MJ0904

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1070
TDN: 1035
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 20 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0904	MJ0910	MJ0915	MJ0920
MJ0905	MJ0911	MJ0916	MJ0921
MJ0907	MJ0912	MJ0917	MJ0922
MJ0908	MJ0913	MJ0918	MJ0923
MJ0909	MJ0914	MJ0919	MJ09E2

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met by all of the ICS analyzed. The recoveries ranged from 85-112%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0920 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of copper. Results for copper in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 59-109%. None of the data were qualified on this basis.

Duplicate Sample Analysis - Acceptable

Sample MJ0920 was utilized for duplicate analysis. The duplicate results met the frequency of analysis control limit criteria for all target analytes. None of the data were qualified on this basis.

Matrix Spike Analysis

Sample MJ0920 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of antimony (65%) in the spike sample MJ0920S. Due to possible bias, the detected and non-detected antimony results in all samples were qualified as estimated, "J/UJ". The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. The recovery for lead could not be accurately determined because the concentration native to the sample was greater than 4 times the amount of spike added to the sample. All of the other spike recoveries were acceptable and ranged from 85-113%.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 460. Forty (8.7%) were qualified as estimated due to spike analysis and ICP serial dilution.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

U.S. EPA - CLP

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	05/31/01	1.00	200
MJ0904	05/31/01	1.00	200
MJ0905	05/31/01	1.01	200
MJ0907	05/31/01	1.00	200
MJ0908	05/31/01	1.01	200
MJ0909	05/31/01	1.01	200
MJ0910	05/31/01	1.01	200
MJ0911	05/31/01	1.02	200
MJ0912	05/31/01	1.01	200
MJ0913	05/31/01	1.00	200
MJ0914	05/31/01	1.01	200
MJ0915	05/31/01	1.01	200
MJ0916	05/31/01	1.01	200
MJ0917	05/31/01	1.02	200
MJ0918	05/31/01	1.00	200
MJ0919	05/31/01	1.02	200
MJ0920	05/31/01	1.00	200
MJ0920D	05/31/01	1.00	200
MJ0920S	05/31/01	1.00	200
MJ0921	05/31/01	1.00	200
MJ0922	05/31/01	1.02	200
MJ0923	05/31/01	1.00	200
MJ09E2	05/31/01	1.02	200
PBS	05/31/01	1.00	200

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	05/30/01	0.20	100
MJ0904	05/30/01	0.20	100
MJ0905	05/30/01	0.20	100
MJ0907	05/30/01	0.21	100
MJ0908	05/30/01	0.22	100
MJ0909	05/30/01	0.20	100
MJ0910	05/30/01	0.21	100
MJ0911	05/30/01	0.21	100
MJ0912	05/30/01	0.22	100
MJ0913	05/30/01	0.21	100
MJ0914	05/30/01	0.22	100
MJ0915	05/30/01	0.20	100
MJ0916	05/30/01	0.20	100
MJ0917	05/30/01	0.21	100
MJ0918	05/30/01	0.22	100
MJ0919	05/30/01	0.20	100
MJ0920	05/30/01	0.20	100
MJ0920D	05/30/01	0.20	100
MJ0920S	05/30/01	0.20	100
MJ0921	05/30/01	0.20	100
MJ0922	05/30/01	0.22	100
MJ0923	05/30/01	0.20	100
MJ09E2	05/30/01	0.21	100
PBS	05/30/01	0.20	100

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0904

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38052S

Level (low/med): LOW Date Received: 05/22/01

% Solids: 87.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8180			P
7440-36-0	Antimony	1.7	B	~~X~~ JL	P
7440-38-2	Arsenic	7.8			P
7440-39-3	Barium	422			P
7440-41-7	Beryllium	0.43	B		P
7440-43-9	Cadmium	4.9			P
7440-70-2	Calcium	12400			P
7440-47-3	Chromium	18.9			P
7440-48-4	Cobalt	5.4	B		P
7440-50-8	Copper	40.6		~~X~~ JL	P
7439-89-6	Iron	17400			P
7439-92-1	Lead	232			P
7439-95-4	Magnesium	8970			P
7439-96-5	Manganese	337			P
7439-97-6	Mercury	0.43			CV
7440-02-0	Nickel	16.6			P
7440-09-7	Potassium	1490			P
7782-49-2	Selenium	0.77	U		P
7440-22-4	Silver	0.78	B		P
7440-23-5	Sodium	242	B		P
7440-28-0	Thallium	0.89	U		P
7440-62-2	Vanadium	24.2			P
7440-66-6	Zinc	581			P
	Cyanide				NR

CP 6-26-01 ~~6~~ 226

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0905

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38053S

Level (low/med): LOW Date Received: 05/22/01

% Solids: 35.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11900			P
7440-36-0	Antimony	2.1	B	~~N~~ JL	P
7440-38-2	Arsenic	4.5	B		P
7440-39-3	Barium	231			P
7440-41-7	Beryllium	0.62	B		P
7440-43-9	Cadmium	1.4	B		P
7440-70-2	Calcium	9340			P
7440-47-3	Chromium	20.4			P
7440-48-4	Cobalt	7.4	B		P
7440-50-8	Copper	41.8		~~N~~ JL	P
7439-89-6	Iron	20400			P
7439-92-1	Lead	64.9			P
7439-95-4	Magnesium	7000			P
7439-96-5	Manganese	392			P
7439-97-6	Mercury	0.14	U		CV
7440-02-0	Nickel	18.7	B		P
7440-09-7	Potassium	2020	B		P
7782-49-2	Selenium	1.9	U		P
7440-22-4	Silver	0.75	B		P
7440-23-5	Sodium	480	B		P
7440-28-0	Thallium	2.2	U		P
7440-62-2	Vanadium	26.7	B		P
7440-66-6	Zinc	250			P
	Cyanide				NR

CP 6-26-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0907

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38187S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 43.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12800			P
7440-36-0	Antimony	3.6	B	~~N~~ JL	P
7440-38-2	Arsenic	9.5			P
7440-39-3	Barium	364			P
7440-41-7	Beryllium	0.69	B		P
7440-43-9	Cadmium	6.5			P
7440-70-2	Calcium	8230			P
7440-47-3	Chromium	33.1			P
7440-48-4	Cobalt	9.2	B		P
7440-50-8	Copper	88.2		~~N~~ JL	P
7439-89-6	Iron	25200			P
7439-92-1	Lead	441			P
7439-95-4	Magnesium	8200			P
7439-96-5	Manganese	673			P
7439-97-6	Mercury	1.2			CV
7440-02-0	Nickel	25.9			P
7440-09-7	Potassium	2440			P
7782-49-2	Selenium	1.5	U		P
7440-22-4	Silver	2.0	B		P
7440-23-5	Sodium	471	B		P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	35.8			P
7440-66-6	Zinc	901			P
	Cyanide				NR

CP 6-26-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0908

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38054S

Level (low/med): LOW Date Received: 05/22/01

% Solids: 35.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6670			P
7440-36-0	Antimony	5.4	B	~~N~~ JL	P
7440-38-2	Arsenic	6.8			P
7440-39-3	Barium	180			P
7440-41-7	Beryllium	0.39	B		P
7440-43-9	Cadmium	1.8	B		P
7440-70-2	Calcium	7630			P
7440-47-3	Chromium	17.0			P
7440-48-4	Cobalt	5.4	B		P
7440-50-8	Copper	66.7		~~E~~ JL	P
7439-89-6	Iron	15500			P
7439-92-1	Lead	72.7			P
7439-95-4	Magnesium	5610			P
7439-96-5	Manganese	303			P
7439-97-6	Mercury	0.13	U		CV
7440-02-0	Nickel	13.6	B		P
7440-09-7	Potassium	1270	B		P
7782-49-2	Selenium	1.9	U		P
7440-22-4	Silver	1.1	B		P
7440-23-5	Sodium	426	B		P
7440-28-0	Thallium	2.2	U		P
7440-62-2	Vanadium	20.2	B		P
7440-66-6	Zinc	455			P
	Cyanide				NR

CP 6-26-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0909

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38188S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 33.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11600			P
7440-36-0	Antimony	3.4	B	~~N~~ JL	P
7440-38-2	Arsenic	10.3			P
7440-39-3	Barium	240			P
7440-41-7	Beryllium	0.60	B		P
7440-43-9	Cadmium	5.9			P
7440-70-2	Calcium	7740			P
7440-47-3	Chromium	30.4			P
7440-48-4	Cobalt	7.9	B		P
7440-50-8	Copper	67.6		~~N~~ JL	P
7439-89-6	Iron	22400			P
7439-92-1	Lead	282			P
7439-95-4	Magnesium	7930			P
7439-96-5	Manganese	392			P
7439-97-6	Mercury	0.90			CV
7440-02-0	Nickel	23.2	B		P
7440-09-7	Potassium	2280	B		P
7782-49-2	Selenium	2.0	U		P
7440-22-4	Silver	1.5	B		P
7440-23-5	Sodium	623	B		P
7440-28-0	Thallium	2.3	U		P
7440-62-2	Vanadium	33.7			P
7440-66-6	Zinc	617			P
	Cyanide				NR

CP 6-26-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0910

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38189S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 99.0

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	1.0	B	~~N~~ JL	P
7440-38-2	Arsenic	4.2			P
7440-39-3	Barium	190			P
7440-41-7	Beryllium	0.63	B		P
7440-43-9	Cadmium	1.6			P
7440-70-2	Calcium	5470			P
7440-47-3	Chromium	25.7			P
7440-48-4	Cobalt	8.2	B		P
7440-50-8	Copper	53.9		~~E~~ JL	P
7439-89-6	Iron	18000			P
7439-92-1	Lead	93.8			P
7439-95-4	Magnesium	6150			P
7439-96-5	Manganese	392			P
7439-97-6	Mercury	0.25			CV
7440-02-0	Nickel	23.0			P
7440-09-7	Potassium	2390			P
7782-49-2	Selenium	0.68	U		P
7440-22-4	Silver	0.98	B		P
7440-23-5	Sodium	186	B		P
7440-28-0	Thallium	0.78	U		P
7440-62-2	Vanadium	32.1			P
7440-66-6	Zinc	280			P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0911

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38190S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 36.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9920			P
7440-36-0	Antimony	4.9	B	~~J~~ JL	P
7440-38-2	Arsenic	10.6			P
7440-39-3	Barium	505			P
7440-41-7	Beryllium	0.54	B		P
7440-43-9	Cadmium	4.3			P
7440-70-2	Calcium	21200			P
7440-47-3	Chromium	25.0			P
7440-48-4	Cobalt	7.9	B		P
7440-50-8	Copper	120		~~J~~ JL	P
7439-89-6	Iron	27500			P
7439-92-1	Lead	211			P
7439-95-4	Magnesium	13800			P
7439-96-5	Manganese	528			P
7439-97-6	Mercury	0.49			CV
7440-02-0	Nickel	21.4			P
7440-09-7	Potassium	1960	B		P
7782-49-2	Selenium	1.8	U		P
7440-22-4	Silver	2.0	B		P
7440-23-5	Sodium	483	B		P
7440-28-0	Thallium	2.1	U		P
7440-62-2	Vanadium	30.5			P
7440-66-6	Zinc	855			P
	Cyanide				NR

CP 6-26-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0912

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38191S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 49.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9090			P
7440-36-0	Antimony	1.3	B	~~N~~ JL	P
7440-38-2	Arsenic	3.4	B		P
7440-39-3	Barium	113			P
7440-41-7	Beryllium	0.58	B		P
7440-43-9	Cadmium	0.29	B		P
7440-70-2	Calcium	4800			P
7440-47-3	Chromium	21.1			P
7440-48-4	Cobalt	6.0	B		P
7440-50-8	Copper	25.0		~~E~~ JL	P
7439-89-6	Iron	16000			P
7439-92-1	Lead	21.3			P
7439-95-4	Magnesium	5190			P
7439-96-5	Manganese	284			P
7439-97-6	Mercury	0.09	U		CV
7440-02-0	Nickel	16.2			P
7440-09-7	Potassium	1380	B		P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	0.52	B		P
7440-23-5	Sodium	385	B		P
7440-28-0	Thallium	1.5	U		P
7440-62-2	Vanadium	29.0			P
7440-66-6	Zinc	104			P
	Cyanide				NR

CP 6-26-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0913

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38192S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 42.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12400			P
7440-36-0	Antimony	3.9	B	~~N~~ JL	P
7440-38-2	Arsenic	9.7			P
7440-39-3	Barium	370			P
7440-41-7	Beryllium	0.67	B		P
7440-43-9	Cadmium	2.8			P
7440-70-2	Calcium	16100			P
7440-47-3	Chromium	30.1			P
7440-48-4	Cobalt	9.6	B		P
7440-50-8	Copper	114		~~E~~ JL	P
7439-89-6	Iron	29000			P
7439-92-1	Lead	149			P
7439-95-4	Magnesium	11900			P
7439-96-5	Manganese	589			P
7439-97-6	Mercury	0.17	B		CV
7440-02-0	Nickel	24.8			P
7440-09-7	Potassium	2480			P
7782-49-2	Selenium	1.6	U		P
7440-22-4	Silver	1.7	B		P
7440-23-5	Sodium	397	B		P
7440-28-0	Thallium	1.9	U		P
7440-62-2	Vanadium	36.7			P
7440-66-6	Zinc	787			P
	Cyanide				NR

CP 6-26-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0914

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38193S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 55.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8000			P
7440-36-0	Antimony	4.8	B	~~N~~ JL	P
7440-38-2	Arsenic	9.5			P
7440-39-3	Barium	375			P
7440-41-7	Beryllium	0.44	B		P
7440-43-9	Cadmium	2.9			P
7440-70-2	Calcium	16600			P
7440-47-3	Chromium	21.9			P
7440-48-4	Cobalt	7.7	B		P
7440-50-8	Copper	118		~~N~~ JL	P
7439-89-6	Iron	23000			P
7439-92-1	Lead	159			P
7439-95-4	Magnesium	11100			P
7439-96-5	Manganese	411			P
7439-97-6	Mercury	0.20			CV
7440-02-0	Nickel	18.0			P
7440-09-7	Potassium	1560	B		P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	1.8	B		P
7440-23-5	Sodium	354	B		P
7440-28-0	Thallium	1.4	U		P
7440-62-2	Vanadium	25.6			P
7440-66-6	Zinc	940			P
	Cyanide				NR

CP 6-26-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0915

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38194S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 98.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7150			P
7440-36-0	Antimony	1.9	B	~~N~~ JL	P
7440-38-2	Arsenic	7.0			P
7440-39-3	Barium	342			P
7440-41-7	Beryllium	0.37	B		P
7440-43-9	Cadmium	3.2			P
7440-70-2	Calcium	11500			P
7440-47-3	Chromium	17.7			P
7440-48-4	Cobalt	5.0	B		P
7440-50-8	Copper	65.7		~~E~~ JL	P
7439-89-6	Iron	15900			P
7439-92-1	Lead	208			P
7439-95-4	Magnesium	7940			P
7439-96-5	Manganese	256			P
7439-97-6	Mercury	0.53			CV
7440-02-0	Nickel	14.1			P
7440-09-7	Potassium	1250			P
7782-49-2	Selenium	0.68	U		P
7440-22-4	Silver	1.5	B		P
7440-23-5	Sodium	200	B		P
7440-28-0	Thallium	0.78	U		P
7440-62-2	Vanadium	21.4			P
7440-66-6	Zinc	600			P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0916

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38195S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 96.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11200			P
7440-36-0	Antimony	4.7	B	~~J~~ JL	P
7440-38-2	Arsenic	11.1			P
7440-39-3	Barium	624			P
7440-41-7	Beryllium	0.62	B		P
7440-43-9	Cadmium	7.2			P
7440-70-2	Calcium	20500			P
7440-47-3	Chromium	30.6			P
7440-48-4	Cobalt	9.0	B		P
7440-50-8	Copper	205		~~J~~ JL	P
7439-89-6	Iron	26800			P
7439-92-1	Lead	369			P
7439-95-4	Magnesium	14200			P
7439-96-5	Manganese	388			P
7439-97-6	Mercury	1.1			CV
7440-02-0	Nickel	23.1			P
7440-09-7	Potassium	1820			P
7782-49-2	Selenium	1.1			P
7440-22-4	Silver	3.1			P
7440-23-5	Sodium	258	B		P
7440-28-0	Thallium	0.80	U		P
7440-62-2	Vanadium	33.1			P
7440-66-6	Zinc	1250			P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0917

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38196S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 60.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6940			P
7440-36-0	Antimony	21.5		~~N~~ JL	P
7440-38-2	Arsenic	11.5			P
7440-39-3	Barium	533			P
7440-41-7	Beryllium	0.38	B		P
7440-43-9	Cadmium	4.3			P
7440-70-2	Calcium	26300			P
7440-47-3	Chromium	29.9			P
7440-48-4	Cobalt	10.7	B		P
7440-50-8	Copper	387		~~N~~ JL	P
7439-89-6	Iron	36300			P
7439-92-1	Lead	256			P
7439-95-4	Magnesium	11800			P
7439-96-5	Manganese	661			P
7439-97-6	Mercury	0.40			CV
7440-02-0	Nickel	16.0			P
7440-09-7	Potassium	1440	B		P
7782-49-2	Selenium	1.6	B		P
7440-22-4	Silver	3.4			P
7440-23-5	Sodium	374	B		P
7440-28-0	Thallium	1.6	B		P
7440-62-2	Vanadium	23.6			P
7440-66-6	Zinc	2560			P
	Cyanide				NR

CP 6-26-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0918

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38197S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 93.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9410			P
7440-36-0	Antimony	4.7	B	≠ JL	P
7440-38-2	Arsenic	8.7			P
7440-39-3	Barium	295			P
7440-41-7	Beryllium	0.54	B		P
7440-43-9	Cadmium	3.5			P
7440-70-2	Calcium	15400			P
7440-47-3	Chromium	26.4			P
7440-48-4	Cobalt	8.6	B		P
7440-50-8	Copper	150		≠ JL	P
7439-89-6	Iron	24700			P
7439-92-1	Lead	165			P
7439-95-4	Magnesium	10200			P
7439-96-5	Manganese	481			P
7439-97-6	Mercury	0.19			CV
7440-02-0	Nickel	21.1			P
7440-09-7	Potassium	1900			P
7782-49-2	Selenium	0.97	B		P
7440-22-4	Silver	2.1	B		P
7440-23-5	Sodium	266	B		P
7440-28-0	Thallium	0.84	U		P
7440-62-2	Vanadium	29.4			P
7440-66-6	Zinc	1030			P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0919

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38198S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 83.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9240			P
7440-36-0	Antimony	7.0	B	~~N~~ JL	P
7440-38-2	Arsenic	13.0			P
7440-39-3	Barium	618			P
7440-41-7	Beryllium	0.51	B		P
7440-43-9	Cadmium	6.9			P
7440-70-2	Calcium	26100			P
7440-47-3	Chromium	29.4			P
7440-48-4	Cobalt	9.0	B		P
7440-50-8	Copper	251		~~E~~ JL	P
7439-89-6	Iron	28900			P
7439-92-1	Lead	392			P
7439-95-4	Magnesium	15300			P
7439-96-5	Manganese	435			P
7439-97-6	Mercury	0.73			CV
7440-02-0	Nickel	20.9			P
7440-09-7	Potassium	1620			P
7782-49-2	Selenium	1.2			P
7440-22-4	Silver	3.2			P
7440-23-5	Sodium	269	B		P
7440-28-0	Thallium	0.92	U		P
7440-62-2	Vanadium	30.2			P
7440-66-6	Zinc	1660			P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0920

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38199S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 99.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8540			P
7440-36-0	Antimony	2.2	B	~~J~~ JL	P
7440-38-2	Arsenic	7.9			P
7440-39-3	Barium	255			P
7440-41-7	Beryllium	0.45	B		P
7440-43-9	Cadmium	2.3			P
7440-70-2	Calcium	10800			P
7440-47-3	Chromium	23.4			P
7440-48-4	Cobalt	7.3	B		P
7440-50-8	Copper	76.8		~~J~~ JL	P
7439-89-6	Iron	19800			P
7439-92-1	Lead	112			P
7439-95-4	Magnesium	8570			P
7439-96-5	Manganese	467			P
7439-97-6	Mercury	0.16			CV
7440-02-0	Nickel	19.1			P
7440-09-7	Potassium	1610			P
7782-49-2	Selenium	0.68	U		P
7440-22-4	Silver	1.2	B		P
7440-23-5	Sodium	237	B		P
7440-28-0	Thallium	0.78	U		P
7440-62-2	Vanadium	28.3			P
7440-66-6	Zinc	592			P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0921

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38200S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 98.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8720			P
7440-36-0	Antimony	5.7	B	~~J~~ JL	P
7440-38-2	Arsenic	10.7			P
7440-39-3	Barium	391			P
7440-41-7	Beryllium	0.49	B		P
7440-43-9	Cadmium	3.6			P
7440-70-2	Calcium	19600			P
7440-47-3	Chromium	25.8			P
7440-48-4	Cobalt	8.6	B		P
7440-50-8	Copper	156		~~J~~ JL	P
7439-89-6	Iron	25500			P
7439-92-1	Lead	190			P
7439-95-4	Magnesium	12800			P
7439-96-5	Manganese	545			P
7439-97-6	Mercury	0.32			CV
7440-02-0	Nickel	19.8			P
7440-09-7	Potassium	1760			P
7782-49-2	Selenium	0.69	U		P
7440-22-4	Silver	2.2			P
7440-23-5	Sodium	207	B		P
7440-28-0	Thallium	0.79	U		P
7440-62-2	Vanadium	28.6			P
7440-66-6	Zinc	1100			P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0922

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38201S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 96.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8790			P
7440-36-0	Antimony	10.8	B	~~N~~ JL	P
7440-38-2	Arsenic	10.4			P
7440-39-3	Barium	438			P
7440-41-7	Beryllium	0.39	B		P
7440-43-9	Cadmium	2.8			P
7440-70-2	Calcium	22300			P
7440-47-3	Chromium	28.1			P
7440-48-4	Cobalt	10.6			P
7440-50-8	Copper	309		~~N~~ JL	P
7439-89-6	Iron	42300			P
7439-92-1	Lead	209			P
7439-95-4	Magnesium	10300			P
7439-96-5	Manganese	946			P
7439-97-6	Mercury	0.16			CV
7440-02-0	Nickel	15.0			P
7440-09-7	Potassium	1400			P
7782-49-2	Selenium	1.4			P
7440-22-4	Silver	2.1			P
7440-23-5	Sodium	384	B		P
7440-28-0	Thallium	0.81	B		P
7440-62-2	Vanadium	27.1			P
7440-66-6	Zinc	3090			P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0923

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38202S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 99.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	18900			P
7440-36-0	Antimony	17.2		~~N~~ JL	P
7440-38-2	Arsenic	26.9			P
7440-39-3	Barium	1070			P
7440-41-7	Beryllium	0.74	B		P
7440-43-9	Cadmium	2.8			P
7440-70-2	Calcium	49600			P
7440-47-3	Chromium	59.1			P
7440-48-4	Cobalt	22.3			P
7440-50-8	Copper	1460		~~N~~ JL	P
7439-89-6	Iron	176000			P
7439-92-1	Lead	1590			P
7439-95-4	Magnesium	7230			P
7439-96-5	Manganese	3390			P
7439-97-6	Mercury	0.07	B		CV
7440-02-0	Nickel	10.3			P
7440-09-7	Potassium	3620			P
7782-49-2	Selenium	0.68	U		P
7440-22-4	Silver	4.0			P
7440-23-5	Sodium	1310			P
7440-28-0	Thallium	4.0			P
7440-62-2	Vanadium	39.0			P
7440-66-6	Zinc	24900			P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09E2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0904

Matrix (soil/water): SOIL Lab Sample ID: 38055S

Level (low/med): LOW Date Received: 05/22/01

% Solids: 81.7

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	0.72	U	~~N~~UJK	P
7440-38-2	Arsenic	2.8			P
7440-39-3	Barium	175			P
7440-41-7	Beryllium	0.55	B		P
7440-43-9	Cadmium	0.43	B		P
7440-70-2	Calcium	5560			P
7440-47-3	Chromium	9.4			P
7440-48-4	Cobalt	4.0	B		P
7440-50-8	Copper	15.6		~~N~~ JL	P
7439-89-6	Iron	11500			P
7439-92-1	Lead	26.8			P
7439-95-4	Magnesium	2970			P
7439-96-5	Manganese	315			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	9.2	B		P
7440-09-7	Potassium	1060	B		P
7782-49-2	Selenium	0.82	U		P
7440-22-4	Silver	0.32	B		P
7440-23-5	Sodium	381	B		P
7440-28-0	Thallium	0.94	U		P
7440-62-2	Vanadium	19.2			P
7440-66-6	Zinc	84.2			P
	Cyanide				NR

VP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

received 8-6-01 BMF

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

DATE: June 27, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt site. Case: 29276 SDG: MJ0924

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1071
TDN: 1035
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 20 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0924	MJ0929	MJ0956	MJ0961
MJ0925	MJ0952	MJ0957	MJ0962
MJ0926	MJ0953	MJ0958	MJ0963
MJ0927	MJ0954	MJ0959	MJ0964
MJ0928	MJ0955	MJ0960	MJ0967

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Analytes which yielded a negative response in the preparation blank and/or continuing calibration blank(s) at concentrations comparable to or less than the absolute value of the blank(s) were qualified as estimated, "J/UJ", due to possible low bias. The following samples were qualified:

Analyte	Associated Samples
thallium	MJ0955, MJ0956, MJ0957, MJ0958, MJ0959, MJ0960, MJ0961, MJ0962, MJ0963, MJ0964, MJ0967

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met by all of the ICS analyzed. The recoveries ranged from 91-118%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0924 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of Al, Ba, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, K, V and Zn. Cu and Zn only slightly exceeded the 10% difference criteria and therefore, were not qualified on this basis. Results for Al, Ba, Ca, Cr, Co, Fe, Pb, Mg, Mn, K and V in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 57-106%. None of the data were qualified on this basis.

Duplicate Sample Analysis - Acceptable

Sample MJ0924 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria (±20% RPD or ± CRDL) for all target analytes with the exception of cadmium, lead and magnesium. Cadmium, lead and magnesium did meet the suggested technical control limit criteria (±35% RPD or ± 2X CRDL) for soils. The "*" qualifiers applied by the laboratory were crossed-out by the reviewer. None of the data were qualified on this basis.

Matrix Spike Analysis

Sample MJ0924 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of antimony (36%), arsenic (148%) and barium (142%) in the spike sample MJ0924S. Due to possible bias, the detected and non-detected antimony results in all samples were qualified as estimated, "J/UJ". Due to possible bias, the detected arsenic and barium results in all samples were qualified as estimated, "J". The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. The recoveries for copper, lead and manganese could not be accurately determined because the concentrations native to the sample were greater than 4 times the amount of spike added to the sample. All of the other spike recoveries were acceptable and ranged from 89-111%.

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

U.S. EPA - CLP

10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

U.S. EPA - CLP

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	05/31/01	1.00	200
MJ0924	05/31/01	1.00	200
MJ0924D	05/31/01	1.00	200
MJ0924S	05/31/01	1.00	200
MJ0925	05/31/01	1.00	200
MJ0926	05/31/01	1.00	200
MJ0927	05/31/01	1.00	200
MJ0928	05/31/01	1.00	200
MJ0929	05/31/01	1.00	200
MJ0952	05/31/01	1.00	200
MJ0953	05/31/01	1.00	200
MJ0954	05/31/01	1.01	200
MJ0955	05/31/01	1.00	200
MJ0956	05/31/01	1.01	200
MJ0957	05/31/01	1.01	200
MJ0958	05/31/01	1.00	200
MJ0959	05/31/01	1.01	200
MJ0960	05/31/01	1.01	200
MJ0961	05/31/01	1.00	200
MJ0962	05/31/01	1.01	200
MJ0963	05/31/01	1.01	200
MJ0964	05/31/01	1.00	200
MJ0967	05/31/01	1.01	200
PBS	05/31/01	1.00	200

U.S. EPA - CLP

13
PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	05/31/01	0.20	100
MJ0924	05/31/01	0.20	100
MJ0924D	05/31/01	0.20	100
MJ0924S	05/31/01	0.20	100
MJ0925	05/31/01	0.20	100
MJ0926	05/31/01	0.20	100
MJ0927	05/31/01	0.20	100
MJ0928	05/31/01	0.20	100
MJ0929	05/31/01	0.20	100
MJ0952	05/31/01	0.20	100
MJ0953	05/31/01	0.20	100
MJ0954	05/31/01	0.21	100
MJ0955	05/31/01	0.20	100
MJ0956	05/31/01	0.21	100
MJ0957	05/31/01	0.20	100
MJ0958	05/31/01	0.21	100
MJ0959	05/31/01	0.20	100
MJ0960	05/31/01	0.20	100
MJ0961	05/31/01	0.21	100
MJ0962	05/31/01	0.20	100
MJ0963	05/31/01	0.21	100
MJ0964	05/31/01	0.20	100
MJ0967	05/31/01	0.21	100
PBS	05/31/01	0.20	100

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0924

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38203S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 99.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12400		~~E~~ JL	P
7440-36-0	Antimony	10.4	B	~~N~~ JL	P
7440-38-2	Arsenic	17.3		~~N~~ JH	P
7440-39-3	Barium	603		~~N~~ ~~E~~ JK	P
7440-41-7	Beryllium	0.53	B		P
7440-43-9	Cadmium	2.1		~~*~~	P
7440-70-2	Calcium	28900		~~E~~ JL	P
7440-47-3	Chromium	35.1		~~E~~ JL	P
7440-48-4	Cobalt	15.1		~~E~~ JL	P
7440-50-8	Copper	823		~~E~~	P
7439-89-6	Iron	109000		~~E~~ JL	P
7439-92-1	Lead	784		~~*~~ ~~E~~ JL	P
7439-95-4	Magnesium	5020		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	2090		~~E~~ JL	P
7439-97-6	Mercury	0.13			CV
7440-02-0	Nickel	8.5			P
7440-09-7	Potassium	2300		~~E~~ JL	P
7782-49-2	Selenium	4.2			P
7440-22-4	Silver	2.9			P
7440-23-5	Sodium	723	B		P
7440-28-0	Thallium	2.4			P
7440-62-2	Vanadium	29.5		~~E~~ JL	P
7440-66-6	Zinc	13900		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0925

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38204S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 95.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4950		~~E~~ JL	P
7440-36-0	Antimony	3.4	B	~~N~~ UJ	P
7440-38-2	Arsenic	9.6		~~N~~ JH	P
7440-39-3	Barium	768		~~N~~ ~~E~~ JK	P
7440-41-7	Beryllium	0.28	B		P
7440-43-9	Cadmium	5.3		~~*~~	P
7440-70-2	Calcium	46900		~~E~~ JL	P
7440-47-3	Chromium	12.5		~~E~~ JL	P
7440-48-4	Cobalt	4.1	B	~~E~~ JL	P
7440-50-8	Copper	102		~~E~~	P
7439-89-6	Iron	25000		~~E~~ JL	P
7439-92-1	Lead	289		~~*~~ ~~E~~ JL	P
7439-95-4	Magnesium	25000		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	442		~~E~~ JL	P
7439-97-6	Mercury	0.29			CV
7440-02-0	Nickel	10.9			P
7440-09-7	Potassium	883	B	~~E~~ JL	P
7782-49-2	Selenium	0.82	B		P
7440-22-4	Silver	0.63	B		P
7440-23-5	Sodium	228	B		P
7440-28-0	Thallium	1.1	B		P
7440-62-2	Vanadium	23.0		~~E~~ JL	P
7440-66-6	Zinc	1990		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0926

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38205S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 98.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6520		~~E~~ JL	P
7440-36-0	Antimony	19.2		~~N~~ JL	P
7440-38-2	Arsenic	9.1		~~N~~ JH	P
7440-39-3	Barium	452		~~N~~ ~~E~~ JK	P
7440-41-7	Beryllium	0.34	B		P
7440-43-9	Cadmium	1.9		~~*~~	P
7440-70-2	Calcium	24700		~~E~~ JL	P
7440-47-3	Chromium	27.1		~~E~~ JL	P
7440-48-4	Cobalt	12.0		~~E~~ JL	P
7440-50-8	Copper	362		~~E~~	P
7439-89-6	Iron	37600		~~E~~ JL	P
7439-92-1	Lead	172		~~*~~ ~~E~~ JL	P
7439-95-4	Magnesium	9750		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	743		~~E~~ JL	P
7439-97-6	Mercury	0.08	B		CV
7440-02-0	Nickel	11.1			P
7440-09-7	Potassium	1330		~~E~~ JL	P
7782-49-2	Selenium	1.8			P
7440-22-4	Silver	2.1			P
7440-23-5	Sodium	377	B		P
7440-28-0	Thallium	1.2	B		P
7440-62-2	Vanadium	21.5		~~E~~ JL	P
7440-66-6	Zinc	2770		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0927

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38206S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 99.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6550		~~E~~ JL	P
7440-36-0	Antimony	17.2		~~N~~ JL	P
7440-38-2	Arsenic	8.7		~~N~~ JH	P
7440-39-3	Barium	495		~~N~~ ~~E~~ JK	P
7440-41-7	Beryllium	0.32	B		P
7440-43-9	Cadmium	2.1		~~*~~	P
7440-70-2	Calcium	28200		~~E~~ JL	P
7440-47-3	Chromium	32.8		~~E~~ JL	P
7440-48-4	Cobalt	13.7		~~E~~ JL	P
7440-50-8	Copper	451		~~E~~	P
7439-89-6	Iron	48200		~~E~~ JL	P
7439-92-1	Lead	175		~~*~~ ~~E~~ JL	P
7439-95-4	Magnesium	9960		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	908		~~E~~ JL	P
7439-97-6	Mercury	0.07	B		CV
7440-02-0	Nickel	10.2			P
7440-09-7	Potassium	1260		~~E~~ JL	P
7782-49-2	Selenium	2.1			P
7440-22-4	Silver	2.2			P
7440-23-5	Sodium	475	B		P
7440-28-0	Thallium	0.78	U		P
7440-62-2	Vanadium	21.4		~~E~~ JL	P
7440-66-6	Zinc	3760		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0928

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38207S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 99.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9280		~~E~~ JL	P
7440-36-0	Antimony	20.7		~~N~~ JL	P
7440-38-2	Arsenic	13.9		~~N~~ JH	P
7440-39-3	Barium	632		~~NE~~ JK	P
7440-41-7	Beryllium	0.43	B		P
7440-43-9	Cadmium	1.6		~~E~~	P
7440-70-2	Calcium	26500		~~E~~ JL	P
7440-47-3	Chromium	44.8		~~E~~ JL	P
7440-48-4	Cobalt	17.7		~~E~~ JL	P
7440-50-8	Copper	720		~~E~~	P
7439-89-6	Iron	79700		~~E~~ JL	P
7439-92-1	Lead	446		~~E~~ ~~E~~ JL	P
7439-95-4	Magnesium	5520		~~E~~ ~~E~~ JL	P
7439-96-5	Manganese	1500		~~E~~ JL	P
7439-97-6	Mercury	0.13			CV
7440-02-0	Nickel	9.6			P
7440-09-7	Potassium	1740		~~E~~ JL	P
7782-49-2	Selenium	3.2			P
7440-22-4	Silver	3.9			P
7440-23-5	Sodium	666	B		P
7440-28-0	Thallium	2.3			P
7440-62-2	Vanadium	26.2		~~E~~ JL	P
7440-66-6	Zinc	8710		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0929

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38208S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 99.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	15500		E JL	P
7440-36-0	Antimony	27.1		N JL	P
7440-38-2	Arsenic	20.3		N JH	P
7440-39-3	Barium	1140		NE JK	P
7440-41-7	Beryllium	0.69	B		P
7440-43-9	Cadmium	1.6			P
7440-70-2	Calcium	46900		E JL	P
7440-47-3	Chromium	76.8		E JL	P
7440-48-4	Cobalt	35.2		E JL	P
7440-50-8	Copper	1550		E	P
7439-89-6	Iron	137000		E JL	P
7439-92-1	Lead	1040		E JL	P
7439-95-4	Magnesium	5780		E JL	P
7439-96-5	Manganese	3060		E JL	P
7439-97-6	Mercury	0.06	B		CV
7440-02-0	Nickel	12.2			P
7440-09-7	Potassium	3750		E JL	P
7782-49-2	Selenium	4.5			P
7440-22-4	Silver	5.7			P
7440-23-5	Sodium	1660			P
7440-28-0	Thallium	4.6			P
7440-62-2	Vanadium	39.2		E JL	P
7440-66-6	Zinc	15000		E	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0952

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38209S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 98.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7070		~~E~~ JL	P
7440-36-0	Antimony	1.0	B	~~N~~ JL	P
7440-38-2	Arsenic	3.2		~~N~~ JH	P
7440-39-3	Barium	74.5		~~N~~ ~~E~~ JK	P
7440-41-7	Beryllium	0.32	B		P
7440-43-9	Cadmium	0.86	B	~~*~~	P
7440-70-2	Calcium	6540		~~E~~ JL	P
7440-47-3	Chromium	14.4		~~E~~ JL	P
7440-48-4	Cobalt	4.2	B	~~E~~ JL	P
7440-50-8	Copper	11.2		~~E~~	P
7439-89-6	Iron	11600		~~E~~ JL	P
7439-92-1	Lead	47.4		~~*~~ ~~E~~ JL	P
7439-95-4	Magnesium	3390		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	190		~~E~~ JL	P
7439-97-6	Mercury	0.14			CV
7440-02-0	Nickel	11.6			P
7440-09-7	Potassium	1710		~~E~~ JL	P
7782-49-2	Selenium	0.69	U		P
7440-22-4	Silver	0.30	B		P
7440-23-5	Sodium	168	B		P
7440-28-0	Thallium	0.79	U		P
7440-62-2	Vanadium	19.7		~~E~~ JL	P
7440-66-6	Zinc	78.1		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0953

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38210S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 60.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7770		~~E~~ JL	P
7440-36-0	Antimony	9.4	B	~~N~~ JL	P
7440-38-2	Arsenic	25.4		~~N~~ JH	P
7440-39-3	Barium	406		~~NE~~ JK	P
7440-41-7	Beryllium	0.30	B		P
7440-43-9	Cadmium	15.3		~~E~~	P
7440-70-2	Calcium	17500		~~E~~ JL	P
7440-47-3	Chromium	12.5		~~E~~ JL	P
7440-48-4	Cobalt	5.4	B	~~E~~ JL	P
7440-50-8	Copper	33.5		~~E~~	P
7439-89-6	Iron	15300		~~E~~ JL	P
7439-92-1	Lead	603		~~NE~~ JL	P
7439-95-4	Magnesium	4520		~~NE~~ JL	P
7439-96-5	Manganese	997		~~E~~ JL	P
7439-97-6	Mercury	0.22			CV
7440-02-0	Nickel	14.2			P
7440-09-7	Potassium	2020		~~E~~ JL	P
7782-49-2	Selenium	1.6	B		P
7440-22-4	Silver	0.66	B		P
7440-23-5	Sodium	260	B		P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	23.1		~~E~~ JL	P
7440-66-6	Zinc	585		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0954

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38211S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 93.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9190		~~E~~ JL	P
7440-36-0	Antimony	3.3	B	~~N~~ JL	P
7440-38-2	Arsenic	54.0		~~N~~ JH	P
7440-39-3	Barium	183		~~NE~~ JK	P
7440-41-7	Beryllium	0.45	B		P
7440-43-9	Cadmium	2.1		~~E~~	P
7440-70-2	Calcium	5390		~~E~~ JL	P
7440-47-3	Chromium	12.4		~~E~~ JL	P
7440-48-4	Cobalt	8.1	B	~~E~~ JL	P
7440-50-8	Copper	31.4		~~E~~	P
7439-89-6	Iron	22700		~~E~~ JL	P
7439-92-1	Lead	85.5		~~E~~ JL	P
7439-95-4	Magnesium	3860		~~E~~ JL	P
7439-96-5	Manganese	716		~~E~~ JL	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	17.6			P
7440-09-7	Potassium	2820		~~E~~ JL	P
7782-49-2	Selenium	1.5			P
7440-22-4	Silver	0.62	B		P
7440-23-5	Sodium	154	B		P
7440-28-0	Thallium	0.83	U		P
7440-62-2	Vanadium	27.3		~~E~~ JL	P
7440-66-6	Zinc	146		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0955

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38212S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 77.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8750		~~E~~ JL	P
7440-36-0	Antimony	3.4	B	~~N~~ JL	P
7440-38-2	Arsenic	23.5		~~N~~ JH	P
7440-39-3	Barium	128		~~N~~ ~~E~~ JK	P
7440-41-7	Beryllium	0.36	B		P
7440-43-9	Cadmium	2.5		~~*~~	P
7440-70-2	Calcium	24100		~~E~~ JL	P
7440-47-3	Chromium	14.5		~~E~~ JL	P
7440-48-4	Cobalt	6.4	B	~~E~~ JL	P
7440-50-8	Copper	30.3		~~E~~	P
7439-89-6	Iron	17500		~~E~~ JL	P
7439-92-1	Lead	107		~~*~~ ~~E~~ JL	P
7439-95-4	Magnesium	6170		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	659		~~E~~ JL	P
7439-97-6	Mercury	0.09	B		CV
7440-02-0	Nickel	17.8			P
7440-09-7	Potassium	1870		~~E~~ JL	P
7782-49-2	Selenium	3.0			P
7440-22-4	Silver	0.55	B		P
7440-23-5	Sodium	222	B		P
7440-28-0	Thallium	1.0	U	uJK	P
7440-62-2	Vanadium	21.9		~~E~~ JL	P
7440-66-6	Zinc	202		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0956

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38213S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 50.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6080		~~E~~ JL	P
7440-36-0	Antimony	1.8	B	~~N~~ JL	P
7440-38-2	Arsenic	9.8		~~N~~ JH	P
7440-39-3	Barium	130		~~N~~ ~~E~~ JK	P
7440-41-7	Beryllium	0.21	B		P
7440-43-9	Cadmium	0.23	B	~~E~~	P
7440-70-2	Calcium	102000		~~E~~ JL	P
7440-47-3	Chromium	16.7		~~E~~ JL	P
7440-48-4	Cobalt	5.8	B	~~E~~ JL	P
7440-50-8	Copper	15.5		~~E~~	P
7439-89-6	Iron	12700		~~E~~ JL	P
7439-92-1	Lead	13.8		~~E~~ ~~E~~ JL	P
7439-95-4	Magnesium	5740		~~E~~ ~~E~~ JL	P
7439-96-5	Manganese	340		~~E~~ JL	P
7439-97-6	Mercury	0.09	U		CV
7440-02-0	Nickel	18.8			P
7440-09-7	Potassium	1070	B	~~E~~ JL	P
7782-49-2	Selenium	2.2			P
7440-22-4	Silver	0.31	U		P
7440-23-5	Sodium	380	B		P
7440-28-0	Thallium	1.5	U	UJK	P
7440-62-2	Vanadium	17.9	B	~~E~~ JL	P
7440-66-6	Zinc	79.4		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0957

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38214S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 25.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5770		~~E~~ JL	P
7440-36-0	Antimony	2.6	B	~~N~~ JL	P
7440-38-2	Arsenic	3.1	U	~~N~~	P
7440-39-3	Barium	114	B	~~N~~ ~~E~~ JK	P
7440-41-7	Beryllium	0.23	B		P
7440-43-9	Cadmium	1.4	B	~~*~~	P
7440-70-2	Calcium	59900		~~E~~ JL	P
7440-47-3	Chromium	13.8		~~E~~ JL	P
7440-48-4	Cobalt	3.1	B	~~E~~ JL	P
7440-50-8	Copper	27.9		~~E~~	P
7439-89-6	Iron	9180		~~E~~ JL	P
7439-92-1	Lead	54.3		~~*~~ ~~E~~ JL	P
7439-95-4	Magnesium	6130		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	133		~~E~~ JL	P
7439-97-6	Mercury	0.19	U		CV
7440-02-0	Nickel	19.3	B		P
7440-09-7	Potassium	1540	B	~~E~~ JL	P
7782-49-2	Selenium	5.0			P
7440-22-4	Silver	0.61	U		P
7440-23-5	Sodium	611	B		P
7440-28-0	Thallium	3.0	U	u JK	P
7440-62-2	Vanadium	14.9	B	~~E~~ JL	P
7440-66-6	Zinc	117		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0958

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38215S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 80.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5650		~~E~~ JL	P
7440-36-0	Antimony	2.4	B	~~N~~ JL	P
7440-38-2	Arsenic	6.3		~~N~~ JH	P
7440-39-3	Barium	152		~~N~~ ~~E~~ JK	P
7440-41-7	Beryllium	0.24	B		P
7440-43-9	Cadmium	2.4		~~E~~	P
7440-70-2	Calcium	82600		~~E~~ JL	P
7440-47-3	Chromium	12.0		~~E~~ JL	P
7440-48-4	Cobalt	3.9	B	~~E~~ JL	P
7440-50-8	Copper	18.9		~~E~~	P
7439-89-6	Iron	9040		~~E~~ JL	P
7439-92-1	Lead	79.4		~~N~~ ~~E~~ JL	P
7439-95-4	Magnesium	4970		~~N~~ ~~E~~ JL	P
7439-96-5	Manganese	289		~~E~~ JL	P
7439-97-6	Mercury	0.10	B		CV
7440-02-0	Nickel	11.7			P
7440-09-7	Potassium	1540		~~E~~ JL	P
7782-49-2	Selenium	1.1	B		P
7440-22-4	Silver	0.25	B		P
7440-23-5	Sodium	237	B		P
7440-28-0	Thallium	0.98	U	UJK	P
7440-62-2	Vanadium	13.8		~~E~~ JL	P
7440-66-6	Zinc	185		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0959

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38216S

Level (low/med): LOW Date Received: 05/26/01

% 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	6290		~~E~~ JL	P
7440-36-0	Antimony	3.5	B	~~N~~ JL	P
7440-38-2	Arsenic	4.1		~~N~~ JH	P
7440-39-3	Barium	115		~~NE~~ JK	P
7440-41-7	Beryllium	0.25	B		P
7440-43-9	Cadmium	8.4		~~*~~	P
7440-70-2	Calcium	34300		~~E~~ JL	P
7440-47-3	Chromium	14.1		~~E~~ JL	P
7440-48-4	Cobalt	3.4	B	~~E~~ JL	P
7440-50-8	Copper	41.3		~~E~~	P
7439-89-6	Iron	10700		~~E~~ JL	P
7439-92-1	Lead	128		~~*~~E JL	P
7439-95-4	Magnesium	5130		~~*~~E JL	P
7439-96-5	Manganese	288		~~E~~ JL	P
7439-97-6	Mercury	0.11	B		CV
7440-02-0	Nickel	33.5			P
7440-09-7	Potassium	1460	B	~~E~~ JL	P
7782-49-2	Selenium	3.8			P
7440-22-4	Silver	0.43	B		P
7440-23-5	Sodium	350	B		P
7440-28-0	Thallium	1.2	U	uJK	P
7440-62-2	Vanadium	28.9		~~E~~ JL	P
7440-66-6	Zinc	212		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0960

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38217S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 97.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3350		~~E~~ JL	P
7440-36-0	Antimony	0.61	U	~~N~~ UJK	P
7440-38-2	Arsenic	1.8	B	~~N~~ JH	P
7440-39-3	Barium	37.7	B	~~N~~ ~~E~~ JK	P
7440-41-7	Beryllium	0.16	B		P
7440-43-9	Cadmium	0.07	B	~~E~~	P
7440-70-2	Calcium	1780		~~E~~ JL	P
7440-47-3	Chromium	6.8		~~E~~ JL	P
7440-48-4	Cobalt	2.4	B	~~E~~ JL	P
7440-50-8	Copper	5.5		~~E~~	P
7439-89-6	Iron	6340		~~E~~ JL	P
7439-92-1	Lead	5.3		~~N~~ ~~E~~ JL	P
7439-95-4	Magnesium	1610		~~N~~ ~~E~~ JL	P
7439-96-5	Manganese	114		~~E~~ JL	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	6.0	B		P
7440-09-7	Potassium	689	B	~~E~~ JL	P
7782-49-2	Selenium	0.69	U		P
7440-22-4	Silver	0.16	U		P
7440-23-5	Sodium	141	B		P
7440-28-0	Thallium	0.79	U	UJK	P
7440-62-2	Vanadium	10.8		~~E~~ JL	P
7440-66-6	Zinc	27.4		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0961

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38218S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 67.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3510		~~E~~ JL	P
7440-36-0	Antimony	1.3	B	~~N~~ JL	P
7440-38-2	Arsenic	6.2		~~N~~ JH	P
7440-39-3	Barium	72.9		~~N~~E JK	P
7440-41-7	Beryllium	0.13	B		P
7440-43-9	Cadmium	0.32	B	~~E~~	P
7440-70-2	Calcium	19500		~~E~~ JL	P
7440-47-3	Chromium	10.2		~~E~~ JL	P
7440-48-4	Cobalt	2.1	B	~~E~~ JL	P
7440-50-8	Copper	10.1		~~E~~	P
7439-89-6	Iron	9260		~~E~~ JL	P
7439-92-1	Lead	15.7		~~E~~E JL	P
7439-95-4	Magnesium	3890		~~E~~E JL	P
7439-96-5	Manganese	95.1		~~E~~ JL	P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	9.7	B		P
7440-09-7	Potassium	647	B	~~E~~ JL	P
7782-49-2	Selenium	1.8			P
7440-22-4	Silver	0.24	U		P
7440-23-5	Sodium	244	B		P
7440-28-0	Thallium	1.2	U	UJK	P
7440-62-2	Vanadium	12.2	B	~~E~~ JL	P
7440-66-6	Zinc	103		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0962

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38219S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 92.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1120		~~E~~ JL	P
7440-36-0	Antimony	1.2	B	~~N~~ JL	P
7440-38-2	Arsenic	2.3		~~N~~ JH	P
7440-39-3	Barium	119		~~N~~ ~~E~~ JK	P
7440-41-7	Beryllium	0.04	U		P
7440-43-9	Cadmium	0.41	B	~~E~~	P
7440-70-2	Calcium	306000		~~E~~ JL	P
7440-47-3	Chromium	1.5	B	~~E~~ JL	P
7440-48-4	Cobalt	0.48	B	~~E~~ JL	P
7440-50-8	Copper	4.0	B	~~E~~	P
7439-89-6	Iron	1440		~~E~~ JL	P
7439-92-1	Lead	10.8		~~N~~ ~~E~~ JL	P
7439-95-4	Magnesium	2980		~~N~~ ~~E~~ JL	P
7439-96-5	Manganese	41.4		~~E~~ JL	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	3.3	B		P
7440-09-7	Potassium	296	B	~~E~~ JL	P
7782-49-2	Selenium	0.73	U		P
7440-22-4	Silver	0.17	U		P
7440-23-5	Sodium	205	B		P
7440-28-0	Thallium	0.84	U	u JK	P
7440-62-2	Vanadium	3.6	B	~~E~~ JL	P
7440-66-6	Zinc	28.5		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0963

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38220S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 74.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	924		~~E~~ JL	P
7440-36-0	Antimony	0.80	U	~~N~~ UJK	P
7440-38-2	Arsenic	2.6	B	~~N~~ JH	P
7440-39-3	Barium	145		~~N~~ ~~E~~ JK	P
7440-41-7	Beryllium	0.05	U		P
7440-43-9	Cadmium	0.77	B	~~E~~	P
7440-70-2	Calcium	336000		~~E~~ JL	P
7440-47-3	Chromium	1.7	B	~~E~~ JL	P
7440-48-4	Cobalt	0.44	B	~~E~~ JL	P
7440-50-8	Copper	6.3	B	~~E~~	P
7439-89-6	Iron	1030		~~E~~ JL	P
7439-92-1	Lead	18.9		~~N~~ ~~E~~ JL	P
7439-95-4	Magnesium	3800		~~N~~ ~~E~~ JL	P
7439-96-5	Manganese	46.6		~~E~~ JL	P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	2.9	B		P
7440-09-7	Potassium	265	B	~~E~~ JL	P
7782-49-2	Selenium	0.91	U		P
7440-22-4	Silver	0.21	U		P
7440-23-5	Sodium	276	B		P
7440-28-0	Thallium	1.0	U	UJK	P
7440-62-2	Vanadium	2.7	B	~~E~~ JL	P
7440-66-6	Zinc	55.7		~~E~~	P
	Cyanide				NR

CL 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0964

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38221S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 30.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9000		~~E~~ JL	P
7440-36-0	Antimony	2.5	B	~~N~~ JL	P
7440-38-2	Arsenic	7.0		~~N~~ JH	P
7440-39-3	Barium	126	B	~~NE~~ JK	P
7440-41-7	Beryllium	0.35	B		P
7440-43-9	Cadmium	5.1		~~E~~	P
7440-70-2	Calcium	42800		~~E~~ JL	P
7440-47-3	Chromium	19.7		~~E~~ JL	P
7440-48-4	Cobalt	5.2	B	~~E~~ JL	P
7440-50-8	Copper	36.0		~~E~~	P
7439-89-6	Iron	11700		~~E~~ JL	P
7439-92-1	Lead	21.8		~~N~~ ~~E~~ JL	P
7439-95-4	Magnesium	4100		~~N~~ ~~E~~ JL	P
7439-96-5	Manganese	238		~~E~~ JL	P
7439-97-6	Mercury	0.16	U		CV
7440-02-0	Nickel	35.0			P
7440-09-7	Potassium	1320	B	~~E~~ JL	P
7782-49-2	Selenium	3.3			P
7440-22-4	Silver	0.70	B		P
7440-23-5	Sodium	723	B		P
7440-28-0	Thallium	2.5	U	UJK	P
7440-62-2	Vanadium	24.6	B	~~E~~ JL	P
7440-66-6	Zinc	135		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0967

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0924

Matrix (soil/water): SOIL Lab Sample ID: 38222S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 90.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7530		~~E~~ JL	P
7440-36-0	Antimony	1.2	B	~~N~~ JL	P
7440-38-2	Arsenic	7.7		~~N~~ JH	P
7440-39-3	Barium	84.6		~~N~~ ~~E~~ JK	P
7440-41-7	Beryllium	0.31	B		P
7440-43-9	Cadmium	1.3		~~*~~	P
7440-70-2	Calcium	3030		~~E~~ JL	P
7440-47-3	Chromium	16.8		~~E~~ JL	P
7440-48-4	Cobalt	5.5	B	~~E~~ JL	P
7440-50-8	Copper	15.5		~~E~~	P
7439-89-6	Iron	13500		~~E~~ JL	P
7439-92-1	Lead	50.2		~~*~~ ~~E~~ JL	P
7439-95-4	Magnesium	3700		~~*~~ ~~E~~ JL	P
7439-96-5	Manganese	352		~~E~~ JL	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	14.8			P
7440-09-7	Potassium	1910		~~E~~ JL	P
7782-49-2	Selenium	0.82	B		P
7440-22-4	Silver	0.40	B		P
7440-23-5	Sodium	217	B		P
7440-28-0	Thallium	0.85	U	u JK	P
7440-62-2	Vanadium	24.9		~~E~~ JL	P
7440-66-6	Zinc	97.0		~~E~~	P
	Cyanide				NR

CP 6-26-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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

Reply To
Attn Of: OEA-095

June 26, 2001

RECEIVED
JUL 0 3 2001

MEMORANDUM

Subject: Data Validation Report for the Volatile Compound (VOCs), Semi-volatile Organic Compounds (SVOCs) and Organochlorine Pesticides/Polychlorinated Biphenyl (Pest/PCBs) Analyses of Samples from Upper Columbia River/Lake Roosevelt Expanded Site Assessment
Case 29276 SDG: JX426

From: Gina Grepo-Grove, Chemist
Quality Assurance & Data Unit, OEA

To: Mark Ader, Task Monitor, ECL
Monica Tonel, Task Monitor,ECL

CC: Bruce Woods, Region 10 CLP TPO
Susan Fitzgerald, Weston Site Manager

The quality assurance (QA) review of 5 water samples collected from the above referenced site has been completed. These samples were analyzed for VOCs, SVOCs and Pest/PCBs in accordance with the USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Organic Analyses (revision OLMO4.2). The analyses were performed by Compuchem, Inc. of Cary, NC.

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the USEPA CLP SOW for Organic Analysis (OLM04.2), the USEPA CLP National Functional Guidelines for Organic Data Review (10/99) and the technical specifications of the Sampling and Quality Assurance Project Plan for the site.

The conclusions presented herein are based on the information provided for the review.

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Date/Time of Analysis	Compound	%D	RRF	Qualifier Detect/Non-detect
5/23/01 (2226) HP66	4-chloroaniline	-30.3	>0.05	J/UJ
	2,4-dinitrophenol	-57.6	>0.05	J/UJ
	atrazine	-28.0	<0.05	J/R
	benzo(k)fluoranthene	34.2	>0.05	J/None
	indeno(c,d-1,2,3)pyrene	32.5	>0.05	J/None
5/20/01 (1344) HP70	hexachlorocyclopentadiene	-60.8	>0.05	J/UJ
	dimethylphthalate	27.8	>0.05	J/None
	2,4-dinitrotoluene	33.0	>0.05	J/None
	fluorene	30.4	>0.05	J/None
	4-nitroaniline	30.0	>0.05	J/None
	atrazine	-66.7	<0.05	J/R
	pentachlorophenol	-34.6	>0.05	J/UJ
	di-n-octylphthalate	37.8	>0.05	J/None

Compound Quantitation and Detection Limits

All of the samples were analyzed at the contract required quantitation limits (CRQLs). All of the concentrations of the compounds detected were within the calibration range of the instrument used for analysis.

Blanks

Trace levels of the following target compounds were detected in the blanks:

- VBLKOH analyzed on 5/22/01, instrument F50055. Acetone, methyl acetate, 1,1,2,2-tetrachloroethane, 1,2-dibromo-3-chloropropane (DBCP) were detected. Acetone detected in the associated samples at concentrations <10 times the value in the blank were qualified as non-detect, "U". Methyl acetate, 1,1,2,2-tetrachloroethane and DBCP detected in the associated samples at concentrations <5 times the value in the blank were qualified as non-detect, "U". Values greater than 10x or 5x rule were not qualified.

- VBLKPL analyzed on 6/06/01, instrument F50051. Methylene chloride, 1,4-dichlorobenzene, 1,2-dichlorobenzene and 1,2,4-trichlorobenzene were detected. Methylene chloride detected in the associated samples at concentrations <10 times the value in the blank were qualified as non-detect, "U". 1,4-Dichlorobenzene, 1,2-dichlorobenzene and 1,2,4-trichlorobenzene detected in the associated samples at concentrations <5 times the value in the blank were qualified as non-detect, "U". Values greater than 10x or 5x rule were not qualified.

- VBLKPK analyzed on 5/20/01, instrument F50055. Acetone, 2-butanone, 4-methyl-2-pentanone, 2-hexanone, 1,1,2,2-tetrachloroethane and DBCP were detected. Acetone, 2-butanone, 4-methyl-2-pentanone, and 2-hexanone detected in the associated samples at concentrations <10 times the value in the blank were qualified as non-detect, "U". 1,1,2,2-

Compound Identification - Acceptable

All of the compounds detected in the GC/MS analyses were within the retention time windows, met the USEPA spectral matching criteria and were judged to be acceptable.

There were no detected Pest/PCB target compounds.

Tentatively Identified Compounds

Peaks that were detected in the samples at areas >10% of the internal standards and were not part of the target compound lists were identified as tentatively identified compounds (TICs). TICs that were both found in the sample and in the associated method blank(s) were qualified as unusable, "R." Peaks that were identified as common laboratory contaminants, solvent preservatives, column bleed or aldol condensation products were qualified as unusable, "R". The rest of the peaks identified as TICs were qualified "NJ", tentatively identified at an estimated concentration.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. Approximately 1.6% of the total data points (514) were qualified as estimated due to continuing calibrations. Approximately 0.5 % of the total data points were qualified as unusable due to low response factors. The data, as qualified, are acceptable and can be used for all purposes.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX426

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-1

Sample wt/vol: 5 (g/mL) ML Lab File ID: JX426-1RA55

Level: (low/med) LOW Date Received: 05/16/01

% Moisture: not dec. _____ Date Analyzed: 05/23/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	10	U
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
75-69-4	Trichlorofluoromethane	10	U
75-35-4	1,1-Dichloroethene	10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	U
67-64-1	Acetone	10 ~~4~~	~~JB~~ U
75-15-0	Carbon Disulfide	10	U
79-20-9	Methyl Acetate	10	U
75-09-2	Methylene Chloride	10	U
156-60-5	trans-1,2-Dichloroethene	10	U
1634-04-4	Methyl tert-Butyl Ether	10	U
75-34-3	1,1-Dichloroethane	10	U
156-59-2	cis-1,2-Dichloroethene	10	U
78-93-3	2-Butanone	10	U
67-66-3	Chloroform	26	
71-55-6	1,1,1-Trichloroethane	10	U
110-82-7	Cyclohexane	10	U
56-23-5	Carbon Tetrachloride	10	U
71-43-2	Benzene	10	U
107-06-2	1,2-Dichloroethane	10	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX426

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-1

Sample wt/vol: 5 (g/mL) ML Lab File ID: JX426-1RA55

Level: (low/med) LOW Date Received: 05/16/01

% Moisture: not dec. _____ Date Analyzed: 05/23/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	10	U
108-87-2	Methylcyclohexane	10	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10 ~~2~~	~~J~~ U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	10	U
106-93-4	1,2-Dibromoethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
1330-20-7	Xylene (Total)	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U
98-82-8	Isopropylbenzene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
96-12-8	1,2-Dibromo-3-Chloropropane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JX426

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-1

Sample wt/vol: 5 (g/mL) ML Lab File ID: JX426-1RA55

Level: (low/med) LOW Date Received: 05/16/01

% Moisture: not dec. _____ Date Analyzed: 05/23/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX427

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-3

Sample wt/vol: 5 (g/mL) ML Lab File ID: JX426-3B55

Level: (low/med) LOW Date Received: 05/17/01

% Moisture: not dec. _____ Date Analyzed: 05/23/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	10	U
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
75-69-4	Trichlorofluoromethane	10	U
75-35-4	1,1-Dichloroethene	10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	U
67-64-1	Acetone	100	~~J~~ U
75-15-0	Carbon Disulfide	10	U
79-20-9	Methyl Acetate	10 ~~J~~	~~J~~ U
75-09-2	Methylene Chloride	10	U
156-60-5	trans-1,2-Dichloroethene	10	U
1634-04-4	Methyl tert-Butyl Ether	10	U
75-34-3	1,1-Dichloroethane	10	U
156-59-2	cis-1,2-Dichloroethene	10	U
78-93-3	2-Butanone	10	U
67-66-3	Chloroform	10	U
71-55-6	1,1,1-Trichloroethane	10	U
110-82-7	Cyclohexane	10	U
56-23-5	Carbon Tetrachloride	10	U
71-43-2	Benzene	10	U
107-06-2	1,2-Dichloroethane	10	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX427

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-3

Sample wt/vol: 5 (g/mL) ML Lab File ID: JX426-3B55

Level: (low/med) LOW Date Received: 05/17/01

% Moisture: not dec. _____ Date Analyzed: 05/23/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	10	U
108-87-2	Methylcyclohexane	10	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	10	U
106-93-4	1,2-Dibromoethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
1330-20-7	Xylene (Total)	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U
98-82-8	Isopropylbenzene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
96-12-8	1,2-Dibromo-3-Chloropropane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U

1F
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JX427

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-3

Sample wt/vol: 5 (g/mL) ML Lab File ID: JX426-3B55

Level: (low/med) LOW Date Received: 05/17/01

% Moisture: not dec. _____ Date Analyzed: 05/23/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 141-78-6	ETHYL ACETATE	8.18	64	NJ
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX428

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-4

Sample wt/vol: 5 (g/mL) ML Lab File ID: JX426-4B55

Level: (low/med) LOW Date Received: 05/17/01

% Moisture: not dec. _____ Date Analyzed: 05/23/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	10	U
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
75-69-4	Trichlorofluoromethane	10	U
75-35-4	1,1-Dichloroethene	10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	U
67-64-1	Acetone	16	~~B~~ U
75-15-0	Carbon Disulfide	10	U
79-20-9	Methyl Acetate	10	U
75-09-2	Methylene Chloride	10	U
156-60-5	trans-1,2-Dichloroethene	10	U
1634-04-4	Methyl tert-Butyl Ether	10	U
75-34-3	1,1-Dichloroethane	10	U
156-59-2	cis-1,2-Dichloroethene	10	U
78-93-3	2-Butanone	10	U
67-66-3	Chloroform	10	U
71-55-6	1,1,1-Trichloroethane	10	U
110-82-7	Cyclohexane	10	U
56-23-5	Carbon Tetrachloride	10	U
71-43-2	Benzene	10	U
107-06-2	1,2-Dichloroethane	10	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX428

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-4

Sample wt/vol: 5 (g/mL) ML Lab File ID: JX426-4B55

Level: (low/med) LOW Date Received: 05/17/01

% Moisture: not dec. _____ Date Analyzed: 05/23/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	10	U
108-87-2	Methylcyclohexane	10	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	10	U
106-93-4	1,2-Dibromoethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
1330-20-7	Xylene (Total)	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U
98-82-8	Isopropylbenzene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
96-12-8	1,2-Dibromo-3-Chloropropane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U

1F
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JX428

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-4

Sample wt/vol: 5 (g/mL) ML Lab File ID: JX426-4B55

Level: (low/med) LOW Date Received: 05/17/01

% Moisture: not dec. _____ Date Analyzed: 05/23/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX547

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-2

Sample wt/vol: 5 (g/mL) ML Lab File ID: JX426-2B55

Level: (low/med) LOW Date Received: 05/16/01

% Moisture: not dec. _____ Date Analyzed: 05/23/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	10	U
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
75-69-4	Trichlorofluoromethane	10	U
75-35-4	1,1-Dichloroethene	10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	U
67-64-1	Acetone	15	~~B~~ U
75-15-0	Carbon Disulfide	10	U
79-20-9	Methyl Acetate	10	U
75-09-2	Methylene Chloride	10	U
156-60-5	trans-1,2-Dichloroethene	10	U
1634-04-4	Methyl tert-Butyl Ether	10	U
75-34-3	1,1-Dichloroethane	10	U
156-59-2	cis-1,2-Dichloroethene	10	U
78-93-3	2-Butanone	10	U
67-66-3	Chloroform	10	U
71-55-6	1,1,1-Trichloroethane	10	U
110-82-7	Cyclohexane	10	U
56-23-5	Carbon Tetrachloride	10	U
71-43-2	Benzene	10	U
107-06-2	1,2-Dichloroethane	10	U

FORM I VOA-1 OLM04.2

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX547

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-2

Sample wt/vol: 5 (g/mL) ML Lab File ID: JX426-2B55

Level: (low/med) LOW Date Received: 05/16/01

% Moisture: not dec. _____ Date Analyzed: 05/23/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	10	U
108-87-2	Methylcyclohexane	10	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	10	U
106-93-4	1,2-Dibromoethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
1330-20-7	Xylene (Total)	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U
98-82-8	Isopropylbenzene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
96-12-8	1,2-Dibromo-3-Chloropropane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U

1F
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JX547

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-2

Sample wt/vol: 5 (g/mL) ML Lab File ID: JX426-2B55

Level: (low/med) LOW Date Received: 05/16/01

% Moisture: not dec. _____ Date Analyzed: 05/23/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC OLM04.2

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX549

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-5

Sample wt/vol: 5 (g/mL) ML Lab File ID: JX426-5B55

Level: (low/med) LOW Date Received: 05/17/01

% Moisture: not dec. _____ Date Analyzed: 05/23/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	10	U
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
75-69-4	Trichlorofluoromethane	10	U
75-35-4	1,1-Dichloroethene	10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	U
67-64-1	Acetone	11	~~B~~ U
75-15-0	Carbon Disulfide	10	U
79-20-9	Methyl Acetate	10	U
75-09-2	Methylene Chloride	10	U
156-60-5	trans-1,2-Dichloroethene	10	U
1634-04-4	Methyl tert-Butyl Ether	10	U
75-34-3	1,1-Dichloroethane	10	U
156-59-2	cis-1,2-Dichloroethene	10	U
78-93-3	2-Butanone	10	U
67-66-3	Chloroform	10	U
71-55-6	1,1,1-Trichloroethane	10	U
110-82-7	Cyclohexane	10	U
56-23-5	Carbon Tetrachloride	10	U
71-43-2	Benzene	10	U
107-06-2	1,2-Dichloroethane	10	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX549

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-5

Sample wt/vol: 5 (g/mL) ML Lab File ID: JX426-5B55

Level: (low/med) LOW Date Received: 05/17/01

% Moisture: not dec. _____ Date Analyzed: 05/23/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	10	U
108-87-2	Methylcyclohexane	10	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	10	U
106-93-4	1,2-Dibromoethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
1330-20-7	Xylene (Total)	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U
98-82-8	Isopropylbenzene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
96-12-8	1,2-Dibromo-3-Chloropropane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U

1F
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JX549

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-5

Sample wt/vol: 5 (g/mL) ML Lab File ID: JX426-5B55

Level: (low/med) LOW Date Received: 05/17/01

% Moisture: not dec. _____ Date Analyzed: 05/23/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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FORM I VOA-TIC OLM04.2

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX426

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-1

Sample wt/vol: 500 (g/mL) ML Lab File ID: JX426-1RB66

Level: (low/med) LOW Date Received: 05/16/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 05/21/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 05/24/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	10	U
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
98-86-2	Acetophenone	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	UJK
87-68-3	Hexachlorobutadiene	10	U
105-60-2	Caprolactam	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
92-52-4	1,1'-Biphenyl	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1D
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX426

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-1

Sample wt/vol: 500 (g/mL) ML Lab File ID: JX426-1RB66

Level: (low/med) LOW Date Received: 05/16/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 05/21/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 05/24/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
51-28-5	2,4-Dinitrophenol	25	U UJK
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
86-73-7	Fluorene	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
1912-24-9	Atrazine	10	~~UJK~~ R
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10 ~~J~~	~~J~~ U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10 ~~J~~	~~J~~ U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

282

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JX426

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-1

Sample wt/vol: 500 (g/mL) ML Lab File ID: JX426-1RB66

Level: (low/med) LOW Date Received: 05/16/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:05/21/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 05/24/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 111-77-3	ETHANOL, 2-(2-METHOXYETHOXY)	6.22	14	NJ
2. 21400-25-9	1-PROPENE, 1,1,2-TRICHLORO-	6.34	4	NJ
3.	UNKNOWN	10.18	5	JN
4.	UNKNOWN	13.18	9	JN
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FORM I SV-TIC OLM04.2

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX427

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-3

Sample wt/vol: 1025 (g/mL) ML Lab File ID: JX426-3A70

Level: (low/med) LOW Date Received: 05/17/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 05/17/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/20/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	10	U
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
98-86-2	Acetophenone	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
105-60-2	Caprolactam	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	UJK
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
92-52-4	1,1'-Biphenyl	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

300

1D
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX427

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-3

Sample wt/vol: 1025 (g/mL) ML Lab File ID: JX426-3A70

Level: (low/med) LOW Date Received: 05/17/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 05/17/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/20/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U JK
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
86-73-7	Fluorene	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
1912-24-9	Atrazine	10	~~U~~ R
87-86-5	Pentachlorophenol	25	U JK
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 OLM04.2

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JX427

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-3

Sample wt/vol: 1025 (g/mL) ML Lab File ID: JX426-3A70

Level: (low/med) LOW Date Received: 05/17/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:05/17/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 05/20/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		~~UNKNOWN (BC)~~	~~4.50~~	~~2~~	~~JB~~ R
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FORM I SV-TIC OLM04.2

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX428

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-4

Sample wt/vol: 500 (g/mL) ML Lab File ID: JX426-4A70

Level: (low/med) LOW Date Received: 05/17/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 05/17/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 05/20/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	10	U
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
98-86-2	Acetophenone	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
105-60-2	Caprolactam	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	UJK
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
92-52-4	1,1'-Biphenyl	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX428

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-4

Sample wt/vol: 500 (g/mL) ML Lab File ID: JX426-4A70

Level: (low/med) LOW Date Received: 05/17/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 05/17/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 05/20/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	UJK
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
86-73-7	Fluorene	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
1912-24-9	Atrazine	10	~~U~~ R
87-86-5	Pentachlorophenol	25	UJK
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10 ~~1~~	~~U~~ 20
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JX428

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-4

Sample wt/vol: 500 (g/mL) ML Lab File ID: JX426-4A70

Level: (low/med) LOW Date Received: 05/17/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:05/17/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 05/20/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	~~UNKNOWN (BC)~~	~~4.40~~	~~7~~	~~JB~~ R
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FORM I SV-TIC OLM04.2

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX426

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) _____ Date Received: 05/16/01

Extraction: (Type) SEPF Date Extracted: 05/18/01

Concentrated Extract Volume: 10000(uL) Date Analyzed: 05/23/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

FORM I PEST OLM04.2

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX427

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-3

Sample wt/vol: 1100 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) _____ Date Received: 05/17/01

Extraction: (Type) SEPF Date Extracted: 05/18/01

Concentrated Extract Volume: 10000(uL) Date Analyzed: 05/23/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

FORM I PEST OLM04.2

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX428

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX426

Matrix: (soil/water) WATER Lab Sample ID: JX426-4

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) _____ Date Received: 05/17/01

Extraction: (Type) SEPF Date Extracted: 05/18/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/23/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 5.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

received 8-6-01

DATE: July 9, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt site. Case: 29276 SDG: MJ0968

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1079
TDN: 1037
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 20 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0930	MJ0935	MJ0969	MJ0974
MJ0931	MJ0936	MJ0970	MJ0975
MJ0932	MJ0937	MJ0971	MJ0977
MJ0933	MJ0938	MJ0972	MJ0978
MJ0934	MJ0968	MJ0973	MJ0979

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Analytes which yielded a negative response in the preparation blank and/or continuing calibration blank(s) at concentrations comparable to or less than the absolute value of the blank(s) were qualified as estimated, "J/UJ", due to possible low bias. The following samples were qualified:

Analyte	Associated Samples
arsenic	MJ0971
thallium	MJ0978, MJ0979

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met by all of the ICS analyzed. The recoveries ranged from 83-113%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0971 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of copper and magnesium. Results for copper and magnesium in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 57-110%. None of the data were qualified on this basis.

Duplicate Sample Analysis - Acceptable

Sample MJ0971 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria (±20% RPD or ± CRDL) for all target analytes with the exception of selenium. Selenium did meet the suggested technical control limit criteria (±35% RPD or ± 2X CRDL) for soils. The "*" qualifiers applied by the laboratory were crossed-out by the reviewer. None of the data were qualified on this basis.

Matrix Spike Analysis

Sample MJ0971 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of selenium (63%) in the spike sample MJ0971S. Due to possible bias, the detected and non-detected selenium results in all samples were qualified as estimated, "J/UJ". The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. All of the other spike recoveries were acceptable and ranged from 82-102%.

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

U.S. EPA - CLP

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/06/01	1.00	200
MJ0930	06/06/01	1.00	200
MJ0931	06/06/01	1.02	200
MJ0932	06/06/01	1.00	200
MJ0933	06/06/01	1.00	200
MJ0934	06/06/01	1.02	200
MJ0935	06/06/01	1.02	200
MJ0936	06/06/01	1.02	200
MJ0937	06/06/01	1.00	200
MJ0938	06/06/01	1.02	200
MJ0968	06/06/01	1.00	200
MJ0969	06/06/01	1.01	200
MJ0970	06/06/01	1.01	200
MJ0971	06/06/01	1.00	200
MJ0971D	06/06/01	1.00	200
MJ0971S	06/06/01	1.00	200
MJ0972	06/06/01	1.01	200
MJ0973	06/06/01	1.01	200
MJ0974	06/06/01	1.01	200
MJ0975	06/06/01	1.00	200
MJ0977	06/06/01	1.02	200
MJ0978	06/06/01	1.02	200
MJ0979	06/06/01	1.01	200
PBS	06/06/01	1.00	200

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/06/01	0.20	100
MJ0930	06/06/01	0.21	100
MJ0931	06/06/01	0.21	100
MJ0932	06/06/01	0.20	100
MJ0933	06/06/01	0.20	100
MJ0934	06/06/01	0.21	100
MJ0935	06/06/01	0.20	100
MJ0936	06/06/01	0.22	100
MJ0937	06/06/01	0.21	100
MJ0938	06/06/01	0.20	100
MJ0968	06/06/01	0.20	100
MJ0969	06/06/01	0.22	100
MJ0970	06/06/01	0.21	100
MJ0971	06/06/01	0.20	100
MJ0971D	06/06/01	0.20	100
MJ0971S	06/06/01	0.20	100
MJ0972	06/06/01	0.22	100
MJ0973	06/06/01	0.20	100
MJ0974	06/06/01	0.20	100
MJ0975	06/06/01	0.22	100
MJ0977	06/06/01	0.20	100
MJ0978	06/06/01	0.20	100
MJ0979	06/06/01	0.22	100
PBS	06/06/01	0.20	100

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0930

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38272S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 100.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	21100			P
7440-36-0	Antimony	53.5			P
7440-38-2	Arsenic	25.5			P
7440-39-3	Barium	2160			P
7440-41-7	Beryllium	0.99	B		P
7440-43-9	Cadmium	0.06	U		P
7440-70-2	Calcium	69900			P
7440-47-3	Chromium	142			P
7440-48-4	Cobalt	59.0			P
7440-50-8	Copper	2900		~~E~~ JL	P
7439-89-6	Iron	239000			P
7439-92-1	Lead	316			P
7439-95-4	Magnesium	5770		~~E~~ JL	P
7439-96-5	Manganese	4040			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	17.0			P
7440-09-7	Potassium	4300			P
7782-49-2	Selenium	0.68	U	~~N~~ UJK	P
7440-22-4	Silver	7.5			P
7440-23-5	Sodium	2210			P
7440-28-0	Thallium	0.78	U		P
7440-62-2	Vanadium	42.3			P
7440-66-6	Zinc	20100			P
	Cyanide				NR

JP 7-9-01 6-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0931

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38273S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 99.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4710			P
7440-36-0	Antimony	9.9	B		P
7440-38-2	Arsenic	7.6			P
7440-39-3	Barium	486			P
7440-41-7	Beryllium	0.27	B		P
7440-43-9	Cadmium	4.8			P
7440-70-2	Calcium	54000			P
7440-47-3	Chromium	20.7			P
7440-48-4	Cobalt	8.4	B		P
7440-50-8	Copper	245		~~E~~ JL	P
7439-89-6	Iron	28000			P
7439-92-1	Lead	199			P
7439-95-4	Magnesium	26600		~~E~~ JL	P
7439-96-5	Manganese	585			P
7439-97-6	Mercury	0.06	B		CV
7440-02-0	Nickel	10.4			P
7440-09-7	Potassium	888	B		P
7782-49-2	Selenium	0.67	U	~~N~~ UJK	P
7440-22-4	Silver	1.6	B		P
7440-23-5	Sodium	269	B		P
7440-28-0	Thallium	0.77	U		P
7440-62-2	Vanadium	22.1			P
7440-66-6	Zinc	2430			P
	Cyanide				NR

7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0932

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38274S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 90.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	17400			P
7440-36-0	Antimony	57.5			P
7440-38-2	Arsenic	30.3			P
7440-39-3	Barium	1970			P
7440-41-7	Beryllium	0.86	B		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	57600			P
7440-47-3	Chromium	135			P
7440-48-4	Cobalt	73.5			P
7440-50-8	Copper	2520		~~E~~ JL	P
7439-89-6	Iron	176000			P
7439-92-1	Lead	409			P
7439-95-4	Magnesium	5040		~~E~~ JL	P
7439-96-5	Manganese	3680			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	15.6			P
7440-09-7	Potassium	3580			P
7782-49-2	Selenium	1.4		~~N~~ JL	P
7440-22-4	Silver	10.2			P
7440-23-5	Sodium	2230			P
7440-28-0	Thallium	0.87	U		P
7440-62-2	Vanadium	39.1			P
7440-66-6	Zinc	17500			P
	Cyanide				NR

CP 7-9-01 ~~6-9-01~~

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

5

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0933

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38275S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 100.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	17800			P
7440-36-0	Antimony	45.2			P
7440-38-2	Arsenic	21.6			P
7440-39-3	Barium	1690			P
7440-41-7	Beryllium	0.77	B		P
7440-43-9	Cadmium	0.19	B		P
7440-70-2	Calcium	66400			P
7440-47-3	Chromium	112			P
7440-48-4	Cobalt	47.3			P
7440-50-8	Copper	2160		~~E~~ JL	P
7439-89-6	Iron	178000			P
7439-92-1	Lead	417			P
7439-95-4	Magnesium	10000		~~E~~ JL	P
7439-96-5	Manganese	3240			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	14.4			P
7440-09-7	Potassium	3490			P
7782-49-2	Selenium	0.68	U	~~N~~ UJK	P
7440-22-4	Silver	7.4			P
7440-23-5	Sodium	1610			P
7440-28-0	Thallium	0.78	U		P
7440-62-2	Vanadium	37.7			P
7440-66-6	Zinc	18200			P
	Cyanide				NR

7-9-01
~~6-9-01~~

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0934

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38276S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 100.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	18100			P
7440-36-0	Antimony	34.9			P
7440-38-2	Arsenic	30.3			P
7440-39-3	Barium	1660			P
7440-41-7	Beryllium	0.75	B		P
7440-43-9	Cadmium	0.06	U		P
7440-70-2	Calcium	58600			P
7440-47-3	Chromium	113			P
7440-48-4	Cobalt	33.8			P
7440-50-8	Copper	2160		~~E~~ JL	P
7439-89-6	Iron	179000			P
7439-92-1	Lead	317			P
7439-95-4	Magnesium	6030		~~E~~ JL	P
7439-96-5	Manganese	3130			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	13.0			P
7440-09-7	Potassium	3480			P
7782-49-2	Selenium	1.4		~~N~~ JL	P
7440-22-4	Silver	5.9			P
7440-23-5	Sodium	1530			P
7440-28-0	Thallium	0.76	U		P
7440-62-2	Vanadium	36.3			P
7440-66-6	Zinc	16500			P
	Cyanide				NR

CP 7-9-01 ~~6-9-01~~

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0935

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38277S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 96.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	18700			P
7440-36-0	Antimony	7.4	B		P
7440-38-2	Arsenic	7.6			P
7440-39-3	Barium	681			P
7440-41-7	Beryllium	0.71	B		P
7440-43-9	Cadmium	0.06	U		P
7440-70-2	Calcium	46900			P
7440-47-3	Chromium	64.0			P
7440-48-4	Cobalt	15.0			P
7440-50-8	Copper	997		~~E~~ JL	P
7439-89-6	Iron	165000			P
7439-92-1	Lead	282			P
7439-95-4	Magnesium	5750		~~E~~ JL	P
7439-96-5	Manganese	2950			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	8.1	B		P
7440-09-7	Potassium	3770			P
7782-49-2	Selenium	2.1		~~N~~ JL	P
7440-22-4	Silver	3.7			P
7440-23-5	Sodium	1050			P
7440-28-0	Thallium	0.79	U		P
7440-62-2	Vanadium	38.2			P
7440-66-6	Zinc	15400			P
	Cyanide				NR

CP 7-9-01 6-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0936

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38278S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 83.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8170			P
7440-36-0	Antimony	20.0			P
7440-38-2	Arsenic	11.8			P
7440-39-3	Barium	763			P
7440-41-7	Beryllium	0.38	B		P
7440-43-9	Cadmium	2.4			P
7440-70-2	Calcium	25300			P
7440-47-3	Chromium	30.2			P
7440-48-4	Cobalt	7.9	B		P
7440-50-8	Copper	444		~~E~~ JL	P
7439-89-6	Iron	67100			P
7439-92-1	Lead	309			P
7439-95-4	Magnesium	8540		~~E~~ JL	P
7439-96-5	Manganese	1080			P
7439-97-6	Mercury	0.29			CV
7440-02-0	Nickel	12.5			P
7440-09-7	Potassium	1400			P
7782-49-2	Selenium	1.4		~~N~~ JL	P
7440-22-4	Silver	2.7			P
7440-23-5	Sodium	385	B		P
7440-28-0	Thallium	0.91	U		P
7440-62-2	Vanadium	28.8			P
7440-66-6	Zinc	4900			P
	Cyanide				NR

CP 7-9-01 ~~6-9-01~~

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0937

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38279S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 99.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	21100			P
7440-36-0	Antimony	61.3			P
7440-38-2	Arsenic	42.8			P
7440-39-3	Barium	2440			P
7440-41-7	Beryllium	1.0	B		P
7440-43-9	Cadmium	0.06	U		P
7440-70-2	Calcium	72400			P
7440-47-3	Chromium	165			P
7440-48-4	Cobalt	85.7			P
7440-50-8	Copper	3300		~~E~~ JL	P
7439-89-6	Iron	245000			P
7439-92-1	Lead	512			P
7439-95-4	Magnesium	5970		~~E~~ JL	P
7439-96-5	Manganese	4360			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	19.4			P
7440-09-7	Potassium	4330			P
7782-49-2	Selenium	0.68	U	~~N~~ uJK	P
7440-22-4	Silver	12.6			P
7440-23-5	Sodium	2630			P
7440-28-0	Thallium	0.78	U		P
7440-62-2	Vanadium	45.0			P
7440-66-6	Zinc	22300			P
	Cyanide				NR

VP 7-9-01 ~~6-9-01~~

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0938

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38280S

Level (low/med): LOW Date Received: 06/05/01

% 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	11000			P
7440-36-0	Antimony	51.4			P
7440-38-2	Arsenic	23.1			P
7440-39-3	Barium	989			P
7440-41-7	Beryllium	0.57	B		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	30800			P
7440-47-3	Chromium	72.0			P
7440-48-4	Cobalt	33.4			P
7440-50-8	Copper	1330		~~E~~ JL	P
7439-89-6	Iron	96900			P
7439-92-1	Lead	276			P
7439-95-4	Magnesium	3990		~~E~~ JL	P
7439-96-5	Manganese	1990			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	13.6			P
7440-09-7	Potassium	2160			P
7782-49-2	Selenium	1.5		~~N~~ JL	P
7440-22-4	Silver	8.5			P
7440-23-5	Sodium	1000	B		P
7440-28-0	Thallium	0.89	U		P
7440-62-2	Vanadium	28.6			P
7440-66-6	Zinc	8820			P
	Cyanide				NR

CP 7-9-01 ~~6-9-01~~

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0968

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38223S

Level (low/med): LOW Date Received: 05/26/01

% 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	5300			P
7440-36-0	Antimony	2.1	B		P
7440-38-2	Arsenic	5.0			P
7440-39-3	Barium	98.0			P
7440-41-7	Beryllium	0.19	B		P
7440-43-9	Cadmium	3.7			P
7440-70-2	Calcium	11400			P
7440-47-3	Chromium	7.6			P
7440-48-4	Cobalt	2.6	B		P
7440-50-8	Copper	15.9		~~E~~ JL	P
7439-89-6	Iron	8440			P
7439-92-1	Lead	105			P
7439-95-4	Magnesium	2690		~~E~~ JL	P
7439-96-5	Manganese	326			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	7.4	B		P
7440-09-7	Potassium	1140	B		P
7782-49-2	Selenium	1.4		~~N~~ JL	P
7440-22-4	Silver	0.41	B		P
7440-23-5	Sodium	213	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	13.3	B		P
7440-66-6	Zinc	421			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0969

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38224S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 95.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8880			P
7440-36-0	Antimony	0.63	B		P
7440-38-2	Arsenic	7.0			P
7440-39-3	Barium	108			P
7440-41-7	Beryllium	0.34	B		P
7440-43-9	Cadmium	1.1			P
7440-70-2	Calcium	5440			P
7440-47-3	Chromium	19.9			P
7440-48-4	Cobalt	4.7	B		P
7440-50-8	Copper	13.7		~~E~~JL	P
7439-89-6	Iron	16000			P
7439-92-1	Lead	44.0			P
7439-95-4	Magnesium	4300		~~E~~JL	P
7439-96-5	Manganese	450			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	18.8			P
7440-09-7	Potassium	1460			P
7782-49-2	Selenium	0.71	U	~~N~~UJK	P
7440-22-4	Silver	0.60	B		P
7440-23-5	Sodium	133	B		P
7440-28-0	Thallium	0.81	U		P
7440-62-2	Vanadium	23.7			P
7440-66-6	Zinc	109			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0970

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38225S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 35.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1200			P
7440-36-0	Antimony	1.7	U		P
7440-38-2	Arsenic	2.2	U		P
7440-39-3	Barium	59.8	B		P
7440-41-7	Beryllium	0.11	U		P
7440-43-9	Cadmium	0.23	B		P
7440-70-2	Calcium	91500			P
7440-47-3	Chromium	3.7	B		P
7440-48-4	Cobalt	0.61	U		P
7440-50-8	Copper	3.6	B	~~E~~ JL	P
7439-89-6	Iron	2600			P
7439-92-1	Lead	5.5			P
7439-95-4	Magnesium	1290	B	~~E~~ JL	P
7439-96-5	Manganese	73.0			P
7439-97-6	Mercury	0.13	U		CV
7440-02-0	Nickel	2.9	B		P
7440-09-7	Potassium	300	B		P
7782-49-2	Selenium	1.9	U	~~N~~ uJK	P
7440-22-4	Silver	0.44	U		P
7440-23-5	Sodium	317	B		P
7440-28-0	Thallium	2.2	U		P
7440-62-2	Vanadium	4.2	B		P
7440-66-6	Zinc	16.2			P
	Cyanide				NR

VF 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0971

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38226S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 48.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5740			P
7440-36-0	Antimony	1.2	U		P
7440-38-2	Arsenic	4.8		JL	P
7440-39-3	Barium	148			P
7440-41-7	Beryllium	0.24	B		P
7440-43-9	Cadmium	1.0	B		P
7440-70-2	Calcium	121000			P
7440-47-3	Chromium	14.7			P
7440-48-4	Cobalt	4.3	B		P
7440-50-8	Copper	16.1		~~E~~ JL	P
7439-89-6	Iron	9520			P
7439-92-1	Lead	22.2			P
7439-95-4	Magnesium	3410		~~E~~ JL	P
7439-96-5	Manganese	564			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	16.7			P
7440-09-7	Potassium	1140	B		P
7782-49-2	Selenium	2.1		~~N~~ JL	P
7440-22-4	Silver	0.39	B		P
7440-23-5	Sodium	291	B		P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	16.1	B		P
7440-66-6	Zinc	95.2			P
	Cyanide				NR

CL 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0972

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38227S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 63.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7140			P
7440-36-0	Antimony	3.3	B		P
7440-38-2	Arsenic	8.6			P
7440-39-3	Barium	273			P
7440-41-7	Beryllium	0.32	B		P
7440-43-9	Cadmium	21.5			P
7440-70-2	Calcium	155000			P
7440-47-3	Chromium	21.3			P
7440-48-4	Cobalt	5.5	B		P
7440-50-8	Copper	42.5		~~E~~ JL	P
7439-89-6	Iron	11700			P
7439-92-1	Lead	84.8			P
7439-95-4	Magnesium	4990		~~E~~ JL	P
7439-96-5	Manganese	277			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	36.8			P
7440-09-7	Potassium	1340	B		P
7782-49-2	Selenium	28.4		~~N~~ JL	P
7440-22-4	Silver	0.71	B		P
7440-23-5	Sodium	236	B		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	21.1			P
7440-66-6	Zinc	403			P
	Cyanide				NR

CP 7-5-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

received 8-6-01 BMF

DATE: July 11, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt site. Case: 29276 SDG: MJ0BK7

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1084
TDN: 1042
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 20 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ09F3	MJ0BK9	MJ0BL4	MJ0BM5
MJ09F8	MJ0BL0	MJ0BL5	MJ0BM6
MJ09G0	MJ0BL1	MJ0BL6	MJ0BM7
MJ0BK7	MJ0BL2	MJ0BM2	MJ0BM8
MJ0BK8	MJ0BL3	MJ0BM4	MJ0BM9

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/5, 6/6 and 6/7/01. The samples were analyzed for mercury within 8 days and all other metals within 11 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 91-103% for ICP-AES and from 85-96% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
antimony	MJ0BK8, MJ0BL3, MJ0BL4, MJ0BM2, MJ0BM8

Antimony was further qualified on the basis of spike analysis.

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met by all of the ICS analyzed. The recoveries ranged from 89-111%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0BL4 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of copper and lead. Lead only slightly exceeded the 10% difference criteria and therefore, was not qualified on this basis. Results for copper in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 53-104%. None of the data were qualified on this basis.

Duplicate Sample Analysis

Sample MJ0BL4 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria (±20% RPD or ± CRDL) for all target analytes with the exception of calcium. Calcium also did not meet the suggested technical control limit criteria (±35% RPD or ± 2X CRDL) for soils. Results for calcium in all samples were qualified as estimated, "J". The "*" qualifiers applied by the laboratory were crossed-out by the reviewer.

Matrix Spike Analysis

Sample MJ0BL4 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of antimony (57%) and lead (139%) in the spike sample MJ0BL4S. Due to possible bias, the detected and non-detected antimony results in all samples were qualified as estimated, "J/UJ". Due to possible bias, the detected lead results in all samples were qualified as estimated, "J". The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. All of the other spike recoveries were acceptable and ranged from 85-125%.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 460. Five (1.1%) were qualified as non-detected due to blank contamination. Eighty (17%) were qualified as estimated due to ICP serial dilution, duplicate and spike analyses.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

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10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/13/01	1.00	200
MJ09F3	06/13/01	1.00	200
MJ09F8	06/13/01	1.00	200
MJ09G0	06/13/01	1.00	200
MJ0BK7	06/13/01	1.00	200
MJ0BK8	06/13/01	1.00	200
MJ0BK9	06/13/01	1.00	200
MJ0BL0	06/13/01	1.00	200
MJ0BL1	06/13/01	1.00	200
MJ0BL2	06/13/01	1.00	200
MJ0BL3	06/13/01	1.00	200
MJ0BL4	06/13/01	1.00	200
MJ0BL4D	06/13/01	1.00	200
MJ0BL4S	06/13/01	1.00	200
MJ0BL5	06/13/01	1.00	200
MJ0BL6	06/13/01	1.00	200
MJ0BM2	06/13/01	1.00	200
MJ0BM4	06/13/01	1.00	200
MJ0BM5	06/13/01	1.00	200
MJ0BM6	06/13/01	1.00	200
MJ0BM7	06/13/01	1.00	200
MJ0BM8	06/13/01	1.00	200
MJ0BM9	06/13/01	1.00	200
PBS	06/13/01	1.00	200

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/13/01	0.20	100
MJ09F3	06/13/01	0.20	100
MJ09F8	06/13/01	0.20	100
MJ09G0	06/13/01	0.20	100
MJ0BK7	06/13/01	0.20	100
MJ0BK8	06/13/01	0.20	100
MJ0BK9	06/13/01	0.20	100
MJ0BL0	06/13/01	0.20	100
MJ0BL1	06/13/01	0.20	100
MJ0BL2	06/13/01	0.20	100
MJ0BL3	06/13/01	0.20	100
MJ0BL4	06/13/01	0.20	100
MJ0BL4D	06/13/01	0.20	100
MJ0BL4S	06/13/01	0.20	100
MJ0BL5	06/13/01	0.20	100
MJ0BL6	06/13/01	0.20	100
MJ0BM2	06/13/01	0.20	100
MJ0BM4	06/13/01	0.20	100
MJ0BM5	06/13/01	0.20	100
MJ0BM6	06/13/01	0.20	100
MJ0BM7	06/13/01	0.20	100
MJ0BM8	06/13/01	0.20	100
MJ0BM9	06/13/01	0.20	100
PBS	06/13/01	0.20	100

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09F3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38464S

Level (low/med): LOW Date Received: 06/08/01

% Solids: 91.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6920			P
7440-36-0	Antimony	0.66	U	~~N~~UJK	P
7440-38-2	Arsenic	3.8			P
7440-39-3	Barium	71.3			P
7440-41-7	Beryllium	0.29	B		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	10800		~~*~~JK	P
7440-47-3	Chromium	17.1			P
7440-48-4	Cobalt	5.5	B		P
7440-50-8	Copper	14.1		~~E~~JL	P
7439-89-6	Iron	15000			P
7439-92-1	Lead	8.4		~~N~~~~E~~JH	P
7439-95-4	Magnesium	4930			P
7439-96-5	Manganese	297			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	23.8			P
7440-09-7	Potassium	1730			P
7782-49-2	Selenium	0.75	U		P
7440-22-4	Silver	0.39	B		P
7440-23-5	Sodium	198	B		P
7440-28-0	Thallium	0.86	U		P
7440-62-2	Vanadium	18.9			P
7440-66-6	Zinc	43.9			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09F8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38465S

Level (low/med): LOW Date Received: 06/08/01

% Solids: 38.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8550			P
7440-36-0	Antimony	1.7	B	~~N~~ JL	P
7440-38-2	Arsenic	7.2			P
7440-39-3	Barium	164			P
7440-41-7	Beryllium	0.39	B		P
7440-43-9	Cadmium	0.16	U		P
7440-70-2	Calcium	22800		~~*~~ JK	P
7440-47-3	Chromium	18.6			P
7440-48-4	Cobalt	7.1	B		P
7440-50-8	Copper	21.8		~~*~~ JL	P
7439-89-6	Iron	16300			P
7439-92-1	Lead	18.3		~~N*~~ JH	P
7439-95-4	Magnesium	4510			P
7439-96-5	Manganese	1010			P
7439-97-6	Mercury	0.13	U		CV
7440-02-0	Nickel	22.1			P
7440-09-7	Potassium	1680	B		P
7782-49-2	Selenium	1.8	U		P
7440-22-4	Silver	0.55	B		P
7440-23-5	Sodium	427	B		P
7440-28-0	Thallium	2.1	U		P
7440-62-2	Vanadium	22.5	B		P
7440-66-6	Zinc	90.4			P
	Cyanide				NR

CP 7-11-07

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09G0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38466S

Level (low/med): LOW Date Received: 06/08/01

% Solids: 88.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6090			P
7440-36-0	Antimony	0.67	U	~~N~~UJK	P
7440-38-2	Arsenic	4.2			P
7440-39-3	Barium	59.4			P
7440-41-7	Beryllium	0.27	B		P
7440-43-9	Cadmium	0.17	B		P
7440-70-2	Calcium	4500		~~J~~JK	P
7440-47-3	Chromium	13.4			P
7440-48-4	Cobalt	4.4	B		P
7440-50-8	Copper	13.4		~~E~~JL	P
7439-89-6	Iron	11000			P
7439-92-1	Lead	8.6		~~N~~JH	P
7439-95-4	Magnesium	3200			P
7439-96-5	Manganese	285			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	13.7			P
7440-09-7	Potassium	1050	B		P
7782-49-2	Selenium	0.76	U		P
7440-22-4	Silver	0.31	B		P
7440-23-5	Sodium	168	B		P
7440-28-0	Thallium	0.88	U		P
7440-62-2	Vanadium	17.8			P
7440-66-6	Zinc	54.7			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38370S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 68.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4530			P
7440-36-0	Antimony	0.87	U	~~N~~UJK	P
7440-38-2	Arsenic	1.4	B		P
7440-39-3	Barium	42.6	B		P
7440-41-7	Beryllium	0.30	B		P
7440-43-9	Cadmium	0.09	U		P
7440-70-2	Calcium	2870		~~*~~JK	P
7440-47-3	Chromium	13.1			P
7440-48-4	Cobalt	3.1	B		P
7440-50-8	Copper	7.3		~~*~~JL	P
7439-89-6	Iron	9730			P
7439-92-1	Lead	3.9		~~N*~~JH	P
7439-95-4	Magnesium	2860			P
7439-96-5	Manganese	151			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	8.7	B		P
7440-09-7	Potassium	714	B		P
7782-49-2	Selenium	0.99	U		P
7440-22-4	Silver	0.25	B		P
7440-23-5	Sodium	264	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	20.8			P
7440-66-6	Zinc	24.5			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38371S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 91.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5600			P
7440-36-0	Antimony	0.96	B	~~N~~UJK	P
7440-38-2	Arsenic	10			P
7440-39-3	Barium	68.9			P
7440-41-7	Beryllium	0.28	B		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	3720		~~*~~JK	P
7440-47-3	Chromium	12.2			P
7440-48-4	Cobalt	4.2	B		P
7440-50-8	Copper	18.0		~~*~~JL	P
7439-89-6	Iron	10800			P
7439-92-1	Lead	10.2		~~N*~~JH	P
7439-95-4	Magnesium	2930			P
7439-96-5	Manganese	284			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	12.4			P
7440-09-7	Potassium	1420			P
7782-49-2	Selenium	0.74	U		P
7440-22-4	Silver	0.32	B		P
7440-23-5	Sodium	204	B		P
7440-28-0	Thallium	0.85	U		P
7440-62-2	Vanadium	19.1			P
7440-66-6	Zinc	45.6			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38372S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 89.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11800			P
7440-36-0	Antimony	1.0	B	~~N~~ JL	P
7440-38-2	Arsenic	3.8			P
7440-39-3	Barium	139			P
7440-41-7	Beryllium	0.58	B		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	4650		~~*~~ JK	P
7440-47-3	Chromium	21.8			P
7440-48-4	Cobalt	6.5	B		P
7440-50-8	Copper	17.1		~~*~~ JL	P
7439-89-6	Iron	16200			P
7439-92-1	Lead	17.3		~~N*~~ JH	P
7439-95-4	Magnesium	4900			P
7439-96-5	Manganese	438			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	17.5			P
7440-09-7	Potassium	3110			P
7782-49-2	Selenium	0.76	U		P
7440-22-4	Silver	0.49	B		P
7440-23-5	Sodium	260	B		P
7440-28-0	Thallium	0.87	U		P
7440-62-2	Vanadium	25.8			P
7440-66-6	Zinc	64.1			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BL0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38467S

Level (low/med): LOW Date Received: 06/08/01

% Solids: 84.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10800			P
7440-36-0	Antimony	0.71	U	~~N~~UJK	P
7440-38-2	Arsenic	3.3			P
7440-39-3	Barium	120			P
7440-41-7	Beryllium	0.51	B		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	16100		~~*~~JK	P
7440-47-3	Chromium	23.6			P
7440-48-4	Cobalt	6.0	B		P
7440-50-8	Copper	19.1		~~*~~JL	P
7439-89-6	Iron	15700			P
7439-92-1	Lead	11.7		~~N*~~JH	P
7439-95-4	Magnesium	7110			P
7439-96-5	Manganese	397			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	17.7			P
7440-09-7	Potassium	3420			P
7782-49-2	Selenium	0.80	U		P
7440-22-4	Silver	0.34	B		P
7440-23-5	Sodium	295	B		P
7440-28-0	Thallium	0.92	U		P
7440-62-2	Vanadium	26.4			P
7440-66-6	Zinc	60.6			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BL1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38468S

Level (low/med): LOW Date Received: 06/08/01

% Solids: 52.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7770			P
7440-36-0	Antimony	1.5	B	~~N~~ JL	P
7440-38-2	Arsenic	3.5	B		P
7440-39-3	Barium	173			P
7440-41-7	Beryllium	0.37	B		P
7440-43-9	Cadmium	0.13	B		P
7440-70-2	Calcium	34300		~~E~~ JK	P
7440-47-3	Chromium	20.9			P
7440-48-4	Cobalt	5.3	B		P
7440-50-8	Copper	13.4		~~E~~ JL	P
7439-89-6	Iron	13800			P
7439-92-1	Lead	8.6		~~NE~~ JH	P
7439-95-4	Magnesium	4150			P
7439-96-5	Manganese	363			P
7439-97-6	Mercury	0.09	U		CV
7440-02-0	Nickel	19.8			P
7440-09-7	Potassium	1430	B		P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	0.38	B		P
7440-23-5	Sodium	378	B		P
7440-28-0	Thallium	1.5	U		P
7440-62-2	Vanadium	27.5			P
7440-66-6	Zinc	63.1			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BL2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38469S

Level (low/med): LOW Date Received: 06/08/01

% Solids: 46.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10100			P
7440-36-0	Antimony	1.3	U	~~N~~UJK	P
7440-38-2	Arsenic	5.3			P
7440-39-3	Barium	201			P
7440-41-7	Beryllium	0.55	B		P
7440-43-9	Cadmium	0.13	U		P
7440-70-2	Calcium	83500		~~E~~JK	P
7440-47-3	Chromium	23.6			P
7440-48-4	Cobalt	7.1	B		P
7440-50-8	Copper	21.1		~~E~~JL	P
7439-89-6	Iron	16200			P
7439-92-1	Lead	11.0		~~NE~~JH	P
7439-95-4	Magnesium	7170			P
7439-96-5	Manganese	414			P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	21.1			P
7440-09-7	Potassium	2580			P
7782-49-2	Selenium	1.4	U		P
7440-22-4	Silver	0.36	B		P
7440-23-5	Sodium	476	B		P
7440-28-0	Thallium	1.7	U		P
7440-62-2	Vanadium	31.8			P
7440-66-6	Zinc	77.1			P
	Cyanide				NR

CF 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BL3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38470S

Level (low/med): LOW Date Received: 06/08/01

% Solids: 94.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13400			P
7440-36-0	Antimony	1.1	B	~~N~~UJK	P
7440-38-2	Arsenic	4.9			P
7440-39-3	Barium	143			P
7440-41-7	Beryllium	0.70	B		P
7440-43-9	Cadmium	0.06	U		P
7440-70-2	Calcium	5340		~~*~~JK	P
7440-47-3	Chromium	35.1			P
7440-48-4	Cobalt	10.8			P
7440-50-8	Copper	26.7		~~*~~JL	P
7439-89-6	Iron	24100			P
7439-92-1	Lead	14.7		~~N*~~JH	P
7439-95-4	Magnesium	7090			P
7439-96-5	Manganese	594			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	31.9			P
7440-09-7	Potassium	3950			P
7782-49-2	Selenium	0.72	U		P
7440-22-4	Silver	0.78	B		P
7440-23-5	Sodium	197	B		P
7440-28-0	Thallium	0.83	U		P
7440-62-2	Vanadium	36.9			P
7440-66-6	Zinc	82.8			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BL4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38471S

Level (low/med): LOW Date Received: 06/08/01

% Solids: 94.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9340			P
7440-36-0	Antimony	1.1	B	~~N~~UJK	P
7440-38-2	Arsenic	4.5			P
7440-39-3	Barium	74.5			P
7440-41-7	Beryllium	0.41	B		P
7440-43-9	Cadmium	0.06	U		P
7440-70-2	Calcium	3400		~~J~~ JK	P
7440-47-3	Chromium	20.5			P
7440-48-4	Cobalt	6.9	B		P
7440-50-8	Copper	16.9		~~E~~ JL	P
7439-89-6	Iron	16100			P
7439-92-1	Lead	16.8		~~N~~ JH	P
7439-95-4	Magnesium	4660			P
7439-96-5	Manganese	359			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	19.6			P
7440-09-7	Potassium	1900			P
7782-49-2	Selenium	0.72	U		P
7440-22-4	Silver	0.49	B		P
7440-23-5	Sodium	188	B		P
7440-28-0	Thallium	0.83	U		P
7440-62-2	Vanadium	24.6			P
7440-66-6	Zinc	68.8			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BL5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38472S

Level (low/med): LOW Date Received: 06/08/01

% Solids: 69.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3010			P
7440-36-0	Antimony	4.9	B	~~N~~ JL	P
7440-38-2	Arsenic	5.8			P
7440-39-3	Barium	72.5			P
7440-41-7	Beryllium	0.13	B		P
7440-43-9	Cadmium	2.4			P
7440-70-2	Calcium	7750		~~E~~ JK	P
7440-47-3	Chromium	5.2			P
7440-48-4	Cobalt	2.2	B		P
7440-50-8	Copper	11.8		~~E~~ JL	P
7439-89-6	Iron	5420			P
7439-92-1	Lead	115		~~NE~~ JH	P
7439-95-4	Magnesium	1450			P
7439-96-5	Manganese	157			P
7439-97-6	Mercury	0.13	B		CV
7440-02-0	Nickel	6.8	B		P
7440-09-7	Potassium	1280	B		P
7782-49-2	Selenium	1.4			P
7440-22-4	Silver	0.25	B		P
7440-23-5	Sodium	228	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	8.8	B		P
7440-66-6	Zinc	180			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BL6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38474S

Level (low/med): LOW Date Received: 06/09/01

% Solids: 90.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2040			P
7440-36-0	Antimony	0.66	U	~~N~~UJK	P
7440-38-2	Arsenic	1.7	B		P
7440-39-3	Barium	36.8	B		P
7440-41-7	Beryllium	0.14	B		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	2490		~~E~~JK	P
7440-47-3	Chromium	3.9			P
7440-48-4	Cobalt	1.9	B		P
7440-50-8	Copper	6.7		~~E~~JL	P
7439-89-6	Iron	5480			P
7439-92-1	Lead	8.4		~~N~~E JH	P
7439-95-4	Magnesium	1210			P
7439-96-5	Manganese	449			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	3.8	B		P
7440-09-7	Potassium	581	B		P
7782-49-2	Selenium	0.75	U		P
7440-22-4	Silver	0.18	U		P
7440-23-5	Sodium	139	B		P
7440-28-0	Thallium	0.86	U		P
7440-62-2	Vanadium	6.7	B		P
7440-66-6	Zinc	17.5			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BM2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38473S

Level (low/med): LOW Date Received: 06/08/01

% Solids: 89.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8100			P
7440-36-0	Antimony	1.9	B	~~N~~UJK	P
7440-38-2	Arsenic	30.0			P
7440-39-3	Barium	110			P
7440-41-7	Beryllium	0.45	B		P
7440-43-9	Cadmium	2.1			P
7440-70-2	Calcium	10800		~~E~~ JK	P
7440-47-3	Chromium	16.1			P
7440-48-4	Cobalt	9.3	B		P
7440-50-8	Copper	29.9		~~E~~ JL	P
7439-89-6	Iron	19500			P
7439-92-1	Lead	18.0		~~N~~E JH	P
7439-95-4	Magnesium	4530			P
7439-96-5	Manganese	599			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	24.9			P
7440-09-7	Potassium	1390			P
7782-49-2	Selenium	0.76	U		P
7440-22-4	Silver	0.64	B		P
7440-23-5	Sodium	188	B		P
7440-28-0	Thallium	0.87	U		P
7440-62-2	Vanadium	25.7			P
7440-66-6	Zinc	540			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BM4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38475S

Level (low/med): LOW Date Received: 06/09/01

% Solids: 86.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6880			P
7440-36-0	Antimony	0.69	U	~~N~~UJK	P
7440-38-2	Arsenic	4.6			P
7440-39-3	Barium	73.1			P
7440-41-7	Beryllium	0.33	B		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	17800		~~J~~ JK	P
7440-47-3	Chromium	12.0			P
7440-48-4	Cobalt	5.0	B		P
7440-50-8	Copper	15.8		~~J~~ JL	P
7439-89-6	Iron	13700			P
7439-92-1	Lead	8.8		~~N~~ JH	P
7439-95-4	Magnesium	3760			P
7439-96-5	Manganese	251			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	16.7			P
7440-09-7	Potassium	1200			P
7782-49-2	Selenium	0.78	U		P
7440-22-4	Silver	0.41	B		P
7440-23-5	Sodium	189	B		P
7440-28-0	Thallium	0.90	U		P
7440-62-2	Vanadium	17.2			P
7440-66-6	Zinc	53.0			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BM5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38476S

Level (low/med): LOW Date Received: 06/09/01

% Solids: 89.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4270			P
7440-36-0	Antimony	0.67	U	~~N~~UJK	P
7440-38-2	Arsenic	1.7	B		P
7440-39-3	Barium	50.1			P
7440-41-7	Beryllium	0.22	B		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	9770		~~*~~JK	P
7440-47-3	Chromium	9.6			P
7440-48-4	Cobalt	3.1	B		P
7440-50-8	Copper	7.9		~~*~~JL	P
7439-89-6	Iron	8030			P
7439-92-1	Lead	5.1		~~N*~~JH	P
7439-95-4	Magnesium	3170			P
7439-96-5	Manganese	194			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	9.3			P
7440-09-7	Potassium	944	B		P
7782-49-2	Selenium	0.76	U		P
7440-22-4	Silver	0.18	B		P
7440-23-5	Sodium	182	B		P
7440-28-0	Thallium	0.87	U		P
7440-62-2	Vanadium	14.0			P
7440-66-6	Zinc	33.6			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BM6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38477S

Level (low/med): LOW Date Received: 06/09/01

% Solids: 71.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4430			P
7440-36-0	Antimony	0.84	U	~~N~~UJK	P
7440-38-2	Arsenic	1.4	B		P
7440-39-3	Barium	43.3	B		P
7440-41-7	Beryllium	0.21	B		P
7440-43-9	Cadmium	0.08	U		P
7440-70-2	Calcium	6760		~~*~~ JK	P
7440-47-3	Chromium	8.8			P
7440-48-4	Cobalt	2.2	B		P
7440-50-8	Copper	6.5	B	~~*~~ JL	P
7439-89-6	Iron	7670			P
7439-92-1	Lead	5.1		~~N~~ JH	P
7439-95-4	Magnesium	2650			P
7439-96-5	Manganese	152			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	6.9	B		P
7440-09-7	Potassium	791	B		P
7782-49-2	Selenium	0.95	U		P
7440-22-4	Silver	0.25	B		P
7440-23-5	Sodium	245	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	19.2			P
7440-66-6	Zinc	46.4			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BM7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38478S

Level (low/med): LOW Date Received: 06/09/01

% Solids: 69.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5610			P
7440-36-0	Antimony	0.86	U	~~N~~UJK	P
7440-38-2	Arsenic	3.5			P
7440-39-3	Barium	54.7	B		P
7440-41-7	Beryllium	0.28	B		P
7440-43-9	Cadmium	0.09	U		P
7440-70-2	Calcium	3690		~~*~~JK	P
7440-47-3	Chromium	12.8			P
7440-48-4	Cobalt	3.8	B		P
7440-50-8	Copper	9.6		~~*~~JL	P
7439-89-6	Iron	10800			P
7439-92-1	Lead	5.6		~~N~~*JH	P
7439-95-4	Magnesium	3320			P
7439-96-5	Manganese	326			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	11.3	B		P
7440-09-7	Potassium	1070	B		P
7782-49-2	Selenium	0.97	U		P
7440-22-4	Silver	0.30	B		P
7440-23-5	Sodium	221	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	18.1			P
7440-66-6	Zinc	35.0			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BM8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38479S

Level (low/med): LOW Date Received: 06/09/01

% Solids: 42.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8280			P
7440-36-0	Antimony	2.6	B	~~N~~ UJK	P
7440-38-2	Arsenic	5.6			P
7440-39-3	Barium	153			P
7440-41-7	Beryllium	0.39	B		P
7440-43-9	Cadmium	0.70	B		P
7440-70-2	Calcium	61100		~~J~~ JK	P
7440-47-3	Chromium	11.4			P
7440-48-4	Cobalt	5.2	B		P
7440-50-8	Copper	18.7		~~J~~ JL	P
7439-89-6	Iron	12800			P
7439-92-1	Lead	11.5		~~N~~ ~~J~~ JH	P
7439-95-4	Magnesium	4950			P
7439-96-5	Manganese	235			P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	18.3	B		P
7440-09-7	Potassium	1620	B		P
7782-49-2	Selenium	2.7			P
7440-22-4	Silver	0.41	B		P
7440-23-5	Sodium	453	B		P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	24.4			P
7440-66-6	Zinc	99.4			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BM9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK7

Matrix (soil/water): SOIL Lab Sample ID: 38480S

Level (low/med): LOW Date Received: 06/09/01

% Solids: 94.5

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	0.63	U	~~N~~UJK	P
7440-38-2	Arsenic	1.7	B		P
7440-39-3	Barium	33.5	B		P
7440-41-7	Beryllium	0.23	B		P
7440-43-9	Cadmium	0.06	U		P
7440-70-2	Calcium	2440		~~E~~JK	P
7440-47-3	Chromium	5.9			P
7440-48-4	Cobalt	2.1	B		P
7440-50-8	Copper	9.9		~~E~~JL	P
7439-89-6	Iron	5980			P
7439-92-1	Lead	6.8		~~NE~~JH	P
7439-95-4	Magnesium	1780			P
7439-96-5	Manganese	126			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	5.1	B		P
7440-09-7	Potassium	790	B		P
7782-49-2	Selenium	0.72	U		P
7440-22-4	Silver	0.17	U		P
7440-23-5	Sodium	169	B		P
7440-28-0	Thallium	0.83	U		P
7440-62-2	Vanadium	12.6			P
7440-66-6	Zinc	23.2			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0973

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38228S

Level (low/med): LOW Date Received: 05/26/01

% 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	11500			P
7440-36-0	Antimony	4.8	B		P
7440-38-2	Arsenic	15.9			P
7440-39-3	Barium	210			P
7440-41-7	Beryllium	0.60	B		P
7440-43-9	Cadmium	11.4			P
7440-70-2	Calcium	16900			P
7440-47-3	Chromium	23.1			P
7440-48-4	Cobalt	8.0	B		P
7440-50-8	Copper	42.2		~~E~~ JL	P
7439-89-6	Iron	19300			P
7439-92-1	Lead	478			P
7439-95-4	Magnesium	5630		~~E~~ JL	P
7439-96-5	Manganese	594			P
7439-97-6	Mercury	0.14	B		CV
7440-02-0	Nickel	20.7			P
7440-09-7	Potassium	2540			P
7782-49-2	Selenium	0.92	U	~~N~~ UJK	P
7440-22-4	Silver	1.1	B		P
7440-23-5	Sodium	174	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	31.7			P
7440-66-6	Zinc	581			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0974

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38229S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 95.0

Concentration 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	1.8	B		P
7440-38-2	Arsenic	7.7			P
7440-39-3	Barium	219			P
7440-41-7	Beryllium	0.60	B		P
7440-43-9	Cadmium	3.4			P
7440-70-2	Calcium	8070			P
7440-47-3	Chromium	23.6			P
7440-48-4	Cobalt	6.6	B		P
7440-50-8	Copper	51.8		~~E~~ JL	P
7439-89-6	Iron	20200			P
7439-92-1	Lead	208			P
7439-95-4	Magnesium	6580		~~E~~ JL	P
7439-96-5	Manganese	193			P
7439-97-6	Mercury	0.14			CV
7440-02-0	Nickel	19.5			P
7440-09-7	Potassium	1290			P
7782-49-2	Selenium	1.4		~~N~~ JL	P
7440-22-4	Silver	1.0	B		P
7440-23-5	Sodium	173	B		P
7440-28-0	Thallium	0.81	U		P
7440-62-2	Vanadium	33.8			P
7440-66-6	Zinc	379			P
	Cyanide				NR

7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0975

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38230S

Level (low/med): LOW Date Received: 05/26/01

% Solids: 42.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2300			P
7440-36-0	Antimony	1.4	U		P
7440-38-2	Arsenic	1.9	U		P
7440-39-3	Barium	198			P
7440-41-7	Beryllium	0.09	U		P
7440-43-9	Cadmium	0.86	B		P
7440-70-2	Calcium	185000			P
7440-47-3	Chromium	4.8			P
7440-48-4	Cobalt	1.0	B		P
7440-50-8	Copper	4.9	B	~~E~~ JL	P
7439-89-6	Iron	3160			P
7439-92-1	Lead	10.8			P
7439-95-4	Magnesium	2910		~~E~~ JL	P
7439-96-5	Manganese	301			P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	4.1	B		P
7440-09-7	Potassium	571	B		P
7782-49-2	Selenium	1.6	U	~~N~~ UJK	P
7440-22-4	Silver	0.37	U		P
7440-23-5	Sodium	327	B		P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	5.2	B		P
7440-66-6	Zinc	31.4			P
	Cyanide				NR

JL 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0977

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38281S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 84.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8840			P
7440-36-0	Antimony	0.81	B		P
7440-38-2	Arsenic	7.0			P
7440-39-3	Barium	155			P
7440-41-7	Beryllium	0.48	B		P
7440-43-9	Cadmium	0.54	B		P
7440-70-2	Calcium	10500			P
7440-47-3	Chromium	26.1			P
7440-48-4	Cobalt	6.7	B		P
7440-50-8	Copper	26.8		~~E~~ JL	P
7439-89-6	Iron	18700			P
7439-92-1	Lead	73.8			P
7439-95-4	Magnesium	7400		~~E~~ JL	P
7439-96-5	Manganese	291			P
7439-97-6	Mercury	0.18			CV
7440-02-0	Nickel	20.2			P
7440-09-7	Potassium	1270			P
7782-49-2	Selenium	1.8		~~N~~ JL	P
7440-22-4	Silver	0.74	B		P
7440-23-5	Sodium	260	B		P
7440-28-0	Thallium	0.90	U		P
7440-62-2	Vanadium	32.3			P
7440-66-6	Zinc	238			P
	Cyanide				NR

CP 7-5-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0978

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38282S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 54.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5890			P
7440-36-0	Antimony	2.4	B		P
7440-38-2	Arsenic	4.5			P
7440-39-3	Barium	102			P
7440-41-7	Beryllium	0.30	B		P
7440-43-9	Cadmium	4.8			P
7440-70-2	Calcium	5630			P
7440-47-3	Chromium	14.4			P
7440-48-4	Cobalt	5.3	B		P
7440-50-8	Copper	22.3		~~E~~ JL	P
7439-89-6	Iron	14300			P
7439-92-1	Lead	151			P
7439-95-4	Magnesium	3120		~~E~~ JL	P
7439-96-5	Manganese	139			P
7439-97-6	Mercury	0.09	U		CV
7440-02-0	Nickel	12.1	B		P
7440-09-7	Potassium	1540	B		P
7782-49-2	Selenium	2.4		~~N~~ JL	P
7440-22-4	Silver	0.67	B		P
7440-23-5	Sodium	148	B		P
7440-28-0	Thallium	1.4	U	UJK	P
7440-62-2	Vanadium	24.9			P
7440-66-6	Zinc	220			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0979

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0968

Matrix (soil/water): SOIL Lab Sample ID: 38283S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 66.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8130			P
7440-36-0	Antimony	0.89	U		P
7440-38-2	Arsenic	4.9			P
7440-39-3	Barium	127			P
7440-41-7	Beryllium	0.19	B		P
7440-43-9	Cadmium	0.79	B		P
7440-70-2	Calcium	15600			P
7440-47-3	Chromium	13.8			P
7440-48-4	Cobalt	8.5	B		P
7440-50-8	Copper	26.7		~~E~~ JL	P
7439-89-6	Iron	19100			P
7439-92-1	Lead	16.5			P
7439-95-4	Magnesium	4290		~~E~~ JL	P
7439-96-5	Manganese	358			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	29.8			P
7440-09-7	Potassium	694	B		P
7782-49-2	Selenium	1.6		~~N~~ JL	P
7440-22-4	Silver	0.79	B		P
7440-23-5	Sodium	139	B		P
7440-28-0	Thallium	1.2	U	UJK	P
7440-62-2	Vanadium	18.2			P
7440-66-6	Zinc	134			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

received
8-6-01
SMF

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

Reply To
Attn Of: OEA-095

July 24, 2001

MEMORANDUM

Subject: Data Validation Report for the Total Inorganic Analyses of Samples from Upper Columbia River/Lake Roosevelt Expanded Site Assessment Case: 29276
SDGs: MJ09G8; MJ0BK7; MJ0968; MJ0BN0; MJ0976; MJ0BK0

From: Ginna Grepo-Grove, Chemist
Quality Assurance & Data Unit, OEA

To: Mark Ader, SAM, ECL

CC: Bruce Woods, Region 10 CLP TPO
Susan Fitzgerald, Weston, Inc.

The quality assurance (QA) review of 106 soil and 3 water samples collected from the above referenced site has been completed. These samples were analyzed for full inorganic target compounds in accordance with the USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analyses (rev. ILMO4.1). The analyses were performed by Sentinel, Inc of Huntsville, AL. The data validations were performed by the Environmental Services Assistance Team (ESAT) of the USEPA Manchester Environmental Laboratory, Port Orchard, WA.

There were no significant problems encountered with the data. Approximately 11% of the total data points were qualified as estimated due to serial dilution results, contamination in the blanks and/or poor matrix spike recoveries. Additional 5% of the total data points were qualified as non-detects due to contamination in the blank. All of the samples were analyzed in accordance with the technical requirements specified in the SOW. Data as qualified can be used for all purposes.

Attached are the validation memos for the above mentioned case and sample delivery groups (SDGs).

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ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

received 8-6-01

DATE: July 11, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt site. Case: 29276 SDG: MJ09G8

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1083
TDN: 1042
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 20 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ09E7	MJ09G8	MJ0BJ6	MJ0BK2
MJ09F1	MJ0BJ2	MJ0BJ7	MJ0BK3
MJ09F7	MJ0BJ3	MJ0BJ8	MJ0BK4
MJ09G0	MJ0BJ4	MJ0BJ9	MJ0BK5
MJ09G2	MJ0BJ5	MJ0BK1	MJ0BK6

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/4 and 6/5/01. The samples were analyzed for mercury within 10 days and all other metals within 12 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 90-103% for ICP-AES and from 83-98% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
arsenic	MJ09G8, MJ0BJ2, MJ0BJ3, MJ0BK5, MJ0BK6
lead	MJ09G0

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met by all of the ICS analyzed. The recoveries ranged from 89-115%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ09G8 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of potassium. Results for potassium in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 58-122%. None of the data were qualified on this basis.

Duplicate Sample Analysis

Sample MJ09G8 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria (±20% RPD or ± CRDL) for all target analytes with the exception of iron. Iron also did not meet the suggested technical control limit criteria (±35% RPD or ± 2X CRDL) for soils. Results for iron in all samples were qualified as estimated, "J". The "*" qualifiers applied by the laboratory were crossed-out by the reviewer.

Matrix Spike Analysis - Acceptable

Sample MJ09G8 was used for the spike analysis. The frequency of analysis and recovery criteria were met. All of the spike recoveries were acceptable and ranged from 84-114%. None of the data were qualified on this basis.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 460. Six (1.3%) were qualified as non-detected due to blank contamination. Forty (8.7%) were qualified as estimated due to ICP serial dilution and duplicate analysis.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

U.S. EPA - CLP

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

U.S. EPA - CLP

10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

U.S. EPA - CLP

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/13/01	1.00	200
MJ09E7	06/13/01	1.02	200
MJ09F1	06/13/01	1.01	200
MJ09F7	06/13/01	1.01	200
MJ09G0	06/13/01	1.01	200
MJ09G2	06/13/01	1.00	200
MJ09G8	06/13/01	1.00	200
MJ09G8D	06/13/01	1.00	200
MJ09G8S	06/13/01	1.00	200
MJ0BJ2	06/13/01	1.00	200
MJ0BJ3	06/13/01	1.02	200
MJ0BJ4	06/13/01	1.00	200
MJ0BJ5	06/13/01	1.01	200
MJ0BJ6	06/13/01	1.01	200
MJ0BJ7	06/13/01	1.00	200
MJ0BJ8	06/13/01	1.01	200
MJ0BJ9	06/13/01	1.01	200
MJ0BK1	06/13/01	1.01	200
MJ0BK2	06/13/01	1.02	200
MJ0BK3	06/13/01	1.02	200
MJ0BK4	06/13/01	1.02	200
MJ0BK5	06/13/01	1.02	200
MJ0BK6	06/13/01	1.02	200
PBS	06/13/01	1.00	200

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/13/01	0.20	100
MJ09E7	06/13/01	0.21	100
MJ09F1	06/13/01	0.20	100
MJ09F7	06/13/01	0.21	100
MJ09G0	06/13/01	0.20	100
MJ09G2	06/13/01	0.20	100
MJ09G8	06/13/01	0.20	100
MJ09G8D	06/13/01	0.20	100
MJ09G8S	06/13/01	0.20	100
MJ0BJ2	06/13/01	0.20	100
MJ0BJ3	06/13/01	0.22	100
MJ0BJ4	06/13/01	0.20	100
MJ0BJ5	06/13/01	0.22	100
MJ0BJ6	06/13/01	0.20	100
MJ0BJ7	06/13/01	0.22	100
MJ0BJ8	06/13/01	0.20	100
MJ0BJ9	06/13/01	0.20	100
MJ0BK1	06/13/01	0.21	100
MJ0BK2	06/13/01	0.21	100
MJ0BK3	06/13/01	0.20	100
MJ0BK4	06/13/01	0.20	100
MJ0BK5	06/13/01	0.20	100
MJ0BK6	06/13/01	0.20	100
PBS	06/13/01	0.20	100

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09E7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38353S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 43.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3770			P
7440-36-0	Antimony	1.3	U		P
7440-38-2	Arsenic	4.6			P
7440-39-3	Barium	157			P
7440-41-7	Beryllium	0.20	B		P
7440-43-9	Cadmium	0.18	B		P
7440-70-2	Calcium	131000			P
7440-47-3	Chromium	21.0			P
7440-48-4	Cobalt	2.5	B		P
7440-50-8	Copper	9.4	B		P
7439-89-6	Iron	5460		*JK	P
7439-92-1	Lead	5.6			P
7439-95-4	Magnesium	2700			P
7439-96-5	Manganese	170			P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	10	B		P
7440-09-7	Potassium	830	B	*JL	P
7782-49-2	Selenium	3.6			P
7440-22-4	Silver	0.36	U		P
7440-23-5	Sodium	411	B		P
7440-28-0	Thallium	1.7	U		P
7440-62-2	Vanadium	9.2	B		P
7440-66-6	Zinc	30.9			P
	Cyanide				NR

Cl 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09F1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38354S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 42.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5890			P
7440-36-0	Antimony	1.4	U		P
7440-38-2	Arsenic	2.8	B		P
7440-39-3	Barium	144			P
7440-41-7	Beryllium	0.34	B		P
7440-43-9	Cadmium	0.14	U		P
7440-70-2	Calcium	168000			P
7440-47-3	Chromium	14.1			P
7440-48-4	Cobalt	3.5	B		P
7440-50-8	Copper	11.9			P
7439-89-6	Iron	8310		~~J~~ JK	P
7439-92-1	Lead	5.8			P
7439-95-4	Magnesium	4500			P
7439-96-5	Manganese	292			P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	11.4	B		P
7440-09-7	Potassium	1580	B	~~J~~ JL	P
7782-49-2	Selenium	1.6	B		P
7440-22-4	Silver	0.37	U		P
7440-23-5	Sodium	472	B		P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	14.8	B		P
7440-66-6	Zinc	30.7			P
	Cyanide				NR

7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09F7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38355S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 54.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8890			P
7440-36-0	Antimony	1.4	B		P
7440-38-2	Arsenic	4.1			P
7440-39-3	Barium	160			P
7440-41-7	Beryllium	0.44	B		P
7440-43-9	Cadmium	0.15	B		P
7440-70-2	Calcium	7610			P
7440-47-3	Chromium	14.8			P
7440-48-4	Cobalt	6.0	B		P
7440-50-8	Copper	14.5			P
7439-89-6	Iron	12600		~~*~~ JK	P
7439-92-1	Lead	16.7			P
7439-95-4	Magnesium	3650			P
7439-96-5	Manganese	2020			P
7439-97-6	Mercury	0.09	U		CV
7440-02-0	Nickel	14.4	B		P
7440-09-7	Potassium	1790	B	~~*~~ JL	P
7782-49-2	Selenium	2.2			P
7440-22-4	Silver	0.59	B		P
7440-23-5	Sodium	334	B		P
7440-28-0	Thallium	1.4	U		P
7440-62-2	Vanadium	20.7			P
7440-66-6	Zinc	62.5			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09G0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38356S

Level (low/med): LOW Date Received: 06/07/01

% 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	1900			P
7440-36-0	Antimony	0.81	U		P
7440-38-2	Arsenic	1.3	B		P
7440-39-3	Barium	11.5	B		P
7440-41-7	Beryllium	0.12	B		P
7440-43-9	Cadmium	0.08	U		P
7440-70-2	Calcium	1790			P
7440-47-3	Chromium	3.2			P
7440-48-4	Cobalt	0.91	B		P
7440-50-8	Copper	1.7	B		P
7439-89-6	Iron	3370		≠ JK	P
7439-92-1	Lead	1.8		U	P
7439-95-4	Magnesium	1620			P
7439-96-5	Manganese	56.7			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	2.3	B		P
7440-09-7	Potassium	431	B	≠ JL	P
7782-49-2	Selenium	0.92	U		P
7440-22-4	Silver	0.22	U		P
7440-23-5	Sodium	222	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	5.3	B		P
7440-66-6	Zinc	7.6			P
	Cyanide				NR

7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09G2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38357S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 92.5

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	1.0	B		P
7440-38-2	Arsenic	3.2			P
7440-39-3	Barium	45.1			P
7440-41-7	Beryllium	0.27	B		P
7440-43-9	Cadmium	0.47	B		P
7440-70-2	Calcium	5320			P
7440-47-3	Chromium	10.3			P
7440-48-4	Cobalt	3.0	B		P
7440-50-8	Copper	8.3			P
7439-89-6	Iron	7960		≠ JK	P
7439-92-1	Lead	23.7			P
7439-95-4	Magnesium	2150			P
7439-96-5	Manganese	213			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	7.9	B		P
7440-09-7	Potassium	1100		≠ JL	P
7782-49-2	Selenium	0.74	U		P
7440-22-4	Silver	0.38	B		P
7440-23-5	Sodium	181	B		P
7440-28-0	Thallium	0.84	U		P
7440-62-2	Vanadium	13.7			P
7440-66-6	Zinc	67.7			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

7

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09G8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38324S

Level (low/med): LOW Date Received: 06/06/01

% Solids: 78.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1550			P
7440-36-0	Antimony	0.76	U		P
7440-38-2	Arsenic	1.4	B	U	P
7440-39-3	Barium	9.7	B		P
7440-41-7	Beryllium	0.10	B		P
7440-43-9	Cadmium	0.08	U		P
7440-70-2	Calcium	1150	B		P
7440-47-3	Chromium	2.0	B		P
7440-48-4	Cobalt	0.53	B		P
7440-50-8	Copper	2.1	B		P
7439-89-6	Iron	3220		≠ JK	P
7439-92-1	Lead	1.2			P
7439-95-4	Magnesium	646	B		P
7439-96-5	Manganese	47.4			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	1.2	B		P
7440-09-7	Potassium	422	B	≠ JL	P
7782-49-2	Selenium	0.86	U		P
7440-22-4	Silver	0.20	U		P
7440-23-5	Sodium	209	B		P
7440-28-0	Thallium	0.99	U		P
7440-62-2	Vanadium	5.4	B		P
7440-66-6	Zinc	7.5			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38325S

Level (low/med): LOW Date Received: 06/06/01

% Solids: 50.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8700			P
7440-36-0	Antimony	1.2	U		P
7440-38-2	Arsenic	3.9	B	U	P
7440-39-3	Barium	132			P
7440-41-7	Beryllium	0.46	B		P
7440-43-9	Cadmium	0.12	U		P
7440-70-2	Calcium	10900			P
7440-47-3	Chromium	12.8			P
7440-48-4	Cobalt	5.0	B		P
7440-50-8	Copper	10.4			P
7439-89-6	Iron	14000		~~J~~K	P
7439-92-1	Lead	11.0			P
7439-95-4	Magnesium	4850			P
7439-96-5	Manganese	390			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	11.8	B		P
7440-09-7	Potassium	1390	B	~~J~~L	P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	0.65	B		P
7440-23-5	Sodium	391	B		P
7440-28-0	Thallium	1.5	U		P
7440-62-2	Vanadium	21.3			P
7440-66-6	Zinc	57.3			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38326S

Level (low/med): LOW Date Received: 06/06/01

% Solids: 66.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3740			P
7440-36-0	Antimony	0.88	U		P
7440-38-2	Arsenic	2.8	B	U	P
7440-39-3	Barium	72.2			P
7440-41-7	Beryllium	0.23	B		P
7440-43-9	Cadmium	0.09	U		P
7440-70-2	Calcium	13800			P
7440-47-3	Chromium	9.9			P
7440-48-4	Cobalt	2.6	B		P
7440-50-8	Copper	5.7	B		P
7439-89-6	Iron	7270		≠ JK	P
7439-92-1	Lead	3.9			P
7439-95-4	Magnesium	2310			P
7439-96-5	Manganese	288			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	7.5	B		P
7440-09-7	Potassium	937	B	≠ JL	P
7782-49-2	Selenium	1.0	U		P
7440-22-4	Silver	0.34	B		P
7440-23-5	Sodium	315	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	12.0	B		P
7440-66-6	Zinc	24.8			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38358S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 84.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13600			P
7440-36-0	Antimony	1.1	B		P
7440-38-2	Arsenic	6.2			P
7440-39-3	Barium	172			P
7440-41-7	Beryllium	0.67	B		P
7440-43-9	Cadmium	0.52	B		P
7440-70-2	Calcium	5080			P
7440-47-3	Chromium	24.8			P
7440-48-4	Cobalt	7.8	B		P
7440-50-8	Copper	19.0			P
7439-89-6	Iron	18700		≠ JK	P
7439-92-1	Lead	37.7			P
7439-95-4	Magnesium	5060			P
7439-96-5	Manganese	588			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	20.1			P
7440-09-7	Potassium	3100		≠ JL	P
7782-49-2	Selenium	0.89	B		P
7440-22-4	Silver	0.67	B		P
7440-23-5	Sodium	258	B		P
7440-28-0	Thallium	0.92	U		P
7440-62-2	Vanadium	31.0			P
7440-66-6	Zinc	85.8			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

11

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38359S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 86.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12900			P
7440-36-0	Antimony	0.89	B		P
7440-38-2	Arsenic	6.6			P
7440-39-3	Barium	155			P
7440-41-7	Beryllium	0.69	B		P
7440-43-9	Cadmium	0.30	B		P
7440-70-2	Calcium	9080			P
7440-47-3	Chromium	32.0			P
7440-48-4	Cobalt	9.4	B		P
7440-50-8	Copper	23.9			P
7439-89-6	Iron	21800		* JK	P
7439-92-1	Lead	27.7			P
7439-95-4	Magnesium	7920			P
7439-96-5	Manganese	546			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	27.5			P
7440-09-7	Potassium	3100		* JL	P
7782-49-2	Selenium	1.1	B		P
7440-22-4	Silver	0.75	B		P
7440-23-5	Sodium	344	B		P
7440-28-0	Thallium	0.90	U		P
7440-62-2	Vanadium	41.4			P
7440-66-6	Zinc	84.5			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38360S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 20.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8360			P
7440-36-0	Antimony	2.9	U		P
7440-38-2	Arsenic	4.6	B		P
7440-39-3	Barium	130	B		P
7440-41-7	Beryllium	0.45	B		P
7440-43-9	Cadmium	0.29	U		P
7440-70-2	Calcium	13400			P
7440-47-3	Chromium	19.8			P
7440-48-4	Cobalt	6.1	B		P
7440-50-8	Copper	12.8	B		P
7439-89-6	Iron	17000		≠JK	P
7439-92-1	Lead	8.6			P
7439-95-4	Magnesium	3520	B		P
7439-96-5	Manganese	939			P
7439-97-6	Mercury	0.24	U		CV
7440-02-0	Nickel	15.7	B		P
7440-09-7	Potassium	1560	B	≠JL	P
7782-49-2	Selenium	3.7	B		P
7440-22-4	Silver	0.77	U		P
7440-23-5	Sodium	685	B		P
7440-28-0	Thallium	3.7	U		P
7440-62-2	Vanadium	19.4	B		P
7440-66-6	Zinc	49.2			P
	Cyanide				NR

CP 7-11-01

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38361S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 57.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7830			P
7440-36-0	Antimony	1.0	U		P
7440-38-2	Arsenic	4.7			P
7440-39-3	Barium	140			P
7440-41-7	Beryllium	0.40	B		P
7440-43-9	Cadmium	0.10	U		P
7440-70-2	Calcium	15800			P
7440-47-3	Chromium	18.3			P
7440-48-4	Cobalt	5.3	B		P
7440-50-8	Copper	9.9			P
7439-89-6	Iron	12800		≠ JK	P
7439-92-1	Lead	8.1			P
7439-95-4	Magnesium	3590			P
7439-96-5	Manganese	907			P
7439-97-6	Mercury	0.08	U		CV
7440-02-0	Nickel	14.4			P
7440-09-7	Potassium	1590	B	≠ JL	P
7782-49-2	Selenium	2.2			P
7440-22-4	Silver	0.61	B		P
7440-23-5	Sodium	394	B		P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	19.9			P
7440-66-6	Zinc	49.1			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38362S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 88.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12100			P
7440-36-0	Antimony	0.95	B		P
7440-38-2	Arsenic	4.6			P
7440-39-3	Barium	160			P
7440-41-7	Beryllium	0.60	B		P
7440-43-9	Cadmium	0.79	B		P
7440-70-2	Calcium	6970			P
7440-47-3	Chromium	22.7			P
7440-48-4	Cobalt	6.7	B		P
7440-50-8	Copper	18.8			P
7439-89-6	Iron	17200		~~*~~ JK	P
7439-92-1	Lead	44.9			P
7439-95-4	Magnesium	5010			P
7439-96-5	Manganese	540			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	17.6			P
7440-09-7	Potassium	3890		~~E~~ JL	P
7782-49-2	Selenium	0.76	U		P
7440-22-4	Silver	0.59	B		P
7440-23-5	Sodium	295	B		P
7440-28-0	Thallium	0.87	U		P
7440-62-2	Vanadium	28.1			P
7440-66-6	Zinc	127			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38363S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 82.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13100			P
7440-36-0	Antimony	0.89	B		P
7440-38-2	Arsenic	3.7			P
7440-39-3	Barium	218			P
7440-41-7	Beryllium	0.66	B		P
7440-43-9	Cadmium	0.70	B		P
7440-70-2	Calcium	32200			P
7440-47-3	Chromium	27.5			P
7440-48-4	Cobalt	6.6	B		P
7440-50-8	Copper	24.4			P
7439-89-6	Iron	18100		JK	P
7439-92-1	Lead	53.4			P
7439-95-4	Magnesium	6800			P
7439-96-5	Manganese	652			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	20.2			P
7440-09-7	Potassium	3180		JL	P
7782-49-2	Selenium	0.82	U		P
7440-22-4	Silver	0.53	B		P
7440-23-5	Sodium	370	B		P
7440-28-0	Thallium	0.94	U		P
7440-62-2	Vanadium	32.8			P
7440-66-6	Zinc	81.8			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38364S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 83.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5530			P
7440-36-0	Antimony	1.5	B		P
7440-38-2	Arsenic	14.2			P
7440-39-3	Barium	73.4			P
7440-41-7	Beryllium	0.36	B		P
7440-43-9	Cadmium	0.66	B		P
7440-70-2	Calcium	3720			P
7440-47-3	Chromium	13.3			P
7440-48-4	Cobalt	5.8	B		P
7440-50-8	Copper	20.6			P
7439-89-6	Iron	18900		* JK	P
7439-92-1	Lead	62.2			P
7439-95-4	Magnesium	2710			P
7439-96-5	Manganese	230			P
7439-97-6	Mercury	0.08	B		CV
7440-02-0	Nickel	14.8			P
7440-09-7	Potassium	1330		* JL	P
7782-49-2	Selenium	1.2			P
7440-22-4	Silver	0.63	B		P
7440-23-5	Sodium	200	B		P
7440-28-0	Thallium	0.93	U		P
7440-62-2	Vanadium	25.5			P
7440-66-6	Zinc	83.8			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38365S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 90.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7360			P
7440-36-0	Antimony	1.6	B		P
7440-38-2	Arsenic	42.5			P
7440-39-3	Barium	153			P
7440-41-7	Beryllium	0.41	B		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	25400			P
7440-47-3	Chromium	21.5			P
7440-48-4	Cobalt	8.8	B		P
7440-50-8	Copper	49.0			P
7439-89-6	Iron	27400		≠ JK	P
7439-92-1	Lead	14.7			P
7439-95-4	Magnesium	4570			P
7439-96-5	Manganese	602			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	31.9			P
7440-09-7	Potassium	1230		≠ JL	P
7782-49-2	Selenium	1.0	B		P
7440-22-4	Silver	0.78	B		P
7440-23-5	Sodium	182	B		P
7440-28-0	Thallium	1.1	B		P
7440-62-2	Vanadium	35.1			P
7440-66-6	Zinc	59.7			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38366S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 94.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5870			P
7440-36-0	Antimony	1.7	B		P
7440-38-2	Arsenic	17.9			P
7440-39-3	Barium	106			P
7440-41-7	Beryllium	0.37	B		P
7440-43-9	Cadmium	0.12	B		P
7440-70-2	Calcium	47900			P
7440-47-3	Chromium	12.6			P
7440-48-4	Cobalt	7.4	B		P
7440-50-8	Copper	59.0			P
7439-89-6	Iron	22200		≠ JK	P
7439-92-1	Lead	11.2			P
7439-95-4	Magnesium	5210			P
7439-96-5	Manganese	495			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	21.9			P
7440-09-7	Potassium	812	B	≠ JL	P
7782-49-2	Selenium	0.71	U		P
7440-22-4	Silver	0.51	B		P
7440-23-5	Sodium	178	B		P
7440-28-0	Thallium	0.81	U		P
7440-62-2	Vanadium	24.8			P
7440-66-6	Zinc	76.0			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38367S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 66.0

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	0.89	U		P
7440-38-2	Arsenic	4.0			P
7440-39-3	Barium	49.4	B		P
7440-41-7	Beryllium	0.38	B		P
7440-43-9	Cadmium	0.09	U		P
7440-70-2	Calcium	2280			P
7440-47-3	Chromium	13.6			P
7440-48-4	Cobalt	4.0	B		P
7440-50-8	Copper	8.8			P
7439-89-6	Iron	12900		≠JK	P
7439-92-1	Lead	7.1			P
7439-95-4	Magnesium	3640			P
7439-96-5	Manganese	191			P
7439-97-6	Mercury	0.08	U		CV
7440-02-0	Nickel	13.3			P
7440-09-7	Potassium	910	B	≠JL	P
7782-49-2	Selenium	1.0	U		P
7440-22-4	Silver	0.47	B		P
7440-23-5	Sodium	219	B		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	24.7			P
7440-66-6	Zinc	34.5			P
	Cyanide				NR

CS 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38368S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 72.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4190			P
7440-36-0	Antimony	0.82	U		P
7440-38-2	Arsenic	2.5	B	U	P
7440-39-3	Barium	31.8	B		P
7440-41-7	Beryllium	0.25	B		P
7440-43-9	Cadmium	0.08	U		P
7440-70-2	Calcium	12400			P
7440-47-3	Chromium	8.4			P
7440-48-4	Cobalt	2.4	B		P
7440-50-8	Copper	5.6	B		P
7439-89-6	Iron	6660		*JK	P
7439-92-1	Lead	3.4			P
7439-95-4	Magnesium	6860			P
7439-96-5	Manganese	140			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	6.3	B		P
7440-09-7	Potassium	741	B	*JL	P
7782-49-2	Selenium	0.95	B		P
7440-22-4	Silver	0.26	B		P
7440-23-5	Sodium	261	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	10.2	B		P
7440-66-6	Zinc	16.8			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ09G8

Matrix (soil/water): SOIL Lab Sample ID: 38369S

Level (low/med): LOW Date Received: 06/07/01

% Solids: 74.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2840			P
7440-36-0	Antimony	0.79	U		P
7440-38-2	Arsenic	1.6	B	U	P
7440-39-3	Barium	33.6	B		P
7440-41-7	Beryllium	0.16	B		P
7440-43-9	Cadmium	0.08	U		P
7440-70-2	Calcium	43700			P
7440-47-3	Chromium	6.2			P
7440-48-4	Cobalt	1.5	B		P
7440-50-8	Copper	3.5	B		P
7439-89-6	Iron	4650		≠ JK	P
7439-92-1	Lead	2.3			P
7439-95-4	Magnesium	4080			P
7439-96-5	Manganese	110			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	4.4	B		P
7440-09-7	Potassium	419	B	≠ JL	P
7782-49-2	Selenium	0.89	U		P
7440-22-4	Silver	0.21	U		P
7440-23-5	Sodium	242	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	8.1	B		P
7440-66-6	Zinc	12.4			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

received
8-6-01

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

Reply To
Attn Of: OEA-095

July 24, 2001

MEMORANDUM

Subject: Data Validation Report for the Organochlorine Pesticides/Polychlorinated Biphenyl (Pest/PCBs) Analyses of Samples from Upper Columbia River/Lake Roosevelt ESI

From: Ginna Grepo-Grove, Chemist
Quality Assurance & Data Unit, OEA

To: Mark Ader, SAM, ECL
Monica Tonel, SAM, ECL

CC: Bruce Woods, Region 10 CLP TPO
Susan Fitzgerald, PM, Roy F. Weston, Inc.

The quality assurance (QA) review of one soil and one water samples collected from the above referenced site has been completed. These samples were analyzed for Pest/PCBs in accordance with the USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Organic Analyses (revision OLM04.2). The analyses were performed by Compuchem, Inc. of Cary, NC. The following samples were reviewed in this validation report:

SDG: JX792	SDG: JX800
JX792	JX800

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the USEPA CLP SOW for Organic Analysis (OLM04.2), the USEPA CLP National Functional Guidelines for Organic Data Review (10/99) and the Region 10 Guidelines for CLP Data Review.

The conclusions presented herein are based on the information provided for the review.

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Holding Time - Acceptable

All of the samples met the method required holding times for all analyses. None of the data were qualified on this basis.

Instrument Performance - Acceptable

All of the GC systems used in the analyses met the SOW specified technical acceptance criteria prior to sample analyses, i.e., GC performance checks, resolution checks, endrin and 4,4'-DDT breakdowns, retention time shifts, and calibration factors. The systems remained stable throughout the course of analyses. Instrument blanks were all clean and there were no indications of carry-over.

Initial Calibrations - Acceptable

The frequency of analysis and the percent relative standard deviations (%RSDs) of the calibration factors of the single-component pesticides were all within acceptable limits. All of the multi-component standards were analyzed in the initial calibrations. None of the data were qualified on this basis.

Continuing Calibration Verification (CCVs) Standards - Acceptable

All of the CCVs met the criteria for frequency of analysis, the recovery, the retention time and the percent differences (%Ds) criteria. None of the data were qualified on this basis.

Compound Quantitation and Detection Limits

All of the reported results were adjusted for sample amounts analyzed. None of the data were qualified on this basis.

Blanks - Acceptable

None of the target compounds were detected in the method and instrument blanks analyzed. None of the data were qualified on this basis.

Analytical Sequence - Acceptable

All of the standards, blanks, samples, and QC samples were analyzed in accordance with the SOW specified analytical sequence.

System Monitoring Compounds/Surrogate Spikes

All of the Pest/PCB surrogate spike recoveries met the applicable QC criteria (30-150%). None of the data were qualified on the basis of system monitoring compounds/surrogate spikes.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) - Acceptable

Sample JX800 was analyzed for MA/MSD. The frequency of analysis, the recoveries and relative percent difference (RPD) criteria were met by all of the MS/MSD analyses. None of the data were qualified on the basis of MS/MSD analyses.

Compound Identification - Acceptable

There were no target compounds detected in the samples.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

No major problems were encountered with this set of data. Total number of data points reviewed was 2380. The data, as qualified, are acceptable and can be used for all purposes.

Data Qualifiers

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
JN	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX800

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX800

Matrix: (soil/water) SOIL Lab Sample ID: JX800-1

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 29 Decanted: (Y/N) N Date Received: 06/12/01

Extraction: (Type) SONC Date Extracted: 06/15/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/18/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.4	U
319-85-7	beta-BHC	2.4	U
319-86-8	delta-BHC	2.4	U
58-89-9	gamma-BHC (Lindane)	2.4	U
76-44-8	Heptachlor	2.4	U
309-00-2	Aldrin	2.4	U
1024-57-3	Heptachlor epoxide	2.4	U
959-98-8	Endosulfan I	2.4	U
60-57-1	Dieldrin	4.6	U
72-55-9	4,4'-DDE	4.6	U
72-20-8	Endrin	4.6	U
33213-65-9	Endosulfan II	4.6	U
72-54-8	4,4'-DDD	4.6	U
1031-07-8	Endosulfan sulfate	4.6	U
50-29-3	4,4'-DDT	4.6	U
72-43-5	Methoxychlor	24	U
53494-70-5	Endrin ketone	4.6	U
7421-93-4	Endrin aldehyde	4.6	U
5103-71-9	alpha-Chlordane	2.4	U
5103-74-2	gamma-Chlordane	2.4	U
8001-35-2	Toxaphene	240	U
12674-11-2	Aroclor-1016	46	U
11104-28-2	Aroclor-1221	94	U
11141-16-5	Aroclor-1232	46	U
53469-21-9	Aroclor-1242	46	U
12672-29-6	Aroclor-1248	46	U
11097-69-1	Aroclor-1254	46	U
11096-82-5	Aroclor-1260	46	U

1E
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX792

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX792

Matrix: (soil/water) WATER Lab Sample ID: JX792-1

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) _____ Date Received: 06/12/01

Extraction: (Type) SEPF Date Extracted: 06/15/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

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received 8.6.01

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

Reply To
Attn Of: OEA-095

July 2, 2001

MEMORANDUM

Subject: Data Validation Report for the Organochlorine Pesticides/Polychlorinated Biphenyl (Pest/PCBs) Analyses of Samples from Upper Columbia River/Lake Roosevelt ESI

From: Ginna Grepo-Grove, Chemist
Quality Assurance & Data Unit, OEA

To: Mark Ader, SAM, ECL
Monica Tonel, SAM, ECL

CC: Bruce Woods, Region 10 CLP TPO
Susan Fitzgerald, PM, Roy F. Weston, Inc.

The quality assurance (QA) review of 83 soil and 2 water samples collected from the above referenced site has been completed. These samples were analyzed for Pest/PCBs in accordance with the USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Organic Analyses (revision OLMO4.2). The analyses were performed by Compuchem, Inc. of Cary, NC. The following samples were reviewed in this validation report:

SDG: JX429

JX429	JX431	JX432	JX433	JX434
JX435	JX436	JX437	JX438	JX439
JX440	JX441	JX442	JX443	JX444
JX445	JX446	JX447	JX448	JX451

SDG: JX556

JX556	JX557

SDG: JX550

JX550	JX450	JX452	JX453	JX454

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JX455	JX456	JX457	JX458	JX459
JX460	JX461	JX462	JX463	JX464
JX465	JX466	JX467	JX468	JX469

SDG: JX562

JX562	JX568	JX569	JX570	JX571
JX572	JX573	JX574	JX791	JX793
JX795	JX796	JX797	JX798	JX799
JX802	JX803	JX804	JX805	JX807

SDG: JX473

JX473	JX474	JX475	JX476	JX477
JX552	JX553	JX478	JX479	JX480
JX481	JX554	JX555	JX558	JX559
JX560	JX564	JX565	JX566	JX567

SDG: JX470

JX470	JX471	JX472

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the USEPA CLP SOW for Organic Analysis (OLM04.2), the USEPA CLP National Functional Guidelines for Organic Data Review (10/99) and the Region 10 Guidelines for CLP Data Review.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

All of the samples met the method required holding times for all analyses. None of the data were qualified on this basis.

Instrument Performance - Acceptable

All of the GC systems used in the analyses met the SOW specified technical acceptance criteria prior to sample analyses, i.e., GC performance checks, resolution checks, endrin and 4,4'-DDT breakdowns, retention time shifts, and calibration factors. The systems remained stable throughout the course of analyses. Instrument blanks were all clean and there were no indications of carry-over.

Initial Calibrations - Acceptable

The frequency of analysis and the percent relative standard deviations (%RSDs) of the calibration factors of the single-component pesticides were all within acceptable limits. All of the multi-component standards were analyzed in the initial calibrations. None of the data were qualified on this basis.

Continuing Calibration Verification (CCVs) Standards - Acceptable

All of the CCVs met the criteria for frequency of analysis, the recovery, the retention time and the percent differences (%Ds) criteria. None of the data were qualified on this basis.

Compound Quantitation and Detection Limits

Target compounds that were detected at concentrations less than the CRQLs were qualified as estimated, "J" with a bias qualifier "Q". All of the reported results were adjusted for sample amounts analyzed.

Blanks - Acceptable

None of the target compounds were detected in the method and instrument blanks analyzed. None of the data were qualified on this basis.

Analytical Sequence - Acceptable

All of the standards, blanks, samples, and QC samples were analyzed in accordance with the SOW specified analytical sequence.

System Monitoring Compounds/Surrogate Spikes

All of the Pest/PCB surrogate spike recoveries met the applicable QC criteria (30-150%). None of the data were qualified on the basis of system monitoring compounds/surrogate spikes.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) - Acceptable

The frequency of analysis, the recoveries and relative percent difference (RPD) criteria were met by all of the MS/MSD analyses. None of the data were qualified on the basis of MS/MSD analyses.

Compound Identification - Acceptable

Compounds that were initially detected at concentrations less than the contract required quantitation limits (CRQLs) and had %Ds between columns >50% were reported by the reviewer as non-detects and qualified "U".

Target compounds detected at concentrations that were >CRQLs with %Ds between columns that were >30% but were <60% were qualified as estimated, "J" with a low bias qualifier, "L". A low bias qualifier was applied because the high %Ds between columns were caused by chromatographic interferences and the lower of the two concentrations from the columns were reported on the Forms I.

The "P" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

No major problems were encountered with this set of data. Total number of data points reviewed was 2380. The data, as qualified, are acceptable and can be used for all purposes.

Data Qualifiers

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
JN	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

JX470

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX470

Matrix: (soil/water) SOIL Lab Sample ID: JX470-1

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 1 Decanted: (Y/N) N Date Received: 05/25/01

Extraction: (Type) SONC Date Extracted: 05/29/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/31/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.3	U
72-55-9	4,4'-DDE	3.3	U
72-20-8	Endrin	3.3	U
33213-65-9	Endosulfan II	3.3	U
72-54-8	4,4'-DDD	3.3	U
1031-07-8	Endosulfan sulfate	3.3	U
50-29-3	4,4'-DDT	3.3	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.3	U
7421-93-4	Endrin aldehyde	3.3	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U

FORM I PEST

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX471

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX470

Matrix: (soil/water) SOIL Lab Sample ID: JX470-2

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 0 Decanted: (Y/N) N Date Received: 05/25/01

Extraction: (Type) SONC Date Extracted: 05/29/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/31/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.3	U
72-55-9	4,4'-DDE	3.3	U
72-20-8	Endrin	3.3	U
33213-65-9	Endosulfan II	3.3	U
72-54-8	4,4'-DDD	3.3	U
1031-07-8	Endosulfan sulfate	3.3	U
50-29-3	4,4'-DDT	3.3	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.3	U
7421-93-4	Endrin aldehyde	3.3	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	67	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U

FORM I PEST OLM0

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX472

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX470

Matrix: (soil/water) SOIL Lab Sample ID: JX470-3

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 2 Decanted: (Y/N) N Date Received: 05/25/01

Extraction: (Type) SONC Date Extracted: 05/29/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/31/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.4	U
72-55-9	4,4'-DDE	3.4	U
72-20-8	Endrin	3.4	U
33213-65-9	Endosulfan II	3.4	U
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	3.4	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	3.4	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX562

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-1

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 12 Decanted: (Y/N) N Date Received: 06/06/01

Extraction: (Type) SONC Date Extracted: 06/07/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/11/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.8	U
72-55-9	4,4'-DDE	3.8	U
72-20-8	Endrin	3.8	U
33213-65-9	Endosulfan II	3.8	U
72-54-8	4,4'-DDD	3.8	U
1031-07-8	Endosulfan sulfate	3.8	U
50-29-3	4,4'-DDT	3.8	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.8	U
7421-93-4	Endrin aldehyde	3.8	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	76	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	38	U
11096-82-5	Aroclor-1260	38	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX568

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-2

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 6 Decanted: (Y/N) N Date Received: 06/07/01

Extraction: (Type) SONC Date Extracted: 06/07/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/11/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8 ~~0.80~~	~~JP~~ U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.5	U
72-55-9	4,4'-DDE	3.5	U
72-20-8	Endrin	3.5	U
33213-65-9	Endosulfan II	3.5	U
72-54-8	4,4'-DDD	3.5	U
1031-07-8	Endosulfan sulfate	3.5	U
50-29-3	4,4'-DDT	3.5	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.5	U
7421-93-4	Endrin aldehyde	0.64	JQ
5103-71-9	alpha-Chlordane	0.89	JQ
5103-74-2	gamma-Chlordane	1.8 ~~0.42~~	~~JP~~ U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	71	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX569

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-3

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 29 Decanted: (Y/N) N Date Received: 06/07/01

Extraction: (Type) SONC Date Extracted: 06/07/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/11/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.4	U
319-85-7	beta-BHC	2.4	U
319-86-8	delta-BHC	2.4	U
58-89-9	gamma-BHC (Lindane)	2.4	U
76-44-8	Heptachlor	2.4	U
309-00-2	Aldrin	2.4	U
1024-57-3	Heptachlor epoxide	2.4	U
959-98-8	Endosulfan I	2.4	U
60-57-1	Dieldrin	4.6	U
72-55-9	4,4'-DDE	4.6	U
72-20-8	Endrin	4.6	U
33213-65-9	Endosulfan II	4.6	U
72-54-8	4,4'-DDD	4.6	U
1031-07-8	Endosulfan sulfate	4.6	U
50-29-3	4,4'-DDT	4.6	U
72-43-5	Methoxychlor	24	U
53494-70-5	Endrin ketone	4.6	U
7421-93-4	Endrin aldehyde	4.6	U
5103-71-9	alpha-Chlordane	2.4	U
5103-74-2	gamma-Chlordane	2.4	U
8001-35-2	Toxaphene	240	U
12674-11-2	Aroclor-1016	46	U
11104-28-2	Aroclor-1221	94	U
11141-16-5	Aroclor-1232	46	U
53469-21-9	Aroclor-1242	46	U
12672-29-6	Aroclor-1248	46	U
11097-69-1	Aroclor-1254	46	U
11096-82-5	Aroclor-1260	46	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX570

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-4

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 75 Decanted: (Y/N) N Date Received: 06/07/01

Extraction: (Type) SONC Date Extracted: 06/07/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/11/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	6.8	U
319-85-7	beta-BHC	5.9	JQ
319-86-8	delta-BHC	6.8	U
58-89-9	gamma-BHC (Lindane)	6.8	U
76-44-8	Heptachlor	6.8	U
309-00-2	Aldrin	6.8	U
1024-57-3	Heptachlor epoxide	6.8	U
959-98-8	Endosulfan I	6.8	U
60-57-1	Dieldrin	13	U
72-55-9	4,4'-DDE	13	U
72-20-8	Endrin	13	U
33213-65-9	Endosulfan II	13	U
72-54-8	4,4'-DDD	13	U
1031-07-8	Endosulfan sulfate	13	U
50-29-3	4,4'-DDT	13	U
72-43-5	Methoxychlor	68	U
53494-70-5	Endrin ketone	13	U
7421-93-4	Endrin aldehyde	13	U
5103-71-9	alpha-Chlordane	618 ~~2.5~~	~~JP~~ U
5103-74-2	gamma-Chlordane	6.8	U
8001-35-2	Toxaphene	680	U
12674-11-2	Aroclor-1016	130	U
11104-28-2	Aroclor-1221	270	U
11141-16-5	Aroclor-1232	130	U
53469-21-9	Aroclor-1242	130	U
12672-29-6	Aroclor-1248	130	U
11097-69-1	Aroclor-1254	130	U
11096-82-5	Aroclor-1260	130	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX571

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-5

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 34 Decanted: (Y/N) N Date Received: 06/08/01

Extraction: (Type) SONC Date Extracted: 06/12/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.6	U
319-85-7	beta-BHC	2.6	U
319-86-8	delta-BHC	2.6	U
58-89-9	gamma-BHC (Lindane)	2.6	U
76-44-8	Heptachlor	2.6	U
309-00-2	Aldrin	2.6	U
1024-57-3	Heptachlor epoxide	2.6	U
959-98-8	Endosulfan I	2.6	U
60-57-1	Dieldrin	5.0	U
72-55-9	4,4'-DDE	5.0	U
72-20-8	Endrin	5.0	U
33213-65-9	Endosulfan II	5.0	U
72-54-8	4,4'-DDD	5.0	U
1031-07-8	Endosulfan sulfate	5.0	U
50-29-3	4,4'-DDT	5.0	U
72-43-5	Methoxychlor	26	U
53494-70-5	Endrin ketone	5.0	U
7421-93-4	Endrin aldehyde	5.0	U
5103-71-9	alpha-Chlordane	2.6	U
5103-74-2	gamma-Chlordane	2.6	U
8001-35-2	Toxaphene	260	U
12674-11-2	Aroclor-1016	50	U
11104-28-2	Aroclor-1221	100	U
11141-16-5	Aroclor-1232	50	U
53469-21-9	Aroclor-1242	50	U
12672-29-6	Aroclor-1248	50	U
11097-69-1	Aroclor-1254	50	U
11096-82-5	Aroclor-1260	50	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX572

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-6

Sample wt/vol: 15.0(g/mL) G Lab File ID: _____

% Moisture: 27 Decanted: (Y/N) N Date Received: 06/08/01

Extraction: (Type) SONC Date Extracted: 06/12/01

Concentrated Extract Volume: 2500(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	2.3	U
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	2.3	U
1024-57-3	Heptachlor epoxide	2.3	U
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.5	U
72-55-9	4,4'-DDE	4.5 ~~2.9~~	~~JP~~ W
72-20-8	Endrin	4.5	U
33213-65-9	Endosulfan II	4.5	U
72-54-8	4,4'-DDD	4.5	U
1031-07-8	Endosulfan sulfate	4.5	U
50-29-3	4,4'-DDT	10	~~P~~ JL
72-43-5	Methoxychlor	23	U
53494-70-5	Endrin ketone	4.5	U
7421-93-4	Endrin aldehyde	4.5	U
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	2.3 ~~1.2~~	~~JP~~ W
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	45	U
11104-28-2	Aroclor-1221	92	U
11141-16-5	Aroclor-1232	45	U
53469-21-9	Aroclor-1242	45	U
12672-29-6	Aroclor-1248	45	U
11097-69-1	Aroclor-1254	45	U
11096-82-5	Aroclor-1260	45	U

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1E
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX573

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-7

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 14 Decanted: (Y/N) N Date Received: 06/08/01

Extraction: (Type) SONC Date Extracted: 06/12/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	3.8	U
72-55-9	4,4'-DDE	1.7	JQ
72-20-8	Endrin	3.8	U
33213-65-9	Endosulfan II	3.8	U
72-54-8	4,4'-DDD	3.8	U
1031-07-8	Endosulfan sulfate	3.8	U
50-29-3	4,4'-DDT	3.8	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	3.8	U
7421-93-4	Endrin aldehyde	3.8	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	78	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	38	U
11096-82-5	Aroclor-1260	38	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX574

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-8

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 16 Decanted: (Y/N) N Date Received: 06/08/01

Extraction: (Type) SONC Date Extracted: 06/12/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	3.9	U
72-55-9	4,4'-DDE	3.9	U
72-20-8	Endrin	3.9	U
33213-65-9	Endosulfan II	3.9	U
72-54-8	4,4'-DDD	3.9	U
1031-07-8	Endosulfan sulfate	3.9	U
50-29-3	4,4'-DDT	3.9	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	3.9	U
7421-93-4	Endrin aldehyde	3.9	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0 ~~1.1~~	~~JP~~ U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	39	U
11104-28-2	Aroclor-1221	80	U
11141-16-5	Aroclor-1232	39	U
53469-21-9	Aroclor-1242	39	U
12672-29-6	Aroclor-1248	39	U
11097-69-1	Aroclor-1254	39	U
11096-82-5	Aroclor-1260	39	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX791

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-9

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 19 Decanted: (Y/N) N Date Received: 06/08/01

Extraction: (Type) SONC Date Extracted: 06/12/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	4.1	U
33213-65-9	Endosulfan II	4.1	U
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.1	U
7421-93-4	Endrin aldehyde	4.1	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	83	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	41	U
11096-82-5	Aroclor-1260	41	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX793

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-10

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 9 Decanted: (Y/N) N Date Received: 06/12/01

Extraction: (Type) SONC Date Extracted: 06/12/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.6	U
72-55-9	4,4'-DDE	3.6 ~~1.4~~	~~JP~~ U
72-20-8	Endrin	3.6	U
33213-65-9	Endosulfan II	3.6	U
72-54-8	4,4'-DDD	3.6	U
1031-07-8	Endosulfan sulfate	3.6	U
50-29-3	4,4'-DDT	3.6	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.6	U
7421-93-4	Endrin aldehyde	3.6	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	74	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX795

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-11

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 26 Decanted: (Y/N) N Date Received: 06/12/01

Extraction: (Type) SONC Date Extracted: 06/12/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	2.3	U
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	2.3	U
1024-57-3	Heptachlor epoxide	2.3	U
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.4	U
72-55-9	4,4'-DDE	4.4	U
72-20-8	Endrin	4.4	U
33213-65-9	Endosulfan II	4.4	U
72-54-8	4,4'-DDD	4.4	U
1031-07-8	Endosulfan sulfate	4.4	U
50-29-3	4,4'-DDT	4.4	U
72-43-5	Methoxychlor	23	U
53494-70-5	Endrin ketone	4.4	U
7421-93-4	Endrin aldehyde	4.4	U
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	2.3	U
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	44	U
11104-28-2	Aroclor-1221	90	U
11141-16-5	Aroclor-1232	44	U
53469-21-9	Aroclor-1242	44	U
12672-29-6	Aroclor-1248	44	U
11097-69-1	Aroclor-1254	44	U
11096-82-5	Aroclor-1260	44	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX796

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-12

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 35 Decanted: (Y/N) N Date Received: 06/12/01

Extraction: (Type) SONC Date Extracted: 06/12/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.6	U
319-85-7	beta-BHC	2.6	U
319-86-8	delta-BHC	2.6	U
58-89-9	gamma-BHC (Lindane)	2.6	U
76-44-8	Heptachlor	2.6	U
309-00-2	Aldrin	2.6	U
1024-57-3	Heptachlor epoxide	2.6	U
959-98-8	Endosulfan I	2.6	U
60-57-1	Dieldrin	5.1	U
72-55-9	4,4'-DDE	5.1	U
72-20-8	Endrin	5.1	U
33213-65-9	Endosulfan II	5.1	U
72-54-8	4,4'-DDD	5.1	U
1031-07-8	Endosulfan sulfate	5.1	U
50-29-3	4,4'-DDT	5.1	U
72-43-5	Methoxychlor	26	U
53494-70-5	Endrin ketone	5.1	U
7421-93-4	Endrin aldehyde	5.1	U
5103-71-9	alpha-Chlordane	2.6	U
5103-74-2	gamma-Chlordane	2.6	U
8001-35-2	Toxaphene	260	U
12674-11-2	Aroclor-1016	51	U
11104-28-2	Aroclor-1221	100	U
11141-16-5	Aroclor-1232	51	U
53469-21-9	Aroclor-1242	51	U
12672-29-6	Aroclor-1248	51	U
11097-69-1	Aroclor-1254	51	U
11096-82-5	Aroclor-1260	51	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX797

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-13

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 25 Decanted: (Y/N) N Date Received: 06/12/01

Extraction: (Type) SONC Date Extracted: 06/12/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	2.3	U
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	2.3	U
1024-57-3	Heptachlor epoxide	2.3	U
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.4	U
72-55-9	4,4'-DDE	4.4	U
72-20-8	Endrin	4.4	U
33213-65-9	Endosulfan II	4.4	U
72-54-8	4,4'-DDD	4.4	U
1031-07-8	Endosulfan sulfate	4.4	U
50-29-3	4,4'-DDT	4.4	U
72-43-5	Methoxychlor	23	U
53494-70-5	Endrin ketone	4.4	U
7421-93-4	Endrin aldehyde	4.4	U
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	2.3	U
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	44	U
11104-28-2	Aroclor-1221	89	U
11141-16-5	Aroclor-1232	44	U
53469-21-9	Aroclor-1242	44	U
12672-29-6	Aroclor-1248	44	U
11097-69-1	Aroclor-1254	44	U
11096-82-5	Aroclor-1260	44	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX798

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-14

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 26 Decanted: (Y/N) N Date Received: 06/12/01

Extraction: (Type) SONC Date Extracted: 06/12/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	2.3	U
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	2.3	U
1024-57-3	Heptachlor epoxide	2.3	U
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.4	U
72-55-9	4,4'-DDE	4.4	U
72-20-8	Endrin	6.3	
33213-65-9	Endosulfan II	4.4	U
72-54-8	4,4'-DDD	4.4	U
1031-07-8	Endosulfan sulfate	4.4 ~~3.4~~	~~JP~~ U
50-29-3	4,4'-DDT	4.4	U
72-43-5	Methoxychlor	23	U
53494-70-5	Endrin ketone	4.4	U
7421-93-4	Endrin aldehyde	4.4 ~~0.89~~	~~JP~~ U
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	2.3	U
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	44	U
11104-28-2	Aroclor-1221	90	U
11141-16-5	Aroclor-1232	44	U
53469-21-9	Aroclor-1242	44	U
12672-29-6	Aroclor-1248	44	U
11097-69-1	Aroclor-1254	44	U
11096-82-5	Aroclor-1260	44	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX799

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-15

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 18 Decanted: (Y/N) N Date Received: 06/12/01

Extraction: (Type) SONC Date Extracted: 06/12/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.0	U
72-55-9	4,4'-DDE	4.0	U
72-20-8	Endrin	4.0	U
33213-65-9	Endosulfan II	4.0	U
72-54-8	4,4'-DDD	4.0	U
1031-07-8	Endosulfan sulfate	4.0	U
50-29-3	4,4'-DDT	4.0	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.0	U
7421-93-4	Endrin aldehyde	4.0	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	40	U
11104-28-2	Aroclor-1221	82	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	40	U
11096-82-5	Aroclor-1260	40	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX802

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-16

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 18 Decanted: (Y/N) N Date Received: 06/12/01

Extraction: (Type) SONC Date Extracted: 06/12/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.0	U
72-55-9	4,4'-DDE	4.0	U
72-20-8	Endrin	4.0	U
33213-65-9	Endosulfan II	4.0	U
72-54-8	4,4'-DDD	4.0	U
1031-07-8	Endosulfan sulfate	4.0	U
50-29-3	4,4'-DDT	4.0	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.0	U
7421-93-4	Endrin aldehyde	4.0	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	40	U
11104-28-2	Aroclor-1221	82	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	40	U
11096-82-5	Aroclor-1260	40	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX803

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-17

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 2 Decanted: (Y/N) N Date Received: 06/12/01

Extraction: (Type) SONC Date Extracted: 06/12/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.4	U
72-55-9	4,4'-DDE	3.4	U
72-20-8	Endrin	3.4	U
33213-65-9	Endosulfan II	3.4	U
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	3.4	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	3.4	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX804

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-18

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 34 Decanted: (Y/N) N Date Received: 06/12/01

Extraction: (Type) SONC Date Extracted: 06/12/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5 Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	2.6	U
319-85-7	beta-BHC	2.6	U
319-86-8	delta-BHC	2.6	U
58-89-9	gamma-BHC (Lindane)	2.6	U
76-44-8	Heptachlor	2.6	U
309-00-2	Aldrin	2.6	U
1024-57-3	Heptachlor epoxide	2.6	U
959-98-8	Endosulfan I	2.6	U
60-57-1	Dieldrin	5.0	U
72-55-9	4,4'-DDE	5.0	U
72-20-8	Endrin	5.0	U
33213-65-9	Endosulfan II	5.0	U
72-54-8	4,4'-DDD	5.0	U
1031-07-8	Endosulfan sulfate	5.0	U
50-29-3	4,4'-DDT	5.0	U
72-43-5	Methoxychlor	26	U
53494-70-5	Endrin ketone	5.0	U
7421-93-4	Endrin aldehyde	5.0	U
5103-71-9	alpha-Chlordane	2.6	U
5103-74-2	gamma-Chlordane	2.6	U
8001-35-2	Toxaphene	260	U
12674-11-2	Aroclor-1016	50	U
11104-28-2	Aroclor-1221	100	U
11141-16-5	Aroclor-1232	50	U
53469-21-9	Aroclor-1242	50	U
12672-29-6	Aroclor-1248	50	U
11097-69-1	Aroclor-1254	50	U
11096-82-5	Aroclor-1260	50	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX805

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-19

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 12 Decanted: (Y/N) N Date Received: 06/12/01

Extraction: (Type) SONC Date Extracted: 06/12/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.8	U
72-55-9	4,4'-DDE	3.8	U
72-20-8	Endrin	3.8	U
33213-65-9	Endosulfan II	3.8	U
72-54-8	4,4'-DDD	3.8	U
1031-07-8	Endosulfan sulfate	3.8	U
50-29-3	4,4'-DDT	3.8	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.8	U
7421-93-4	Endrin aldehyde	3.8	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	76	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	38	U
11096-82-5	Aroclor-1260	38	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX807

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX562

Matrix: (soil/water) SOIL Lab Sample ID: JX562-20

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 22 Decanted: (Y/N) N Date Received: 06/12/01

Extraction: (Type) SONC Date Extracted: 06/12/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/17/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.2	U
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.2	U
72-55-9	4,4'-DDE	4.2	U
72-20-8	Endrin	4.2	U
33213-65-9	Endosulfan II	4.2	U
72-54-8	4,4'-DDD	4.2	U
1031-07-8	Endosulfan sulfate	4.2	U
50-29-3	4,4'-DDT	4.2	U
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.2	U
7421-93-4	Endrin aldehyde	4.2	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	42	U
11104-28-2	Aroclor-1221	86	U
11141-16-5	Aroclor-1232	42	U
53469-21-9	Aroclor-1242	42	U
12672-29-6	Aroclor-1248	42	U
11097-69-1	Aroclor-1254	42	U
11096-82-5	Aroclor-1260	42	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX556

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX556

Matrix: (soil/water) WATER Lab Sample ID: JX556-1

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) _____ Date Received: 06/02/01

Extraction: (Type) SEPF Date Extracted: 06/06/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/06/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX557

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX556

Matrix: (soil/water) WATER Lab Sample ID: JX556-2

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) _____ Date Received: 06/02/01

Extraction: (Type) SEPF Date Extracted: 06/06/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/06/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX473

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-1

Sample wt/vol: 30.0(g/mL)·G Lab File ID: _____

% Moisture: 0 Decanted: (Y/N) N Date Received: 06/02/01

Extraction: (Type) SONC Date Extracted: 06/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/07/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.3	U
72-55-9	4,4'-DDE	3.3	U
72-20-8	Endrin	3.3	U
33213-65-9	Endosulfan II	3.3	U
72-54-8	4,4'-DDD	3.3	U
1031-07-8	Endosulfan sulfate	3.3	U
50-29-3	4,4'-DDT	3.3	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.3	U
7421-93-4	Endrin aldehyde	3.3	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	67	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX474

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-2

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 0 Decanted: (Y/N) N Date Received: 06/02/01

Extraction: (Type) SONC Date Extracted: 06/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/07/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.3	U
72-55-9	4,4'-DDE	3.3	U
72-20-8	Endrin	3.3	U
33213-65-9	Endosulfan II	3.3	U
72-54-8	4,4'-DDD	3.3	U
1031-07-8	Endosulfan sulfate	3.3	U
50-29-3	4,4'-DDT	3.3	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.3	U
7421-93-4	Endrin aldehyde	3.3	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	67	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX475

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-3

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 9 Decanted: (Y/N) N Date Received: 06/02/01

Extraction: (Type) SONC Date Extracted: 06/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/08/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.6	U
72-55-9	4,4'-DDE	3.6	U
72-20-8	Endrin	3.6	U
33213-65-9	Endosulfan II	3.6	U
72-54-8	4,4'-DDD	3.6	U
1031-07-8	Endosulfan sulfate	3.6	U
50-29-3	4,4'-DDT	3.6	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.6	U
7421-93-4	Endrin aldehyde	3.6	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	74	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX476

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-4

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 1 Decanted: (Y/N) N Date Received: 06/02/01

Extraction: (Type) SONC Date Extracted: 06/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/08/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.3	U
72-55-9	4,4'-DDE	3.3	U
72-20-8	Endrin	3.3	U
33213-65-9	Endosulfan II	3.3	U
72-54-8	4,4'-DDD	3.3	U
1031-07-8	Endosulfan sulfate	3.3	U
50-29-3	4,4'-DDT	3.3	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.3	U
7421-93-4	Endrin aldehyde	3.3	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX477

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-5

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 1 Decanted: (Y/N) N Date Received: 06/02/01

Extraction: (Type) SONC Date Extracted: 06/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/08/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.3	U
72-55-9	4,4'-DDE	3.3	U
72-20-8	Endrin	3.3	U
33213-65-9	Endosulfan II	3.3	U
72-54-8	4,4'-DDD	3.3	U
1031-07-8	Endosulfan sulfate	3.3	U
50-29-3	4,4'-DDT	3.3	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.3	U
7421-93-4	Endrin aldehyde	3.3	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX478

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-8

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 4 Decanted: (Y/N) N Date Received: 06/05/01

Extraction: (Type) SONC Date Extracted: 06/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/08/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.9 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.4	U
72-55-9	4,4'-DDE	3.4	U
72-20-8	Endrin	3.4	U
33213-65-9	Endosulfan II	3.4	U
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	3.4	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	3.4	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	70	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX479

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-9

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 16 Decanted: (Y/N) N Date Received: 06/05/01

Extraction: (Type) SONC Date Extracted: 06/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/08/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	3.9	U
72-55-9	4,4'-DDE	3.9	U
72-20-8	Endrin	3.9	U
33213-65-9	Endosulfan II	3.9	U
72-54-8	4,4'-DDD	3.9	U
1031-07-8	Endosulfan sulfate	3.9	U
50-29-3	4,4'-DDT	3.9	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	3.9	U
7421-93-4	Endrin aldehyde	3.9	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	39	U
11104-28-2	Aroclor-1221	80	U
11141-16-5	Aroclor-1232	39	U
53469-21-9	Aroclor-1242	39	U
12672-29-6	Aroclor-1248	39	U
11097-69-1	Aroclor-1254	39	U
11096-82-5	Aroclor-1260	39	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX480

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-10

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 0 Decanted: (Y/N) N Date Received: 06/05/01

Extraction: (Type) SONC Date Extracted: 06/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/08/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.3	U
72-55-9	4,4'-DDE	3.3	U
72-20-8	Endrin	3.3	U
33213-65-9	Endosulfan II	3.3	U
72-54-8	4,4'-DDD	3.3	U
1031-07-8	Endosulfan sulfate	3.3	U
50-29-3	4,4'-DDT	3.3	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.3	U
7421-93-4	Endrin aldehyde	3.3	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	67	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX481

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-11

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 12 Decanted: (Y/N) N Date Received: 06/05/01

Extraction: (Type) SONC Date Extracted: 06/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/08/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.8	U
72-55-9	4,4'-DDE	3.8	U
72-20-8	Endrin	3.8	U
33213-65-9	Endosulfan II	3.8	U
72-54-8	4,4'-DDD	3.8	U
1031-07-8	Endosulfan sulfate	3.8	U
50-29-3	4,4'-DDT	3.8	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.8	U
7421-93-4	Endrin aldehyde	3.8	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	76	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	38	U
11096-82-5	Aroclor-1260	38	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX552

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-6

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 3 Decanted: (Y/N) N Date Received: 06/02/01

Extraction: (Type) SONC Date Extracted: 06/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/08/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.4	U
72-55-9	4,4'-DDE	3.4	U
72-20-8	Endrin	3.4	U
33213-65-9	Endosulfan II	3.4	U
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	3.4	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	3.4	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8 ~~0.61~~	BU
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	69	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX553

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-7

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 45 Decanted: (Y/N) N Date Received: 06/02/01

Extraction: (Type) SONC Date Extracted: 06/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/08/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.9 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	3.1	U
319-85-7	beta-BHC	3.1	U
319-86-8	delta-BHC	3.1	U
58-89-9	gamma-BHC (Lindane)	3.1	U
76-44-8	Heptachlor	3.1	U
309-00-2	Aldrin	3.1	U
1024-57-3	Heptachlor epoxide	3.1	U
959-98-8	Endosulfan I	3.1	U
60-57-1	Dieldrin	6.0	U
72-55-9	4,4'-DDE	6.0	U
72-20-8	Endrin	6.0	U
33213-65-9	Endosulfan II	6.0	U
72-54-8	4,4'-DDD	6.0	U
1031-07-8	Endosulfan sulfate	6.0	U
50-29-3	4,4'-DDT	5.2	J
72-43-5	Methoxychlor	34	
53494-70-5	Endrin ketone	6.0	U
7421-93-4	Endrin aldehyde	6.0	U
5103-71-9	alpha-Chlordane	3.1	U
5103-74-2	gamma-Chlordane	3.1 ~~2.1~~	~~JP~~ U
8001-35-2	Toxaphene	310	U
12674-11-2	Aroclor-1016	60	U
11104-28-2	Aroclor-1221	120	U
11141-16-5	Aroclor-1232	60	U
53469-21-9	Aroclor-1242	60	U
12672-29-6	Aroclor-1248	60	U
11097-69-1	Aroclor-1254	60	U
11096-82-5	Aroclor-1260	60	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX554

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-12

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 34 Decanted: (Y/N) N Date Received: 06/05/01

Extraction: (Type) SONC Date Extracted: 06/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/08/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.6	U
319-85-7	beta-BHC	2.6	U
319-86-8	delta-BHC	2.6	U
58-89-9	gamma-BHC (Lindane)	2.6	U
76-44-8	Heptachlor	2.6	U
309-00-2	Aldrin	2.6	U
1024-57-3	Heptachlor epoxide	2.6	U
959-98-8	Endosulfan I	2.6	U
60-57-1	Dieldrin	5.0	U
72-55-9	4,4'-DDE	5.0	U
72-20-8	Endrin	5.0	U
33213-65-9	Endosulfan II	5.0	U
72-54-8	4,4'-DDD	5.0	U
1031-07-8	Endosulfan sulfate	5.0	U
50-29-3	4,4'-DDT	5.0	U
72-43-5	Methoxychlor	36	
53494-70-5	Endrin ketone	5.0	U
7421-93-4	Endrin aldehyde	5.0	U
5103-71-9	alpha-Chlordane	2.6	U
5103-74-2	gamma-Chlordane	2.6	U
8001-35-2	Toxaphene	260	U
12674-11-2	Aroclor-1016	50	U
11104-28-2	Aroclor-1221	100	U
11141-16-5	Aroclor-1232	50	U
53469-21-9	Aroclor-1242	50	U
12672-29-6	Aroclor-1248	50	U
11097-69-1	Aroclor-1254	50	U
11096-82-5	Aroclor-1260	50	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX555

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-13

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 23 Decanted: (Y/N) N Date Received: 06/05/01

Extraction: (Type) SONC Date Extracted: 06/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/08/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 4.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2 ~~0.89~~	~~JP~~ U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.2	U
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2 ~~0.52~~	~~J~~ U
60-57-1	Dieldrin	4.3	U
72-55-9	4,4'-DDE	4.3 ~~2.7~~	~~JP~~ U
72-20-8	Endrin	4.3	U
33213-65-9	Endosulfan II	4.3	U
72-54-8	4,4'-DDD	4.3	U
1031-07-8	Endosulfan sulfate	4.3 ~~2.4~~	~~JP~~ U
50-29-3	4,4'-DDT	5.9	~~P~~ JQ
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.3	U
7421-93-4	Endrin aldehyde	4.3	U
5103-71-9	alpha-Chlordane	2.2 ~~0.89~~	~~JP~~ U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	43	U
11104-28-2	Aroclor-1221	87	U
11141-16-5	Aroclor-1232	43	U
53469-21-9	Aroclor-1242	43	U
12672-29-6	Aroclor-1248	43	U
11097-69-1	Aroclor-1254	43	U
11096-82-5	Aroclor-1260	43	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX558

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-15

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 11 Decanted: (Y/N) N Date Received: 06/06/01

Extraction: (Type) SONC Date Extracted: 06/07/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.9 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.7	U
72-55-9	4,4'-DDE	3.1	J Q
72-20-8	Endrin	3.7	U
33213-65-9	Endosulfan II	3.7	U
72-54-8	4,4'-DDD	3.7	U
1031-07-8	Endosulfan sulfate	3.7	U
50-29-3	4,4'-DDT	3.7	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.7	U
7421-93-4	Endrin aldehyde	1.5	J Q
5103-71-9	alpha-Chlordane	0.73	J Q
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	75	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	37	U
11096-82-5	Aroclor-1260	37	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX559

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-14

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 29 Decanted: (Y/N) N Date Received: 06/05/01

Extraction: (Type) SONC Date Extracted: 06/05/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/08/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.4	U
319-85-7	beta-BHC	2.4	U
319-86-8	delta-BHC	2.4	U
58-89-9	gamma-BHC (Lindane)	2.4	U
76-44-8	Heptachlor	2.4	U
309-00-2	Aldrin	2.4	U
1024-57-3	Heptachlor epoxide	2.4	U
959-98-8	Endosulfan I	2.4	U
60-57-1	Dieldrin	4.6	U
72-55-9	4,4'-DDE	4.6	U
72-20-8	Endrin	4.6	U
33213-65-9	Endosulfan II	4.6	U
72-54-8	4,4'-DDD	4.6	U
1031-07-8	Endosulfan sulfate	4.6	U
50-29-3	4,4'-DDT	4.6	U
72-43-5	Methoxychlor	27	
53494-70-5	Endrin ketone	4.6	U
7421-93-4	Endrin aldehyde	4.6	U
5103-71-9	alpha-Chlordane	2.4	U
5103-74-2	gamma-Chlordane	2.4	U
8001-35-2	Toxaphene	240	U
12674-11-2	Aroclor-1016	46	U
11104-28-2	Aroclor-1221	94	U
11141-16-5	Aroclor-1232	46	U
53469-21-9	Aroclor-1242	46	U
12672-29-6	Aroclor-1248	46	U
11097-69-1	Aroclor-1254	46	U
11096-82-5	Aroclor-1260	46	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX560

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-16

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 7 Decanted: (Y/N) N Date Received: 06/06/01

Extraction: (Type) SONC Date Extracted: 06/07/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8 ~~0.59~~	~~J~~ U
60-57-1	Dieldrin	3.5	U
72-55-9	4,4'-DDE	3.5	U
72-20-8	Endrin	3.5	U
33213-65-9	Endosulfan II	3.5 ~~1.1~~	~~JP~~ U
72-54-8	4,4'-DDD	3.5	U
1031-07-8	Endosulfan sulfate	3.5	U
50-29-3	4,4'-DDT	3.5	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.5	U
7421-93-4	Endrin aldehyde	3.5 ~~1.2~~	~~JP~~ U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	72	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX564

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-17

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 22 Decanted: (Y/N) N Date Received: 06/06/01

Extraction: (Type) SONC Date Extracted: 06/07/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	2.2 ~~0.60~~	~~U~~ U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.2	U
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.2	U
72-55-9	4,4'-DDE	4.2	U
72-20-8	Endrin	4.2	U
33213-65-9	Endosulfan II	4.2	U
72-54-8	4,4'-DDD	4.2	U
1031-07-8	Endosulfan sulfate	4.2	U
50-29-3	4,4'-DDT	4.2	U
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.2	U
7421-93-4	Endrin aldehyde	4.2	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	42	U
11104-28-2	Aroclor-1221	86	U
11141-16-5	Aroclor-1232	42	U
53469-21-9	Aroclor-1242	42	U
12672-29-6	Aroclor-1248	42	U
11097-69-1	Aroclor-1254	42	U
11096-82-5	Aroclor-1260	42	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX565

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-18

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 46 Decanted: (Y/N) N Date Received: 06/06/01

Extraction: (Type) SONC Date Extracted: 06/07/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	3.1	U
319-85-7	beta-BHC	3.1	U
319-86-8	delta-BHC	3.1	U
58-89-9	gamma-BHC (Lindane)	3.1	U
76-44-8	Heptachlor	3.1	U
309-00-2	Aldrin	3.1	U
1024-57-3	Heptachlor epoxide	3.1	U
959-98-8	Endosulfan I	3.1	U
60-57-1	Dieldrin	6.1	U
72-55-9	4,4'-DDE	6.1	U
72-20-8	Endrin	6.1	U
33213-65-9	Endosulfan II	6.1	U
72-54-8	4,4'-DDD	6.1	U
1031-07-8	Endosulfan sulfate	6.1	U
50-29-3	4,4'-DDT	3.5	J Q
72-43-5	Methoxychlor	31	U
53494-70-5	Endrin ketone	6.1	U
7421-93-4	Endrin aldehyde	6.1	U
5103-71-9	alpha-Chlordane	3.1	U
5103-74-2	gamma-Chlordane	3.1	U
8001-35-2	Toxaphene	310	U
12674-11-2	Aroclor-1016	61	U
11104-28-2	Aroclor-1221	120	U
11141-16-5	Aroclor-1232	61	U
53469-21-9	Aroclor-1242	61	U
12672-29-6	Aroclor-1248	61	U
11097-69-1	Aroclor-1254	61	U
11096-82-5	Aroclor-1260	61	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX566

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-19

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 48 Decanted: (Y/N) N Date Received: 06/06/01

Extraction: (Type) SONC Date Extracted: 06/07/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	3.3	U
319-85-7	beta-BHC	3.3	U
319-86-8	delta-BHC	3.3	U
58-89-9	gamma-BHC (Lindane)	3.3	U
76-44-8	Heptachlor	3.3	U
309-00-2	Aldrin	3.3	U
1024-57-3	Heptachlor epoxide	3.3	U
959-98-8	Endosulfan I	3.3	U
60-57-1	Dieldrin	6.3	U
72-55-9	4,4'-DDE	6.3	U
72-20-8	Endrin	6.3	U
33213-65-9	Endosulfan II	6.3	U
72-54-8	4,4'-DDD	6.3	U
1031-07-8	Endosulfan sulfate	6.3	U
50-29-3	4,4'-DDT	6.3	U
72-43-5	Methoxychlor	33	U
53494-70-5	Endrin ketone	6.3	U
7421-93-4	Endrin aldehyde	6.3	U
5103-71-9	alpha-Chlordane	3.3	U
5103-74-2	gamma-Chlordane	3.3	U
8001-35-2	Toxaphene	330	U
12674-11-2	Aroclor-1016	63	U
11104-28-2	Aroclor-1221	130	U
11141-16-5	Aroclor-1232	63	U
53469-21-9	Aroclor-1242	63	U
12672-29-6	Aroclor-1248	63	U
11097-69-1	Aroclor-1254	63	U
11096-82-5	Aroclor-1260	63	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX567

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX473

Matrix: (soil/water) SOIL Lab Sample ID: JX473-20

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 19 Decanted: (Y/N) N Date Received: 06/07/01

Extraction: (Type) SONC Date Extracted: 06/07/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	4.1	U
33213-65-9	Endosulfan II	4.1	U
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.1	U
7421-93-4	Endrin aldehyde	4.1	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	83	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	41	U
11096-82-5	Aroclor-1260	41	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX450

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-2

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 51 Decanted: (Y/N) N Date Received: 05/23/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/29/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	3.5	U
319-85-7	beta-BHC	3.5	U
319-86-8	delta-BHC	3.5	U
58-89-9	gamma-BHC (Lindane)	3.5	U
76-44-8	Heptachlor	3.5	U
309-00-2	Aldrin	3.5	U
1024-57-3	Heptachlor epoxide	3.5	U
959-98-8	Endosulfan I	3.5	U
60-57-1	Dieldrin	6.7	U
72-55-9	4,4'-DDE	6.7	U
72-20-8	Endrin	6.7	U
33213-65-9	Endosulfan II	6.7	U
72-54-8	4,4'-DDD	6.7	U
1031-07-8	Endosulfan sulfate	6.7	U
50-29-3	4,4'-DDT	6.7	U
72-43-5	Methoxychlor	35	U
53494-70-5	Endrin ketone	6.7	U
7421-93-4	Endrin aldehyde	6.7	U
5103-71-9	alpha-Chlordane	3.5	U
5103-74-2	gamma-Chlordane	3.5	U
8001-35-2	Toxaphene	350	U
12674-11-2	Aroclor-1016	67	U
11104-28-2	Aroclor-1221	140	U
11141-16-5	Aroclor-1232	67	U
53469-21-9	Aroclor-1242	67	U
12672-29-6	Aroclor-1248	67	U
11097-69-1	Aroclor-1254	67	U
11096-82-5	Aroclor-1260	67	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX452

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-3

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 62 Decanted: (Y/N) N Date Received: 05/23/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/29/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	4.5	U
319-85-7	beta-BHC	4.5	U
319-86-8	delta-BHC	4.5	U
58-89-9	gamma-BHC (Lindane)	4.5	U
76-44-8	Heptachlor	4.5	U
309-00-2	Aldrin	4.5	U
1024-57-3	Heptachlor epoxide	4.5	U
959-98-8	Endosulfan I	4.5	U
60-57-1	Dieldrin	8.7	U
72-55-9	4,4'-DDE	8.7	U
72-20-8	Endrin	8.7	U
33213-65-9	Endosulfan II	8.7	U
72-54-8	4,4'-DDD	8.7	U
1031-07-8	Endosulfan sulfate	8.7	U
50-29-3	4,4'-DDT	8.7	U
72-43-5	Methoxychlor	45	U
53494-70-5	Endrin ketone	8.7	U
7421-93-4	Endrin aldehyde	8.7	U
5103-71-9	alpha-Chlordane	4.5	U
5103-74-2	gamma-Chlordane	4.5	U
8001-35-2	Toxaphene	450	U
12674-11-2	Aroclor-1016	87	U
11104-28-2	Aroclor-1221	180	U
11141-16-5	Aroclor-1232	87	U
53469-21-9	Aroclor-1242	87	U
12672-29-6	Aroclor-1248	87	U
11097-69-1	Aroclor-1254	87	U
11096-82-5	Aroclor-1260	87	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX453

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-4

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 1 Decanted: (Y/N) N Date Received: 05/23/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/29/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.3	U
72-55-9	4,4'-DDE	3.3	U
72-20-8	Endrin	3.3	U
33213-65-9	Endosulfan II	3.3	U
72-54-8	4,4'-DDD	3.3	U
1031-07-8	Endosulfan sulfate	3.3	U
50-29-3	4,4'-DDT	3.3	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.3	U
7421-93-4	Endrin aldehyde	3.3	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX454

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-5

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 58 Decanted: (Y/N) N Date Received: 05/23/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/29/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	4.0	U
319-85-7	beta-BHC	4.0	U
319-86-8	delta-BHC	4.0	U
58-89-9	gamma-BHC (Lindane)	4.0 ~~1.5~~	~~JP~~ U
76-44-8	Heptachlor	4.0	U
309-00-2	Aldrin	4.0	U
1024-57-3	Heptachlor epoxide	4.0	U
959-98-8	Endosulfan I	4.0	U
60-57-1	Dieldrin	7.8	U
72-55-9	4,4'-DDE	7.8	U
72-20-8	Endrin	7.8	U
33213-65-9	Endosulfan II	7.8	U
72-54-8	4,4'-DDD	7.8	U
1031-07-8	Endosulfan sulfate	7.8	U
50-29-3	4,4'-DDT	7.8	U
72-43-5	Methoxychlor	40	U
53494-70-5	Endrin ketone	7.8	U
7421-93-4	Endrin aldehyde	7.8	U
5103-71-9	alpha-Chlordane	4.0	U
5103-74-2	gamma-Chlordane	4.0	U
8001-35-2	Toxaphene	400	U
12674-11-2	Aroclor-1016	78	U
11104-28-2	Aroclor-1221	160	U
11141-16-5	Aroclor-1232	78	U
53469-21-9	Aroclor-1242	78	U
12672-29-6	Aroclor-1248	78	U
11097-69-1	Aroclor-1254	78	U
11096-82-5	Aroclor-1260	78	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX457

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-8

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 39 Decanted: (Y/N) N Date Received: 05/23/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/29/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.8	U
319-85-7	beta-BHC	2.8	U
319-86-8	delta-BHC	2.8	U
58-89-9	gamma-BHC (Lindane)	2.8	U
76-44-8	Heptachlor	2.8	U
309-00-2	Aldrin	2.8	U
1024-57-3	Heptachlor epoxide	2.8	U
959-98-8	Endosulfan I	2.8	U
60-57-1	Dieldrin	5.4	U
72-55-9	4,4'-DDE	5.4	U
72-20-8	Endrin	5.4	U
33213-65-9	Endosulfan II	5.4	U
72-54-8	4,4'-DDD	5.4	U
1031-07-8	Endosulfan sulfate	5.4	U
50-29-3	4,4'-DDT	5.4	U
72-43-5	Methoxychlor	52	
53494-70-5	Endrin ketone	5.4	U
7421-93-4	Endrin aldehyde	5.4	U
5103-71-9	alpha-Chlordane	2.8	U
5103-74-2	gamma-Chlordane	2.8	U
8001-35-2	Toxaphene	280	U
12674-11-2	Aroclor-1016	54	U
11104-28-2	Aroclor-1221	110	U
11141-16-5	Aroclor-1232	54	U
53469-21-9	Aroclor-1242	54	U
12672-29-6	Aroclor-1248	54	U
11097-69-1	Aroclor-1254	54	U
11096-82-5	Aroclor-1260	54	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX458

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-9

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 2 Decanted: (Y/N) N Date Received: 05/23/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/29/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.4	U
72-55-9	4,4'-DDE	3.4	U
72-20-8	Endrin	3.4	U
33213-65-9	Endosulfan II	3.4	U
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	3.4	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	3.4	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX459

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-10

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 4 Decanted: (Y/N) N Date Received: 05/23/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/29/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.4	U
72-55-9	4,4'-DDE	3.4	U
72-20-8	Endrin	3.4	U
33213-65-9	Endosulfan II	3.4	U
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	3.4	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	3.4	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	70	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX460

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-11

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 37 Decanted: (Y/N) N Date Received: 05/23/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/30/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.9 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.7	U
319-85-7	beta-BHC	2.7	U
319-86-8	delta-BHC	2.7	U
58-89-9	gamma-BHC (Lindane)	2.7	U
76-44-8	Heptachlor	2.7	U
309-00-2	Aldrin	2.7	U
1024-57-3	Heptachlor epoxide	2.7	U
959-98-8	Endosulfan I	2.7	U
60-57-1	Dieldrin	5.2	U
72-55-9	4,4'-DDE	5.2	U
72-20-8	Endrin	5.2	U
33213-65-9	Endosulfan II	5.2	U
72-54-8	4,4'-DDD	5.2	U
1031-07-8	Endosulfan sulfate	5.2	U
50-29-3	4,4'-DDT	5.2	U
72-43-5	Methoxychlor	27	U
53494-70-5	Endrin ketone	5.2	U
7421-93-4	Endrin aldehyde	5.2	U
5103-71-9	alpha-Chlordane	2.7	U
5103-74-2	gamma-Chlordane	2.7	U
8001-35-2	Toxaphene	270	U
12674-11-2	Aroclor-1016	52	U
11104-28-2	Aroclor-1221	110	U
11141-16-5	Aroclor-1232	52	U
53469-21-9	Aroclor-1242	52	U
12672-29-6	Aroclor-1248	52	U
11097-69-1	Aroclor-1254	52	U
11096-82-5	Aroclor-1260	52	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX461

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-12

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 8 Decanted: (Y/N) N Date Received: 05/24/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/30/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.6	U
72-55-9	4,4'-DDE	3.6	U
72-20-8	Endrin	3.6	U
33213-65-9	Endosulfan II	3.6	U
72-54-8	4,4'-DDD	3.6	U
1031-07-8	Endosulfan sulfate	3.6	U
50-29-3	4,4'-DDT	3.6	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.6	U
7421-93-4	Endrin aldehyde	3.6	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	73	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX462

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-13

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 18 Decanted: (Y/N) N Date Received: 05/24/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/30/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.0	U
72-55-9	4,4'-DDE	4.0	U
72-20-8	Endrin	4.0	U
33213-65-9	Endosulfan II	4.0	U
72-54-8	4,4'-DDD	4.0	U
1031-07-8	Endosulfan sulfate	4.0	U
50-29-3	4,4'-DDT	4.0	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.0	U
7421-93-4	Endrin aldehyde	4.0	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	40	U
11104-28-2	Aroclor-1221	82	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	40	U
11096-82-5	Aroclor-1260	40	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX463

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-14

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 2 Decanted: (Y/N) N Date Received: 05/24/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/30/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.4	U
72-55-9	4,4'-DDE	3.4	U
72-20-8	Endrin	3.4	U
33213-65-9	Endosulfan II	3.4	U
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	3.4	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	3.4	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX464

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-15

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 6 Decanted: (Y/N) N Date Received: 05/24/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/30/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.5	U
72-55-9	4,4'-DDE	3.5	U
72-20-8	Endrin	3.5	U
33213-65-9	Endosulfan II	3.5	U
72-54-8	4,4'-DDD	3.5	U
1031-07-8	Endosulfan sulfate	3.5	U
50-29-3	4,4'-DDT	3.5	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.5	U
7421-93-4	Endrin aldehyde	3.5	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	71	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX465

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-16

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 4 Decanted: (Y/N) N Date Received: 05/24/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/30/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.4	U
72-55-9	4,4'-DDE	3.4	U
72-20-8	Endrin	3.4	U
33213-65-9	Endosulfan II	3.4	U
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	3.4	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	3.4	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	70	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX466

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-17

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 2 Decanted: (Y/N) N Date Received: 05/24/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/30/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.4	U
72-55-9	4,4'-DDE	3.4	U
72-20-8	Endrin	3.4	U
33213-65-9	Endosulfan II	3.4	U
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	3.4	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	3.4	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX467

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-18

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 2 Decanted: (Y/N) N Date Received: 05/25/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/30/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.4	U
72-55-9	4,4'-DDE	3.4	U
72-20-8	Endrin	3.4	U
33213-65-9	Endosulfan II	3.4	U
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	3.4	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	3.4	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

FORM I PEST OLM04.2

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX468

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-19

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 5 Decanted: (Y/N) N Date Received: 05/25/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/30/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.9 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.5	U
72-55-9	4,4'-DDE	3.5	U
72-20-8	Endrin	3.5	U
33213-65-9	Endosulfan II	3.5	U
72-54-8	4,4'-DDD	3.5	U
1031-07-8	Endosulfan sulfate	3.5	U
50-29-3	4,4'-DDT	3.5	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.5	U
7421-93-4	Endrin aldehyde	3.5	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	70	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U

FORM I PEST OLM04.2

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX469

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-20

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 2 Decanted: (Y/N) N Date Received: 05/25/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/30/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.7	U
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.4	U
72-55-9	4,4'-DDE	3.4	U
72-20-8	Endrin	3.4	U
33213-65-9	Endosulfan II	3.4	U
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	3.4	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	3.4	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.7	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX550

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX550

Matrix: (soil/water) SOIL Lab Sample ID: JX550-1

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 19 Decanted: (Y/N) N Date Received: 05/22/01

Extraction: (Type) SONC Date Extracted: 05/27/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/29/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	4.1	U
33213-65-9	Endosulfan II	4.1	U
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.1	U
7421-93-4	Endrin aldehyde	4.1	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	83	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	41	U
11096-82-5	Aroclor-1260	41	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX429

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-1

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 20 Decanted: (Y/N) N Date Received: 05/17/01

Extraction: (Type) SONC Date Extracted: 05/18/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	4.1	U
33213-65-9	Endosulfan II	4.1	U
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.1	U
7421-93-4	Endrin aldehyde	4.1	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	84	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	11	J ~~P~~Q
11096-82-5	Aroclor-1260	5.9	J ~~P~~Q

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX431

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-2

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 21 Decanted: (Y/N) N Date Received: 05/17/01

Extraction: (Type) SONC Date Extracted: 05/18/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.9 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.2	U
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.2	U
72-55-9	4,4'-DDE	4.2	U
72-20-8	Endrin	4.2	U
33213-65-9	Endosulfan II	4.2	U
72-54-8	4,4'-DDD	4.2	U
1031-07-8	Endosulfan sulfate	4.2	U
50-29-3	4,4'-DDT	4.2	U
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.2	U
7421-93-4	Endrin aldehyde	4.2	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	42	U
11104-28-2	Aroclor-1221	85	U
11141-16-5	Aroclor-1232	42	U
53469-21-9	Aroclor-1242	42	U
12672-29-6	Aroclor-1248	42	U
11097-69-1	Aroclor-1254	42	U
11096-82-5	Aroclor-1260	42	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX432

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-3

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 27 Decanted: (Y/N) N Date Received: 05/17/01

Extraction: (Type) SONC Date Extracted: 05/18/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	2.3	U
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	2.3	U
1024-57-3	Heptachlor epoxide	2.3	U
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.5	U
72-55-9	4,4'-DDE	4.5	U
72-20-8	Endrin	4.5	U
33213-65-9	Endosulfan II	4.5	U
72-54-8	4,4'-DDD	4.5	U
1031-07-8	Endosulfan sulfate	4.5	U
50-29-3	4,4'-DDT	4.5	U
72-43-5	Methoxychlor	23	U
53494-70-5	Endrin ketone	4.5	U
7421-93-4	Endrin aldehyde	4.5	U
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	2.3	U
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	45	U
11104-28-2	Aroclor-1221	92	U
11141-16-5	Aroclor-1232	45	U
53469-21-9	Aroclor-1242	45	U
12672-29-6	Aroclor-1248	45	U
11097-69-1	Aroclor-1254	45	U
11096-82-5	Aroclor-1260	45	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX433

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-4

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 39 Decanted: (Y/N) N Date Received: 05/21/01

Extraction: (Type) SONC Date Extracted: 05/22/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.8	U
319-85-7	beta-BHC	2.8	U
319-86-8	delta-BHC	2.8	U
58-89-9	gamma-BHC (Lindane)	2.8	U
76-44-8	Heptachlor	2.8	U
309-00-2	Aldrin	2.8	U
1024-57-3	Heptachlor epoxide	2.8	U
959-98-8	Endosulfan I	2.8	U
60-57-1	Dieldrin	5.4	U
72-55-9	4,4'-DDE	5.4	U
72-20-8	Endrin	5.4	U
33213-65-9	Endosulfan II	5.4	U
72-54-8	4,4'-DDD	5.4	U
1031-07-8	Endosulfan sulfate	5.4	U
50-29-3	4,4'-DDT	5.4	U
72-43-5	Methoxychlor	28	U
53494-70-5	Endrin ketone	5.4	U
7421-93-4	Endrin aldehyde	5.4	U
5103-71-9	alpha-Chlordane	2.8	U
5103-74-2	gamma-Chlordane	2.8	U
8001-35-2	Toxaphene	280	U
12674-11-2	Aroclor-1016	54	U
11104-28-2	Aroclor-1221	110	U
11141-16-5	Aroclor-1232	54	U
53469-21-9	Aroclor-1242	54	U
12672-29-6	Aroclor-1248	54	U
11097-69-1	Aroclor-1254	54	U
11096-82-5	Aroclor-1260	54	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX434

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-5

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 39 Decanted: (Y/N) N Date Received: 05/21/01

Extraction: (Type) SONC Date Extracted: 05/22/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.8	U
319-85-7	beta-BHC	2.8	U
319-86-8	delta-BHC	2.8	U
58-89-9	gamma-BHC (Lindane)	2.8	U
76-44-8	Heptachlor	2.8	U
309-00-2	Aldrin	2.8	U
1024-57-3	Heptachlor epoxide	2.8	U
959-98-8	Endosulfan I	2.8	U
60-57-1	Dieldrin	5.4	U
72-55-9	4,4'-DDE	5.4	U
72-20-8	Endrin	5.4	U
33213-65-9	Endosulfan II	5.4	U
72-54-8	4,4'-DDD	5.4	U
1031-07-8	Endosulfan sulfate	5.4	U
50-29-3	4,4'-DDT	5.4	U
72-43-5	Methoxychlor	28	U
53494-70-5	Endrin ketone	5.4	U
7421-93-4	Endrin aldehyde	5.4	U
5103-71-9	alpha-Chlordane	2.8	U
5103-74-2	gamma-Chlordane	2.8	U
8001-35-2	Toxaphene	280	U
12674-11-2	Aroclor-1016	54	U
11104-28-2	Aroclor-1221	110	U
11141-16-5	Aroclor-1232	54	U
53469-21-9	Aroclor-1242	54	U
12672-29-6	Aroclor-1248	54	U
11097-69-1	Aroclor-1254	54	U
11096-82-5	Aroclor-1260	54	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX435

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-6

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 16 Decanted: (Y/N) N Date Received: 05/21/01

Extraction: (Type) SONC Date Extracted: 05/22/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.9 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	3.9	U
72-55-9	4,4'-DDE	3.9	U
72-20-8	Endrin	3.9	U
33213-65-9	Endosulfan II	3.9	U
72-54-8	4,4'-DDD	3.9	U
1031-07-8	Endosulfan sulfate	3.9	U
50-29-3	4,4'-DDT	3.9	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	3.9	U
7421-93-4	Endrin aldehyde	3.9	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	39	U
11104-28-2	Aroclor-1221	80	U
11141-16-5	Aroclor-1232	39	U
53469-21-9	Aroclor-1242	39	U
12672-29-6	Aroclor-1248	39	U
11097-69-1	Aroclor-1254	39	U
11096-82-5	Aroclor-1260	39	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX436

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-7

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 33 Decanted: (Y/N) N Date Received: 05/21/01

Extraction: (Type) SONC Date Extracted: 05/22/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.5	U
319-85-7	beta-BHC	2.5	U
319-86-8	delta-BHC	2.5	U
58-89-9	gamma-BHC (Lindane)	2.5	U
76-44-8	Heptachlor	2.5	U
309-00-2	Aldrin	2.5	U
1024-57-3	Heptachlor epoxide	2.5	U
959-98-8	Endosulfan I	2.5	U
60-57-1	Dieldrin	4.9	U
72-55-9	4,4'-DDE	4.9	U
72-20-8	Endrin	4.9	U
33213-65-9	Endosulfan II	4.9	U
72-54-8	4,4'-DDD	4.9	U
1031-07-8	Endosulfan sulfate	4.9	U
50-29-3	4,4'-DDT	4.9	U
72-43-5	Methoxychlor	25	U
53494-70-5	Endrin ketone	4.9	U
7421-93-4	Endrin aldehyde	4.9	U
5103-71-9	alpha-Chlordane	2.5	U
5103-74-2	gamma-Chlordane	2.5	U
8001-35-2	Toxaphene	250	U
12674-11-2	Aroclor-1016	49	U
11104-28-2	Aroclor-1221	100	U
11141-16-5	Aroclor-1232	49	U
53469-21-9	Aroclor-1242	49	U
12672-29-6	Aroclor-1248	49	U
11097-69-1	Aroclor-1254	49	U
11096-82-5	Aroclor-1260	49	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX437

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-8

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 34 Decanted: (Y/N) N Date Received: 05/21/01

Extraction: (Type) SONC Date Extracted: 05/22/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.6	U
319-85-7	beta-BHC	2.6	U
319-86-8	delta-BHC	2.6	U
58-89-9	gamma-BHC (Lindane)	2.6	U
76-44-8	Heptachlor	2.6	U
309-00-2	Aldrin	2.6	U
1024-57-3	Heptachlor epoxide	2.6	U
959-98-8	Endosulfan I	2.6	U
60-57-1	Dieldrin	5.0	U
72-55-9	4,4'-DDE	5.0	U
72-20-8	Endrin	5.0	U
33213-65-9	Endosulfan II	5.0	U
72-54-8	4,4'-DDD	5.0	U
1031-07-8	Endosulfan sulfate	5.0	U
50-29-3	4,4'-DDT	5.0	U
72-43-5	Methoxychlor	26	U
53494-70-5	Endrin ketone	5.0	U
7421-93-4	Endrin aldehyde	5.0	U
5103-71-9	alpha-Chlordane	2.6	U
5103-74-2	gamma-Chlordane	2.6	U
8001-35-2	Toxaphene	260	U
12674-11-2	Aroclor-1016	50	U
11104-28-2	Aroclor-1221	100	U
11141-16-5	Aroclor-1232	50	U
53469-21-9	Aroclor-1242	50	U
12672-29-6	Aroclor-1248	50	U
11097-69-1	Aroclor-1254	50	U
11096-82-5	Aroclor-1260	50	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX438

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-9

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 9 Decanted: (Y/N) N Date Received: 05/21/01

Extraction: (Type) SONC Date Extracted: 05/22/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.9 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.6	U
72-55-9	4,4'-DDE	3.6	U
72-20-8	Endrin	3.6	U
33213-65-9	Endosulfan II	3.6	U
72-54-8	4,4'-DDD	3.6	U
1031-07-8	Endosulfan sulfate	3.6	U
50-29-3	4,4'-DDT	3.6	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.6	U
7421-93-4	Endrin aldehyde	3.6	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	73	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX439

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-10

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 7 Decanted: (Y/N) N Date Received: 05/21/01

Extraction: (Type) SONC Date Extracted: 05/22/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.6	U
72-55-9	4,4'-DDE	3.6	U
72-20-8	Endrin	3.6	U
33213-65-9	Endosulfan II	3.6	U
72-54-8	4,4'-DDD	3.6	U
1031-07-8	Endosulfan sulfate	3.6	U
50-29-3	4,4'-DDT	3.6	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.6	U
7421-93-4	Endrin aldehyde	3.6	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	72	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX440

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-11

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 47 Decanted: (Y/N) N Date Received: 05/21/01

Extraction: (Type) SONC Date Extracted: 05/22/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	3.2	U
319-85-7	beta-BHC	3.2	U
319-86-8	delta-BHC	3.2	U
58-89-9	gamma-BHC (Lindane)	3.2	U
76-44-8	Heptachlor	3.2	U
309-00-2	Aldrin	3.2	U
1024-57-3	Heptachlor epoxide	3.2	U
959-98-8	Endosulfan I	3.2	U
60-57-1	Dieldrin	6.2	U
72-55-9	4,4'-DDE	6.2	U
72-20-8	Endrin	6.2	U
33213-65-9	Endosulfan II	6.2	U
72-54-8	4,4'-DDD	6.2	U
1031-07-8	Endosulfan sulfate	6.2	U
50-29-3	4,4'-DDT	6.2	U
72-43-5	Methoxychlor	32	U
53494-70-5	Endrin ketone	6.2	U
7421-93-4	Endrin aldehyde	6.2	U
5103-71-9	alpha-Chlordane	3.2	U
5103-74-2	gamma-Chlordane	3.2	U
8001-35-2	Toxaphene	320	U
12674-11-2	Aroclor-1016	62	U
11104-28-2	Aroclor-1221	130	U
11141-16-5	Aroclor-1232	62	U
53469-21-9	Aroclor-1242	62	U
12672-29-6	Aroclor-1248	62	U
11097-69-1	Aroclor-1254	62	U
11096-82-5	Aroclor-1260	62	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX441

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-12

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 47 Decanted: (Y/N) N Date Received: 05/22/01

Extraction: (Type) SONC Date Extracted: 05/23/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	3.2	U
319-85-7	beta-BHC	3.2	U
319-86-8	delta-BHC	3.2	U
58-89-9	gamma-BHC (Lindane)	3.2	U
76-44-8	Heptachlor	3.2	U
309-00-2	Aldrin	3.2	U
1024-57-3	Heptachlor epoxide	3.2	U
959-98-8	Endosulfan I	3.2	U
60-57-1	Dieldrin	6.2	U
72-55-9	4,4'-DDE	6.2	U
72-20-8	Endrin	6.2	U
33213-65-9	Endosulfan II	6.2	U
72-54-8	4,4'-DDD	6.2	U
1031-07-8	Endosulfan sulfate	6.2	U
50-29-3	4,4'-DDT	6.2	U
72-43-5	Methoxychlor	32	U
53494-70-5	Endrin ketone	6.2	U
7421-93-4	Endrin aldehyde	6.2	U
5103-71-9	alpha-Chlordane	3.2	U
5103-74-2	gamma-Chlordane	3.2	U
8001-35-2	Toxaphene	320	U
12674-11-2	Aroclor-1016	62	U
11104-28-2	Aroclor-1221	130	U
11141-16-5	Aroclor-1232	62	U
53469-21-9	Aroclor-1242	62	U
12672-29-6	Aroclor-1248	62	U
11097-69-1	Aroclor-1254	38	J
11096-82-5	Aroclor-1260	17	J

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX442

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-13

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 20 Decanted: (Y/N) N Date Received: 05/22/01

Extraction: (Type) SONC Date Extracted: 05/23/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/01/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.1	U
319-85-7	beta-BHC	2.1	U
319-86-8	delta-BHC	2.1	U
58-89-9	gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.1	U
72-55-9	4,4'-DDE	4.1	U
72-20-8	Endrin	4.1	U
33213-65-9	Endosulfan II	4.1	U
72-54-8	4,4'-DDD	4.1	U
1031-07-8	Endosulfan sulfate	4.1	U
50-29-3	4,4'-DDT	4.1	U
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.1	U
7421-93-4	Endrin aldehyde	4.1	U
5103-71-9	alpha-Chlordane	2.1	U
5103-74-2	gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	84	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	41	U
11096-82-5	Aroclor-1260	41	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX443

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-14

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 54 Decanted: (Y/N) N Date Received: 05/22/01

Extraction: (Type) SONC Date Extracted: 05/23/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	3.7	U
319-85-7	beta-BHC	3.7	U
319-86-8	delta-BHC	3.7	U
58-89-9	gamma-BHC (Lindane)	3.7	U
76-44-8	Heptachlor	3.7	U
309-00-2	Aldrin	3.7	U
1024-57-3	Heptachlor epoxide	3.7	U
959-98-8	Endosulfan I	3.7	U
60-57-1	Dieldrin	7.2	U
72-55-9	4,4'-DDE	7.2	U
72-20-8	Endrin	7.2	U
33213-65-9	Endosulfan II	7.2	U
72-54-8	4,4'-DDD	7.2	U
1031-07-8	Endosulfan sulfate	7.2	U
50-29-3	4,4'-DDT	7.2	U
72-43-5	Methoxychlor	37	U
53494-70-5	Endrin ketone	7.2	U
7421-93-4	Endrin aldehyde	7.2	U
5103-71-9	alpha-Chlordane	3.7	U
5103-74-2	gamma-Chlordane	3.7	U
8001-35-2	Toxaphene	370	U
12674-11-2	Aroclor-1016	72	U
11104-28-2	Aroclor-1221	140	U
11141-16-5	Aroclor-1232	72	U
53469-21-9	Aroclor-1242	72	U
12672-29-6	Aroclor-1248	72	U
11097-69-1	Aroclor-1254	72	U
11096-82-5	Aroclor-1260	72	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX444

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-15

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 13 Decanted: (Y/N) N Date Received: 05/22/01

Extraction: (Type) SONC Date Extracted: 05/23/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/01/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	3.8	U
72-55-9	4,4'-DDE	3.8	U
72-20-8	Endrin	3.8	U
33213-65-9	Endosulfan II	3.8	U
72-54-8	4,4'-DDD	3.8	U
1031-07-8	Endosulfan sulfate	3.8	U
50-29-3	4,4'-DDT	3.8	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	3.8	U
7421-93-4	Endrin aldehyde	3.8	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	77	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	38	U
11096-82-5	Aroclor-1260	38	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX445

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-16

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 5 Decanted: (Y/N) N Date Received: 05/22/01

Extraction: (Type) SONC Date Extracted: 05/23/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/01/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.5	U
72-55-9	4,4'-DDE	3.5	U
72-20-8	Endrin	3.5	U
33213-65-9	Endosulfan II	3.5	U
72-54-8	4,4'-DDD	3.5	U
1031-07-8	Endosulfan sulfate	3.5	U
50-29-3	4,4'-DDT	3.5	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.5	U
7421-93-4	Endrin aldehyde	3.5	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	71	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX446

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-17

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 21 Decanted: (Y/N) N Date Received: 05/22/01

Extraction: (Type) SONC Date Extracted: 05/23/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.2	U
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.2	U
72-55-9	4,4'-DDE	4.2	U
72-20-8	Endrin	4.2	U
33213-65-9	Endosulfan II	4.2	U
72-54-8	4,4'-DDD	4.2	U
1031-07-8	Endosulfan sulfate	4.2	U
50-29-3	4,4'-DDT	4.2	U
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.2	U
7421-93-4	Endrin aldehyde	4.2	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	42	U
11104-28-2	Aroclor-1221	85	U
11141-16-5	Aroclor-1232	42	U
53469-21-9	Aroclor-1242	42	U
12672-29-6	Aroclor-1248	42	U
11097-69-1	Aroclor-1254	42	U
11096-82-5	Aroclor-1260	42	U

FORM I PEST OLM04.2

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX447

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-18

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 12 Decanted: (Y/N) N Date Received: 05/22/01

Extraction: (Type) SONC Date Extracted: 05/23/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/01/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	1.9	U
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	1.9	U
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.8	U
72-55-9	4,4'-DDE	3.8	U
72-20-8	Endrin	3.8	U
33213-65-9	Endosulfan II	3.8	U
72-54-8	4,4'-DDD	3.8	U
1031-07-8	Endosulfan sulfate	3.8	U
50-29-3	4,4'-DDT	3.8	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.8	U
7421-93-4	Endrin aldehyde	3.8	U
5103-71-9	alpha-Chlordane	1.9	U
5103-74-2	gamma-Chlordane	1.9	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	76	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	38	U
11096-82-5	Aroclor-1260	38	U

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX448

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-19

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 58 Decanted: (Y/N) N Date Received: 05/22/01

Extraction: (Type) SONC Date Extracted: 05/23/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/01/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	4.0	U
319-85-7	beta-BHC	4.0	U
319-86-8	delta-BHC	4.0	U
58-89-9	gamma-BHC (Lindane)	4.0	U
76-44-8	Heptachlor	4.0	U
309-00-2	Aldrin	4.0	U
1024-57-3	Heptachlor epoxide	4.0	U
959-98-8	Endosulfan I	4.0	U
60-57-1	Dieldrin	7.8	U
72-55-9	4,4'-DDE	7.8	U
72-20-8	Endrin	7.8	U
33213-65-9	Endosulfan II	7.8	U
72-54-8	4,4'-DDD	7.8	U
1031-07-8	Endosulfan sulfate	7.8	U
50-29-3	4,4'-DDT	7.8	U
72-43-5	Methoxychlor	40	U
53494-70-5	Endrin ketone	7.8	U
7421-93-4	Endrin aldehyde	7.8	U
5103-71-9	alpha-Chlordane	4.0	U
5103-74-2	gamma-Chlordane	4.0	U
8001-35-2	Toxaphene	400	U
12674-11-2	Aroclor-1016	78	U
11104-28-2	Aroclor-1221	160	U
11141-16-5	Aroclor-1232	78	U
53469-21-9	Aroclor-1242	78	U
12672-29-6	Aroclor-1248	78	U
11097-69-1	Aroclor-1254	78	U
11096-82-5	Aroclor-1260	78	U

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JX451

Lab Name: COMPUCHEM Contract: 68W99071

Lab Code: LIBRTY Case No.: 29276 SAS No.: SDG No.: JX429

Matrix: (soil/water) SOIL Lab Sample ID: JX429-20

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 60 Decanted: (Y/N) N Date Received: 05/22/01

Extraction: (Type) SONC Date Extracted: 05/23/01

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/27/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	4.2	U
319-85-7	beta-BHC	4.2	U
319-86-8	delta-BHC	4.2	U
58-89-9	gamma-BHC (Lindane)	4.2	U
76-44-8	Heptachlor	4.2	U
309-00-2	Aldrin	4.2	U
1024-57-3	Heptachlor epoxide	4.2	U
959-98-8	Endosulfan I	4.2	U
60-57-1	Dieldrin	8.2	U
72-55-9	4,4'-DDE	8.2	U
72-20-8	Endrin	8.2	U
33213-65-9	Endosulfan II	8.2	U
72-54-8	4,4'-DDD	8.2	U
1031-07-8	Endosulfan sulfate	8.2	U
50-29-3	4,4'-DDT	8.2	U
72-43-5	Methoxychlor	42	U
53494-70-5	Endrin ketone	8.2	U
7421-93-4	Endrin aldehyde	8.2	U
5103-71-9	alpha-Chlordane	4.2	U
5103-74-2	gamma-Chlordane	4.2	U
8001-35-2	Toxaphene	420	U
12674-11-2	Aroclor-1016	82	U
11104-28-2	Aroclor-1221	170	U
11141-16-5	Aroclor-1232	82	U
53469-21-9	Aroclor-1242	82	U
12672-29-6	Aroclor-1248	82	U
11097-69-1	Aroclor-1254	82	U
11096-82-5	Aroclor-1260	82	U

FORM I PEST OLM04.2

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

IN REPLY
REFER TO: OEA-095 September 20, 2001

MEMORANDUM

SUBJECT: Upper Columbia River/Lake Roosevelt, CLP Metals Analysis, Data Validation
Case: 29469
SDG: MJ0BN3

FROM: Laura Castrilli, Chemist
Quality Assurance and Data Unit, OEA

RECEIVED
SEP 21 2001

TO: Mark Ader, Site Assessment Manager
Office of Environmental Cleanup

CC: Bruce Woods, Region 10 CLP TPO
Susan Fitzgerald, Roy F. Weston, Inc.

The following is a validation of ICP-AES and mercury analyses of sixteen soil/sediment and four water samples from the Upper Columbia River/Lake Roosevelt site. The analyses were performed following the USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis Multi-media, Multi-Concentration, ILM04.1. Analyses were conducted by Datachem Laboratories, Salt Lake City, Utah. This validation was conducted for the following samples:

MJ0BN3	MJ0BN6	MJ0BN9	MJ0BP3	MJ0BP6	MJ0BQ2	MJ0BQ7
MJ0BN4	MJ0BN7	MJ0BP1	MJ0BP4	MJ0BP8	MJ0BQ3	MJ0BQ8
MJ0BN5	MJ0BN8	MJ0BP2	MJ0BP5	MJ0BQ1	MJ0BQ5	

Data Qualifications

The following comments refer to the Datachem Laboratory's performance in meeting quality control specifications outlined in the *CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM04.1*. The comments presented herein are based on the information provided for the review.

1.0 Timeliness -

The technical (40 CFR part 136) holding time from the date of collection for mercury in water is 28 days. The holding time for the remaining metals in water is 180 days. The samples were collected between 06/25/01 and 06/28/01. ICP-AES analyses were completed on

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08/14/01. Mercury water analyses were completed on 07/23/01. Mercury soil/sediment analyses were completed on 07/25/01. All analyses were conducted within the technical water holding times, with the exception of mercury analyses for soil/sediment samples MJ0BN3, MJ0BN4, MJ0BN6, MJ0BN7, MJ0BN8, MJ0BP1, MJ0BP3, and MJ0BP5, which were analyzed 1-2 days outside the water technical holding time. Since the preparation/digestion of the mercury samples occurred earlier/within the 28 day holding time, no results were qualified based on holding time.

Note that the laboratory did meet the contractual holding time of analysis within 26 days of verified time of sample receipt.

2.0 Sample Preparation - Acceptable

The water samples were prepared for mercury analyses on 07/19/01. The soil/sediment samples were prepared for mercury and ICP-AES analyses on 07/12/01. The water samples were prepared for ICP-AES analyses on 07/09/01. No qualification was made based on sample preparation.

3.0 Calibrations/Calibration Verifications - Acceptable

The samples were analyzed for mercury by CVAAS on 07/23/01 (water) and 07/25/01 (soil/sediment). The initial calibrations included one blank and five standards. The curves were linear with correlation coefficients greater than 0.995.

The samples were analyzed by ICP-AES on 08/03/01 (arsenic, cadmium, lead, selenium, and thallium), 08/13/01 (remaining ICP-AES metals for water samples) and 08/14/01 (remaining ICP-AES metals for soil/sediment samples). The instruments were standardized the day of analysis according to the analytical method using one blank and a single calibration standard for each element.

All ICP-AES and CVAAS (mercury) calibrations were performed as required and met the acceptance criteria; therefore, no qualification was made on this basis.

Calibration verification samples are required before and after sample analysis and after every 10 samples during analysis. Mercury recoveries must be within 80-120%. Other metal recoveries must be within 90-110%.

All ICP-AES and CVAAS (mercury) calibration verification (initial and continuing) samples bracketing reported sample results met the frequency and recovery criteria; therefore no qualification was made based on ICP-AES or CVAAS calibration verification.

4.0 Laboratory Control Samples - Acceptable

Laboratory Control samples (LCS) are digested and analyzed along with

the samples to verify the efficiency of laboratory procedures (LCS analyses are not required for mercury in water). All recoveries associated with reported sample results met the acceptance criteria for control samples, therefore no qualification was made based on LCS results.

5.0 Blanks -

Procedural blanks were prepared with the samples to show potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified if the analyte concentration was less than five times the analytical value in the blank.

Cadmium, iron, manganese, sodium, and zinc were detected in the water preparation blank. Aluminum in the water preparation blank had a negative value with an absolute value greater than the detection limit. Barium, beryllium, cadmium, calcium, iron, manganese, vanadium, and zinc were detected in one or more continuing calibration blanks (CCBs) associated with water samples. Aluminum in several CCBs associated with water samples had negative results with absolute values greater than the detection limit.

Aluminum, barium, beryllium, calcium, iron, magnesium, manganese, and sodium were detected in the **soil/sediment** preparation blank. Barium, beryllium, iron, lead, manganese, nickel, thallium, and sodium were detected in one or more CCBs associated with **soil/sediment** samples.

Based on blank contamination, the following qualifications were made:

- aluminum in water samples MJ0BP4 and MJ0BQ2 was qualified 'J', estimated, or 'UJ', estimated detection limit
- beryllium in all **soil/sediment** samples except MJ0BP5 was qualified 'U', undetected
- cadmium in water samples MJ0BN5, MJ0BP6, and MJ0BQ2 was qualified 'U', undetected
- manganese in water sample MJ0BQ2 was qualified 'U', undetected
- sodium in **soil/sediment** samples MJ0BQ3, MJ0BQ5, MJ0BQ7, and MJ0BQ8 was qualified 'U', undetected
- vanadium in water samples MJ0BN5 and MJ0BP6 was qualified 'U', undetected
- zinc in water samples MJ0BN5 and MJ0BP4 was qualified 'U', undetected

The remaining sample results were greater than five times the

associated blank levels (or were already undetected) and were not qualified on this basis.

6.0 ICP-AES Interference Check Sample - Acceptable

The interference check sample (ICS) is analyzed by ICP-AES to verify interelement and background correction factors. Analysis is required at the beginning and end of each sample analysis run and recoveries must be between 80% and 120%. All ICS recoveries associated with reported sample results were within the recovery criterion.

The raw data for a number of samples had interfering levels of calcium or iron. Since the estimated interference was negligible, no qualification was made based on interference.

7.0 Duplicate Analysis -

Duplicate analysis was done on samples MJ0BN5 (water) and MJ0BN9 (**soil/sediment**). Soil/sediment duplicate results were within the ±35% Relative Percent Difference (RPD) or ±2xCRDL criteria for soil/sediment results < 5 times the CRDL criteria, with the exception of cadmium (50.5% RPD), copper (37.5% RPD), and calcium (outside the ±2xCRDL criteria); therefore cadmium, copper, and calcium in **soil/sediment** samples was qualified 'J', estimated. Water duplicate results were within the +20% Relative Percent Difference (RPD) or ±CRDL criteria for water results < 5 times the CRDL criteria, with the exception of lead (outside the ±CRDL criteria); therefore lead in water samples was qualified 'J', estimated.

Laboratory '*' qualifiers were removed from **soil/sediment** antimony, arsenic, cobalt, iron, lead, nickel, and silver results as the laboratory used the stricter water criteria to qualify **soil/sediment** results.

8.0 Matrix Spike Analysis -

Matrix spike sample analyses are done to provide information about the effect of the sample matrix on digestion and measurement methods. Matrix spike recovery must be within the limits of 75 - 125%.

Matrix spike analysis was done on samples MJ0BN5 (water) and MJ0BN9 (**soil/sediment**). All **soil/sediment** matrix spike recoveries were within the required QC limits; with the exception of copper (42.4%R) and silver (71.3%). All copper and silver **soil/sediment** results were qualified 'J', estimated (low bias suspected for silver, unknown bias for copper as copper was also qualified due to poor duplicate precision). All water matrix spike recoveries were within the required QC limits; with the exception of iron (74.4%R). Since the iron recovery was just outside the acceptance criteria, iron water results were not qualified based on matrix spike recovery and

laboratory 'N' qualifiers were removed.

9.0 ICP-AES Serial Dilution -

Samples MJ0BN5 (water) and MJ0BN9 (**soil/sediment**) were analyzed by ICP-AES serial dilution to check for potential interferences. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) were within the 10%D criteria; with the exception of aluminum in water (14.3%). All water aluminum results were qualified 'J', estimated.

10.0 Detection Limits - Acceptable

Sample results which fall below the instrument detection limit (IDL) are assigned the value of the instrument detection limit and the 'U' qualifier is attached.

Contract Required Detection Limit (CRDL) standards are required for most analytes to demonstrate a linear calibration curve near the CRDL. CRDL standards were run at the required frequency.

11.0 Overall Assessment of the Data

This validation of the data is based on the criteria outlined in the *National Functional Guidelines for Inorganic Data Review (02/94)*.

The sample cooler temperature upon receipt was 16°C for soil/sediment samples MJ0BN9, MJ0BP8, MJ0BQ1, MJ0BQ3, MJ0BQ5, MJ0BQ7, and MJ0BQ8 and water sample MJ0BQ2. The cooler was shipped Friday, 6/29/01 but was not received until Monday, 07/02/01. According to the cooler information checklist, all applicable pHs were within specific guidelines and some ice was still present. Properly preserved water metals samples (pH<2) do not require cooling (40 CFR 136.2, Table II). In the reviewer's judgement, it is unlikely that the elevated temperature for soil/sediment due to the delay in delivery would cause appreciable loss of metals, therefore no action was taken based on the elevated cooler temperature.

Soil/sediment sample MJ0BP5 had a very low percent solids - 16.8%. The raw data was checked to make sure there wasn't a calculation error. There was no calculation error. In fact, this sample also had a duplicate percent solids determination which had a very similar result of 17.2%. According to the station location identifier, this sample is a background sediment sample. None of the other samples in this SDG have such a low percent solids.

For soil/sediment the amount of sample MJ0BP5 analyzed for mercury is 0.2 g, wet weight, while the amount of sample MJ0BP5 analyzed for other metals is 1.0 gram, wet weight. With 16.8% solids, this means only approximately 0.034 g of solid material was analyzed for mercury and approximately 0.168 g of solid material was analyzed for the other

metals. Since mercury was not detected in this sample and since such a minute amount of material was digested, the undetected mercury result for this sample was qualified 'R', unusable. There were some detects for the ICP-AES analysis, indicating that at least some ICP analytes were measurable in the small sample aliquot. All ICP-AES analytes, including non-detects, in this sample were qualified 'J', estimated (unknown bias).

There were 460 data points reported: 29 results were estimated due to blank contamination; 52 results were estimated due to duplicate precision; 32 results were estimated due to matrix spike recovery; 4 results were estimated due to serial dilution; 22 results were estimated due to reduced sample analysis size and 1 result was rejected due to reduced sample analysis size. Overall, 25.6 percent of the data was qualified (only counting one qualification in the case where there were multiple reasons for qualification).

Below are the definitions for the National Functional Guidelines for Inorganic Data Review (02/94) qualifiers used when validating/qualifying data from Inorganic analysis.

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. (Note: Analyte may or may not be present.)

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

At the request of the site assessment manager, bias for the data was qualitatively assessed and if applicable, the following additional qualifiers were applied:

L - Low bias.

H - High bias.

K - Unknown Bias.

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BN3

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): SOIL Lab Sample ID: 01C01335

Level (low/med): LOW Date Received: 06/29/01

% 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	3410			P
7440-36-0	Antimony	8.6	U	*	P
7440-38-2	Arsenic	1.9	B	*	P
7440-39-3	Barium	50.8	B		P
7440-41-7	Beryllium	0.20	~~B~~	U	P
7440-43-9	Cadmium	0.06	B	* JK	P
7440-70-2	Calcium	1760		* JK	P
7440-47-3	Chromium	2.2	B		P
7440-48-4	Cobalt	1.6	U	*	P
7440-50-8	Copper	3.7	B	~~N*~~ JK	P
7439-89-6	Iron	4520		*	P
7439-92-1	Lead	2.7		*	P
7439-95-4	Magnesium	799	B		P
7439-96-5	Manganese	387			P
7439-97-6	Mercury	0.07	U	JL	CV
7440-02-0	Nickel	2.5	U	*	P
7440-09-7	Potassium	508	B		P
7782-49-2	Selenium	0.56	U		P
7440-22-4	Silver	0.80	U	~~N*~~ JL	P
7440-23-5	Sodium	123	B		P
7440-28-0	Thallium	0.86	U		P
7440-62-2	Vanadium	9.2	B		P
7440-66-6	Zinc	18.3			P
	Cyanide				NR

9/18/01

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: COLORLESS Clarity After: CLOUDY Artifacts:

Comments:

FORM I - IN

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BN4

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): SOIL Lab Sample ID: 01C01336

Level (low/med): LOW Date Received: 06/29/01

% Solids: 81.6

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4860			P
7440-36-0	Antimony	7.2	U	*	P
7440-38-2	Arsenic	1.3	B	*	P
7440-39-3	Barium	31.1	B		P
7440-41-7	Beryllium	0.27	~~B~~	U	P
7440-43-9	Cadmium	0.05	U	*JK	P
7440-70-2	Calcium	3740		*JK	P
7440-47-3	Chromium	6.1			P
7440-48-4	Cobalt	2.7	B	*	P
7440-50-8	Copper	5.1	B	N*JK	P
7439-89-6	Iron	7020		*	P
7439-92-1	Lead	8.0		*	P
7439-95-4	Magnesium	1860			P
7439-96-5	Manganese	148			P
7439-97-6	Mercury	0.06	U	JL	CV
7440-02-0	Nickel	8.2	B	*	P
7440-09-7	Potassium	509	B		P
7782-49-2	Selenium	0.47	U		P
7440-22-4	Silver	0.66	U	N*JL	P
7440-23-5	Sodium	131	B		P
7440-28-0	Thallium	0.71	U		P
7440-62-2	Vanadium	10.1	B		P
7440-66-6	Zinc	20.0			P
	Cyanide				NR

7/18/01

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: COLORLESS Clarity After: CLOUDY Artifacts:

Comments:

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BN5

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): WATER Lab Sample ID: 01C01344

Level (low/med): LOW Date Received: 06/29/01

% 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	2250		EJK	PM
7440-36-0	Antimony	32.6	U		PM
7440-38-2	Arsenic	2.2	U		PM
7440-39-3	Barium	22.9	B		PM
7440-41-7	Beryllium	0.22	U		PM
7440-43-9	Cadmium	0.70	~~B~~	U	PM
7440-70-2	Calcium	11800			PM
7440-47-3	Chromium	2.8	U		PM
7440-48-4	Cobalt	6.1	U		PM
7440-50-8	Copper	3.4	U		PM
7439-89-6	Iron	1650		~~N~~	PM
7439-92-1	Lead	13.4		*JK	PM
7439-95-4	Magnesium	2330	B		PM
7439-96-5	Manganese	56.6			PM
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	9.4	U		PM
7440-09-7	Potassium	913	B		PM
7782-49-2	Selenium	2.1	U		PM
7440-22-4	Silver	3.0	U		PM
7440-23-5	Sodium	1230	B		PM
7440-28-0	Thallium	3.2	U		PM
7440-62-2	Vanadium	4.6	~~B~~	U	PM
7440-66-6	Zinc	13.3	~~B~~	U	PM
	Cyanide				NR

9/18/01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
E - ICP SERIAL DILUTION IS OUTSIDE OF CONTROL LIMITS.

FORM I - IN

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BN6

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): SOIL Lab Sample ID: 01C01337

Level (low/med): LOW Date Received: 06/29/01

% Solids: 83.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16000			P
7440-36-0	Antimony	7.0	U	*	P
7440-38-2	Arsenic	1.5	B	*	P
7440-39-3	Barium	197			P
7440-41-7	Beryllium	0.59	~~B~~	U	P
7440-43-9	Cadmium	0.05	U	* JK	P
7440-70-2	Calcium	2100		* JK	P
7440-47-3	Chromium	10.3			P
7440-48-4	Cobalt	6.2	B	*	P
7440-50-8	Copper	6.4		~~N*~~ JK	P
7439-89-6	Iron	13200		*	P
7439-92-1	Lead	8.4		*	P
7439-95-4	Magnesium	2300			P
7439-96-5	Manganese	501			P
7439-97-6	Mercury	0.06	U	~~JL~~	CV
7440-02-0	Nickel	10.8		*	P
7440-09-7	Potassium	885	B		P
7782-49-2	Selenium	0.96	B		P
7440-22-4	Silver	0.64	U	~~N*~~ JL	P
7440-23-5	Sodium	140	B		P
7440-28-0	Thallium	0.69	U		P
7440-62-2	Vanadium	15.6			P
7440-66-6	Zinc	80.6			P
	Cyanide				NR

9/18/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: CLOUDY Artifacts:

Comments:

FORM I - IN

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BN7

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): SOIL Lab Sample ID: 01C01338

Level (low/med): LOW Date Received: 06/29/01

% Solids: 71.9

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	29300			P
7440-36-0	Antimony	8.2	U	*	P
7440-38-2	Arsenic	4.5		*	P
7440-39-3	Barium	166			P
7440-41-7	Beryllium	0.79	~~B~~	U	P
7440-43-9	Cadmium	0.28	B	* JK	P
7440-70-2	Calcium	6860		* JK	P
7440-47-3	Chromium	21.5			P
7440-48-4	Cobalt	7.5	B	*	P
7440-50-8	Copper	13.9		N* JK	P
7439-89-6	Iron	19200		*	P
7439-92-1	Lead	19.2		*	P
7439-95-4	Magnesium	5190			P
7439-96-5	Manganese	501			P
7439-97-6	Mercury	0.07	U	JL	CV
7440-02-0	Nickel	15.9		*	P
7440-09-7	Potassium	1210	B		P
7782-49-2	Selenium	0.89	B		P
7440-22-4	Silver	0.75	U	N* JL	P
7440-23-5	Sodium	419	B		P
7440-28-0	Thallium	0.81	U		P
7440-62-2	Vanadium	27.2			P
7440-66-6	Zinc	135			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: CLOUDY Artifacts:

Comments:

FORM I - IN

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BN8

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): SOIL Lab Sample ID: 01C01339

Level (low/med): LOW Date Received: 06/29/01

% Solids: 71.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	27000			P
7440-36-0	Antimony	8.2	U	*	P
7440-38-2	Arsenic	7.0		*	P
7440-39-3	Barium	214			P
7440-41-7	Beryllium	0.80	~~B~~	U	P
7440-43-9	Cadmium	3.3		* JK	P
7440-70-2	Calcium	1510		* JK	P
7440-47-3	Chromium	9.8			P
7440-48-4	Cobalt	8.1	B	*	P
7440-50-8	Copper	9.8		N* JK	P
7439-89-6	Iron	17800		*	P
7439-92-1	Lead	139		*	P
7439-95-4	Magnesium	1640			P
7439-96-5	Manganese	2340			P
7439-97-6	Mercury	0.07	U	JL	CV
7440-02-0	Nickel	10.2	B	*	P
7440-09-7	Potassium	764	B		P
7782-49-2	Selenium	0.69	B		P
7440-22-4	Silver	0.76	U	N* JL	P
7440-23-5	Sodium	193	B		P
7440-28-0	Thallium	0.81	U		P
7440-62-2	Vanadium	25.4			P
7440-66-6	Zinc	901			P
	Cyanide				NR

9/6/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: CLOUDY Artifacts:

Comments:

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BN9

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): SOIL Lab Sample ID: 01C01385

Level (low/med): LOW Date Received: 07/02/01

% Solids: 85.3

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10300			P
7440-36-0	Antimony	637		*	P
7440-38-2	Arsenic	2850		*	P
7440-39-3	Barium	59.5			P
7440-41-7	Beryllium	0.63	~~B~~	U	P
7440-43-9	Cadmium	152		*JK	P
7440-70-2	Calcium	9120		*JK	P
7440-47-3	Chromium	20.9			P
7440-48-4	Cobalt	20.1		*	P
7440-50-8	Copper	106		N*JK	P
7439-89-6	Iron	63500		*	P
7439-92-1	Lead	14100		*	P
7439-95-4	Magnesium	12800			P
7439-96-5	Manganese	2300			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	23.9		*	P
7440-09-7	Potassium	847	B		P
7782-49-2	Selenium	0.45	U		P
7440-22-4	Silver	24.4		N*JL	P
7440-23-5	Sodium	55.4	B		P
7440-28-0	Thallium	1.4	U		P
7440-62-2	Vanadium	38.7			P
7440-66-6	Zinc	12300			P
	Cyanide				NR

9/18/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: CLOUDY Artifacts:

Comments:

FORM I - IN

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BP1

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): SOIL Lab Sample ID: 01C01341

Level (low/med): LOW Date Received: 06/29/01

% Solids: 81.3

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10000			P
7440-36-0	Antimony	7.2	U	*	P
7440-38-2	Arsenic	0.89	B	*	P
7440-39-3	Barium	18.5	B		P
7440-41-7	Beryllium	0.19	~~B~~	U	P
7440-43-9	Cadmium	0.05	U	* JK	P
7440-70-2	Calcium	2620		* JK	P
7440-47-3	Chromium	13.2			P
7440-48-4	Cobalt	5.9	B	*	P
7440-50-8	Copper	4.2	B	~~N*~~ JK	P
7439-89-6	Iron	22800		*	P
7439-92-1	Lead	6.4		*	P
7439-95-4	Magnesium	4260			P
7439-96-5	Manganese	292			P
7439-97-6	Mercury	0.06	U	~~JL~~	CV
7440-02-0	Nickel	17.0		*	P
7440-09-7	Potassium	181	B		P
7782-49-2	Selenium	0.57	B		P
7440-22-4	Silver	0.66	U	~~N*~~ JL	P
7440-23-5	Sodium	73.9	B		P
7440-28-0	Thallium	0.71	U		P
7440-62-2	Vanadium	12.0	B		P
7440-66-6	Zinc	41.2			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BP2

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): SOIL Lab Sample ID: 01C01340

Level (low/med): LOW Date Received: 06/29/01

% Solids: 78.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8660			P
7440-36-0	Antimony	7.4	U	*	P
7440-38-2	Arsenic	0.51	U	*	P
7440-39-3	Barium	52.3			P
7440-41-7	Beryllium	0.74	~~B~~	U	P
7440-43-9	Cadmium	0.05	U	* JK	P
7440-70-2	Calcium	1720		* JK	P
7440-47-3	Chromium	12.3			P
7440-48-4	Cobalt	3.9	B	*	P
7440-50-8	Copper	4.6	B	~~N*~~ JK	P
7439-89-6	Iron	13200		*	P
7439-92-1	Lead	5.4		*	P
7439-95-4	Magnesium	2750			P
7439-96-5	Manganese	194			P
7439-97-6	Mercury	0.06	U	JK	CV
7440-02-0	Nickel	9.9	B	*	P
7440-09-7	Potassium	1210	B		P
7782-49-2	Selenium	0.73	B		P
7440-22-4	Silver	0.69	U	~~N*~~ JL	P
7440-23-5	Sodium	90.9	B		P
7440-28-0	Thallium	0.74	U		P
7440-62-2	Vanadium	14.5			P
7440-66-6	Zinc	32.3			P
	Cyanide				NR

9/18/01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BP3

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): SOIL Lab Sample ID: 01C01342

Level (low/med): LOW Date Received: 06/29/01

% Solids: 80.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4440			P
7440-36-0	Antimony	7.3	U	*	P
7440-38-2	Arsenic	1.2	B	*	P
7440-39-3	Barium	26.4	B		P
7440-41-7	Beryllium	0.16	~~B~~ U		P
7440-43-9	Cadmium	0.05	U	*JK	P
7440-70-2	Calcium	2510		*JK	P
7440-47-3	Chromium	7.3			P
7440-48-4	Cobalt	2.5	B	*	P
7440-50-8	Copper	5.9	B	N*JK	P
7439-89-6	Iron	10200		*	P
7439-92-1	Lead	3.3		*	P
7439-95-4	Magnesium	2160			P
7439-96-5	Manganese	206			P
7439-97-6	Mercury	0.06	U	JL	CV
7440-02-0	Nickel	8.9	B	*	P
7440-09-7	Potassium	696	B		P
7782-49-2	Selenium	0.48	B		P
7440-22-4	Silver	0.67	U	N*JL	P
7440-23-5	Sodium	65.3	B		P
7440-28-0	Thallium	0.72	U		P
7440-62-2	Vanadium	9.4	B		P
7440-66-6	Zinc	18.3			P
	Cyanide				NR

9/18/01

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BP4

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): WATER Lab Sample ID: 01C01345

Level (low/med): LOW Date Received: 06/29/01

% 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	27.2	U	E J	PM
7440-36-0	Antimony	32.6	U		PM
7440-38-2	Arsenic	2.2	U		PM
7440-39-3	Barium	17.3	B		PM
7440-41-7	Beryllium	0.22	U		PM
7440-43-9	Cadmium	0.22	U		PM
7440-70-2	Calcium	47500			PM
7440-47-3	Chromium	2.8	U		PM
7440-48-4	Cobalt	6.1	U		PM
7440-50-8	Copper	3.4	U		PM
7439-89-6	Iron	116		N	PM
7439-92-1	Lead	1.3	U	* J	PM
7439-95-4	Magnesium	7120			PM
7439-96-5	Manganese	10.4	B		PM
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	9.4	U		PM
7440-09-7	Potassium	1450	B		PM
7782-49-2	Selenium	2.1	U		PM
7440-22-4	Silver	3.0	U		PM
7440-23-5	Sodium	2680	B		PM
7440-28-0	Thallium	3.2	U		PM
7440-62-2	Vanadium	2.9	U		PM
7440-66-6	Zinc	6.1	~~B~~	U	PM
	Cyanide				NR

olor Before: COLORLESS Clarity Before: CLEAR Texture:

olor After: COLORLESS Clarity After: CLEAR Artifacts:

omments:
E - ICP SERIAL DILUTION IS OUTSIDE OF CONTROL LIMITS.

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BP5

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): SOIL Lab Sample ID: 01C01343

Level (low/med): LOW Date Received: 06/29/01

% Solids: 16.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2260		JK	P
7440-36-0	Antimony	34.9	U	* JK	P
7440-38-2	Arsenic	2.4	U	* JK	P
7440-39-3	Barium	66.5	B	JK	P
7440-41-7	Beryllium	0.24	U	JK	P
7440-43-9	Cadmium	1.7	B	* JK	P
7440-70-2	Calcium	68500		* JK	P
7440-47-3	Chromium	3.0	U	JK	P
7440-48-4	Cobalt	6.5	U	* JK	P
7440-50-8	Copper	13.0	B	N* JK	P
7439-89-6	Iron	2310		* JK	P
7439-92-1	Lead	16.1		* JK	P
7439-95-4	Magnesium	2260	B	JK	P
7439-96-5	Manganese	12.2	B	JK	P
7439-97-6	Mercury	~~0.30~~	~~U~~	~~JK~~ R	CV
7440-02-0	Nickel	14.1	B	* JK	P
7440-09-7	Potassium	398	U	JK	P
7782-49-2	Selenium	12.1		JK	P
7440-22-4	Silver	3.2	U	N* JK	P
7440-23-5	Sodium	213	B	JK	P
7440-28-0	Thallium	3.5	U	JK	P
7440-62-2	Vanadium	51.9	B	JK	P
7440-66-6	Zinc	42.0		JK	P
	Cyanide				NR

9/20/01

9/18/01

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BP6

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): WATER Lab Sample ID: 01C01346

Level (low/med): LOW Date Received: 06/29/01

% 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	1240		E JK	PM
7440-36-0	Antimony	32.6	U		PM
7440-38-2	Arsenic	2.2	U		PM
7440-39-3	Barium	72.0	B		PM
7440-41-7	Beryllium	0.22	U		PM
7440-43-9	Cadmium	0.49	~~B~~	U	PM
7440-70-2	Calcium	146000			PM
7440-47-3	Chromium	2.8	U		PM
7440-48-4	Cobalt	6.1	U		PM
7440-50-8	Copper	3.4	U		PM
7439-89-6	Iron	1240		~~N~~	PM
7439-92-1	Lead	10.6		* JK	PM
7439-95-4	Magnesium	15600			PM
7439-96-5	Manganese	21.0			PM
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	9.4	U		PM
7440-09-7	Potassium	1690	B		PM
7782-49-2	Selenium	3.5	B		PM
7440-22-4	Silver	3.0	U		PM
7440-23-5	Sodium	2740	B		PM
7440-28-0	Thallium	3.2	U		PM
7440-62-2	Vanadium	8.4	~~B~~	U	PM
7440-66-6	Zinc	28.8			PM
	Cyanide				NR

9/18/01

Color Before: BROWN Clarity Before: CLOUDY Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:
E - ICP SERIAL DILUTION IS OUTSIDE OF CONTROL LIMITS.

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BP8

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): SOIL Lab Sample ID: 01C01387

Level (low/med): LOW Date Received: 07/02/01

% 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	10500			P
7440-36-0	Antimony	28.0		*	P
7440-38-2	Arsenic	862		*	P
7440-39-3	Barium	52.4	B		P
7440-41-7	Beryllium	0.38	~~B~~	4	P
7440-43-9	Cadmium	9.8		* JK	P
7440-70-2	Calcium	4890		* JK	P
7440-47-3	Chromium	28.8			P
7440-48-4	Cobalt	12.8	B	*	P
7440-50-8	Copper	25.8		N* JL	P
7439-89-6	Iron	29400		*	P
7439-92-1	Lead	494		*	P
7439-95-4	Magnesium	9140			P
7439-96-5	Manganese	985			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	21.6		*	P
7440-09-7	Potassium	822	B		P
7782-49-2	Selenium	0.51	U		P
7440-22-4	Silver	0.80	B	N* JL	P
7440-23-5	Sodium	47.6	B		P
7440-28-0	Thallium	0.77	U		P
7440-62-2	Vanadium	31.5			P
7440-66-6	Zinc	1330			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BQ1

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): SOIL Lab Sample ID: 01C01384

Level (low/med): LOW Date Received: 07/02/01

% Solids: 63.7

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3750			P
7440-36-0	Antimony	9.2	U	*	P
7440-38-2	Arsenic	6.7		*	P
7440-39-3	Barium	166			P
7440-41-7	Beryllium	0.20	~~B~~	U	P
7440-43-9	Cadmium	46.2		* JK	P
7440-70-2	Calcium	214000		* JK	P
7440-47-3	Chromium	7.0			P
7440-48-4	Cobalt	2.2	B	*	P
7440-50-8	Copper	28.5		N* JK	P
7439-89-6	Iron	7050		*	P
7439-92-1	Lead	20.3		*	P
7439-95-4	Magnesium	2660			P
7439-96-5	Manganese	177			P
7439-97-6	Mercury	0.08	U		CV
7440-02-0	Nickel	66.7		*	P
7440-09-7	Potassium	353	B		P
7782-49-2	Selenium	0.60	U		P
7440-22-4	Silver	0.85	U	N* JL	P
7440-23-5	Sodium	83.6	B		P
7440-28-0	Thallium	0.91	U		P
7440-62-2	Vanadium	12.3	B		P
7440-66-6	Zinc	1880			P
	Cyanide				NR

Color Before: WHITE Clarity Before: Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BQ2

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): WATER Lab Sample ID: 01C01391

Level (low/med): LOW Date Received: 07/02/01

% 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	126	B	~~E~~ JK	PM
7440-36-0	Antimony	32.6	U		PM
7440-38-2	Arsenic	2.2	U		PM
7440-39-3	Barium	77.4	B		PM
7440-41-7	Beryllium	0.22	U		PM
7440-43-9	Cadmium	1.6	~~B~~	U	PM
7440-70-2	Calcium	83800			PM
7440-47-3	Chromium	2.8	U		PM
7440-48-4	Cobalt	6.1	U		PM
7440-50-8	Copper	3.4	U		PM
7439-89-6	Iron	165		~~N~~	PM
7439-92-1	Lead	1.3	U	* JK	PM
7439-95-4	Magnesium	24300			PM
7439-96-5	Manganese	8.3	~~B~~	U	PM
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	9.4	U		PM
7440-09-7	Potassium	1030	B		PM
7782-49-2	Selenium	4.2	B		PM
7440-22-4	Silver	3.0	U		PM
7440-23-5	Sodium	2100	B		PM
7440-28-0	Thallium	3.2	U		PM
7440-62-2	Vanadium	2.9	U		PM
7440-66-6	Zinc	116			PM
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
E - ICP SERIAL DILUTION IS OUTSIDE OF CONTROL LIMITS.

FORM I - IN

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BQ8

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BN3

Matrix (soil/water): SOIL Lab Sample ID: 01C01386

Level (low/med): LOW Date Received: 07/02/01

% Solids: 79.3

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8960			P
7440-36-0	Antimony	2450		*	P
7440-38-2	Arsenic	6180		*	P
7440-39-3	Barium	55.6			P
7440-41-7	Beryllium	0.67	~~B~~	U	P
7440-43-9	Cadmium	210		* JK	P
7440-70-2	Calcium	14400		* JK	P
7440-47-3	Chromium	16.9			P
7440-48-4	Cobalt	23.0		*	P
7440-50-8	Copper	279		~~N*~~ JK	P
7439-89-6	Iron	62800		*	P
7439-92-1	Lead	18300		*	P
7439-95-4	Magnesium	19200			P
7439-96-5	Manganese	3520			P
7439-97-6	Mercury	0.35			CV
7440-02-0	Nickel	23.6		*	P
7440-09-7	Potassium	1010	B		P
7782-49-2	Selenium	0.48	U		P
7440-22-4	Silver	37.4		~~N*~~ JL	P
7440-23-5	Sodium	40.0	~~B~~	U	P
7440-28-0	Thallium	0.73	U		P
7440-62-2	Vanadium	35.4			P
7440-66-6	Zinc	23600			P
	Cyanide				NR

9/20/01

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN

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

IN REPLY
REFER TO: OEA-095 September 19, 2001

MEMORANDUM

SUBJECT: Upper Columbia River/Lake Roosevelt, Data Validation
Case: 29469
SDG: MJ0BP9

FROM: Laura Castrilli, Chemist
Quality Assurance and Data Unit, OEA

RECEIVED
SEP 21 2001

TO: Mark Ader, Site Assessment Manager
Office of Environmental Cleanup

CC: Bruce Woods, Region 10 CLP TPO
Susan Fitzgerald, Roy F. Weston, Inc.

The following is a validation of ICP-AES and mercury analyses of four water samples from the Upper Columbia River/Lake Roosevelt site. The analyses were performed following the USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis Multi-media, Multi-Concentration, ILM04.1. Analyses were conducted by Datachem Laboratories, Salt Lake City, Utah. This validation was conducted for the following samples:

MJ0BP9 MJ0BQ0 MJ0BQ4 MJ0BQ6

Data Qualifications

The following comments refer to the Datachem Laboratory's performance in meeting quality control specifications outlined in the *CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM04.1.* The comments presented herein are based on the information provided for the review.

1.0 Timeliness - Acceptable

The technical (40 CFR part 136) holding time from the date of collection for mercury in water is 28 days. The holding time for the remaining metals in water is 180 days. The samples were collected between 06/27/00 and 06/28/01. ICP-AES analyses were completed on 08/20/01. Mercury analyses were completed on 07/25/01. All analyses were conducted within the technical water holding times, therefore no qualification was made on the basis of holding time.

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2.0 Sample Preparation - Acceptable

The samples were prepared for mercury analyses on 07/19/01. The samples were prepared for ICP-AES analyses on 07/18/01. No qualification was made based on sample preparation.

3.0 Calibrations/Calibration Verifications - Acceptable

The samples were analyzed for mercury by CVAAS on 07/25/01. The initial calibration included one blank and five standards. The curve was linear with a correlation coefficient greater than 0.995.

The samples were analyzed by ICP-AES on 08/03/01 (arsenic, lead, selenium and thallium), 08/15/01 (remaining ICP-AES metals), and 08/20/01 (silver for sample MJ0BQ4). The instruments were standardized each day of analysis according to the analytical method using one blank and a single calibration standard for each element.

All ICP-AES and CVAAS (mercury) calibrations were performed as required and met the acceptance criteria; therefore, no qualification was made on this basis.

Calibration verification samples are required before and after sample analysis and after every 10 samples during analysis. Mercury recoveries must be within 80-120%. Other metal recoveries must be within 90-110%.

All ICP-AES and CVAAS (mercury) calibration verification (initial and continuing) samples bracketing reported sample results met the frequency and recovery criteria; therefore no qualification was made based on ICP-AES or CVAAS calibration verification.

4.0 Laboratory Control Samples - Acceptable

Laboratory Control samples (LCS) are digested and analyzed along with the samples to verify the efficiency of laboratory procedures (LCS analyses are not required for mercury in water). All recoveries associated with reported sample results met the acceptance criteria for control samples, therefore no qualification was made based on LCS results.

5.0 Blanks -

Procedural blanks were prepared with the samples to show potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified if the analyte concentration was less than five times the analytical value in the blank.

Calcium, chromium, iron, nickel, and sodium were detected in the preparation blank. Aluminum and zinc in the preparation blank had

negative results with absolute values greater than the instrument detection limits (IDLs). Beryllium, calcium, iron, manganese, and zinc were detected in one or more continuing calibration blanks (CCBs). Aluminum in one or more CCBs had negative results with absolute values greater than the IDL. Based on blank contamination, the following qualifications were made:

- aluminum in all samples was qualified 'J', estimated or 'UJ', estimated detection limit
- calcium in samples MJ0BQ0 and MJ0BQ4 was qualified 'U', undetected
- iron in samples MJ0BQ0 and MJ0BQ6 was qualified 'U', undetected
- manganese in sample MJ0BQ6 was qualified 'U', undetected
- sodium in samples MJ0BQ0 and MJ0BQ4 was qualified 'U', undetected
- zinc in samples MJ0BQ0, MJ0BQ4, and MJ0BQ6 was qualified 'UJ', estimated detection limit

The remaining sample results were greater than five times the associated blank levels (or were already undetected) and were not qualified on this basis.

6.0 ICP-AES Interference Check Sample - Acceptable

The interference check sample (ICS) is analyzed by ICP-AES to verify interelement and background correction factors. Analysis is required at the beginning and end of each sample analysis run and recoveries must be between 80% and 120%. All ICS recoveries associated with reported sample results were within the recovery criterion.

None of the samples had interfering levels of metals, therefore no qualification was made based on interference.

7.0 Duplicate Analysis - Acceptable

Duplicate analysis was done on sample MJ0BP9. Water duplicate results were within the ±20% Relative Percent Difference (RPD) or ±CRDL criteria for water results < 5 times the CRDL criteria, therefore no qualification was made based on duplicate results.

8.0 Matrix Spike Analysis - Acceptable

Matrix spike sample analyses are done to provide information about the effect of the sample matrix on digestion and measurement methods. Matrix spike recovery must be within the limits of 75 - 125%.

Matrix spike analysis was done on sample MJ0BP9. All matrix spike

recoveries were within the required QC limits; therefore no qualification was made based on matrix spike recovery.

9.0 ICP-AES Serial Dilution -

Sample MJ0BP9 was analyzed by ICP-AES serial dilution to check for potential interferences. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) were within the 10%D criteria; with the exception of sodium (10.5%D) and zinc (10.1%D). Since the dilution results were so close to the acceptance criteria, sample results were not qualified on this basis and laboratory 'E' qualifiers were removed from the sample results.

10.0 Detection Limits - Acceptable

Sample results which fall below the instrument detection limit (IDL) are assigned the value of the instrument detection limit and the 'U' qualifier is attached.

Contract Required Detection Limit (CRDL) standards are required for most analytes to demonstrate a linear calibration curve near the CRDL. CRDL standards were run at the required frequency.

11.0 Overall Assessment of the Data

This validation of the data is based on the criteria outlined in the *National Functional Guidelines for Inorganic Data Review (02/94)*. Approximately 15% of the data was qualified based on blank contamination.

Note that the sample cooler temperature upon receipt was 16°C. According to the cooler information checklist, all applicable pHs were within specific guidelines. Since properly preserved water metals samples (pH<2) do not require cooling (40 CFR 136.2, Table II), no action was taken based on the elevated cooler temperature.

Below are the definitions for the National Functional Guidelines for Inorganic Data Review (02/94) qualifiers used when validating/qualifying data from Inorganic analysis.

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. (Note: Analyte may or may not be present.)

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

At the request of the site assessment manager, bias for the data was qualitatively assessed and if applicable, the following additional qualifiers were applied:

L - Low bias.

H - High bias.

K - Unknown Bias.

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BQ0

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BP9

Matrix (soil/water): WATER Lab Sample ID: 01C01393

Level (low/med): LOW Date Received: 07/02/01

% 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	27.2	U	JL	PM
7440-36-0	Antimony	32.6	U		PM
7440-38-2	Arsenic	2.2	U		PM
7440-39-3	Barium	0.72	B		PM
7440-41-7	Beryllium	0.22	U		PM
7440-43-9	Cadmium	1.6	U		PM
7440-70-2	Calcium	48.6	~~B~~	U	PM
7440-47-3	Chromium	2.8	U		PM
7440-48-4	Cobalt	6.1	U		PM
7440-50-8	Copper	3.4	U		PM
7439-89-6	Iron	14.3	~~B~~	U	PM
7439-92-1	Lead	2.1	B		PM
7439-95-4	Magnesium	33.6	U		PM
7439-96-5	Manganese	0.44	U		PM
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	9.4	U		PM
7440-09-7	Potassium	372	U		PM
7782-49-2	Selenium	2.1	U		PM
7440-22-4	Silver	3.0	U		PM
7440-23-5	Sodium	119	~~B~~	~~E~~ U	PM
7440-28-0	Thallium	3.2	U		PM
7440-62-2	Vanadium	2.9	U		PM
7440-66-6	Zinc	2.1	~~B~~	~~E~~ UJK	PM
	Cyanide				NR

8/28/11/01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
E - ICP SERIAL DILUTION IS OUTSIDE OF CONTROL LIMITS.

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MJ0BQ6

Lab Name: DATACHEM LABORATORIES Contract: 68-W0-0087

Lab Code: DATAC Case No.: 29469 SAS No.: SDG No.: MJ0BP9

Matrix (soil/water): WATER Lab Sample ID: 01C01394

Level (low/med): LOW Date Received: 07/02/01

% 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	27.2	U	JL	PM
7440-36-0	Antimony	32.6	U		PM
7440-38-2	Arsenic	2.2	U		PM
7440-39-3	Barium	8.9	B		PM
7440-41-7	Beryllium	0.22	U		PM
7440-43-9	Cadmium	1.6	U		PM
7440-70-2	Calcium	12500			PM
7440-47-3	Chromium	2.8	U		PM
7440-48-4	Cobalt	6.1	U		PM
7440-50-8	Copper	3.4	U		PM
7439-89-6	Iron	41.2	~~B~~	U	PM
7439-92-1	Lead	1.3	U		PM
7439-95-4	Magnesium	2050	B		PM
7439-96-5	Manganese	1.1	~~B~~	U	PM
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	9.4	U		PM
7440-09-7	Potassium	674	B		PM
7782-49-2	Selenium	2.1	U		PM
7440-22-4	Silver	3.0	U		PM
7440-23-5	Sodium	786	B	~~E~~	PM
7440-28-0	Thallium	3.2	U		PM
7440-62-2	Vanadium	2.9	U		PM
7440-66-6	Zinc	1.9	U	~~E~~ JK	PM
	Cyanide				NR

9/11/01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
E - ICP SERIAL DILUTION IS OUTSIDE OF CONTROL LIMITS.

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

Received 8-6-01 SNF 8-24-01

DATE: July 11, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt site. Case: 29276 SDG: MJ0BK0

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1086
TDN: 1042
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 9 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0BK0	MJ0BL9
MJ0BK7	MJ0BM0
MJ0BK8	MJ0BM1
MJ0BK9	MJ0BM3
MJ0BL8	

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/6, 6/8 and 6/9/01. The samples were analyzed for mercury within 8 days and all other metals within 10 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 91-104% for ICP-AES and from 82-96% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
lead	MJ0BM1

Lead was further qualified on the basis of duplicate and spike analyses.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/6, 6/8 and 6/9/01. The samples were analyzed for mercury within 8 days and all other metals within 10 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 91-104% for ICP-AES and from 82-96% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
lead	MJ0BM1

Lead was further qualified on the basis of duplicate and spike analyses.

Analytes which yielded a negative response in the preparation blank and/or continuing calibration blank(s) at concentrations comparable to or less than the absolute value of the blank(s) were qualified as estimated, "J/UJ", due to possible low bias. The following samples were qualified:

Analyte	Associated Samples
arsenic	MJ0BM1

Arsenic was further qualified on the basis of duplicate and spike analyses.

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met by all of the ICS analyzed. The recoveries ranged from 93-111%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0BK0 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of copper. Results for copper in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 55-103%. None of the data were qualified on this basis.

Duplicate Sample Analysis

Sample MJ0BK0 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria (±20% RPD or ± CRDL) for all target analytes with the exception of arsenic and lead. Arsenic did meet the suggested technical control limit criteria (±35% RPD or ± 2X CRDL) for soils but lead did not. Results for lead in all samples were qualified as estimated, "J", and arsenic was not qualified on this basis. The "*" qualifiers applied by the laboratory were crossed-out by the reviewer.

Matrix Spike Analysis

Sample MJ0BK0 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of antimony (57%), arsenic (41%) and lead (-15%) in the spike sample MJ0BK0S. Due to possible bias, the detected and non-detected antimony and arsenic results in all samples were qualified as estimated, "J/UJ". All samples had detected quantities of lead and due to possible bias, the lead results in all samples were qualified as estimated, "J". The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. The recovery for manganese could not be accurately determined because the concentration native to the sample was greater than 4 times the amount of spike added to the sample. All of the other spike recoveries were acceptable and ranged from 82-106%.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 207. One (0.48%) was qualified as non-detected due to blank contamination. Thirty six (17%) were qualified as estimated due to blank contamination and ICP serial dilution, duplicate and spike analyses.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

received 8-6-01 SMF

DATE: July 11, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt site. Case: 29276 SDG: MJ0BK0

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1086
TDN: 1042
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 9 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0BK0	MJ0BL9
MJ0BK7	MJ0BM0
MJ0BK8	MJ0BM1
MJ0BK9	MJ0BM3
MJ0BL8	

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/6, 6/8 and 6/9/01. The samples were analyzed for mercury within 8 days and all other metals within 10 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 91-104% for ICP-AES and from 82-96% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
lead	MJ0BM1

Lead was further qualified on the basis of duplicate and spike analyses.

Analytes which yielded a negative response in the preparation blank and/or continuing calibration blank(s) at concentrations comparable to or less than the absolute value of the blank(s) were qualified as estimated, "J/UJ", due to possible low bias. The following samples were qualified:

Analyte	Associated Samples
arsenic	MJ0BM1

Arsenic was further qualified on the basis of duplicate and spike analyses.

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met by all of the ICS analyzed. The recoveries ranged from 93-111%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0BK0 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of copper. Results for copper in all samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control sample was met. The recoveries ranged from 55-103%. None of the data were qualified on this basis.

Duplicate Sample Analysis

Sample MJ0BK0 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria (±20% RPD or ± CRDL) for all target analytes with the exception of arsenic and lead. Arsenic did meet the suggested technical control limit criteria (±35% RPD or ± 2X CRDL) for soils but lead did not. Results for lead in all samples were qualified as estimated, "J", and arsenic was not qualified on this basis. The "*" qualifiers applied by the laboratory were crossed-out by the reviewer.

Matrix Spike Analysis

Sample MJ0BK0 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of antimony (57%), arsenic (41%) and lead (-15%) in the spike sample MJ0BK0S. Due to possible bias, the detected and non-detected antimony and arsenic results in all samples were qualified as estimated, "J/UJ". All samples had detected quantities of lead and due to possible bias, the lead results in all samples were qualified as estimated, "J". The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. The recovery for manganese could not be accurately determined because the concentration native to the sample was greater than 4 times the amount of spike added to the sample. All of the other spike recoveries were acceptable and ranged from 82-106%.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 207. One (0.48%) was qualified as non-detected due to blank contamination. Thirty six (17%) were qualified as estimated due to blank contamination and ICP serial dilution, duplicate and spike analyses.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BM3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK0

Matrix (soil/water): SOIL Lab Sample ID: 38510S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 76.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2600			P
7440-36-0	Antimony	0.78	U	~~N~~ UJK	P
7440-38-2	Arsenic	2.5	B	~~N~~ JL	P
7440-39-3	Barium	40.2	B		P
7440-41-7	Beryllium	0.12	B		P
7440-43-9	Cadmium	0.08	U		P
7440-70-2	Calcium	3960			P
7440-47-3	Chromium	6.5			P
7440-48-4	Cobalt	1.7	B		P
7440-50-8	Copper	5.0	B	~~E~~ JL	P
7439-89-6	Iron	5240			P
7439-92-1	Lead	5.1		~~N~~ JL	P
7439-95-4	Magnesium	1680			P
7439-96-5	Manganese	129			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	4.9	B		P
7440-09-7	Potassium	532	B		P
7782-49-2	Selenium	0.88	U		P
7440-22-4	Silver	0.24	B		P
7440-23-5	Sodium	210	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	9.0	B		P
7440-66-6	Zinc	20.2			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BM3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK0

Matrix (soil/water): SOIL Lab Sample ID: 38510S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 76.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2600			P
7440-36-0	Antimony	0.78	U	~~N~~ UJK	P
7440-38-2	Arsenic	2.5	B	~~N~~* JL	P
7440-39-3	Barium	40.2	B		P
7440-41-7	Beryllium	0.12	B		P
7440-43-9	Cadmium	0.08	U		P
7440-70-2	Calcium	3960			P
7440-47-3	Chromium	6.5			P
7440-48-4	Cobalt	1.7	B		P
7440-50-8	Copper	5.0	B	~~E~~ JL	P
7439-89-6	Iron	5240			P
7439-92-1	Lead	5.1		~~N~~* JL	P
7439-95-4	Magnesium	1680			P
7439-96-5	Manganese	129			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	4.9	B		P
7440-09-7	Potassium	532	B		P
7782-49-2	Selenium	0.88	U		P
7440-22-4	Silver	0.24	B		P
7440-23-5	Sodium	210	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	9.0	B		P
7440-66-6	Zinc	20.2			P
	Cyanide				NR

7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BM0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK0

Matrix (soil/water): SOIL Lab Sample ID: 38508S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 76.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4340			P
7440-36-0	Antimony	0.78	U	~~N~~UJK	P
7440-38-2	Arsenic	4.5		~~N~~ JL	P
7440-39-3	Barium	71.2			P
7440-41-7	Beryllium	0.11	B		P
7440-43-9	Cadmium	0.08	U		P
7440-70-2	Calcium	82800			P
7440-47-3	Chromium	9.5			P
7440-48-4	Cobalt	2.7	B		P
7440-50-8	Copper	7.5		~~E~~ JL	P
7439-89-6	Iron	11300			P
7439-92-1	Lead	4.7		~~N~~ JL	P
7439-95-4	Magnesium	3740			P
7439-96-5	Manganese	172			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	9.5	B		P
7440-09-7	Potassium	607	B		P
7782-49-2	Selenium	1.1	B		P
7440-22-4	Silver	0.21	B		P
7440-23-5	Sodium	201	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	12.8	B		P
7440-66-6	Zinc	34.4			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BM1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK0

Matrix (soil/water): SOIL Lab Sample ID: 38509S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 71.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1210			P
7440-36-0	Antimony	0.84	U	~~N~~UJK	P
7440-38-2	Arsenic	1.1	U	~~N~~UJK	P
7440-39-3	Barium	11.0	B		P
7440-41-7	Beryllium	0.07	B		P
7440-43-9	Cadmium	0.08	U		P
7440-70-2	Calcium	910	B		P
7440-47-3	Chromium	1.6	B		P
7440-48-4	Cobalt	0.60	B		P
7440-50-8	Copper	1.7	B	~~E~~ JL	P
7439-89-6	Iron	2040			P
7439-92-1	Lead	1.5		~~N~~UJK	P
7439-95-4	Magnesium	569	B		P
7439-96-5	Manganese	64.4			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	1.2	B		P
7440-09-7	Potassium	298	B		P
7782-49-2	Selenium	0.95	U		P
7440-22-4	Silver	0.22	U		P
7440-23-5	Sodium	203	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	3.4	B		P
7440-66-6	Zinc	7.0			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK0

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

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10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK0

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK0

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/15/01	1.00	200
MJ0BK0	06/15/01	1.00	200
MJ0BK0D	06/15/01	1.00	200
MJ0BK0S	06/15/01	1.00	200
MJ0BK7	06/15/01	1.00	200
MJ0BK8	06/15/01	1.00	200
MJ0BK9	06/15/01	1.00	200
MJ0BL8	06/15/01	1.00	200
MJ0BL9	06/15/01	1.00	200
MJ0BM0	06/15/01	1.01	200
MJ0BM1	06/15/01	1.01	200
MJ0BM3	06/15/01	1.00	200
PBS	06/15/01	1.00	200

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK0

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/14/01	0.20	100
MJ0BK0	06/14/01	0.20	100
MJ0BK0D	06/14/01	0.20	100
MJ0BK0S	06/14/01	0.20	100
MJ0BK7	06/14/01	0.20	100
MJ0BK8	06/14/01	0.20	100
MJ0BK9	06/14/01	0.20	100
MJ0BL8	06/14/01	0.20	100
MJ0BL9	06/14/01	0.20	100
MJ0BM0	06/14/01	0.21	100
MJ0BM1	06/14/01	0.20	100
MJ0BM3	06/14/01	0.20	100
PBS	06/14/01	0.20	100

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK0

Matrix (soil/water): SOIL Lab Sample ID: 38539S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 95.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7960			P
7440-36-0	Antimony	1.0	B	~~N~~ JL	P
7440-38-2	Arsenic	14.9		~~N~~ JL	P
7440-39-3	Barium	116			P
7440-41-7	Beryllium	0.42	B		P
7440-43-9	Cadmium	0.06	U		P
7440-70-2	Calcium	21000			P
7440-47-3	Chromium	21.1			P
7440-48-4	Cobalt	7.9	B		P
7440-50-8	Copper	28.8		~~N~~ JL	P
7439-89-6	Iron	25000			P
7439-92-1	Lead	14.2		~~N~~ JL	P
7439-95-4	Magnesium	5170			P
7439-96-5	Manganese	452			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	24.1			P
7440-09-7	Potassium	1210			P
7782-49-2	Selenium	0.78	B		P
7440-22-4	Silver	0.77	B		P
7440-23-5	Sodium	164	B		P
7440-28-0	Thallium	0.82	U		P
7440-62-2	Vanadium	33.0			P
7440-66-6	Zinc	78.5			P
	Cyanide				NR

7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK0

Matrix (soil/water): SOIL Lab Sample ID: 38503S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 76.2

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	0.79	U	~~N~~ UJK	P
7440-38-2	Arsenic	5.8		~~N~~ JL	P
7440-39-3	Barium	156			P
7440-41-7	Beryllium	0.18	B		P
7440-43-9	Cadmium	0.39	B		P
7440-70-2	Calcium	174000			P
7440-47-3	Chromium	11.2			P
7440-48-4	Cobalt	4.0	B		P
7440-50-8	Copper	14.3		~~E~~ JL	P
7439-89-6	Iron	9450			P
7439-92-1	Lead	28.7		~~N~~ JL	P
7439-95-4	Magnesium	4080			P
7439-96-5	Manganese	293			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	11.3			P
7440-09-7	Potassium	824	B		P
7782-49-2	Selenium	0.89	U		P
7440-22-4	Silver	0.21	U		P
7440-23-5	Sodium	275	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	11.4	B		P
7440-66-6	Zinc	52.0			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

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1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK0

Matrix (soil/water): SOIL Lab Sample ID: 38504S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 73.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8030			P
7440-36-0	Antimony	0.82	U	~~N~~UJK	P
7440-38-2	Arsenic	6.4		~~N~~ JL	P
7440-39-3	Barium	163			P
7440-41-7	Beryllium	0.35	B		P
7440-43-9	Cadmium	0.33	B		P
7440-70-2	Calcium	151000			P
7440-47-3	Chromium	15.8			P
7440-48-4	Cobalt	5.2	B		P
7440-50-8	Copper	17.9		~~E~~ JL	P
7439-89-6	Iron	12300			P
7439-92-1	Lead	12.2		~~N~~ JL	P
7439-95-4	Magnesium	4860			P
7439-96-5	Manganese	348			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	18.0			P
7440-09-7	Potassium	1620			P
7782-49-2	Selenium	1.5			P
7440-22-4	Silver	0.26	B		P
7440-23-5	Sodium	299	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	20.6			P
7440-66-6	Zinc	61.2			P
	Cyanide				NR

AP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK0

Matrix (soil/water): SOIL Lab Sample ID: 38505S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 89.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	20000			P
7440-36-0	Antimony	0.67	U	~~N~~ UJK	P
7440-38-2	Arsenic	5.5		~~N~~ JL	P
7440-39-3	Barium	301			P
7440-41-7	Beryllium	0.98	B		P
7440-43-9	Cadmium	0.20	B		P
7440-70-2	Calcium	7790			P
7440-47-3	Chromium	40.1			P
7440-48-4	Cobalt	14.1			P
7440-50-8	Copper	39.9		~~E~~ JL	P
7439-89-6	Iron	27800			P
7439-92-1	Lead	37.3		~~N~~ JL	P
7439-95-4	Magnesium	8670			P
7439-96-5	Manganese	836			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	38.4			P
7440-09-7	Potassium	6120			P
7782-49-2	Selenium	0.76	U		P
7440-22-4	Silver	0.99	B		P
7440-23-5	Sodium	279	B		P
7440-28-0	Thallium	0.87	U		P
7440-62-2	Vanadium	44.8			P
7440-66-6	Zinc	120			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BL8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK0

Matrix (soil/water): SOIL Lab Sample ID: 38506S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 82.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8460			P
7440-36-0	Antimony	0.73	U	~~N~~UJK	P
7440-38-2	Arsenic	5.9		~~N~~* JL	P
7440-39-3	Barium	145			P
7440-41-7	Beryllium	0.33	B		P
7440-43-9	Cadmium	0.58	B		P
7440-70-2	Calcium	98700			P
7440-47-3	Chromium	13.0			P
7440-48-4	Cobalt	4.6	B		P
7440-50-8	Copper	17.5		~~E~~ JL	P
7439-89-6	Iron	11900			P
7439-92-1	Lead	17.9		~~N~~* JL	P
7439-95-4	Magnesium	6770			P
7439-96-5	Manganese	257			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	14.3			P
7440-09-7	Potassium	1640			P
7782-49-2	Selenium	1.7			P
7440-22-4	Silver	0.43	B		P
7440-23-5	Sodium	287	B		P
7440-28-0	Thallium	0.94	U		P
7440-62-2	Vanadium	23.7			P
7440-66-6	Zinc	92.3			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BL9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BK0

Matrix (soil/water): SOIL Lab Sample ID: 38507S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 81.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5370			P
7440-36-0	Antimony	0.74	U	~~N~~U JK	P
7440-38-2	Arsenic	4.3		~~N~~ JL	P
7440-39-3	Barium	114			P
7440-41-7	Beryllium	0.21	B		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	161000			P
7440-47-3	Chromium	9.8			P
7440-48-4	Cobalt	3.4	B		P
7440-50-8	Copper	12.2		~~E~~ JL	P
7439-89-6	Iron	8940			P
7439-92-1	Lead	8.0		~~N~~ JL	P
7439-95-4	Magnesium	4540			P
7439-96-5	Manganese	220			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	9.6	B		P
7440-09-7	Potassium	1170	B		P
7782-49-2	Selenium	0.84	U		P
7440-22-4	Silver	0.20	U		P
7440-23-5	Sodium	274	B		P
7440-28-0	Thallium	0.96	U		P
7440-62-2	Vanadium	12.8			P
7440-66-6	Zinc	55.5			P
	Cyanide				NR

CP 7-11-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

received 8-6-01 SMF

DELIVERABLE NARRATIVE

DATE: July 12, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10 DD

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10 CP

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt site. Case: 29276 SDG: MJ0BN0

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1085
TDN: 1042
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 1 water and 19 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ09F8	MJ0BJ4	MJ0BJ9	MJ0BK5
MJ09G6	MJ0BJ5	MJ0BK0	MJ0BK6
MJ0BJ1	MJ0BJ6	MJ0BK2	MJ0BN0
MJ0BJ2	MJ0BJ7	MJ0BK3	MJ0BN1
MJ0BJ3	MJ0BJ8	MJ0BK4	MJ0BN2

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 6/6, 6/7, 6/8 and 6/9/01. The samples were analyzed for mercury within 8 days and all other metals within 10 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 91-105% for ICP-AES and from 83-95% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
antimony	MJ0BJ1, MJ0BJ4, MJ0BJ7, MJ0BJ9, MJ0BK3, MJ0BK4, MJ0BK5, MJ0BK6
lead	MJ0BJ3
manganese	MJ0BJ3
silver	all except MJ0BJ3, MJ0BK0

sodium	all except MJ0BJ3, MJ0BJ5, MJ0BK3
thallium	MJ0BJ3

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met by all of the ICS analyzed. The recoveries ranged from 92-113%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0BK0 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of copper and lead. Results for copper and lead in the associated samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control samples were met. The aqueous recoveries ranged from 86-105% and the solid recoveries ranged from 64-107%. None of the data were qualified on this basis.

Duplicate Sample Analysis - Acceptable

Sample MJ0BK0 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria for all target analytes. None of the data were qualified on this basis.

Matrix Spike Analysis

Sample MJ0BK0 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of antimony (53%) in the spike sample MJ0BK0S. Due to possible bias, the detected and non-detected antimony results in the associated samples were qualified as estimated, "J/UJ". The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. All of the other spike recoveries were acceptable and ranged from 81-122%.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 460. Forty six (10%) were qualified as non-detected due to blank contamination. Fifty seven (12%) were qualified as estimated due to ICP serial dilution and spike analyses.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:
P4: THERMO JARRELL ASH

U.S. EPA - CLP

10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

U.S. EPA - CLP

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/13/01	1.00	200
LCSW	06/13/01		100
MJ09F8	06/13/01	1.02	200
MJ09G6	06/13/01	1.00	200
MJ0BJ1	06/13/01	1.02	200
MJ0BJ2	06/13/01	1.02	200
MJ0BJ3	06/13/01		100
MJ0BJ4	06/13/01	1.01	200
MJ0BJ5	06/13/01	1.00	200
MJ0BJ6	06/13/01	1.00	200
MJ0BJ7	06/13/01	1.02	200
MJ0BJ8	06/13/01	1.00	200
MJ0BJ9	06/13/01	1.00	200
MJ0BK0	06/13/01	1.00	200
MJ0BK0D	06/13/01	1.00	200
MJ0BK0S	06/13/01	1.00	200
MJ0BK2	06/13/01	1.01	200
MJ0BK3	06/13/01	1.02	200
MJ0BK4	06/13/01	1.00	200
MJ0BK5	06/13/01	1.02	200
MJ0BK6	06/13/01	1.00	200
MJ0BN0	06/13/01	1.00	200
MJ0BN1	06/13/01	1.00	200
MJ0BN2	06/13/01	1.01	200
PBS	06/13/01	1.00	200
PBW	06/13/01		100

U.S. EPA - CLP

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/13/01	0.20	100
MJ09F8	06/13/01	0.21	100
MJ09G6	06/13/01	0.21	100
MJ0BJ1	06/13/01	0.20	100
MJ0BJ2	06/13/01	0.22	100
MJ0BJ3	06/13/01		100
MJ0BJ4	06/13/01	0.20	100
MJ0BJ5	06/13/01	0.21	100
MJ0BJ6	06/13/01	0.21	100
MJ0BJ7	06/13/01	0.21	100
MJ0BJ8	06/13/01	0.22	100
MJ0BJ9	06/13/01	0.22	100
MJ0BK0	06/13/01	0.20	100
MJ0BK0D	06/13/01	0.20	100
MJ0BK0S	06/13/01	0.20	100
MJ0BK2	06/13/01	0.22	100
MJ0BK3	06/13/01	0.22	100
MJ0BK4	06/13/01	0.22	100
MJ0BK5	06/13/01	0.22	100
MJ0BK6	06/13/01	0.20	100
MJ0BN0	06/13/01	0.20	100
MJ0BN1	06/13/01	0.20	100
MJ0BN2	06/13/01	0.20	100
PBS	06/13/01	0.20	100
PBW	06/13/01		100

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09F8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38486S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 96.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8190			P
7440-36-0	Antimony	1.0	B	~~N~~ JL	P
7440-38-2	Arsenic	25.5			P
7440-39-3	Barium	75.4			P
7440-41-7	Beryllium	0.34	B		P
7440-43-9	Cadmium	0.06	U		P
7440-70-2	Calcium	16700			P
7440-47-3	Chromium	31.4			P
7440-48-4	Cobalt	7.0	B		P
7440-50-8	Copper	15.6		~~E~~ JL	P
7439-89-6	Iron	17300			P
7439-92-1	Lead	7.8		~~E~~ JL	P
7439-95-4	Magnesium	5960			P
7439-96-5	Manganese	296			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	28.4			P
7440-09-7	Potassium	1020			P
7782-49-2	Selenium	0.69	U		P
7440-22-4	Silver	0.60	B	U	P
7440-23-5	Sodium	216	B	U	P
7440-28-0	Thallium	0.79	U		P
7440-62-2	Vanadium	28.0			P
7440-66-6	Zinc	55.6			P
	Cyanide				NR

7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09G6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38487S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 95.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5120			P
7440-36-0	Antimony	0.81	B	~~N~~ JL	P
7440-38-2	Arsenic	2.4			P
7440-39-3	Barium	51.5			P
7440-41-7	Beryllium	0.23	B		P
7440-43-9	Cadmium	0.06	U		P
7440-70-2	Calcium	9240			P
7440-47-3	Chromium	9.4			P
7440-48-4	Cobalt	3.0	B		P
7440-50-8	Copper	7.9		~~E~~ JL	P
7439-89-6	Iron	8670			P
7439-92-1	Lead	6.7		~~E~~ JL	P
7439-95-4	Magnesium	4470			P
7439-96-5	Manganese	146			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	8.2	B		P
7440-09-7	Potassium	1180			P
7782-49-2	Selenium	0.72	U		P
7440-22-4	Silver	0.37	B	U	P
7440-23-5	Sodium	212	B	U	P
7440-28-0	Thallium	0.82	U		P
7440-62-2	Vanadium	14.4			P
7440-66-6	Zinc	37.3			P
	Cyanide				NR

CP 7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38488S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 75.6

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	0.91	B	~~N~~UJK	P
7440-38-2	Arsenic	1.4	B		P
7440-39-3	Barium	57.4			P
7440-41-7	Beryllium	0.22	B		P
7440-43-9	Cadmium	0.08	U		P
7440-70-2	Calcium	22800			P
7440-47-3	Chromium	15.8			P
7440-48-4	Cobalt	2.5	B		P
7440-50-8	Copper	8.2		~~E~~JL	P
7439-89-6	Iron	8030			P
7439-92-1	Lead	6.5		~~E~~JL	P
7439-95-4	Magnesium	2780			P
7439-96-5	Manganese	134			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	7.4	B		P
7440-09-7	Potassium	767	B		P
7782-49-2	Selenium	0.92	B		P
7440-22-4	Silver	0.34	B	U	P
7440-23-5	Sodium	254	B	U	P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	13.3			P
7440-66-6	Zinc	32.2			P
	Cyanide				NR

CF 7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38489S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 75.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8710			P
7440-36-0	Antimony	9.6	B	~~N~~ JL	P
7440-38-2	Arsenic	12.0			P
7440-39-3	Barium	288			P
7440-41-7	Beryllium	0.37	B		P
7440-43-9	Cadmium	10.5			P
7440-70-2	Calcium	5510			P
7440-47-3	Chromium	12.3			P
7440-48-4	Cobalt	4.5	B		P
7440-50-8	Copper	15.1		~~E~~ JL	P
7439-89-6	Iron	11400			P
7439-92-1	Lead	405		~~E~~ JL	P
7439-95-4	Magnesium	2770			P
7439-96-5	Manganese	1210			P
7439-97-6	Mercury	0.08	B		CV
7440-02-0	Nickel	10.8			P
7440-09-7	Potassium	1490			P
7782-49-2	Selenium	0.88	U		P
7440-22-4	Silver	0.72	B	U	P
7440-23-5	Sodium	273	B	U	P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	17.7			P
7440-66-6	Zinc	495			P
	Cyanide				NR

CP 7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): WATER Lab Sample ID: 38490S

Level (low/med): LOW Date Received: 06/12/01

% 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	168	U		P
7440-36-0	Antimony	3.0	U		P
7440-38-2	Arsenic	4.0	U		P
7440-39-3	Barium	1.7	U		P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	0.30	U		P
7440-70-2	Calcium	136	U		P
7440-47-3	Chromium	0.70	U		P
7440-48-4	Cobalt	1.1	U		P
7440-50-8	Copper	1.2	B		P
7439-89-6	Iron	54.6	U		P
7439-92-1	Lead	1.8	B	U	P
7439-95-4	Magnesium	132	U		P
7439-96-5	Manganese	0.40	B	U	P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.5	U		P
7440-09-7	Potassium	167	B		P
7782-49-2	Selenium	3.4	U		P
7440-22-4	Silver	0.80	U		P
7440-23-5	Sodium	515	B		P
7440-28-0	Thallium	4.3	B	U	P
7440-62-2	Vanadium	0.90	U		P
7440-66-6	Zinc	5.2	B		P
	Cyanide				NR

CP 7-12-01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
FIELD BLANK

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38491S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 73.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3760			P
7440-36-0	Antimony	1.1	B	~~N~~ UJK	P
7440-38-2	Arsenic	1.1	U		P
7440-39-3	Barium	25.9	B		P
7440-41-7	Beryllium	0.15	B		P
7440-43-9	Cadmium	0.08	U		P
7440-70-2	Calcium	1850			P
7440-47-3	Chromium	9.4			P
7440-48-4	Cobalt	1.9	B		P
7440-50-8	Copper	13.6		~~E~~ JL	P
7439-89-6	Iron	5970			P
7439-92-1	Lead	5.8		~~E~~ JL	P
7439-95-4	Magnesium	1920			P
7439-96-5	Manganese	77.5			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	5.8	B		P
7440-09-7	Potassium	576	B		P
7782-49-2	Selenium	0.91	U		P
7440-22-4	Silver	0.45	B	U	P
7440-23-5	Sodium	303	B	U	P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	10.6	B		P
7440-66-6	Zinc	20.7			P
	Cyanide				NR

7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38492S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 66.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5940			P
7440-36-0	Antimony	0.90	U	~~J~~UJK	P
7440-38-2	Arsenic	9.7			P
7440-39-3	Barium	42.6	B		P
7440-41-7	Beryllium	0.20	B		P
7440-43-9	Cadmium	0.09	U		P
7440-70-2	Calcium	4590			P
7440-47-3	Chromium	16.6			P
7440-48-4	Cobalt	4.7	B		P
7440-50-8	Copper	10.6		~~E~~ JL	P
7439-89-6	Iron	12500			P
7439-92-1	Lead	7.2		~~E~~ JL	P
7439-95-4	Magnesium	4240			P
7439-96-5	Manganese	192			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	25.9			P
7440-09-7	Potassium	771	B		P
7782-49-2	Selenium	1.0	U		P
7440-22-4	Silver	0.75	B	U	P
7440-23-5	Sodium	408	B		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	29.3			P
7440-66-6	Zinc	37.0			P
	Cyanide				NR

CP 7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38493S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 40.1

Concentration 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	1.5	U	~~J~~UJK	P
7440-38-2	Arsenic	5.2			P
7440-39-3	Barium	105			P
7440-41-7	Beryllium	0.17	B		P
7440-43-9	Cadmium	0.16	B		P
7440-70-2	Calcium	49100			P
7440-47-3	Chromium	14.9			P
7440-48-4	Cobalt	3.6	B		P
7440-50-8	Copper	11.5	B	~~J~~JL	P
7439-89-6	Iron	9410			P
7439-92-1	Lead	11.3		~~J~~JL	P
7439-95-4	Magnesium	3210			P
7439-96-5	Manganese	993			P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	9.9	B		P
7440-09-7	Potassium	705	B		P
7782-49-2	Selenium	1.7	U		P
7440-22-4	Silver	0.49	B	U	P
7440-23-5	Sodium	523	B	U	P
7440-28-0	Thallium	1.9	U		P
7440-62-2	Vanadium	16.7	B		P
7440-66-6	Zinc	42.2			P
	Cyanide				NR

CP 7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38494S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 75.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4190			P
7440-36-0	Antimony	1.2	B	~~N~~UJK	P
7440-38-2	Arsenic	4.8			P
7440-39-3	Barium	42.4	B		P
7440-41-7	Beryllium	0.21	B		P
7440-43-9	Cadmium	0.08	U		P
7440-70-2	Calcium	13700			P
7440-47-3	Chromium	11.3			P
7440-48-4	Cobalt	3.9	B		P
7440-50-8	Copper	10.2		~~E~~ JL	P
7439-89-6	Iron	10900			P
7439-92-1	Lead	9.3		~~E~~ JL	P
7439-95-4	Magnesium	3480			P
7439-96-5	Manganese	183			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	11.7			P
7440-09-7	Potassium	571	B		P
7782-49-2	Selenium	0.88	U		P
7440-22-4	Silver	0.51	B	U	P
7440-23-5	Sodium	237	B	U	P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	20.0			P
7440-66-6	Zinc	48.4			P
	Cyanide				NR

CP 7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38495S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 71.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3090			P
7440-36-0	Antimony	0.83	U	~~N~~UJK	P
7440-38-2	Arsenic	1.6	B		P
7440-39-3	Barium	41.5	B		P
7440-41-7	Beryllium	0.17	B		P
7440-43-9	Cadmium	0.17	B		P
7440-70-2	Calcium	6380			P
7440-47-3	Chromium	4.6			P
7440-48-4	Cobalt	1.6	B		P
7440-50-8	Copper	3.9	B	~~E~~JL	P
7439-89-6	Iron	6230			P
7439-92-1	Lead	13.2		~~E~~JL	P
7439-95-4	Magnesium	2790			P
7439-96-5	Manganese	113			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	4.3	B		P
7440-09-7	Potassium	701	B		P
7782-49-2	Selenium	0.95	U		P
7440-22-4	Silver	0.40	B	U	P
7440-23-5	Sodium	241	B	U	P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	11.9	B		P
7440-66-6	Zinc	98.4			P
	Cyanide				NR

CP 7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38496S

Level (low/med): LOW Date Received: 06/12/01

% 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	6750			P
7440-36-0	Antimony	0.91	B	~~N~~UJK	P
7440-38-2	Arsenic	3.8			P
7440-39-3	Barium	60.2			P
7440-41-7	Beryllium	0.26	B		P
7440-43-9	Cadmium	0.11	B		P
7440-70-2	Calcium	36200			P
7440-47-3	Chromium	15.7			P
7440-48-4	Cobalt	4.6	B		P
7440-50-8	Copper	12.7		~~N~~ JL	P
7439-89-6	Iron	13900			P
7439-92-1	Lead	8.1		~~N~~ JL	P
7439-95-4	Magnesium	4910			P
7439-96-5	Manganese	208			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	16.0			P
7440-09-7	Potassium	1380			P
7782-49-2	Selenium	0.92	U		P
7440-22-4	Silver	0.59	B	U	P
7440-23-5	Sodium	297	B	U	P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	26.6			P
7440-66-6	Zinc	138			P
	Cyanide				NR

CP 7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38497S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 69.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6480			P
7440-36-0	Antimony	1.1	B	~~N~~ JL	P
7440-38-2	Arsenic	3.7			P
7440-39-3	Barium	121			P
7440-41-7	Beryllium	0.31	B		P
7440-43-9	Cadmium	1.8			P
7440-70-2	Calcium	110000			P
7440-47-3	Chromium	20.6			P
7440-48-4	Cobalt	4.5	B		P
7440-50-8	Copper	18.3		~~E~~ JL	P
7439-89-6	Iron	10800			P
7439-92-1	Lead	29.3		~~E~~ JL	P
7439-95-4	Magnesium	4210			P
7439-96-5	Manganese	223			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	17.4			P
7440-09-7	Potassium	1450			P
7782-49-2	Selenium	1.7			P
7440-22-4	Silver	0.47	B		P
7440-23-5	Sodium	294	B	U	P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	22.5			P
7440-66-6	Zinc	148			P
	Cyanide				NR

CP 7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38498S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 80.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3480			P
7440-36-0	Antimony	0.74	U	~~N~~UJK	P
7440-38-2	Arsenic	2.6			P
7440-39-3	Barium	28.4	B		P
7440-41-7	Beryllium	0.13	B		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	3330			P
7440-47-3	Chromium	7.4			P
7440-48-4	Cobalt	2.1	B		P
7440-50-8	Copper	6.7		~~E~~ JL	P
7439-89-6	Iron	6850			P
7439-92-1	Lead	3.3		~~E~~ JL	P
7439-95-4	Magnesium	2470			P
7439-96-5	Manganese	123			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	8.3	B		P
7440-09-7	Potassium	596	B		P
7782-49-2	Selenium	0.84	U		P
7440-22-4	Silver	0.37	B	U	P
7440-23-5	Sodium	255	B	U	P
7440-28-0	Thallium	0.96	U		P
7440-62-2	Vanadium	12.4			P
7440-66-6	Zinc	21.2			P
	Cyanide				NR

CP 7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38499S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 97.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6790			P
7440-36-0	Antimony	0.61	B	~~U~~JK	P
7440-38-2	Arsenic	9.2			P
7440-39-3	Barium	73.4			P
7440-41-7	Beryllium	0.23	B		P
7440-43-9	Cadmium	0.06	U		P
7440-70-2	Calcium	33400			P
7440-47-3	Chromium	17.6			P
7440-48-4	Cobalt	5.6	B		P
7440-50-8	Copper	22.0		~~E~~ JL	P
7439-89-6	Iron	16500			P
7439-92-1	Lead	8.5		~~E~~ JL	P
7439-95-4	Magnesium	7750			P
7439-96-5	Manganese	250			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	17.9			P
7440-09-7	Potassium	1160			P
7782-49-2	Selenium	0.68	U		P
7440-22-4	Silver	0.73	B	u	P
7440-23-5	Sodium	282	B		P
7440-28-0	Thallium	0.78	U		P
7440-62-2	Vanadium	30.7			P
7440-66-6	Zinc	50.5			P
	Cyanide				NR

7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38500S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 58.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6810			P
7440-36-0	Antimony	1.6	B	~~N~~UJK	P
7440-38-2	Arsenic	5.8			P
7440-39-3	Barium	147			P
7440-41-7	Beryllium	0.29	B		P
7440-43-9	Cadmium	0.10	U		P
7440-70-2	Calcium	162000			P
7440-47-3	Chromium	12.9			P
7440-48-4	Cobalt	4.7	B		P
7440-50-8	Copper	18.1		~~E~~ JL	P
7439-89-6	Iron	11700			P
7439-92-1	Lead	6.7		~~E~~ JL	P
7439-95-4	Magnesium	5090			P
7439-96-5	Manganese	327			P
7439-97-6	Mercury	0.08	U		CV
7440-02-0	Nickel	14.3			P
7440-09-7	Potassium	1330	B		P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	0.32	B	U	P
7440-23-5	Sodium	337	B	U	P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	16.6	B		P
7440-66-6	Zinc	42.3			P
	Cyanide				NR

CP 7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38501S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 83.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10300			P
7440-36-0	Antimony	1.5	B	~~N~~UJK	P
7440-38-2	Arsenic	10.7			P
7440-39-3	Barium	124			P
7440-41-7	Beryllium	0.45	B		P
7440-43-9	Cadmium	0.88	B		P
7440-70-2	Calcium	12500			P
7440-47-3	Chromium	20.1			P
7440-48-4	Cobalt	7.9	B		P
7440-50-8	Copper	30.0		~~J~~JL	P
7439-89-6	Iron	18600			P
7439-92-1	Lead	65.5		~~J~~JL	P
7439-95-4	Magnesium	5340			P
7439-96-5	Manganese	421			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	19.2			P
7440-09-7	Potassium	2860			P
7782-49-2	Selenium	0.80	U		P
7440-22-4	Silver	0.86	B	U	P
7440-23-5	Sodium	265	B	U	P
7440-28-0	Thallium	0.92	U		P
7440-62-2	Vanadium	28.3			P
7440-66-6	Zinc	123			P
	Cyanide				NR

CP 7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BK6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38502S

Level (low/med): LOW Date Received: 06/12/01

% Solids: 37.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7350			P
7440-36-0	Antimony	2.5	B	~~N~~UJK	P
7440-38-2	Arsenic	2.1	U		P
7440-39-3	Barium	167			P
7440-41-7	Beryllium	0.34	B		P
7440-43-9	Cadmium	0.50	B		P
7440-70-2	Calcium	106000			P
7440-47-3	Chromium	21.4			P
7440-48-4	Cobalt	4.6	B		P
7440-50-8	Copper	19.4		~~E~~ JL	P
7439-89-6	Iron	13200			P
7439-92-1	Lead	20.6		~~E~~ JL	P
7439-95-4	Magnesium	6700			P
7439-96-5	Manganese	167			P
7439-97-6	Mercury	0.13	U		CV
7440-02-0	Nickel	15.1	B		P
7440-09-7	Potassium	1760	B		P
7782-49-2	Selenium	3.8			P
7440-22-4	Silver	0.56	B	U	P
7440-23-5	Sodium	562	B	U	P
7440-28-0	Thallium	2.1	U		P
7440-62-2	Vanadium	20.1	B		P
7440-66-6	Zinc	102			P
	Cyanide				NR

CP 7-12-01

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BN0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38481S

Level (low/med): LOW Date Received: 06/09/01

% Solids: 76.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8560			P
7440-36-0	Antimony	0.91	B	~~N~~ JL	P
7440-38-2	Arsenic	2.1	B		P
7440-39-3	Barium	87.4			P
7440-41-7	Beryllium	0.41	B		P
7440-43-9	Cadmium	0.56	B		P
7440-70-2	Calcium	10100			P
7440-47-3	Chromium	21.5			P
7440-48-4	Cobalt	4.6	B		P
7440-50-8	Copper	27.0		~~E~~ JL	P
7439-89-6	Iron	11200			P
7439-92-1	Lead	34.0		~~E~~ JL	P
7439-95-4	Magnesium	3580			P
7439-96-5	Manganese	338			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	12.3			P
7440-09-7	Potassium	1870			P
7782-49-2	Selenium	1.3	B		P
7440-22-4	Silver	0.60	B	u	P
7440-23-5	Sodium	255	B	u	P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	22.4			P
7440-66-6	Zinc	65.8			P
	Cyanide				NR

CP 7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BN1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38482S

Level (low/med): LOW Date Received: 06/09/01

% Solids: 85.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3080			P
7440-36-0	Antimony	0.70	U	~~N~~UJK	P
7440-38-2	Arsenic	1.5	B		P
7440-39-3	Barium	25.8	B		P
7440-41-7	Beryllium	0.20	B		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	1420			P
7440-47-3	Chromium	5.9			P
7440-48-4	Cobalt	1.9	B		P
7440-50-8	Copper	6.4		~~E~~ JL	P
7439-89-6	Iron	5700			P
7439-92-1	Lead	3.9		~~E~~ JL	P
7439-95-4	Magnesium	1430			P
7439-96-5	Manganese	109			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	4.8	B		P
7440-09-7	Potassium	792	B		P
7782-49-2	Selenium	0.79	U		P
7440-22-4	Silver	0.23	B	U	P
7440-23-5	Sodium	178	B	U	P
7440-28-0	Thallium	0.91	U		P
7440-62-2	Vanadium	10.7	B		P
7440-66-6	Zinc	15.8			P
	Cyanide				NR

CR 7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BN2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0BN0

Matrix (soil/water): SOIL Lab Sample ID: 38483S

Level (low/med): LOW Date Received: 06/09/01

% Solids: 98.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3670			P
7440-36-0	Antimony	0.60	U	~~N~~UJK	P
7440-38-2	Arsenic	1.2	B		P
7440-39-3	Barium	42.4			P
7440-41-7	Beryllium	0.22	B		P
7440-43-9	Cadmium	0.06	U		P
7440-70-2	Calcium	2470			P
7440-47-3	Chromium	8.4			P
7440-48-4	Cobalt	3.7	B		P
7440-50-8	Copper	7.3		~~E~~ JL	P
7439-89-6	Iron	6800			P
7439-92-1	Lead	6.0		~~E~~ JL	P
7439-95-4	Magnesium	2440			P
7439-96-5	Manganese	243			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	8.4			P
7440-09-7	Potassium	1120			P
7782-49-2	Selenium	0.68	U		P
7440-22-4	Silver	0.38	B	U	P
7440-23-5	Sodium	193	B	U	P
7440-28-0	Thallium	0.79	U		P
7440-62-2	Vanadium	12.8			P
7440-66-6	Zinc	22.4			P
	Cyanide				NR

VP 7-12-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

ENVIRONMENTAL SERVICES ASSISTANCE TEAM

ESAT Region 10
7411 Beach Drive East
Port Orchard, WA 98366
Phone (360) 871-8723

DELIVERABLE NARRATIVE

mailed 8-6-01

DATE: July 9, 2001

To: Ginna Grepo-Grove, TOPO, USEPA, Region 10

THROUGH: Dave Dobb, Team Manager, ESAT Region 10

FROM: Chris Pace, Data Validation Task Lead, ESAT Region 10

SUBJECT: Data Validation Report for the Inorganic Analysis of Samples from the Upper Columbia River Lake Roosevelt site. Case: 29276 SDG: MJ0976

Account Code: 01T10P50102D106XLA00

Doc. #: ES10-0-1080
TDN: 1037
Task Order: 001
Contract: 68-W-01-027

CC: Gerald Dodo, PO, USEPA, Region 10
Project File

The quality assurance (QA) review of 2 water and 18 soil samples collected from the above referenced site has been completed. These samples were analyzed for total metals by Sentinel, Inc. of Huntsville, AL. The following samples were reviewed in this validation report:

MJ0976	MJ09E5	MJ09F2	MJ09G1
MJ0980	MJ09E6	MJ09F4	MJ09G3
MJ0981	MJ09E8	MJ09F5	MJ09G7
MJ0982	MJ09E9	MJ09F6	MJ09H0
MJ09E4	MJ09F0	MJ09F9	MJ0BJ1

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis (ILM04.1) and the USEPA CLP Functional Guidelines for Inorganic Data Review, 2/94.

The conclusions presented herein are based on the information provided for the review.

Holding Time - Acceptable

The suggested holding time for mercury is 28 days from the date of sample collection and the holding time for the rest of the metals is 180 days. The samples were collected on 5/31, 6/1, 6/3 and 6/4/01. The samples were analyzed for mercury within 8 days and all other metals within 9 days of the sample collection date. None of the data were qualified on this basis.

Sample Preparation - Acceptable

The samples were prepared in accordance with the methods used. None of the data were qualified on this basis.

Initial Calibration - Acceptable

All of the samples were analyzed for total mercury using Cold Vapor Atomic Absorption Spectroscopy (CVAAS). The initial calibration for mercury met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

The rest of the target analytes were analyzed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES). The initial calibration for ICP-AES met the frequency of analysis and the linearity criteria (correlation coefficients, r=>0.995).

None of the data were qualified on this basis.

Calibration Verification - Acceptable

The initial and continuing calibration verifications met the criteria for frequency of analysis and recovery criteria of 90-110% and 80-120% for mercury. The recoveries ranged from 91-105% for ICP-AES and from 82-103% for mercury. None of the data were qualified on this basis.

Detection Limits - Acceptable

All of the target analytes met the project required quantitation limits. All of the Contract Required Detection Limit (CRDL) checks met the frequency of analysis and recovery criteria.

Blanks

Procedural blanks were prepared with the samples to indicate potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified as non-detects, "U", if the analyte concentration is less than five times the analytical value in the blank.

The frequency of analysis of blanks was met. Based on the target analytes detected in the procedural, initial and continuing calibration blanks, the following results were qualified as non-detects, "U":

Analyte	Associated Samples
arsenic	MJ0981, MJ09E4, MJ09E5, MJ09E6, MJ09E9, MJ09F0, MJ09F2, MJ09F4, MJ09F6, MJ09F9, MJ09G1, MJ09G7, MJ09H0, MJ0BJ1
manganese	MJ0982
sodium	MJ09E6, MJ09E9, MJ09F4, MJ09F6, MJ09G1, MJ09G7, MJ0BJ1

ICP-AES Interference Check Sample - Acceptable

The ICP-AES interference check samples (ICS) were analyzed to verify inter-element and background correction factors. The frequency of analysis (beginning and end of sequence) and recovery criteria (80-120%) were met by all of the ICS analyzed. The recoveries ranged from 90-111%. None of the data were qualified on this basis.

ICP-AES Serial Dilution Analysis

Sample MJ0976 was analyzed for serial dilution. All of the analytes which exceeded the minimum concentration criterion (50 times the IDL) agreed within 10% difference with the exception of copper. Results for copper in the associated samples were qualified as estimated, "J". The "E" qualifiers applied by the laboratory were crossed-out by the reviewer.

Laboratory Control Sample - Acceptable

The frequency of analysis and the recovery criteria for the laboratory control samples were met. The aqueous recoveries ranged from 93-109% and the solid recoveries ranged from 62-112%. None of the data were qualified on this basis.

Duplicate Sample Analysis - Acceptable

Sample MJ0976 was utilized for duplicate analysis. The duplicate results met the frequency of analysis and method control limit criteria for all target analytes. None of the data were qualified on this basis.

Matrix Spike Analysis

Sample MJ0976 was used for the spike analysis. The frequency of analysis and recovery criteria were met with the exception of antimony (49%) and selenium (132%) in the spike sample MJ0976S. Due to possible bias, the detected and non-detected antimony results in the associated samples were qualified as estimated, "J/UJ". Due to possible bias, the detected selenium results in the associated samples were qualified as estimated, "J". The "N" qualifiers applied by the laboratory were crossed-out by the reviewer. The recovery for lead could not be accurately determined because the concentration native to the sample was greater than 4 times the amount of spike added to the sample. All of the other spike recoveries were acceptable and ranged from 80-104%.

Laboratory Contact

The laboratory was not contacted for this review.

Overall Assessment

The total number of data points was 460. Twenty two (4.8%) were qualified as non-detected due to blank contamination. Forty two (9.1%) were qualified as estimated due to spike analysis and ICP serial dilution.

All of the samples were analyzed in accordance with technical specifications outlined in the SOW. The data, as qualified, are acceptable and can be used for all purposes.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported result.
J	-	The analyte was positively identified. The associated numerical result is an estimate.
R	-	The data are unusable for all purposes.
N	-	There is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
L	-	Low bias.
H	-	High bias.
Q	-	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs).
K	-	Unknown Bias.

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09F2

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38291S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 38.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5940			P
7440-36-0	Antimony	1.5	U	~~N~~UJK	P
7440-38-2	Arsenic	9.5		U	P
7440-39-3	Barium	90.8	B		P
7440-41-7	Beryllium	0.28	B		P
7440-43-9	Cadmium	0.15	B		P
7440-70-2	Calcium	8190			P
7440-47-3	Chromium	20.8			P
7440-48-4	Cobalt	6.0	B		P
7440-50-8	Copper	15.6		~~E~~ JL	P
7439-89-6	Iron	14200			P
7439-92-1	Lead	8.0			P
7439-95-4	Magnesium	3890			P
7439-96-5	Manganese	1130			P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	15.3	B		P
7440-09-7	Potassium	1090	B		P
7782-49-2	Selenium	1.7	U	~~N~~	P
7440-22-4	Silver	0.52	B		P
7440-23-5	Sodium	544	B		P
7440-28-0	Thallium	2.0	U		P
7440-62-2	Vanadium	21.1	B		P
7440-66-6	Zinc	46.9			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09F4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38292S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 39.0

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	2.1	B	~~N~~ JL	P
7440-38-2	Arsenic	4.4	B	U	P
7440-39-3	Barium	78.6	B		P
7440-41-7	Beryllium	0.35	B		P
7440-43-9	Cadmium	0.15	U		P
7440-70-2	Calcium	10900			P
7440-47-3	Chromium	17.6			P
7440-48-4	Cobalt	3.4	B		P
7440-50-8	Copper	12.9		~~N~~ JL	P
7439-89-6	Iron	9740			P
7439-92-1	Lead	8.5			P
7439-95-4	Magnesium	3070			P
7439-96-5	Manganese	291			P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	10.2	B		P
7440-09-7	Potassium	1300	B		P
7782-49-2	Selenium	2.2	B	~~N~~ JH	P
7440-22-4	Silver	0.40	U		P
7440-23-5	Sodium	480	B	U	P
7440-28-0	Thallium	2.0	U		P
7440-62-2	Vanadium	16.2	B		P
7440-66-6	Zinc	50.2			P
	Cyanide				NR

7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09F5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38293S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 93.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11400			P
7440-36-0	Antimony	0.84	B	~~N~~ JL	P
7440-38-2	Arsenic	6.6			P
7440-39-3	Barium	146			P
7440-41-7	Beryllium	0.58	B		P
7440-43-9	Cadmium	0.29	B		P
7440-70-2	Calcium	13300			P
7440-47-3	Chromium	26.8			P
7440-48-4	Cobalt	7.5	B		P
7440-50-8	Copper	23.3		~~E~~ JL	P
7439-89-6	Iron	19300			P
7439-92-1	Lead	24.9			P
7439-95-4	Magnesium	7320			P
7439-96-5	Manganese	439			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	24.7			P
7440-09-7	Potassium	2980			P
7782-49-2	Selenium	0.71	U	~~N~~	P
7440-22-4	Silver	0.63	B		P
7440-23-5	Sodium	337	B		P
7440-28-0	Thallium	0.82	U		P
7440-62-2	Vanadium	40.6			P
7440-66-6	Zinc	110			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09F6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38294S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 55.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4500			P
7440-36-0	Antimony	1.1	U	~~N~~UJK	P
7440-38-2	Arsenic	3.1	B	U	P
7440-39-3	Barium	46.1	B		P
7440-41-7	Beryllium	0.25	B		P
7440-43-9	Cadmium	0.11	U		P
7440-70-2	Calcium	2340			P
7440-47-3	Chromium	7.6			P
7440-48-4	Cobalt	1.9	B		P
7440-50-8	Copper	3.7	B	~~E~~JL	P
7439-89-6	Iron	6280			P
7439-92-1	Lead	3.1			P
7439-95-4	Magnesium	1670	B		P
7439-96-5	Manganese	106			P
7439-97-6	Mercury	0.08	U		CV
7440-02-0	Nickel	5.1	B		P
7440-09-7	Potassium	868	B		P
7782-49-2	Selenium	1.2	U	~~N~~	P
7440-22-4	Silver	0.32	B		P
7440-23-5	Sodium	358	B	U	P
7440-28-0	Thallium	1.4	U		P
7440-62-2	Vanadium	9.1	B		P
7440-66-6	Zinc	21.4			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09F9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38295S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 89.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6760			P
7440-36-0	Antimony	0.73	B	~~N~~ JL	P
7440-38-2	Arsenic	5.7		U	P
7440-39-3	Barium	74.5			P
7440-41-7	Beryllium	0.23	B		P
7440-43-9	Cadmium	13.1			P
7440-70-2	Calcium	136000			P
7440-47-3	Chromium	11.7			P
7440-48-4	Cobalt	4.3	B		P
7440-50-8	Copper	18.6		~~E~~ JL	P
7439-89-6	Iron	12100			P
7439-92-1	Lead	17.9			P
7439-95-4	Magnesium	4870			P
7439-96-5	Manganese	183			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	45.6			P
7440-09-7	Potassium	1110	B		P
7782-49-2	Selenium	0.76	U	~~N~~	P
7440-22-4	Silver	0.22	B		P
7440-23-5	Sodium	253	B		P
7440-28-0	Thallium	0.87	U		P
7440-62-2	Vanadium	29.0			P
7440-66-6	Zinc	727			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09G1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38296S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 17.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12200			P
7440-36-0	Antimony	3.4	U	~~N~~UJK	P
7440-38-2	Arsenic	8.5	B	U	P
7440-39-3	Barium	188	B		P
7440-41-7	Beryllium	0.64	B		P
7440-43-9	Cadmium	0.94	B		P
7440-70-2	Calcium	23100			P
7440-47-3	Chromium	16.3			P
7440-48-4	Cobalt	4.9	B		P
7440-50-8	Copper	21.7	B	~~E~~JL	P
7439-89-6	Iron	14600			P
7439-92-1	Lead	14.5			P
7439-95-4	Magnesium	3860	B		P
7439-96-5	Manganese	548			P
7439-97-6	Mercury	0.27	U		CV
7440-02-0	Nickel	17.4	B		P
7440-09-7	Potassium	1740	B		P
7782-49-2	Selenium	4.8	B	~~N~~ JH	P
7440-22-4	Silver	0.91	U		P
7440-23-5	Sodium	1010	B	U	P
7440-28-0	Thallium	4.4	U		P
7440-62-2	Vanadium	24.7	B		P
7440-66-6	Zinc	95.8			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09G3

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38320S

Level (low/med): LOW Date Received: 06/06/01

% Solids: 91.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14800			P
7440-36-0	Antimony	1.6	B	~~N~~ JL	P
7440-38-2	Arsenic	19.3			P
7440-39-3	Barium	315			P
7440-41-7	Beryllium	0.71	B		P
7440-43-9	Cadmium	0.74	B		P
7440-70-2	Calcium	6750			P
7440-47-3	Chromium	35.1			P
7440-48-4	Cobalt	13.5			P
7440-50-8	Copper	39.6		~~E~~ JL	P
7439-89-6	Iron	30100			P
7439-92-1	Lead	95.6			P
7439-95-4	Magnesium	6710			P
7439-96-5	Manganese	803			P
7439-97-6	Mercury	0.11			CV
7440-02-0	Nickel	41.6			P
7440-09-7	Potassium	3920			P
7782-49-2	Selenium	0.74	U	~~N~~	P
7440-22-4	Silver	1.0	B		P
7440-23-5	Sodium	259	B		P
7440-28-0	Thallium	0.85	U		P
7440-62-2	Vanadium	48.5			P
7440-66-6	Zinc	147			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09G7

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38321S

Level (low/med): LOW Date Received: 06/06/01

% Solids: 91.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3500			P
7440-36-0	Antimony	1.1	B	~~N~~ JL	P
7440-38-2	Arsenic	2.9		U	P
7440-39-3	Barium	30.3	B		P
7440-41-7	Beryllium	0.16	B		P
7440-43-9	Cadmium	2.0			P
7440-70-2	Calcium	1780			P
7440-47-3	Chromium	6.1			P
7440-48-4	Cobalt	1.7	B		P
7440-50-8	Copper	5.5		~~E~~ JL	P
7439-89-6	Iron	5010			P
7439-92-1	Lead	34.9			P
7439-95-4	Magnesium	1240			P
7439-96-5	Manganese	670			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	3.8	B		P
7440-09-7	Potassium	595	B		P
7782-49-2	Selenium	0.74	U	~~N~~	P
7440-22-4	Silver	0.28	B		P
7440-23-5	Sodium	219	B	U	P
7440-28-0	Thallium	0.84	U		P
7440-62-2	Vanadium	9.2	B		P
7440-66-6	Zinc	739			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09H0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38322S

Level (low/med): LOW Date Received: 06/06/01

% Solids: 74.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7050			P
7440-36-0	Antimony	1.1	B	~~N~~ JL	P
7440-38-2	Arsenic	5.3		U	P
7440-39-3	Barium	202			P
7440-41-7	Beryllium	0.28	B		P
7440-43-9	Cadmium	0.51	B		P
7440-70-2	Calcium	152000			P
7440-47-3	Chromium	10.5			P
7440-48-4	Cobalt	3.9	B		P
7440-50-8	Copper	21.2		~~E~~ JL	P
7439-89-6	Iron	10100			P
7439-92-1	Lead	12.4			P
7439-95-4	Magnesium	3310			P
7439-96-5	Manganese	431			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	12.6			P
7440-09-7	Potassium	1540			P
7782-49-2	Selenium	1.1	B	~~N~~ JH	P
7440-22-4	Silver	0.30	B		P
7440-23-5	Sodium	345	B		P
7440-28-0	Thallium	1.0	U		P
7440-62-2	Vanadium	17.4			P
7440-66-6	Zinc	68.2			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0BJ1

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38323S

Level (low/med): LOW Date Received: 06/06/01

% Solids: 40.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11700			P
7440-36-0	Antimony	2.2	B	~~N~~ JL	P
7440-38-2	Arsenic	9.6		U	P
7440-39-3	Barium	101			P
7440-41-7	Beryllium	0.45	B		P
7440-43-9	Cadmium	0.14	U		P
7440-70-2	Calcium	43400			P
7440-47-3	Chromium	24.7			P
7440-48-4	Cobalt	10.4	B		P
7440-50-8	Copper	26.8		~~E~~ JL	P
7439-89-6	Iron	23400			P
7439-92-1	Lead	13.2			P
7439-95-4	Magnesium	7910			P
7439-96-5	Manganese	372			P
7439-97-6	Mercury	0.21	B		CV
7440-02-0	Nickel	24.1			P
7440-09-7	Potassium	1700	B		P
7782-49-2	Selenium	1.6	U	~~N~~	P
7440-22-4	Silver	0.73	B		P
7440-23-5	Sodium	479	B	U	P
7440-28-0	Thallium	1.9	U		P
7440-62-2	Vanadium	40.9			P
7440-66-6	Zinc	71.9			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

ICP ID Number: P4 Date: 04/15/01

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200	168.1	P
Antimony	206.80		60	3.0	P
Arsenic	189.00		10	4.0	P
Barium	493.40		200	1.7	P
Beryllium	313.00		5	0.2	P
Cadmium	226.50		5	0.3	P
Calcium	317.90		5000	136.5	P
Chromium	267.70		10	0.7	P
Cobalt	228.60		50	1.1	P
Copper	324.70		25	0.7	P
Iron	271.40		100	54.6	P
Lead	220.30		3	1.5	P
Magnesium	279.00		5000	132.2	P
Manganese	257.60		15	0.4	P
Mercury			0.2		NR
Nickel	231.60		40	1.5	P
Potassium	766.40		5000	15.4	P
Selenium	196.00		5	3.4	P
Silver	328.00		10	0.8	P
Sodium	330.20		5000	130.9	P
Thallium	190.80		10	3.9	P
Vanadium	292.40		50	0.9	P
Zinc	206.20		20	0.8	P
Cyanide			10		NR

Comments:

P4: THERMO JARRELL ASH

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

ICP ID Number: Date: 04/15/01

Flame AA ID Number: C5

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR
Cyanide			10		NR

Comments:
C5: CETAC M6000

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Method: P

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/07/01	1.00	200
LCSW	06/07/01		100
MJ0976	06/07/01	1.00	200
MJ0976D	06/07/01	1.00	200
MJ0976S	06/07/01	1.00	200
MJ0980	06/07/01	1.00	200
MJ0981	06/07/01		100
MJ0982	06/07/01		100
MJ09E4	06/07/01	1.01	200
MJ09E5	06/07/01	1.00	200
MJ09E6	06/07/01	1.02	200
MJ09E8	06/07/01	1.01	200
MJ09E9	06/07/01	1.02	200
MJ09F0	06/07/01	1.02	200
MJ09F2	06/07/01	1.01	200
MJ09F4	06/07/01	1.02	200
MJ09F5	06/07/01	1.02	200
MJ09F6	06/07/01	1.02	200
MJ09F9	06/07/01	1.00	200
MJ09G1	06/07/01	1.01	200
MJ09G3	06/07/01	1.00	200
MJ09G7	06/07/01	1.01	200
MJ09H0	06/07/01	1.02	200
MJ0BJ1	06/07/01	1.02	200
PBS	06/07/01	1.00	200
PBW	06/07/01		100

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PREPARATION LOG

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSS	06/07/01	0.20	100
MJ0976	06/07/01	0.20	100
MJ0976D	06/07/01	0.20	100
MJ0976S	06/07/01	0.20	100
MJ0980	06/07/01	0.21	100
MJ0981	06/07/01		100
MJ0982	06/07/01		100
MJ09E4	06/07/01	0.20	100
MJ09E5	06/07/01	0.20	100
MJ09E6	06/07/01	0.21	100
MJ09E8	06/07/01	0.21	100
MJ09E9	06/07/01	0.22	100
MJ09F0	06/07/01	0.20	100
MJ09F2	06/07/01	0.22	100
MJ09F4	06/07/01	0.22	100
MJ09F5	06/07/01	0.20	100
MJ09F6	06/07/01	0.22	100
MJ09F9	06/07/01	0.20	100
MJ09G1	06/07/01	0.21	100
MJ09G3	06/07/01	0.20	100
MJ09G7	06/07/01	0.22	100
MJ09H0	06/07/01	0.21	100
MJ0BJ1	06/07/01	0.20	100
PBS	06/07/01	0.20	100
PBW	06/07/01		100

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0976

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38284S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 97.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9470			P
7440-36-0	Antimony	0.62	U	~~N~~UJK	P
7440-38-2	Arsenic	7.7			P
7440-39-3	Barium	104			P
7440-41-7	Beryllium	0.69	B		P
7440-43-9	Cadmium	0.06	U		P
7440-70-2	Calcium	6120			P
7440-47-3	Chromium	31.8			P
7440-48-4	Cobalt	7.0	B		P
7440-50-8	Copper	21.4		~~E~~JL	P
7439-89-6	Iron	18800			P
7439-92-1	Lead	23.7			P
7439-95-4	Magnesium	6030			P
7439-96-5	Manganese	348			P
7439-97-6	Mercury	0.08	B		CV
7440-02-0	Nickel	24.6			P
7440-09-7	Potassium	1290			P
7782-49-2	Selenium	0.70	U	~~N~~	P
7440-22-4	Silver	0.69	B		P
7440-23-5	Sodium	345	B		P
7440-28-0	Thallium	0.80	U		P
7440-62-2	Vanadium	39.5			P
7440-66-6	Zinc	78.8			P
	Cyanide				NR

MP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0980

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38285S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 88.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6850			P
7440-36-0	Antimony	14.3		~~N~~ JL	P
7440-38-2	Arsenic	21.4			P
7440-39-3	Barium	51.4			P
7440-41-7	Beryllium	0.26	B		P
7440-43-9	Cadmium	2.8			P
7440-70-2	Calcium	2480			P
7440-47-3	Chromium	12.6			P
7440-48-4	Cobalt	2.2	B		P
7440-50-8	Copper	22.7		~~E~~ JL	P
7439-89-6	Iron	10900			P
7439-92-1	Lead	589			P
7439-95-4	Magnesium	3480			P
7439-96-5	Manganese	176			P
7439-97-6	Mercury	0.19			CV
7440-02-0	Nickel	8.0	B		P
7440-09-7	Potassium	1660			P
7782-49-2	Selenium	0.81	B	~~N~~ JH	P
7440-22-4	Silver	1.1	B		P
7440-23-5	Sodium	326	B		P
7440-28-0	Thallium	0.88	U		P
7440-62-2	Vanadium	17.8			P
7440-66-6	Zinc	279			P
	Cyanide				NR

CP 4-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0981

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): WATER Lab Sample ID: 38286S

Level (low/med): LOW Date Received: 06/05/01

% 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	168	U		P
7440-36-0	Antimony	3.0	U		P
7440-38-2	Arsenic	5.3	B	U	P
7440-39-3	Barium	1.7	U		P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	0.30	U		P
7440-70-2	Calcium	136	U		P
7440-47-3	Chromium	0.70	U		P
7440-48-4	Cobalt	1.1	U		P
7440-50-8	Copper	0.70	U		P
7439-89-6	Iron	54.6	U		P
7439-92-1	Lead	1.5	U		P
7439-95-4	Magnesium	132	U		P
7439-96-5	Manganese	0.40	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.5	U		P
7440-09-7	Potassium	121	B		P
7782-49-2	Selenium	3.4	U		P
7440-22-4	Silver	0.80	U		P
7440-23-5	Sodium	846	B		P
7440-28-0	Thallium	3.9	U		P
7440-62-2	Vanadium	0.90	U		P
7440-66-6	Zinc	0.80	U		P
	Cyanide				NR

CP 7-9-01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Field Blank

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ0982

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): WATER Lab Sample ID: 38287S

Level (low/med): LOW Date Received: 06/05/01

% 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	168	U		P
7440-36-0	Antimony	3.0	U		P
7440-38-2	Arsenic	4.0	U		P
7440-39-3	Barium	1.7	U		P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	0.30	U		P
7440-70-2	Calcium	136	U		P
7440-47-3	Chromium	1.1	B		P
7440-48-4	Cobalt	1.1	U		P
7440-50-8	Copper	0.89	B		P
7439-89-6	Iron	54.6	U		P
7439-92-1	Lead	1.5	U		P
7439-95-4	Magnesium	132	U		P
7439-96-5	Manganese	0.72	B	U	P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.5	U		P
7440-09-7	Potassium	157	B		P
7782-49-2	Selenium	3.4	U		P
7440-22-4	Silver	1.5	B		P
7440-23-5	Sodium	759	B		P
7440-28-0	Thallium	3.9	U		P
7440-62-2	Vanadium	0.90	U		P
7440-66-6	Zinc	6.0	B		P
	Cyanide				NR

CP 7-9-01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Field Blank

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09E4

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38288S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 78.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14400			P
7440-36-0	Antimony	0.76	U	~~N~~UJK	P
7440-38-2	Arsenic	6.2		U	P
7440-39-3	Barium	159			P
7440-41-7	Beryllium	0.72	B		P
7440-43-9	Cadmium	0.08	U		P
7440-70-2	Calcium	7180			P
7440-47-3	Chromium	29.4			P
7440-48-4	Cobalt	9.0	B		P
7440-50-8	Copper	25.2		~~N~~JL	P
7439-89-6	Iron	21700			P
7439-92-1	Lead	14.8			P
7439-95-4	Magnesium	6720			P
7439-96-5	Manganese	612			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	25.3			P
7440-09-7	Potassium	3530			P
7782-49-2	Selenium	1.1	B	~~N~~JH	P
7440-22-4	Silver	0.66	B		P
7440-23-5	Sodium	326	B		P
7440-28-0	Thallium	0.99	U		P
7440-62-2	Vanadium	37.7			P
7440-66-6	Zinc	85.8			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09E5

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38317S

Level (low/med): LOW Date Received: 06/06/01

% Solids: 88.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12500			P
7440-36-0	Antimony	0.68	U	~~N~~UJK	P
7440-38-2	Arsenic	5.7		U	P
7440-39-3	Barium	151			P
7440-41-7	Beryllium	0.55	B		P
7440-43-9	Cadmium	0.38	B		P
7440-70-2	Calcium	31800			P
7440-47-3	Chromium	24.5			P
7440-48-4	Cobalt	7.6	B		P
7440-50-8	Copper	21.6		~~N~~ JL	P
7439-89-6	Iron	17200			P
7439-92-1	Lead	26.6			P
7439-95-4	Magnesium	5030			P
7439-96-5	Manganese	453			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	21.3			P
7440-09-7	Potassium	2810			P
7782-49-2	Selenium	0.82	B	~~N~~ JH	P
7440-22-4	Silver	0.48	B		P
7440-23-5	Sodium	309	B		P
7440-28-0	Thallium	0.88	U		P
7440-62-2	Vanadium	23.8			P
7440-66-6	Zinc	73.5			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09E6

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38289S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 62.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3170			P
7440-36-0	Antimony	0.94	U	~~N~~ UJK	P
7440-38-2	Arsenic	3.7		U	P
7440-39-3	Barium	49.3	B		P
7440-41-7	Beryllium	0.20	B		P
7440-43-9	Cadmium	0.09	U		P
7440-70-2	Calcium	1630			P
7440-47-3	Chromium	8.9			P
7440-48-4	Cobalt	2.4	B		P
7440-50-8	Copper	4.7	B	~~E~~ JL	P
7439-89-6	Iron	6600			P
7439-92-1	Lead	2.9			P
7439-95-4	Magnesium	1580			P
7439-96-5	Manganese	172			P
7439-97-6	Mercury	0.08	U		CV
7440-02-0	Nickel	6.4	B		P
7440-09-7	Potassium	629	B		P
7782-49-2	Selenium	1.1	U	~~N~~	P
7440-22-4	Silver	0.25	U		P
7440-23-5	Sodium	265	B	U	P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	8.5	B		P
7440-66-6	Zinc	19.5			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09E8

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38318S

Level (low/med): LOW Date Received: 06/06/01

% Solids: 86.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14000			P
7440-36-0	Antimony	0.80	B	~~N~~ JL	P
7440-38-2	Arsenic	6.2			P
7440-39-3	Barium	201			P
7440-41-7	Beryllium	0.64	B		P
7440-43-9	Cadmium	0.07	U		P
7440-70-2	Calcium	31200			P
7440-47-3	Chromium	29.9			P
7440-48-4	Cobalt	8.5	B		P
7440-50-8	Copper	23.7		~~N~~ JL	P
7439-89-6	Iron	19900			P
7439-92-1	Lead	15.9			P
7439-95-4	Magnesium	9140			P
7439-96-5	Manganese	482			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	24.9			P
7440-09-7	Potassium	3770			P
7782-49-2	Selenium	0.78	U	~~N~~	P
7440-22-4	Silver	0.50	B		P
7440-23-5	Sodium	372	B		P
7440-28-0	Thallium	0.89	U		P
7440-62-2	Vanadium	32.9			P
7440-66-6	Zinc	68.8			P
	Cyanide				NR

CF 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09E9

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38319S

Level (low/med): LOW Date Received: 06/06/01

% 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	5060			P
7440-36-0	Antimony	1.0	U	~~N~~UJK	P
7440-38-2	Arsenic	5.4		U	P
7440-39-3	Barium	106			P
7440-41-7	Beryllium	0.22	B		P
7440-43-9	Cadmium	0.10	B		P
7440-70-2	Calcium	65700			P
7440-47-3	Chromium	15.3			P
7440-48-4	Cobalt	3.4	B		P
7440-50-8	Copper	9.3		~~E~~JL	P
7439-89-6	Iron	10300			P
7439-92-1	Lead	6.4			P
7439-95-4	Magnesium	3290			P
7439-96-5	Manganese	122			P
7439-97-6	Mercury	0.08	U		CV
7440-02-0	Nickel	14.3			P
7440-09-7	Potassium	818	B		P
7782-49-2	Selenium	1.1	U	~~N~~	P
7440-22-4	Silver	0.27	U		P
7440-23-5	Sodium	341	B	U	P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	13.6	B		P
7440-66-6	Zinc	35.2			P
	Cyanide				NR

CP 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ09F0

Lab Name: Sentinel, Inc. Contract: 68-W-00-085

Lab Code: SENTIN Case No.: 29276 SAS No.: SDG No.: MJ0976

Matrix (soil/water): SOIL Lab Sample ID: 38290S

Level (low/med): LOW Date Received: 06/05/01

% Solids: 82.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13200			P
7440-36-0	Antimony	0.81	B	~~N~~ JL	P
7440-38-2	Arsenic	3.5		U	P
7440-39-3	Barium	108			P
7440-41-7	Beryllium	0.65	B		P
7440-43-9	Cadmium	0.08	B		P
7440-70-2	Calcium	6460			P
7440-47-3	Chromium	30.5			P
7440-48-4	Cobalt	7.0	B		P
7440-50-8	Copper	22.2		~~E~~ JL	P
7439-89-6	Iron	19100			P
7439-92-1	Lead	14.8			P
7439-95-4	Magnesium	6740			P
7439-96-5	Manganese	249			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	20.6			P
7440-09-7	Potassium	2720			P
7782-49-2	Selenium	0.81	U	~~N~~	P
7440-22-4	Silver	0.60	B		P
7440-23-5	Sodium	376	B		P
7440-28-0	Thallium	0.93	U		P
7440-62-2	Vanadium	28.8			P
7440-66-6	Zinc	71.0			P
	Cyanide				NR

CF 7-9-01

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

FORM I - IN ILM04.1

12

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MEMORANDUM

Date:	30 October 2001
To:	Mark Ader, Task Monitor, U.S. EPA, Region 10
From:	Paul Swift, Chief Chemist, WESTON, Seattle
Subject:	Data validation report for the total organic carbon (TOC) analysis of sediment and soil samples: SDG B1G0068
Site:	Upper Columbia River/Lake Roosevelt Expanded Site Inspection
Contract:	U.S. EPA—START 68-S0-01-02
TDD:	01-02-0001
Work Order No.:	12644.001.002.0101.00
Doc. Control No.:	12644.001.002.AAEA
cc:	QAU, U.S. EPA, Region 10 Keith Pine, Project Manager, WESTON, Seattle (memo only) Susan Fitzgerald, Site Leader, WESTON, Seattle (memo only) Craig Mitchell, MIS Manager, WESTON, Seattle

The quality assurance review of 13 samples collected from the Upper Columbia River/Lake Roosevelt site in northeast Washington State has been completed. The soil samples were analyzed for total organic carbon (TOC) content by North Creek Analytical Laboratories, Inc. (NCA), of Bothell, WA. The samples were numbered:

01234050	01234051	01234056	01234058	01234059
01234060	01234062	01234065	01234068	01234070
01234072	01234073	01234075		

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria outlined in the technical specifications of WESTON's laboratory services agreement, SW846 Method 9060-modified (USEPA SW-846, 3rd edition), and NCA SOP B-SOP-WET-023-R02 (03/15/2000). The review follows the format described in the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994).

Timeliness—*Acceptable*

All samples met holding time criteria.

Detection Limits—*Acceptable*

All analyses met required quantitation limits.

Calibration—*Acceptable*

Initial Calibration

Initial calibration frequencies and QC criteria were met. The correlation coefficient was 0.995 or greater.

Initial Calibration Verification

The initial calibration verification check sample recovery (97%) was within the acceptance range of 80-120%.

Continuing Calibration Verification

All continuing calibration verification (CCV) results met control limits of 80 to 120 percent recovery (percent R) of the true values.

Blanks

Laboratory Method Blanks

Laboratory method blank frequency and recovery criteria were met.

Matrix Spike and Matrix Spike Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) percent recovery for the following compounds were outside QC guidelines.

Sample	Spike Type	Compound	Percent Recovery	QC Limits
01234056	MSD	TOC	34.6	40-160

Since recoveries of the other MS/MSD pair (01234060; 102%/95.9%), LCS (117%) and LCSD (106%) samples met acceptance criteria, no data was not qualified for this event.

Relative percent differences (RPD) between the MS and MSD percent recoveries exceeded QC guidelines for the following compound:

Sample	Compound	RPD	QC Limits
01234056	TOC	41.4	35

Field Duplicate Analysis

No field duplicate samples were associated with this sample deliver group.

Sample Analysis

No unusual problems were noted.

Laboratory Contact

No laboratory contact was required.

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

Data Qualifiers

U — The compound was analyzed for, but was not detected.

UJ — The compound was analyzed for, but was not detected. The associated quantitation limit is an estimate because quality control criteria were not met.

J — The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less then CRDL or lowest calibration standard.

R — Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.

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MEMORANDUM

Date:	30 October 2001
To:	Mark Ader, Task Monitor, U.S. EPA, Region 10
From:	Paul Swift, Chief Chemist, WESTON, Seattle
Subject:	Data validation report for the total organic carbon (TOC) analysis of sediment and soil samples: SDG B1F0266
Site:	Upper Columbia River/Lake Roosevelt Expanded Site Inspection
Contract:	U.S. EPA—START 68-S0-01-02
TDD:	01-02-0001
Work Order No.:	12644.001.002.0101.00
Doc. Control No.:	12644.001.002.AAEA
cc:	QAU, U.S. EPA, Region 10 Keith Pine, Project Manager, WESTON, Seattle (memo only) Susan Fitzgerald, Site Leader, WESTON, Seattle (memo only) Craig Mitchell, MIS Manager, WESTON, Seattle

The quality assurance review of 12 samples collected from the Upper Columbia River/Lake Roosevelt site in northeast Washington State has been completed. The soil samples were analyzed for total organic carbon (TOC) content by North Creek Analytical Laboratories, Inc. (NCA), of Bothell, WA. The samples were numbered:

01234122	01234123	01234124	01234125	01234127
01234129	01234137	01234138	01234139	01234140
01234141	01234142			

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria outlined in the technical specifications of WESTON's laboratory services agreement, SW846 Method 9060-modified (USEPA SW-846, 3rd edition), and NCA SOP B-SOP-WET-023-R02 (03/15/2000). The review follows the format described in the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994).

Timeliness—*Acceptable*

All samples met holding time criteria.

Detection Limits—*Acceptable*

All analyses met required quantitation limits.

Calibration—*Acceptable*

Initial Calibration

Initial calibration frequencies and QC criteria were met. The correlation coefficient was 0.995 or greater.

Initial Calibration Verification

The initial calibration verification check sample recovery (92%) was within the acceptance range of 80-120%.

Continuing Calibration Verification

All continuing calibration verification (CCV) results met control limits of 80 to 120 percent recovery (percent R) of the true values.

Blanks

Laboratory Method Blanks

Laboratory method blank frequency and recovery criteria were met.

Matrix Spike and Matrix Spike Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) percent recovery for the following compounds were outside QC guidelines.

Sample	Spike Type	Compound	Percent Recovery	QC Limits
01234137	MS	TOC	34.6	40-160
01234141	MS	TOC	31.2	40-160
	MSD	TOC	20.5	40-160

Since recoveries of the LCS (117%) and LCSD (106%) samples met acceptance criteria, no data was not qualified for this event.

Field Duplicate Analysis

No field duplicate samples were associated with this sample deliver group.

Sample Analysis

No unusual problems were noted.

Laboratory Contact

No laboratory contact was required.

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

Data Qualifiers

U — The compound was analyzed for, but was not detected.

UJ — The compound was analyzed for, but was not detected. The associated quantitation limit is an estimate because quality control criteria were not met.

J — The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less then CRDL or lowest calibration standard.

R — Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.

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MEMORANDUM

Date:	30 October 2001
To:	Mark Ader, Task Monitor, U.S. EPA, Region 10
From:	Paul Swift, Chief Chemist, WESTON, Seattle
Subject:	Data validation report for the total organic carbon (TOC) analysis of sediment and soil samples: SDG B1F0188
Site:	Upper Columbia River/Lake Roosevelt Expanded Site Inspection
Contract:	U.S. EPA—START 68-S0-01-02
TDD:	01-02-0001
Work Order No.:	12644.001.002.0101.00
Doc. Control No.:	12644.001.002.AAEA
cc:	QAU, U.S. EPA, Region 10 Keith Pine, Project Manager, WESTON, Seattle (memo only) Susan Fitzgerald, Site Leader, WESTON, Seattle (memo only) Craig Mitchell, MIS Manager, WESTON, Seattle

The quality assurance review of 15 samples collected from the Upper Columbia River/Lake Roosevelt site in northeast Washington State has been completed. The soil samples were analyzed for total organic carbon (TOC) content by North Creek Analytical Laboratories, Inc. (NCA), of Bothell, WA. The samples were numbered:

01234054	01234066	01234068	01234073	01234075
01234076	01234077	0123081	01234091	01234095
01234099	01234103	01234106	01234107	01234108

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria outlined in the technical specifications of WESTON's laboratory services agreement, SW846 Method 9060-modified (USEPA SW-846, 3rd edition), and NCA SOP B-SOP-WET-023-R02 (03/15/2000). The review follows the format described in the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994).

Timeliness—*Acceptable*

All samples met holding time criteria.

Detection Limits—*Acceptable*

All analyses met required quantitation limits.

Calibration—*Acceptable*

Initial Calibration

Initial calibration frequencies and QC criteria were met. The correlation coefficient was 0.995 or greater.

Initial/Continuing Calibration Verification

The initial calibration verification check sample recovery was acceptable.

All continuing calibration verification (CCV) results met control limits of 80 to 120 percent recovery (percent R) of the true values.

Blanks—*Acceptable*

Laboratory Method Blanks

Laboratory method blank frequency and recovery criteria were met.

Laboratory Control Sample Analysis—*Acceptable*

Recovery from the laboratory control sample (103%), the LCS duplicate sample (107%), and the relative percent difference of those determinations (3.8%) met the recovery and precision criteria of 68-120% and 30%, respectively.

Matrix Spike and Matrix Spike Duplicate—*Acceptable*

Matrix spike (MS) and matrix spike duplicate (MSD) percent recoveries were within QC guidelines with the following exception:

Sample	Spike Type	Compound	Percent Recovery	QC Limits
01234099	MSD	TOC	30.6	40-160

Two sets of MS/MSD samples were prepared and analyzed with this SDG. The other MS/MSD pair, as well as the matrix spike sample 01234099 and the LCS/LCSD samples all exhibited acceptable recoveries. No data was qualified for this event.

Duplicate Sample Analysis

Field Duplicate Sample Analysis—*Not Applicable*

No field duplicate samples were associated with this sample deliver group.

Laboratory Duplicate Sample Analysis—*Acceptable*

Sample 01234091 was prepared and analyzed in duplicate by the laboratory. The relative percent difference (RPD) between the two results (22.6%) met the acceptance criteria of 35%.

Sample Analysis—*Acceptable*

No unusual problems were noted.

Laboratory Contact—*Not Applicable*

No laboratory contact was required.

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

Data Qualifiers

U — The compound was analyzed for, but was not detected.

UJ — The compound was analyzed for, but was not detected. The associated quantitation limit is an estimate because quality control criteria were not met.

J — The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less then CRDL or lowest calibration standard.

R — Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.

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MEMORANDUM

Date:	30 October 2001
To:	Mark Ader, Task Monitor, U.S. EPA, Region 10
From:	Paul Swift, Chief Chemist, WESTON, Seattle
Subject:	Data validation report for the total organic carbon (TOC) analysis of sediment and soil samples: SDG B1F0075
Site:	Upper Columbia River/Lake Roosevelt Expanded Site Inspection
Contract:	U.S. EPA—START 68-S0-01-02
TDD:	01-02-0001
Work Order No.:	12644.001.002.0101.00
Doc. Control No.:	12644.001.002.AAEA'
cc:	QAU, U.S. EPA, Region 10 Keith Pine, Project Manager, WESTON, Seattle (memo only) Susan Fitzgerald, Site Leader, WESTON, Seattle (memo only) Craig Mitchell, MIS Manager, WESTON, Seattle

The quality assurance review of 14 samples collected from the Upper Columbia River/Lake Roosevelt site in northeast Washington State has been completed. The soil samples were analyzed for total organic carbon (TOC) content by North Creek Analytical Laboratories, Inc. (NCA), of Bothell, WA. The samples were numbered:

01224150	01224151	01224153	01224154	01224155
1224156	01224157	01224160	01224161	01224162
01224163	01224164	01224165	01234052	

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria outlined in the technical specifications of WESTON's laboratory services agreement, SW846 Method 9060-modified (USEPA SW-846, 3rd edition), and NCA SOP B-SOP-WET-023-R02 (03/15/2000). The review follows the format described in the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994).

Timeliness—*Acceptable*

All samples met holding time criteria.

Detection Limits—*Acceptable*

All analyses met required quantitation limits.

Calibration—*Acceptable*

Initial Calibration

Initial calibration frequencies and QC criteria were met. The correlation coefficient was 0.995 or greater.

Initial/Continuing Calibration Verification

The initial calibration verification check sample recovery (78%) was outside the acceptance range of 80-120%. However, recoveries from the laboratory control sample and LCS duplicate sample, analyzed immediately following the ICV, were within acceptance limits. No data was qualified for this event.

All continuing calibration verification (CCV) results met control limits of 80 to 120 percent recovery (percent R) of the true values.

Blanks—*Acceptable*

Laboratory Method Blanks

Laboratory method blank frequency and recovery criteria were met.

Laboratory Control Sample Analysis—*Acceptable*

Recovery from the laboratory control sample (99.2%), the LCS duplicate sample (108%), and the relative percent difference of those determinations (8.4%) met the recovery and precision criteria of 68-120% and 30%, respectively.

Matrix Spike and Matrix Spike Duplicate—*Acceptable*

Matrix spike (MS) and matrix spike duplicate (MSD) percent recoveries were within QC guidelines.

Duplicate Sample Analysis

Field Duplicate Sample Analysis—*Not Applicable*

No field duplicate samples were associated with this sample deliver group.

Laboratory Duplicate Sample Analysis—*Acceptable*

Sample 01224156 was prepared and analyzed in duplicate by the laboratory. The relative percent difference (RPD) between the two results (10.4%) met the acceptance criteria of 35%.

Sample Analysis—*Acceptable*

No unusual problems were noted.

Laboratory Contact—*Not Applicable*

No laboratory contact was required.

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

Data Qualifiers

U — The compound was analyzed for, but was not detected.

UJ — The compound was analyzed for, but was not detected. The associated quantitation limit is an estimate because quality control criteria were not met.

J — The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less then CRDL or lowest calibration standard.

R — Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.

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MEMORANDUM

Date:	30 October 2001
To:	Mark Ader, Task Monitor, U.S. EPA, Region 10
From:	Paul Swift, Chief Chemist, WESTON, Seattle
Subject:	Data validation report for the total organic carbon (TOC) analysis of sediment and soil samples: SDG B1E0713
Site:	Upper Columbia River/Lake Roosevelt Expanded Site Inspection
Contract:	U.S. EPA—START 68-S0-01-02
TDD:	01-02-0001
Work Order No.:	12644.001.002.0101.00
Doc. Control No.:	12644.001.002.AAEA
cc:	QAU, U.S. EPA, Region 10 Keith Pine, Project Manager, WESTON, Seattle (memo only) Susan Fitzgerald, Site Leader, WESTON, Seattle (memo only) Craig Mitchell, MIS Manager, WESTON, Seattle

The quality assurance review of 15 samples collected from the Upper Columbia River/Lake Roosevelt site in northeast Washington State has been completed. The soil samples were analyzed for total organic carbon (TOC) content by North Creek Analytical Laboratories, Inc. (NCA), of Bothell, WA. The samples were numbered:

01204104	10204106	01204107	10204110	01204111
01204112	01204113	10204114	01214132	01214134
01214136	01214138	01214140	01214142	01214144

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria outlined in the technical specifications of WESTON's laboratory services agreement, SW846 Method 9060-modified (USEPA SW-846, 3rd edition), and NCA SOP B-SOP-WET-023-R02 (03/15/2000). The review follows the format described in the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994).

Timeliness—*Acceptable*

All samples met holding time criteria.

Detection Limits—*Acceptable*

All analyses met required quantitation limits.

Calibration

Initial Calibration—*Acceptable*

Initial calibration frequencies and QC criteria were met. The correlation coefficient was 0.995 or greater.

Initial Calibration Verification

The initial calibration verification check sample recovery (78%) was outside the acceptance range of 80-120%. However, recoveries from the laboratory control sample and LCS duplicate sample, analyzed immediately following the ICV, were within acceptance limits. No data was qualified for this event.

Continuing Calibration Verification—*Acceptable*

All continuing calibration verification (CCV) results met control limits of 80 to 120 percent recovery (percent R) of the true values.

Blanks—*Acceptable*

Laboratory Method Blanks

Laboratory method blank frequency and recovery criteria were met.

Matrix Spike and Matrix Spike Duplicate—*Not Applicable*

Matrix spike (MS) and matrix spike duplicate (MSD) results were not reported for this sample delivery group.

Field Duplicate Analysis

No field duplicate samples were associated with this sample delivery group.

Sample Analysis

No unusual problems were noted.

Laboratory Contact

No laboratory contact was required.

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

Data Qualifiers

U — The compound was analyzed for, but was not detected.

UJ — The compound was analyzed for, but was not detected. The associated quantitation limit is an estimate because quality control criteria were not met.

J — The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less then CRDL or lowest calibration standard.

R — Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.

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MEMORANDUM

Date:	30 October 2001
To:	Mark Ader, Task Monitor, U.S. EPA, Region 10
From:	Paul Swift, Chief Chemist, WESTON, Seattle
Subject:	Data validation report for the total organic carbon (TOC) analysis of sediment and soil samples: SDG B1E0711
Site:	Upper Columbia River/Lake Roosevelt Expanded Site Inspection
Contract:	U.S. EPA—START 68-S0-01-02
TDD:	01-02-0001
Work Order No.:	12644.001.002.0101.00
Doc. Control No.:	12644.001.002.AAEA
cc:	QAU, U.S. EPA, Region 10 Keith Pine, Project Manager, WESTON, Seattle (memo only) Susan Fitzgerald, Site Leader, WESTON, Seattle (memo only) Craig Mitchell, MIS Manager, WESTON, Seattle

The quality assurance review of 13 samples collected from the Upper Columbia River/Lake Roosevelt site in northeast Washington State has been completed. The soil samples were analyzed for total organic carbon (TOC) content by North Creek Analytical Laboratories, Inc. (NCA), of Bothell, WA. The samples were numbered:

01204115	01204116	01204117	01240118	01204119
01204120	01204121	01204122	01204123	01204124
01204125	01204126	01204127		

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria outlined in the technical specifications of WESTON's laboratory services agreement, SW846 Method 9060-modified (USEPA SW-846, 3rd edition), and NCA SOP B-SOP-WET-023-R02 (03/15/2000). The review follows the format described in the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994).

Timeliness—*Acceptable*

All samples met holding time criteria.

Detection Limits—*Acceptable*

All analyses met required quantitation limits.

Calibration

Initial Calibration—*Acceptable*

Initial calibration frequencies and QC criteria were met. The correlation coefficient was 0.995 or greater.

Initial Calibration Verification

The initial calibration verification check sample recovery (78%) was outside the acceptance range of 80-120%. However, recoveries from the laboratory control sample and LCS duplicate sample, analyzed immediately following the ICV, were within acceptance limits. No data was qualified for this event.

Continuing Calibration Verification—*Acceptable*

All continuing calibration verification (CCV) results met control limits of 80 to 120 percent recovery (percent R) of the true values.

Blanks—*Acceptable*

Laboratory Method Blanks

Laboratory method blank frequency and recovery criteria were met.

Matrix Spike and Matrix Spike Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) percent recovery for the following compounds were outside QC guidelines.

Sample	Spike Type	Compound	Percent Recovery	QC Limits
01204120	MS	TOC	23.5	40-160
	MSD	TOC	23.4	40-160

Since recoveries of the LCS (102%)/LCSD (96.9%) samples prepared on 06/08/01 and the LCS (96.9%) and LCSD (93.0%) samples prepared on 06/11/01 met acceptance criteria, no data was not qualified for this event.

Field Duplicate Analysis

No field duplicate samples were associated with this sample deliver group.

Sample Analysis

No unusual problems were noted.

Laboratory Contact

No laboratory contact was required.

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

Data Qualifiers

U — The compound was analyzed for, but was not detected.

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MEMORANDUM

Date:	30 October 2001
To:	Mark Ader, Task Monitor, U.S. EPA, Region 10
From:	Paul Swift, Chief Chemist, WESTON, Seattle
Subject:	Data validation report for the total organic carbon (TOC) analysis of sediment and soil samples: SDG B1E0710
Site:	Upper Columbia River/Lake Roosevelt Expanded Site Inspection
Contract:	U.S. EPA—START 68-S0-01-02
TDD:	01-02-0001
Work Order No.:	12644.001.002.0101.00
Doc. Control No.:	12644.001.002.AAEA
cc:	QAU, U.S. EPA, Region 10 Keith Pine, Project Manager, WESTON, Seattle (memo only) Susan Fitzgerald, Site Leader, WESTON, Seattle (memo only) Craig Mitchell, MIS Manager, WESTON, Seattle

The quality assurance review of 15 samples collected from the Upper Columbia River/Lake Roosevelt site in northeast Washington State has been completed. The soil samples were analyzed for total organic carbon (TOC) content by North Creek Analytical Laboratories, Inc. (NCA), of Bothell, WA. The samples were numbered:

01214102	01214104	01214106	01214108	01214110
01214112	01214114	01214116	01214118	01214120
01214122	01214124	01214126	01214128	01214130

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria outlined in the technical specifications of WESTON's laboratory services agreement, SW846 Method 9060-modified (USEPA SW-846, 3rd edition), and NCA SOP B-SOP-WET-023-R02 (03/15/2000). The review follows the format described in the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994).

Timeliness—*Acceptable*

All samples met holding time criteria.

Detection Limits—*Acceptable*

All analyses met required quantitation limits.

Calibration—*Acceptable*

Initial Calibration

Initial calibration frequencies and QC criteria were met. The correlation coefficient was 0.995 or greater.

Initial Calibration Verification

The initial calibration verification check sample recovery (96%) was within the acceptance range of 80-120%.

Continuing Calibration Verification

All continuing calibration verification (CCV) results met control limits of 80 to 120 percent recovery (percent R) of the true values.

Blanks—*Acceptable*

Laboratory Method Blanks

Laboratory method blank frequency and recovery criteria were met.

Matrix Spike and Matrix Spike Duplicate—*Acceptable*

Matrix spike (MS) and matrix spike duplicate (MSD) accuracy and precision criteria were met for this sample delivery group.

Field Duplicate Analysis

No field duplicate samples were associated with this sample deliver group.

Sample Analysis

No unusual problems were noted.

Laboratory Contact

No laboratory contact was required.

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

Data Qualifiers

U — The compound was analyzed for, but was not detected.

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R — Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.

WESTON

INORGANICS DATA REVIEW CHECKLIST

Method: ☐ ICP ☐ ICP-MS ☐ GFA ☐ CVA Other TOC

Analysis Date: ~~10/6/01~~ 6/8/01 -TOC
~~Dry Weight~~ AB

B1E0710	Reviewer	Comment
Analyst, Date, Method Information	AB	✓
Sample IDs	AB	✓
Standard/QC Solution IDs Recorded	AB	✓
Dilution Factors	AB	NA
Blank and Standard Intensities	AB	✓
Standard Deviations	AB	✓
Curve Fit	AB	✓
ICV/CCV recoveries	AB	✓
ICB/CCB	AB	✓
RSDs and SDs	AB	NA
Internal Standards	AB	NA
Carry-Over	AB	NA
CRI-CRA	AB	NA
ICSA/ICSAB	AB	NA
Post Spikes/Serial Dilutions	AB	NA
Analytic Spikes	AB	NA
SRM/LCS / ICV ensure 2nd source	AB	✓
Matrix Spikes	AB	NA
Matrix Duplicates	AB	~~NA AB ✓~~ NA
Method Blanks	AB	✓
Necessary Analysts Notes and CAFs		

Adrienne Bam AB 8/8/01

WESTON

INORGANICS DATA REVIEW CHECKLIST

Method: ☐ ICP ☐ ICP-MS ☐ GFA ☐ CVA Other TOC

Analysis Date: 6/8/01, 6/11/01, 6/12/01

B1E0711	Reviewer	Comment
Analyst, Date, Method Information	AB	✓
Sample IDs	AB	✓
Standard/QC Solution IDs Recorded	AB	✓
Dilution Factors	AB	NA
Blank and Standard Intensities	AB	✓
Standard Deviations	AB	✓
Curve Fit	AB	✓
ICV/CCV	AB	Initial Cal. June 11, 01, 78% below CL
ICB/CCB	AB	✓ LCS OK!
RSDs and SDs	AB	NA
Internal Standards	AB	NA
Carry-Over	AB	NA
CRI-CRA	AB	NA
ICSA/ICSAB	AB	NA
Post Spikes/Serial Dilutions	AB	NA
Analytic Spikes	AB	NA
SRM/LCS / ICV	AB	✓
Matrix Spikes	AB	✓ Recovery below est. control limit
Matrix Duplicates	AB	Recovery below est. control limit
Method Blanks	AB	✓
Necessary Analysts Notes and CAFs		

AB 8/8/01

WESTON

INORGANICS DATA REVIEW CHECKLIST

Method: ☐ ICP ☐ ICP-MS ☐ GFA ☐ CVA Other TOC

Analysis Date: 6/11/01

B1E0713	Reviewer	Comment
Analyst, Date, Method Information	AB	✓
Sample IDs	AB	✓
Standard/QC Solution IDs Recorded	AB	✓
Dilution Factors		NA
Blank and Standard Intensities	AB	✓
Standard Deviations	AB	✓
Curve Fit	AB	✓
ICV/CCV	AB	Initial Calib for 6/11/01 78% below CL - LCS OK!
ICB/CCB	AB	✓
RSDs and SDs		NA
Internal Standards		NA
Carry-Over		NA
CRI-CRA		NA
ICSA/ICSAB		NA
Post Spikes/Serial Dilutions		NA
Analytic Spikes		NA
SRM/LCS /TOV	AB	✓
Matrix Spikes	AB	✓
Matrix Duplicates	AB	✓
Method Blanks	AB	✓
Necessary Analysts Notes and CAFs		

Adrienne Barr AB 8/8/01

Data Package

RECEIVED
JUL 06 2001

Client: Roy F. Weston, Inc.

Project: Upper Columbia/Lake Roosevelt ESI

Project Number: 12644.001.002.0101.00

Laboratory Work Orders: B1E0710, B1E0711 and B1E0713

July 3, 2001

North Creek Analytical, Inc.
11720 North Creek Parkway North, Suite 400
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Phone: (425) 420-9200
FAX: (425) 420-9210

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Case Narrative

Sample Receiving

B1E0710:
Ten soil samples were collected on 05/21/01 between 10:30 and 18:00. Five soil samples were collected on 05/22/01 between 10:00 and 15:00. The samples were received at North Creek Analytical, Inc. (NCA) on 05/29/01 with all of the containers intact at a temperature of 5.9°C. 15

B1E0711:
Three soil samples were collected on 05/17/01 between 14:45 and 17:00. Seven soil samples were collected on 05/18/01 between 10:30 and 15:45. Three soil samples were collected on 05/19/01 between 09:00 and 11:30. The samples were received at North Creek Analytical, Inc. (NCA) on 05/29/01 with all of the containers intact at a temperature of 4.6°C. 13

B1E0713:
Two soil samples were collected on 05/14/01 between 18:00 and 19:00. One soil sample was collected on 05/15/01 at 13:00. Five soil samples were collected on 05/17/01 between 10:00 and 14:15. One soil sample was collected on 05/22/01 at 16:30. Six soil samples were collected on 05/23/01 between 10:15 and 15:15. The samples were received at North Creek Analytical, Inc. (NCA) on 05/29/01 with all of the containers intact at a temperature of 10.6°C. The established acceptance criteria for sample storage is 4 +/- 2° C. 15

Sample Preparation

- **EPA 9060M for Total Organic Carbon** - The samples were prepared in five analytical batches (1F12001, 1F12002, 1F12004, 1F13023 and 1F12005) in accordance with EPA 9060M.

Analysis

- **EPA 9060M for Total Organic Carbon** - The sample was analyzed in accordance with EPA 9060M.

  The initial calibration verification check was outside acceptance criteria on 06/11/01 and biased slightly low. Based on the recoveries of the Laboratory Control Sample and LCSD, analyzed subsequent to the ICV and prior to the samples, this low bias does not significantly affect the sample recoveries, and reanalysis would not significantly alter the sample results.

Quality Assurance

Per client request, sample 01204120 (B1E0711-06) was prepared as a matrix spike/matrix spike duplicate.

- **EPA 9060M for Total Organic Carbon** - All of the recoveries for the monitored target analytes were within the established acceptance criteria or qualified in this narrative.

  1F13023-MS1/MSD1: The recoveries for Total Organic Carbon were below the established control limits. Since the recoveries for Total Organic Carbon in the LCS/LCSD were within the established control limits no further corrective action was taken.

" I certify that this data package is in compliance with the Contract both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Director or his designee, as verified by the following signatures:"

7/5/01

Prepared by Anne Conrad, QA Associate

Dave Wunderlich (by dwd) 07/05/01

Reviewed by Dave Wunderlich, QA Manager

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Reported:**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 12:55

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
01214102	B1E0710-01	Soil	05/21/01 10:30	05/29/01 09:30
01214104	B1E0710-02	Soil	05/21/01 10:50	05/29/01 09:30
01214106	B1E0710-03	Soil	05/21/01 12:00	05/29/01 09:30
01214108	B1E0710-04	Soil	05/21/01 12:45	05/29/01 09:30
01214110	B1E0710-05	Soil	05/21/01 13:30	05/29/01 09:30
01214112	B1E0710-06	Soil	05/21/01 14:45	05/29/01 09:30
01214114	B1E0710-07	Soil	05/21/01 14:15	05/29/01 09:30
01214116	B1E0710-08	Soil	05/21/01 15:45	05/29/01 09:30
01214118	B1E0710-09	Soil	05/21/01 16:45	05/29/01 09:30
01214120	B1E0710-10	Soil	05/21/01 18:00	05/29/01 09:30
01214122	B1E0710-11	Soil	05/22/01 10:00	05/29/01 09:30
01214124	B1E0710-12	Soil	05/22/01 11:00	05/29/01 09:30
01214126	B1E0710-13	Soil	05/22/01 12:00	05/29/01 09:30
01214128	B1E0710-14	Soil	05/22/01 14:00	05/29/01 09:30
01214130	B1E0710-15	Soil	05/22/01 15:00	05/29/01 09:30

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Scott A. Woerman, Project Manager

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Reported:**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 12:55

Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01214102 (B1E0710-01) Soil	**Sampled: 05/21/01 10:30**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**12600**	2140	mg/kg dry	1	1F12001	06/08/01	06/08/01	EPA 9060 mod.	
01214104 (B1E0710-02) Soil	**Sampled: 05/21/01 10:50**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**10200**	2440	mg/kg dry	1	1F12001	06/08/01	06/08/01	EPA 9060 mod.	
01214106 (B1E0710-03) Soil	**Sampled: 05/21/01 12:00**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**15500**	1000	mg/kg dry	1	1F12001	06/08/01	06/08/01	EPA 9060 mod.	
01214108 (B1E0710-04) Soil	**Sampled: 05/21/01 12:45**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**24600**	2420	mg/kg dry	1	1F12001	06/08/01	06/08/01	EPA 9060 mod.	
01214110 (B1E0710-05) Soil	**Sampled: 05/21/01 13:30**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**18100**	1000	mg/kg dry	1	1F12001	06/08/01	06/08/01	EPA 9060 mod.	
01214112 (B1E0710-06) Soil	**Sampled: 05/21/01 14:45**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**21200**	2260	mg/kg dry	1	1F12001	06/08/01	06/08/01	EPA 9060 mod.	
01214114 (B1E0710-07) Soil	**Sampled: 05/21/01 14:15**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**13700**	1000	mg/kg dry	1	1F12001	06/08/01	06/08/01	EPA 9060 mod.	
01214116 (B1E0710-08) Soil	**Sampled: 05/21/01 15:45**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**11900**	1000	mg/kg dry	1	1F12001	06/08/01	06/08/01	EPA 9060 mod.	
01214118 (B1E0710-09) Soil	**Sampled: 05/21/01 16:45**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**27800**	1000	mg/kg dry	1	1F12001	06/08/01	06/08/01	EPA 9060 mod.	

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Scott A. Woerman, Project Manager

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Reported:**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 12:55

Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01214120 (B1E0710-10) Soil	**Sampled: 05/21/01 18:00**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**9170**	1000	mg/kg dry	1	1F12001	06/08/01	06/08/01	EPA 9060 mod.	
01214122 (B1E0710-11) Soil	**Sampled: 05/22/01 10:00**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**29300**	1000	mg/kg dry	1	1F12001	06/08/01	06/08/01	EPA 9060 mod.	
01214124 (B1E0710-12) Soil	**Sampled: 05/22/01 11:00**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**20900**	1000	mg/kg dry	1	1F12001	06/08/01	06/08/01	EPA 9060 mod.	
01214126 (B1E0710-13) Soil	**Sampled: 05/22/01 12:00**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**15800**	1000	mg/kg dry	1	1F12001	06/08/01	06/08/01	EPA 9060 mod.	
01214128 (B1E0710-14) Soil	**Sampled: 05/22/01 14:00**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**18700**	1000	mg/kg dry	1	1F12001	06/08/01	06/08/01	EPA 9060 mod.	
01214130 (B1E0710-15) Soil	**Sampled: 05/22/01 15:00**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**9450**	1000	mg/kg dry	1	1F12001	06/08/01	06/08/01	EPA 9060 mod.	

JB 8/01

North Creek Analytical - Bothell

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Scott A. Woerman, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	Reported:
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 12:55

Physical Parameters by APHA/ASTM/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01214102 (B1E0710-01) Soil	**Sampled: 05/21/01 10:30**	**Received: 05/29/01 09:30**							
Dry Weight	46.7	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01214104 (B1E0710-02) Soil	**Sampled: 05/21/01 10:50**	**Received: 05/29/01 09:30**							
Dry Weight	41.1	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01214106 (B1E0710-03) Soil	**Sampled: 05/21/01 12:00**	**Received: 05/29/01 09:30**							
Dry Weight	99.7	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01214108 (B1E0710-04) Soil	**Sampled: 05/21/01 12:45**	**Received: 05/29/01 09:30**							
Dry Weight	41.3	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01214110 (B1E0710-05) Soil	**Sampled: 05/21/01 13:30**	**Received: 05/29/01 09:30**							
Dry Weight	56.4	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01214112 (B1E0710-06) Soil	**Sampled: 05/21/01 14:45**	**Received: 05/29/01 09:30**							
Dry Weight	44.2	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01214114 (B1E0710-07) Soil	**Sampled: 05/21/01 14:15**	**Received: 05/29/01 09:30**							
Dry Weight	56.1	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01214116 (B1E0710-08) Soil	**Sampled: 05/21/01 15:45**	**Received: 05/29/01 09:30**							
Dry Weight	99.2	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01214118 (B1E0710-09) Soil	**Sampled: 05/21/01 16:45**	**Received: 05/29/01 09:30**							
Dry Weight	96.7	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	

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Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 12:55

Physical Parameters by APHA/ASTM/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01214120 (B1E0710-10) Soil	**Sampled: 05/21/01 18:00**	**Received: 05/29/01 09:30**							
Dry Weight	61.6	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01214122 (B1E0710-11) Soil	**Sampled: 05/22/01 10:00**	**Received: 05/29/01 09:30**							
Dry Weight	93.1	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01214124 (B1E0710-12) Soil	**Sampled: 05/22/01 11:00**	**Received: 05/29/01 09:30**							
Dry Weight	82.4	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01214126 (B1E0710-13) Soil	**Sampled: 05/22/01 12:00**	**Received: 05/29/01 09:30**							
Dry Weight	100	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01214128 (B1E0710-14) Soil	**Sampled: 05/22/01 14:00**	**Received: 05/29/01 09:30**							
Dry Weight	99.2	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01214130 (B1E0710-15) Soil	**Sampled: 05/22/01 15:00**	**Received: 05/29/01 09:30**							
Dry Weight	97.1	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	

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Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 12:55

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F12001: Prepared 06/08/01 Using General Preparation										
Blank (1F12001-BLK1)										
Total Organic Carbon	ND	1000	mg/kg wet							
LCS (1F12001-BS1)										
Total Organic Carbon	13000	1000	mg/kg wet	12700		102	68-120			
LCS Dup (1F12001-BSD1)										
Total Organic Carbon	12800	1000	mg/kg wet	12700		101	68-120	1.55	30	
Duplicate (1F12001-DUP1)					**Source: B1E0710-15**					
Total Organic Carbon	7990	1000	mg/kg dry		9450			16.7	35	

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Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 12:55

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F05013: Prepared 06/05/01 Using Dry Weight										
Blank (1F05013-BLK1)										
Dry Weight	100	1.00	%							

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Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 12:55

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Roy F. Weston, Inc. 190 Queen Anne Avenue North, Suite 200 Seattle WA, 98109-4926	Project: Upper Columbia/Lake Roosevelt ESI Project Number: 12644.001.002.0101.00 Project Manager: R. Paul Swift, Ph.D.	**Reported:** 06/13/01 15:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
01204115	B1E0711-01	Soil	05/17/01 14:45	05/29/01 09:30
01204116	B1E0711-02	Soil	05/17/01 16:00	05/29/01 09:30
01204117	B1E0711-03	Soil	05/17/01 17:00	05/29/01 09:30
01204118	B1E0711-04	Soil	05/18/01 10:30	05/29/01 09:30
01204119	B1E0711-05	Soil	05/18/01 11:00	05/29/01 09:30
01204120	B1E0711-06	Soil	05/18/01 12:30	05/29/01 09:30
01204121	B1E0711-07	Soil	05/18/01 13:30	05/29/01 09:30
01204122	B1E0711-08	Soil	05/18/01 14:30	05/29/01 09:30
01204123	B1E0711-09	Soil	05/18/01 15:30	05/29/01 09:30
01204124	B1E0711-10	Soil	05/18/01 15:45	05/29/01 09:30
01204125	B1E0711-11	Soil	05/19/01 09:00	05/29/01 09:30
01204126	B1E0711-12	Soil	05/19/01 10:45	05/29/01 09:30
01204127	B1E0711-13	Soil	05/19/01 11:30	05/29/01 09:30

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North Creek Analytical - Bothell

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Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 15:23

Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01204115 (B1E0711-01) Soil Sampled: 05/17/01 14:45 Received: 05/29/01 09:30									
Total Organic Carbon	ND	1000	mg/kg dry	1	1F12004	06/11/01	06/11/01	EPA 9060 mod.	
01204116 (B1E0711-02) Soil Sampled: 05/17/01 16:00 Received: 05/29/01 09:30									
Total Organic Carbon	**29400**	1000	mg/kg dry	1	1F12004	06/11/01	06/11/01	EPA 9060 mod.	
01204117 (B1E0711-03) Soil Sampled: 05/17/01 17:00 Received: 05/29/01 09:30									
Total Organic Carbon	**17200**	2020	mg/kg dry	1	1F12004	06/11/01	06/11/01	EPA 9060 mod.	
01204118 (B1E0711-04) Soil Sampled: 05/18/01 10:30 Received: 05/29/01 09:30									
Total Organic Carbon	**13400**	1000	mg/kg dry	1	1F12002	06/08/01	06/08/01	EPA 9060 mod.	
01204119 (B1E0711-05) Soil Sampled: 05/18/01 11:00 Received: 05/29/01 09:30									
Total Organic Carbon	**11900**	1000	mg/kg dry	1	1F12002	06/08/01	06/08/01	EPA 9060 mod.	
01204120 (B1E0711-06) Soil Sampled: 05/18/01 12:30 Received: 05/29/01 09:30									
Total Organic Carbon	**22600**	2320	mg/kg dry	1	1F12002	06/08/01	06/08/01	EPA 9060 mod.	
01204120 (B1E0711-06RE1) Soil Sampled: 05/18/01 12:30 Received: 05/29/01 09:30									
Total Organic Carbon	**25400**	2320	mg/kg dry	1	1F13023	06/12/01	06/12/01	EPA 9060 mod.	
01204121 (B1E0711-07) Soil Sampled: 05/18/01 13:30 Received: 05/29/01 09:30									
Total Organic Carbon	**8630**	1000	mg/kg dry	1	1F12002	06/08/01	06/08/01	EPA 9060 mod.	
01204122 (B1E0711-08) Soil Sampled: 05/18/01 14:30 Received: 05/29/01 09:30									
Total Organic Carbon	**23100**	1000	mg/kg dry	1	1F12002	06/08/01	06/08/01	EPA 9060 mod.	

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Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 15:23

Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01204123 (B1E0711-09) Soil	**Sampled: 05/18/01 15:30**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**16600**	1000	mg/kg dry	1	1F13023	06/12/01	06/12/01	EPA 9060 mod.	
01204124 (B1E0711-10) Soil	**Sampled: 05/18/01 15:45**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**10400**	1000	mg/kg dry	1	1F12002	06/08/01	06/08/01	EPA 9060 mod.	
01204125 (B1E0711-11) Soil	**Sampled: 05/19/01 09:00**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**10700**	1000	mg/kg dry	1	1F12004	06/11/01	06/11/01	EPA 9060 mod.	
01204126 (B1E0711-12) Soil	**Sampled: 05/19/01 10:45**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**21500**	2530	mg/kg dry	1	1F12004	06/11/01	06/11/01	EPA 9060 mod.	
01204127 (B1E0711-13) Soil	**Sampled: 05/19/01 11:30**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**26400**	2680	mg/kg dry	1	1F12004	06/11/01	06/11/01	EPA 9060 mod.	

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Physical Parameters by APHA/ASTM/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01204115 (B1E0711-01) Soil	**Sampled: 05/17/01 14:45**	**Received: 05/29/01 09:30**							
Dry Weight	92.6	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01204116 (B1E0711-02) Soil	**Sampled: 05/17/01 16:00**	**Received: 05/29/01 09:30**							
Dry Weight	94.5	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01204117 (B1E0711-03) Soil	**Sampled: 05/17/01 17:00**	**Received: 05/29/01 09:30**							
Dry Weight	49.4	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01204118 (B1E0711-04) Soil	**Sampled: 05/18/01 10:30**	**Received: 05/29/01 09:30**							
Dry Weight	51.5	1.00	%	1	1F05013	06/05/01	06/06/01	BSOPSPL003R07	
01204119 (B1E0711-05) Soil	**Sampled: 05/18/01 11:00**	**Received: 05/29/01 09:30**							
Dry Weight	91.9	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	
01204120 (B1E0711-06) Soil	**Sampled: 05/18/01 12:30**	**Received: 05/29/01 09:30**							
Dry Weight	43.1	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	
01204121 (B1E0711-07) Soil	**Sampled: 05/18/01 13:30**	**Received: 05/29/01 09:30**							
Dry Weight	88.0	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	
01204122 (B1E0711-08) Soil	**Sampled: 05/18/01 14:30**	**Received: 05/29/01 09:30**							
Dry Weight	95.9	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	
01204123 (B1E0711-09) Soil	**Sampled: 05/18/01 15:30**	**Received: 05/29/01 09:30**							
Dry Weight	79.4	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	

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Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 15:23

Physical Parameters by APHA/ASTM/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01204124 (B1E0711-10) Soil	**Sampled: 05/18/01 15:45**	**Received: 05/29/01 09:30**							
Dry Weight	81.9	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	
01204125 (B1E0711-11) Soil	**Sampled: 05/19/01 09:00**	**Received: 05/29/01 09:30**							
Dry Weight	87.7	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	
01204126 (B1E0711-12) Soil	**Sampled: 05/19/01 10:45**	**Received: 05/29/01 09:30**							
Dry Weight	39.5	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	
01204127 (B1E0711-13) Soil	**Sampled: 05/19/01 11:30**	**Received: 05/29/01 09:30**							
Dry Weight	37.3	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F12002: Prepared 06/08/01 Using General Preparation										
Blank (1F12002-BLK1)										
Total Organic Carbon	ND	1000	mg/kg wet							
LCS (1F12002-BS1)										
Total Organic Carbon	13000	1000	mg/kg wet	12700		102	68-120			
LCS Dup (1F12002-BSD1)										
Total Organic Carbon	12300	1000	mg/kg wet	12700		96.9	68-120	5.53	30	
Duplicate (1F12002-DUP1)					**Source: B1E0711-06**					
Total Organic Carbon	23000	2320	mg/kg dry		22600			1.75	35	
Batch 1F12004: Prepared 06/11/01 Using General Preparation										
Blank (1F12004-BLK1)										
Total Organic Carbon	ND	1000	mg/kg wet							
LCS (1F12004-BS1)										
Total Organic Carbon	12500	1000	mg/kg wet	12900		96.9	68-120			
LCS Dup (1F12004-BSD1)										
Total Organic Carbon	12000	1000	mg/kg wet	12900		93.0	68-120	4.08	30	
Duplicate (1F12004-DUP1)					**Source: B1E0711-01**					
Total Organic Carbon	ND	1000	mg/kg dry		ND				35	
Batch 1F13023: Prepared 06/12/01 Using General Preparation										
Blank (1F13023-BLK1)										
Total Organic Carbon	ND	1000	mg/kg wet							

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Reported:**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 15:23

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F13023: Prepared 06/12/01 Using General Preparation										
LCS (1F13023-BS1)										
Total Organic Carbon	12300	1000	mg/kg wet	12700		96.9	68-120			
LCS Dup (1F13023-BSD1)										
Total Organic Carbon	10900	1000	mg/kg wet	12700		85.8	68-120	12.1	30	
Matrix Spike (1F13023-MS1)					**Source: B1E0711-06RE1**					
Total Organic Carbon	35800	2320	mg/kg dry	44300	25400	23.5	40-160			Q-01
Matrix Spike Dup (1F13023-MSD1)					**Source: B1E0711-06RE1**					
Total Organic Carbon	39500	2320	mg/kg dry	60200	25400	23.4	40-160	9.83	35	Q-01

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Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 15:23

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F05013: Prepared 06/05/01 Using Dry Weight										
Blank (1F05013-BLK1)										
Dry Weight	100	1.00	%							
Batch 1F05014: Prepared 06/05/01 Using Dry Weight										
Blank (1F05014-BLK1)										
Dry Weight	99.8	1.00	%							

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Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 15:23

Notes and Definitions

Q-01	The spike recovery for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Reported:**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 12:56

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
01214132	B1E0713-01	Soil	05/22/01 16:30	05/29/01 09:30
01214134	B1E0713-02	Soil	05/23/01 10:15	05/29/01 09:30
01214136	B1E0713-03	Soil	05/23/01 11:30	05/29/01 09:30
01214138	B1E0713-04	Soil	05/23/01 12:45	05/29/01 09:30
01214140	B1E0713-05	Soil	05/23/01 13:30	05/29/01 09:30
01214142	B1E0713-06	Soil	05/23/01 14:00	05/29/01 09:30
01214144	B1E0713-07	Soil	05/23/01 15:15	05/29/01 09:30
01204104	B1E0713-08	Soil	05/14/01 19:00	05/29/01 09:30
01204106	B1E0713-09	Soil	05/14/01 18:00	05/29/01 09:30
01204107	B1E0713-10	Soil	05/15/01 13:00	05/29/01 09:30
01204110	B1E0713-11	Soil	05/17/01 10:00	05/29/01 09:30
01204111	B1E0713-12	Soil	05/17/01 10:45	05/29/01 09:30
01204112	B1E0713-13	Soil	05/17/01 11:30	05/29/01 09:30
01204113	B1E0713-14	Soil	05/17/01 12:30	05/29/01 09:30
01204114	B1E0713-15	Soil	05/17/01 14:15	05/29/01 09:30

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North Creek Analytical - Bothell

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Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 12:56

Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01214132 (B1E0713-01) Soil	**Sampled: 05/22/01 16:30**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**1380**	1000	mg/kg dry	1	1F12004	06/11/01	06/11/01	EPA 9060 mod.	
01214134 (B1E0713-02) Soil	**Sampled: 05/23/01 10:15**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**1680**	1000	mg/kg dry	1	1F12004	06/11/01	06/11/01	EPA 9060 mod.	
01214136 (B1E0713-03) Soil	**Sampled: 05/23/01 11:30**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**4830**	1000	mg/kg dry	1	1F12004	06/11/01	06/11/01	EPA 9060 mod.	
01214138 (B1E0713-04) Soil	**Sampled: 05/23/01 12:45**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**5510**	1000	mg/kg dry	1	1F12004	06/11/01	06/11/01	EPA 9060 mod.	
01214140 (B1E0713-05) Soil	**Sampled: 05/23/01 13:30**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**3460**	1000	mg/kg dry	1	1F12004	06/11/01	06/11/01	EPA 9060 mod.	
01214142 (B1E0713-06) Soil	**Sampled: 05/23/01 14:00**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**1950**	1000	mg/kg dry	1	1F12004	06/11/01	06/11/01	EPA 9060 mod.	
01214144 (B1E0713-07) Soil	**Sampled: 05/23/01 15:15**	**Received: 05/29/01 09:30**							
Total Organic Carbon	ND	1000	mg/kg dry	1	1F12004	06/11/01	06/11/01	EPA 9060 mod.	
01204104 (B1E0713-08) Soil	**Sampled: 05/14/01 19:00**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**8830**	1000	mg/kg dry	1	1F12004	06/11/01	06/11/01	EPA 9060 mod.	
01204106 (B1E0713-09) Soil	**Sampled: 05/14/01 18:00**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**2150**	1000	mg/kg dry	1	1F12004	06/11/01	06/11/01	EPA 9060 mod.	

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Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 12:56

Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01204107 (B1E0713-10) Soil	**Sampled: 05/15/01 13:00**	**Received: 05/29/01 09:30**							
Total Organic Carbon	ND	1000	mg/kg dry	1	1F12005	06/11/01	06/11/01	EPA 9060 mod.	
01204110 (B1E0713-11) Soil	**Sampled: 05/17/01 10:00**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**8060**	1000	mg/kg dry	1	1F12005	06/11/01	06/11/01	EPA 9060 mod.	
01204111 (B1E0713-12) Soil	**Sampled: 05/17/01 10:45**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**8900**	1000	mg/kg dry	1	1F12005	06/11/01	06/11/01	EPA 9060 mod.	
01204112 (B1E0713-13) Soil	**Sampled: 05/17/01 11:30**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**1420**	1000	mg/kg dry	1	1F12005	06/11/01	06/11/01	EPA 9060 mod.	
01204113 (B1E0713-14) Soil	**Sampled: 05/17/01 12:30**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**2040**	1000	mg/kg dry	1	1F12005	06/11/01	06/11/01	EPA 9060 mod.	
01204114 (B1E0713-15) Soil	**Sampled: 05/17/01 14:15**	**Received: 05/29/01 09:30**							
Total Organic Carbon	**9250**	1000	mg/kg dry	1	1F12005	06/11/01	06/11/01	EPA 9060 mod.	

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Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 12:56

Physical Parameters by APHA/ASTM/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01214132 (B1E0713-01) Soil	**Sampled: 05/22/01 16:30**	**Received: 05/29/01 09:30**							
Dry Weight	**100**	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	
01214134 (B1E0713-02) Soil	**Sampled: 05/23/01 10:15**	**Received: 05/29/01 09:30**							
Dry Weight	**99.8**	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	
01214136 (B1E0713-03) Soil	**Sampled: 05/23/01 11:30**	**Received: 05/29/01 09:30**							
Dry Weight	**95.0**	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	
01214138 (B1E0713-04) Soil	**Sampled: 05/23/01 12:45**	**Received: 05/29/01 09:30**							
Dry Weight	**98.5**	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	
01214140 (B1E0713-05) Soil	**Sampled: 05/23/01 13:30**	**Received: 05/29/01 09:30**							
Dry Weight	**100**	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	
01214142 (B1E0713-06) Soil	**Sampled: 05/23/01 14:00**	**Received: 05/29/01 09:30**							
Dry Weight	**100**	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	
01214144 (B1E0713-07) Soil	**Sampled: 05/23/01 15:15**	**Received: 05/29/01 09:30**							
Dry Weight	**99.0**	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	
01204104 (B1E0713-08) Soil	**Sampled: 05/14/01 19:00**	**Received: 05/29/01 09:30**							
Dry Weight	**55.2**	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	
01204106 (B1E0713-09) Soil	**Sampled: 05/14/01 18:00**	**Received: 05/29/01 09:30**							
Dry Weight	**75.8**	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	

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Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 12:56

Physical Parameters by APHA/ASTM/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01204107 (B1E0713-10) Soil	**Sampled: 05/15/01 13:00**	**Received: 05/29/01 09:30**							
Dry Weight	**74.1**	1.00	%	1	1F05014	06/05/01	06/06/01	BSOPSPL003R07	
01204110 (B1E0713-11) Soil	**Sampled: 05/17/01 10:00**	**Received: 05/29/01 09:30**							
Dry Weight	**61.0**	1.00	%	1	1F05015	06/05/01	06/06/01	BSOPSPL003R07	
01204111 (B1E0713-12) Soil	**Sampled: 05/17/01 10:45**	**Received: 05/29/01 09:30**							
Dry Weight	**60.2**	1.00	%	1	1F05015	06/05/01	06/06/01	BSOPSPL003R07	
01204112 (B1E0713-13) Soil	**Sampled: 05/17/01 11:30**	**Received: 05/29/01 09:30**							
Dry Weight	**82.7**	1.00	%	1	1F05015	06/05/01	06/06/01	BSOPSPL003R07	
01204113 (B1E0713-14) Soil	**Sampled: 05/17/01 12:30**	**Received: 05/29/01 09:30**							
Dry Weight	**54.7**	1.00	%	1	1F05015	06/05/01	06/06/01	BSOPSPL003R07	
01204114 (B1E0713-15) Soil	**Sampled: 05/17/01 14:15**	**Received: 05/29/01 09:30**							
Dry Weight	**65.4**	1.00	%	1	1F05015	06/05/01	06/06/01	BSOPSPL003R07	

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Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 12:56

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F12004: Prepared 06/11/01 Using General Preparation										
Blank (1F12004-BLK1)										
Total Organic Carbon	ND	1000	mg/kg wet							
LCS (1F12004-BS1)										
Total Organic Carbon	12500	1000	mg/kg wet	12900		96.9	68-120			
LCS Dup (1F12004-BSD1)										
Total Organic Carbon	12000	1000	mg/kg wet	12900		93.0	68-120	4.08	30	
Duplicate (1F12004-DUP1)					**Source: B1E0711-01**					
Total Organic Carbon	ND	1000	mg/kg dry		ND				35	
Batch 1F12005: Prepared 06/11/01 Using General Preparation										
Blank (1F12005-BLK1)										
Total Organic Carbon	ND	1000	mg/kg wet							
LCS (1F12005-BS1)										
Total Organic Carbon	12600	1000	mg/kg wet	12700		99.2	68-120			
LCS Dup (1F12005-BSD1)										
Total Organic Carbon	13700	1000	mg/kg wet	12700		108	68-120	8.37	30	
Duplicate (1F12005-DUP1)					**Source: B1E0713-10**					
Total Organic Carbon	ND	1000	mg/kg dry		ND				35	
Duplicate (1F12005-DUP2)					**Source: B1F0075-06**					
Total Organic Carbon	52000	1000	mg/kg dry		57700			10.4	35	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F12005: Prepared 06/11/01 Using General Preparation										
Matrix Spike (1F12005-MS1)					**Source: B1F0075-03**					
Total Organic Carbon	15900	1000	mg/kg dry	27200	4980	40.1	40-160			
Matrix Spike Dup (1F12005-MSD1)					**Source: B1F0075-03**					
Total Organic Carbon	14400	1000	mg/kg dry	22500	4980	41.9	40-160	9.90	35	

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541.383.9310 fax 541.382.7588

Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Reported:**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 12:56

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F05014: Prepared 06/05/01 Using Dry Weight										
Blank (1F05014-BLK1)										
Dry Weight	99.8	1.00	%							
Batch 1F05015: Prepared 06/05/01 Using Dry Weight										
Blank (1F05015-BLK1)										
Dry Weight	100	1.00	%							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Scott A. Woerman, Project Manager

www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Reported:**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	06/13/01 12:56

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

EPA 9060M
Initial and Continuing Calibration Verification

June 8, 2001

	Initial Calib. (mg/kg)			Continuing Calibration (mg/kg)						
Analyte	TRUE	Found	%R	TRUE	Found[1]	%R	Found[2]	%R	Found[3]	%R
TOC	27000	25803	96%	27000	24828	92%	22300	83%	23700	88%

Control Limits: 80 to 120%

8/8/01

EPA 9060M
Blanks

June 8, 2001

Analytes	ICB (mg/kg)	CCB (mg/kg)		
		01	02	03
TOC	-537.4	-506.1	-552.2	-600.0

Acceptance Criterion: ≤ 1000 mg/kg

JB 8/8/01

Batch # 1F12001
~~Batch # 1F12002~~ 6/14/01

6/8/01
Shaunna Jackson
Spike ID (Sucrose): 1050084
BS ID: 1030060

Untitled

** RESULTS - 060801 **

Pos/Vial: 1 Name: ICV Analyzed: 08Jun2001 12:12
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds377	08Jun2001	12:28	102.70	-	-	-	8748	2.650	2.58

25803

Pos/Vial: 2 Name: ICB Analyzed: 08Jun2001 12:28
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds378	08Jun2001	12:44	223.30	-	-	-	7	-0.120	-0.05

-537.4

Pos/Vial: 3 Name: BS Analyzed: 08Jun2001 12:44
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds379	08Jun2001	13:00	235.80	-	-	-	10068	3.070	1.30

13019
~~15691~~ 6/8/

Pos/Vial: 4 Name: BS DUP Analyzed: 08Jun2001 13:00
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds380	08Jun2001	13:16	258.70	-	-	-	10856	3.320	1.28

12833

Pos/Vial: 5 Name: B1E0710-01 Analyzed: 08Jun2001 13:16
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds381	08Jun2001	13:32	255.70	-	-	-	5147	1.510	0.59

5905.4

Pos/Vial: 6 Name: B1E0710-02 Analyzed: 08Jun2001 13:32
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds382	08Jun2001	13:48	217.00	-	-	-	3264	0.910	0.42

4193.5

Pos/Vial: 7 Name: B1E0710-03 Analyzed: 08Jun2001 13:49
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass	TC Area	TC Mass	TC Conc	TOC Area	TOC Mass	TOC Conc

Rep	Datafile	Date	Time	(mg)	(cts)	(mgC)	(% Carbon)	(cts)	(mgC)	(% Carbon)	
1	slds383	08Jun2001	14:08	198.70	-	-	-	10066	3.070	1.54	15450

****

Pos/Vial: 8 Name: B1E0710-04 Analyzed: 08Jun2001 14:08
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds384	08Jun2001	14:25	216.40	-	-	-	7341	2.200	1.02	10166

****

Pos/Vial: 9 Name: B1E0710-05 Analyzed: 08Jun2001 14:26
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds385	08Jun2001	15:36	200.00	-	-	-	6831	2.040	1.02	10200

****

Pos/Vial: 10 Name: B1E0710-06 Analyzed: 08Jun2001 15:36
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds386	08Jun2001	15:52	206.90	-	-	-	6523	1.940	0.94	93765

****

Pos/Vial: 11 Name: CCV Analyzed: 08Jun2001 15:52
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds387	08Jun2001	16:08	101.90	-	-	-	8364	2.530	2.48	24828

****

Pos/Vial: 12 Name: CCB Analyzed: 08Jun2001 16:08
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds388	08Jun2001	16:24	237.10	-	-	-	9	-0.120	-0.05	-506.1

****

Pos/Vial: 13 Name: B1E0710-07 Analyzed: 08Jun2001 16:24
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds389	08Jun2001	16:45	211.70	-	-	-	5536	1.630	0.77	7699.6

****

Pos/Vial: 14 Name: B1E0710-08 Analyzed: 08Jun2001 16:45
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds390	08Jun2001	17:02	204.60	-	-	-	8026	2.420	1.18	11827

****

Pos/Vial: 15 Name: B1E0710-09 Analyzed: 08Jun2001 17:02
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds391	08Jun2001	17:18	198.80	-	-	-	17261	5.350	2.69	26911

****

Pos/Vial: 16 Name: B1E0710-10 Analyzed: 08Jun2001 17:18
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds392	08Jun2001	17:45	199.90	-	-	-	3940	1.130	0.56	5652.8

****

Pos/Vial: 17 Name: B1E0710-11 Analyzed: 08Jun2001 17:45
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds393	08Jun2001	18:09	189.80	-	-	-	16721	5.180	2.73	27291

****

Pos/Vial: 18 Name: B1E0710-12 Analyzed: 08Jun2001 18:09
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds394	08Jun2001	18:25	210.90	-	-	-	11837	3.630	1.72	17211

****

Pos/Vial: 19 Name: B1E0710-13 Analyzed: 08Jun2001 18:25
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds395	08Jun2001	18:41	218.40	-	-	-	11315	3.460	1.59	15842

****

Pos/Vial: 20 Name: B1E0710-14 Analyzed: 08Jun2001 18:41
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds396	08Jun2001	18:57	229.30	-	-	-	13822	4.260	1.86	18578

****

Untitled

Pos/Vial: 21 Name: B1E0710-15 Analyzed: 08Jun2001 18:57
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds397	08Jun2001	19:13	219.10	-	-	-	6721	2.010	0.92

9173.9

****

8/6/11/01 B1E0710-15Dup

Pos/Vial: 22 Name: ~~B1E0711-01~~ Analyzed: 08Jun2001 19:13
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds398	08Jun2001	19:32	230.70	-	-	-	6039	1.790	0.78

7758.9

****

Pos/Vial: 23 Name: CCV Analyzed: 08Jun2001 19:33
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds399	08Jun2001	19:50	103.20	-	-	-	7659	2.300	2.23

#1F12002 New Batch ↓

****

Pos/Vial: 24 Name: CCB Analyzed: 08Jun2001 19:50
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds400	08Jun2001	20:06	217.30	-	-	-	8	-0.120	-0.06

-552.2

****

8/6/11/01 BS

Pos/Vial: 25 Name: ~~B1E0711-02~~ Analyzed: 08Jun2001 20:06
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds401	08Jun2001	20:22	199.20	-	-	-	8564	2.590	1.30

13002

****

8/6/11/01 BSD

Pos/Vial: 26 Name: ~~B1E0711-03~~ Analyzed: 08Jun2001 20:22
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds402	08Jun2001	20:38	195.80	-	-	-	8002	2.410	1.23

12308

****

Pos/Vial: 27 Name: B1E0711-04 Analyzed: 08Jun2001 20:38
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)

1	slds403	08Jun2001	20:54	214.80	-	-	-	5068	1.480	0.69	6890.1

****

Pos/Vial: 28 Name: B1E0711-05 Analyzed: 08Jun2001 20:54
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds404	08Jun2001	21:10	210.40	-	-	-	7644	2.300	1.09	10931

****

Pos/Vial: 29 Name: B1E0711-06 Analyzed: 08Jun2001 21:10
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds405	08Jun2001	21:27	206.40	-	-	-	6727	2.010	0.97	~~9738.4~~

include Tetra for batch QC frac 6/12 MS frac 6/

****

Pos/Vial: 30 Name: B1E0711-07 Analyzed: 08Jun2001 21:28
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds406	08Jun2001	21:43	183.00	-	-	-	4760	1.390	0.76	7595.6

****

Pos/Vial: 31 Name: B1E0711-08 Analyzed: 08Jun2001 21:44
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds407	08Jun2001	21:59	227.20	-	-	-	16262	5.030	2.21	22139

****

Pos/Vial: 32 Name: B1E0711-09 Analyzed: 08Jun2001 21:59
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds408	08Jun2001	22:15	207.10	-	-	-	306	-0.030	-0.01	~~-144.85~~

return 6/12 frac 6/1

****

Pos/Vial: 33 Name: B1E0711-10 Analyzed: 08Jun2001 22:15
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds409	08Jun2001	22:31	~~200.00~~ 227.1	-	-	-	6518	1.940	0.97	8542.5

SJ 6/11/01

****

SJ 6/11/01 B1E0711-06 Dup

Pos/Vial: 34 Name: ~~B1E0711-11~~ Analyzed: 08Jun2001 22:31
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES Input TC TC TC TOC TOC TOC

Untitled

9931

Rep	Datafile	Date	Time	Mass (mg)	Area (cts)	Mass (mgC)	Conc (% Carbon)	Area (cts)	Mass (mgC)	Conc (% Carbon)
1	slds410	08Jun2001	22:49	204.40	-	-	-	6806	2.030	1.00

****

Pos/Vial: 35 Name: CCV Analyzed: 08Jun2001 22:49
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds411	08Jun2001	23:05	103.10	-	-	-	8100	2.440	2.37

****

Pos/Vial: 36 Name: CCB Analyzed: 08Jun2001 23:05
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds412	08Jun2001	23:21	188.30	-	-	-	14	-0.120	-0.06

EPA 9060M
Initial and Continuing Calibration Verification

June 11, 2001

	Initial Calib. (mg/kg)			Continuing Calibration (mg/kg)						
Analyte	TRUE	Found	%R	TRUE	Found[1]	%R	Found[2]	%R	Found[3]	%R
TOC	27000	21191	78%	27000	24411	90%	24877	92%	24803	92%

Continuing Calibration (mg/kg)					
Analyte	TRUE	Found[4]	%R	Found[5]	%R
TOC	27000	23900	89%	22641	84%

Control Limits: 80 to 120%

JB
8/8/01

EPA 9060M
Blanks

June 11, 2001

Analytes	ICB (mg/kg)	CCB (mg/kg)				Preparation Blank (mg/kg) 1F12005-BLK1
		01	02	03	04	
TOC	-566	-596	-486	-537.9	-613	-625

Acceptance Criterion: ≤ 1000 mg/kg

JHB
8/8/01
36

Batch # 1F12004 ✓ 6/14/01
~~Batch # 1F12005~~
SS 6/14/01

6/11/01
Shaunna Jackson

Spike ID: 1050084
(SUCROSE)

BS ID: 1030060

Untitled

** SEQUENCE **

061101 Mon Jun 11 06:30:15 2001

Start Pos/Vial #: 1, Stop Pos/Vial #: 48

Pos/ Vial	Sample Name	Method	Run Type	# Rep	Mass (mg)	Remarks
1	ICV	30.0mg	Sample	1	100.00	
2	ICB	30.0mg	Sample	1	200.00	
3	BS	30.0mg	Sample	1	200.00	
4	BS DUP	30.0mg	Sample	1	200.00	
5	B1E0711-01	30.0mg	Sample	1	200.00	
6	B1E0711-01 DUP	30.0mg	Sample	1	200.00	
7	B1E0711-02	30.0mg	Sample	1	200.00	
8	B1E0711-03	30.0mg	Sample	1	200.00	
9	B1E0711-11	30.0mg	Sample	1	200.00	
10	B1E0711-12	30.0mg	Sample	1	200.00	
11	CCV	30.0mg	Sample	1	100.00	
12	CCB	30.0mg	Sample	1	200.00	
13	B1E0711-13	30.0mg	Sample	1	200.00	
14	B1E0713-01	30.0mg	Sample	1	200.00	
15	B1E0713-02	30.0mg	Sample	1	200.00	
16	B1E0713-03	30.0mg	Sample	1	200.00	
17	B1E0713-04	30.0mg	Sample	1	200.00	
18	B1E0713-05	30.0mg	Sample	1	200.00	
19	B1E0713-06	30.0mg	Sample	1	200.00	
20	B1E0713-07	30.0mg	Sample	1	200.00	
21	B1E0713-08	30.0mg	Sample	1	200.00	
22	B1E0713-09	30.0mg	Sample	1	200.00	
23	CCV	30.0mg	Sample	1	100.00	
24	CCB	30.0mg	Sample	1	200.00	
25	BS	30.0mg	Sample	1	200.00	
26	BS DUP	30.0mg	Sample	1	200.00	
27	METHOD BLANK	30.0mg	Sample	1	200.00	
28	B1E0713-10	30.0mg	Sample	1	200.00	
29	B1E0713-10 DUP	30.0mg	Sample	1	200.00	
30	B1E0713-11	30.0mg	Sample	1	200.00	
31	B1E0713-12	30.0mg	Sample	1	200.00	
32	B1E0713-13	30.0mg	Sample	1	200.00	
33	B1E0713-14	30.0mg	Sample	1	200.00	
34	B1E0713-15	30.0mg	Sample	1	200.00	
35	CCV	30.0mg	Sample	1	100.00	
36	CCB	30.0mg	Sample	1	200.00	
37	B1F0075-01	30.0mg	Sample	1	200.00	
38	B1F0075-02	30.0mg	Sample	1	200.00	
39	B1F0075-03	30.0mg	Sample	1	200.00	
40	B1F0075-04	30.0mg	Sample	1	200.00	
41	B1F0075-05	30.0mg	Sample	1	200.00	
42	B1F0075-06	30.0mg	Sample	1	200.00	
43	B1F0075-06 DUP	30.0mg	Sample	1	200.00	
44	B1F0075-07	30.0mg	Sample	1	200.00	
45	B1F0075-08	30.0mg	Sample	1	200.00	
46	B1F0075-09	30.0mg	Sample	1	200.00	
47	CCV	30.0mg	Sample	1	100.00	
48	CCB	30.0mg	Sample	1	200.00	

** RESULTS - 061101 **

Pos/Vial: 1 Name: ICV Analyzed: 11Jun2001 06:30
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds413	11Jun2001	07:24	102.40	-	-	-	7225	2.170	2.12

21191

37

Untitled

Pos/Vial: 2 Name: ICB Analyzed: 11Jun2001 07:24
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds414	11Jun2001	07:40	212.00	-	-	-	6	-0.120	-0.06	-566

****

Pos/Vial: 3 Name: BS Analyzed: 11Jun2001 07:40
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds415	11Jun2001	07:56	217.50	-	-	-	8949	2.710	1.25	12459

****

Pos/Vial: 4 Name: BS DUP Analyzed: 11Jun2001 07:56
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds416	11Jun2001	08:12	221.10	-	-	-	8752	2.650	1.20	11985

****

Pos/Vial: 5 Name: B1E0711-01 Analyzed: 11Jun2001 08:12
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds417	11Jun2001	08:42	210.80	-	-	-	632	0.080	0.04	379.5

****

Pos/Vial: 6 Name: B1E0711-01 DUP Analyzed: 11Jun2001 08:43
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds418	11Jun2001	08:58	224.20	-	-	-	449	0.020	0.01	89.2

****

Pos/Vial: 7 Name: B1E0711-02 Analyzed: 11Jun2001 08:58
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds419	11Jun2001	09:16	208.30	-	-	-	18640	5.790	2.78	27796

****

Pos/Vial: 8 Name: B1E0711-03 Analyzed: 11Jun2001 09:16
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds420	11Jun2001	09:34	268.10	-	-	-	7582	2.280	0.85	8504.3

****

Pos/Vial: 9 Name: B1E0711-11 Analyzed: 11Jun2001 09:34
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds421	11Jun2001	09:53	202.10	-	-	-	6353	1.890	0.94	9351.8

****

Pos/Vial: 10 Name: B1E0711-12 Analyzed: 11Jun2001 09:54
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds422	11Jun2001	10:10	201.10	-	-	-	5796	1.710	0.85	8503.2

****

Pos/Vial: 11 Name: CCV Analyzed: 11Jun2001 10:10
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds423	11Jun2001	10:26	102.00	-	-	-	8244	2.490	2.44	24411

****

Pos/Vial: 12 Name: CCB Analyzed: 11Jun2001 10:26
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds424	11Jun2001	10:46	201.30	-	-	-	6	-0.120	-0.06	-596

****

Pos/Vial: 13 Name: B1E0711-13 Analyzed: 11Jun2001 10:46
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds425	11Jun2001	11:02	255.50	-	-	-	8312	2.510	0.98	9823.9

****

Pos/Vial: 14 Name: B1E0713-01 Analyzed: 11Jun2001 11:02
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds426	11Jun2001	11:18	239.80	-	-	-	1434	0.330	0.14	1376.1

****

Pos/Vial: 15 Name: B1E0713-02 Analyzed: 11Jun2001 11:18
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Input Mass	TC Area	TC Mass	TC Conc	TOC Area	TOC Mass	TOC Conc

Untitled

Rep	Datafile	Date	Time	(mg)	(cts)	(mgC)	(% Carbon)	(cts)	(mgC)	(% Carbon)	
1	slds427	11Jun2001	11:33	220.40	-	-	-	1543	0.370	0.17	1678.8

****

Pos/Vial: 16 Name: B1E0713-03 Analyzed: 11Jun2001 11:34
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds428	11Jun2001	12:04	224.40	-	-	-	3645	1.030	0.46	4590.0

****

Pos/Vial: 17 Name: B1E0713-04 Analyzed: 11Jun2001 12:04
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds429	11Jun2001	12:26	219.10	-	-	-	4128	1.190	0.54	5431.3

****

Pos/Vial: 18 Name: B1E0713-05 Analyzed: 11Jun2001 12:27
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds430	11Jun2001	12:45	237.30	-	-	-	2976	0.820	0.35	3455.5

****

Pos/Vial: 19 Name: B1E0713-06 Analyzed: 11Jun2001 12:45
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds431	11Jun2001	13:06	226.10	-	-	-	1771	0.440	0.19	1946.0

****

Pos/Vial: 20 Name: B1E0713-07 Analyzed: 11Jun2001 13:06
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds432	11Jun2001	13:22	211.30	-	-	-	513	0.040	0.02	189.3

****

Pos/Vial: 21 Name: B1E0713-08 Analyzed: 11Jun2001 13:22
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds433	11Jun2001	13:39	272.80	-	-	-	4583	1.330	0.49	4875.4

****

Pos/Vial: 22 Name: B1E0713-09 Analyzed: 11Jun2001 13:39
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds434	11Jun2001	13:59	215.20	-	-	-	1488	0.350	0.16	1626.4

****

Pos/Vial: 23 Name: CCV Analyzed: 11Jun2001 13:59
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds435	11Jun2001	14:18	102.10	-	-	-	8389	2.540	2.48	24877

****

Pos/Vial: 24 Name: CCB Analyzed: 11Jun2001 14:18
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds436	11Jun2001	14:34	246.80	-	-	-	13	-0.120	-0.05	-486

NEW BATCH ↓

****

#1F12005

Pos/Vial: 25 Name: BS Analyzed: 11Jun2001 14:34
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds437	11Jun2001	14:50	231.30	-	-	-	9556	2.910	1.26	12581

****

Pos/Vial: 26 Name: BS DUP Analyzed: 11Jun2001 14:50
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds438	11Jun2001	15:30	217.50	-	-	-	9818	2.990	1.37	13747

****

Pos/Vial: 27 Name: METHOD BLANK Analyzed: 11Jun2001 15:31
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds439	11Jun2001	15:55	191.90	-	-	-	14	-0.120	-0.06	-625

****

CCV 8F6/12/01

Pos/Vial: 28 Name: ~~B1E0713-10~~ Analyzed: 11Jun2001 15:56
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds440	11Jun2001	16:18	102.00	-	-	-	8365	2.530	2.48	24803

****

6/12/01

Pos/Vial: 29 Name: B1E0713-10 ~~DUP~~ Analyzed: 11Jun2001 16:19
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds441	11Jun2001	16:57	217.50	-	-	-	163	-0.070	-0.03

-321.8

****

Pos/Vial: 30 Name: B1E0713-11 Analyzed: 11Jun2001 16:57
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds442	11Jun2001	17:14	207.60	-	-	-	3614	1.020	0.49

4913.3

****

Pos/Vial: 31 Name: B1E0713-12 Analyzed: 11Jun2001 17:14
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds443	11Jun2001	17:31	231.50	-	-	-	4288	1.240	0.53

5356.4

****

Pos/Vial: 32 Name: B1E0713-13 Analyzed: 11Jun2001 17:31
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds444	11Jun2001	17:47	237.70	-	-	-	1274	0.280	0.12

1177.9

****

Pos/Vial: 33 Name: B1E0713-14 Analyzed: 11Jun2001 17:47
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds445	11Jun2001	18:06	314.10	-	-	-	1479	0.350	0.11

1114.3

****

Pos/Vial: 34 Name: B1E0713-15 Analyzed: 11Jun2001 18:06
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds446	11Jun2001	18:22	294.30	-	-	-	5996	1.780	0.60

6048.3

****

Pos/Vial: 35 Name: CCV Analyzed: 11Jun2001 18:22
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)

1	slds447	11Jun2001	18:41	101.80	-	-	-	8055	2.430	2.39

****

Pos/Vial: 36 Name: CCB Analyzed: 11Jun2001 18:41
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds448	11Jun2001	18:58	223.10	-	-	-	9	-0.120	-0.05

-537.9

****

B1F0711-04 SJ 6/12/01

Pos/Vial: 37 Name: ~~B1F0075-01~~ Analyzed: 11Jun2001 18:58
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds449	11Jun2001	19:14	218.30	-	-	-	7192	2.160	0.99

9894.4

****

B1F0713-10 Dup SJ 6/12/01

Pos/Vial: 38 Name: ~~B1F0075-02~~ Analyzed: 11Jun2001 19:14
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds450	11Jun2001	19:35	225.50	-	-	-	331	-0.020	-0.01

-88.69

****

Pos/Vial: 39 Name: B1F0075-03 Analyzed: 11Jun2001 19:35
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds451	11Jun2001	19:52	201.40	-	-	-	3483	0.980	0.49

4845.9

****

B1F0075-03 MS SJ 6/12/01

Pos/Vial: 40 Name: ~~B1F0075-04~~ Analyzed: 11Jun2001 19:52
Run ID: 1 Meth: 30 Mass (mg): 200.00

Sample = 101.6 mg
Sucrose = 102.1 mg
(spike)
203.7 mg

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds452	11Jun2001	20:17	203.70	-	-	-	10342	3.160	1.55

15513
~~15513~~ SJ 6/12/01 ~~31102~~ SJ 6/12/01

****

B1F0075-03 MS DUP SJ 6/12/01

Pos/Vial: 41 Name: ~~B1F0075-05~~ Analyzed: 11Jun2001 20:17
Run ID: 1 Meth: 30 Mass (mg): 200.00

Sample = 122.6 mg
Sucrose = 100.9 mg
(spike)
223.5 mg

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds453	11Jun2001	20:33	223.50	-	-	-	10341	3.150	1.41

~~14093~~ SJ 6/12/01 ~~25693~~ SJ 6/12/01
14093

****

B1F0075-04 SJ 6/12/01

Pos/Vial: 42 Name: ~~B1F0075-06~~ Analyzed: 11Jun2001 20:33
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES Input TC TC TC TOC TOC TOC

Untitled

Rep	Datafile	Date	Time	Mass (mg)	Area (cts)	Mass (mgC)	Conc (% Carbon)	Area (cts)	Mass (mgC)	Conc (% Carbon)	
1	slds454	11Jun2001	20:53	191.10	-	-	-	1055	0.210	0.11	1098.9

****

Pos/Vial: 43 Name: B1F0075-06 DUP Analyzed: 11Jun2001 20:53
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds455	11Jun2001	21:13	200.40	-	-	-	18267	5.670	2.83	28293

****

B1F0075-06 SF61201

Pos/Vial: 44 Name: ~~B1F0075-07~~ Analyzed: 11Jun2001 21:13
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds456	11Jun2001	21:37	207.20	-	-	-	20898	6.500	3.14	31370

****

Pos/Vial: 45 Name: B1F0075-08 Analyzed: 11Jun2001 21:38
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds457	11Jun2001	21:57	187.30	-	-	-	471	0.030	0.01	140.2

****

B1F0711-06 MS SF61201

Pos/Vial: 46 Name: ~~B1F0075-09~~ Analyzed: 11Jun2001 21:57
Run ID: 1 Meth: 30 Mass (mg): 200.00

Sample = 92.7mg
Sucrose = 101.3mg
193.0mg

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds458	11Jun2001	22:13	193.00	-	-	-	10450	3.190	1.65	~~10528~~ SF61201 34412

****

Pos/Vial: 47 Name: CCV Analyzed: 11Jun2001 22:14
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds459	11Jun2001	22:29	100.70	-	-	-	7587	2.280	2.27	22641

****

Pos/Vial: 48 Name: CCB Analyzed: 11Jun2001 22:29
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds460	11Jun2001	22:47	195.50	-	-	-	9	-0.120	-0.06	-613

EPA 9060M
Initial and Continuing Calibration Verification

June 12, 2001

	Initial Calib. (mg/kg)			Continuing Calibration (mg/kg)						
Analyte	TRUE	Found	%R	TRUE	Found[1]	%R	Found[2]	%R	Found[3]	%R
TOC	27000	23800	88%	27000	25511	94%	24700	91%	25300	94%

Control Limits: 80 to 120%

EPA 9060M
Blanks

June 12, 2001

Analytes	ICB (mg/kg)	CCB (mg/kg)			
		01	02	03	
TOC	-516	-500	-500	-500	

Acceptance Criterion: ≤ 1000 mg/kg

JB 8/8/0

Batch # 1F13023

6/12/01
Shawonna Jackson
Spike#: 1050084
(Sucrose)
BS#: 1030060

Untitled

RESULTS - 061201 **

****

Pos/Vial: 1 Name: ICV Analyzed: 12Jun2001 09:58
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds463	12Jun2001	10:13	102.10	-	-	-	8062	2.430	2.38

****

Pos/Vial: 2 Name: ICB Analyzed: 12Jun2001 10:13
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds464	12Jun2001	10:29	232.50	-	-	-	8	-0.120	-0.05

-516

****

Pos/Vial: 3 Name: BS Analyzed: 12Jun2001 10:29
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds465	12Jun2001	10:45	233.50	-	-	-	9434	2.870	1.23

12291

****

Pos/Vial: 4 Name: BS DUP Analyzed: 12Jun2001 10:45
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds466	12Jun2001	11:03	223.20	-	-	-	8053	2.430	1.09

~~8~~ 6/12
+8 10887

****

Pos/Vial: 5 Name: B1F0711-06 Analyzed: 12Jun2001 11:03
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds467	12Jun2001	11:19	209.00	-	-	-	7605	2.290	1.09

10956

****

Sample= 141.4
Sucrose= 100.7
242.1

Pos/Vial: 6 Name: B1F0711-06MS Analyzed: 12Jun2001 11:19
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds468	12Jun2001	11:46	242.10	-	-	-	12186	3.740	1.54

15448

****

Sample= 103.9
Sucrose= 101.9
205.8

Pos/Vial: 7 Name: B1F0711-06 MSD Analyzed: 12Jun2001 11:46
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Input Mass	TC Area	TC Mass	TC Conc	TOC Area	TOC Mass	TOC Conc

Untitled

Rep	Datafile	Date	Time	(mg)	(cts)	(mgC)	(% Carbon)	(cts)	(mgC)	(% Carbon)
1	slds469	12Jun2001	12:02	205.80	-	-	-	11474	3.510	1.71

17055

****

Pos/Vial: 8 Name: CCV Analyzed: 12Jun2001 12:03
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds470	12Jun2001	12:19	102.70	-	-	-	8662	2.620	2.55

25511

****

Pos/Vial: 9 Name: CCB Analyzed: 12Jun2001 12:19
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds471	12Jun2001	12:37	242.20	-	-	-	9	-0.120	-0.05

****
** RESULTS - 061201B **
****

Pos/Vial: 1 Name: ~~ICB~~ CCV Analyzed: 12Jun2001 13:11
Run ID: 1 Meth: 30 JMC 6/17 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds472	12Jun2001	13:27	100.00	-	-	-	8184	2.470	2.47

24700

****

Pos/Vial: 2 Name: ~~ICB~~ CCB JMC 6/13 Analyzed: 12Jun2001 13:27
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds473	12Jun2001	13:43	228.50	-	-	-	12	-0.120	-0.05

****

Pos/Vial: 3 Name: B1F0711-09 Analyzed: 12Jun2001 13:43
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds474	12Jun2001	14:17	229.40	-	-	-	9920	3.020	1.32

13164

****

Pos/Vial: 4 Name: CCV Analyzed: 12Jun2001 14:18
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds475	12Jun2001	14:33	102.30	-	-	-	8546	2.590	2.53

****

Untitled

Pos/Vial: 5 Name: CCB Analyzed: 12Jun2001 14:34
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds476	12Jun2001	14:50	245.20	-	-	-	10	-0.120	-0.05

* CALIBRATION **

****

SUCROSE27 Thu Jan 25 19:36:13 2001

Std. #	Used	Mass (mgC)
1	Yes	0.00
2	Yes	0.27
3	Yes	2.70
4	Yes	27.00
5	No	200.00

RF (ugc/k-cnt):	316.93
R-Squared:	1.0000
Offset (mgC):	0.1224
Calibration Mode:	TC
Allow Editing:	No

Rep	Std. 1	Std. 2	Std. 3	Std. 4	Std. 5
1	125	1286	9145	85553	-
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-
5	-	-	-	-	-
6	-	-	-	-	-
7	-	-	-	-	-
8	-	-	-	-	-
9	-	-	-	-	-
10	-	-	-	-	-

(* = unused)

PREPARATION BENCH SHEET

1F12001

North Creek Analytical - Bothell

Printed: 6/12/01 5:12:28PM

Matrix: Soil — **Prepared using: Wet Chem - General Preparation** — **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (g)	Final (ml)	Spike ID	Source ID	ul Spike	ul Surrogate	Initials Samp	Initials To Vol	Initials Spk	Extraction Comments
1F12001-BLK1	QC	06/08/01 00:00	0.2233	0.2233								
1F12001-BS1	QC	06/08/01 00:00	0.2358	0.2358	1030060		235.8					
1F12001-BSD1	QC	06/08/01 00:00	0.2587	0.2587	1030060		258.7					
1F12001-DUP1	QC	06/08/01 00:00	0.2307	0.2307		B1E0710-15						
B1E0710-01	TOC (1) EPA 9060	06/08/01 00:00	0.2557	0.2557								
B1E0710-02	TOC (1) EPA 9060	06/08/01 00:00	0.217	0.217								
B1E0710-03	TOC (1) EPA 9060	06/08/01 00:00	0.1987	0.1987								
B1E0710-04	TOC (1) EPA 9060	06/08/01 00:00	0.2164	0.2164								
B1E0710-05	TOC (1) EPA 9060	06/08/01 00:00	0.2	0.2								
B1E0710-06	TOC (1) EPA 9060	06/08/01 00:00	0.2069	0.2069								
B1E0710-07	TOC (1) EPA 9060	06/08/01 00:00	0.2117	0.2117								
B1E0710-08	TOC (1) EPA 9060	06/08/01 00:00	0.2046	0.2046								
B1E0710-09	TOC (1) EPA 9060	06/08/01 00:00	0.1988	0.1988								
B1E0710-10	TOC (1) EPA 9060	06/08/01 00:00	0.1999	0.1999								
B1E0710-11	TOC (1) EPA 9060	06/08/01 00:00	0.1898	0.1898								
B1E0710-12	TOC (1) EPA 9060	06/08/01 00:00	0.2109	0.2109								
B1E0710-13	TOC (1) EPA 9060	06/08/01 00:00	0.2184	0.2184								
B1E0710-14	TOC (1) EPA 9060	06/08/01 00:00	0.2293	0.2293								
B1E0710-15	TOC (1) EPA 9060	06/08/01 00:00	0.2191	0.2191								

Batch Comments

Shawnna Jacun 6/13/01

Spiking Witnessed By — Date

Preparation Reviewed By — Date

Extracts Received By — Date

NZ 6/12

PREPARATION BENCH SHEET

1F12002

North Creek Analytical - Bothell

Printed: 6/12/01 4:48:26PM

Matrix: Soil **Prepared using: Wet Chem - General Preparation** (No Surrogate)

Lab Number	Analysis	Prepared	Initial (g)	Final (ml)	Spike ID	Source ID	ul Spike	ul Surrogate	Initials Samp	Initials To Vol	Initials Spk	Extraction Comments
1F12002-BLK1	QC	06/08/01 00:00	0.2173	0.2173								
1F12002-BS1	QC	06/08/01 00:00	0.1992	0.1992	1030060		199.2					
1F12002-BSD1	QC	06/08/01 00:00	0.1958	0.1958	1030060		195.8					
1F12002-DUP1	QC	06/08/01 00:00	0.2044	0.2044		B1E0711-06						
B1E0711-04	TOC (1) EPA 9060	06/08/01 00:00	0.2148	0.2148								
B1E0711-05	TOC (1) EPA 9060	06/08/01 00:00	0.2104	0.2104								
B1E0711-06	TOC (1) EPA 9060	06/08/01 00:00	0.2064	0.2064								
B1E0711-07	TOC (1) EPA 9060	06/08/01 00:00	0.183	0.183								
B1E0711-08	TOC (1) EPA 9060	06/08/01 00:00	0.2272	0.2272								
B1E0711-09	TOC (1) EPA 9060	06/08/01 00:00	0.2071	0.2071								
B1E0711-10	TOC (1) EPA 9060	06/08/01 00:00	0.2271	0.2271								

Batch Comments

Shawnna Jackson 6/13/01

Spiking Witnessed By Date

Preparation Reviewed By Date

Extracts Received By Date

5 Fog 6/12

PREPARATION BENCH SHEET

1F12004

North Creek Analytical - Bothell

Printed: 6/12/01 3:38:32PM

Matrix: Soil — **Prepared using: Wet Chem - General Preparation** — **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (g)	Final (ml)	Spike ID	Source ID	ul Spike	ul Surrogate	Initials Samp	Initials To Vol	Initials Spk	Extraction Comments
1F12004-BLK1	QC	06/11/01 00:00	0.212	0.212								
1F12004-BS1	QC	06/11/01 00:00	0.2175	0.2175	1030060		221.1					
1F12004-BSD1	QC	06/11/01 00:00	0.2211	0.2211	1030060		224.2					
1F12004-DUP1	QC	06/11/01 00:00	0.2242	0.2242		B1E0711-01						
B1E0711-01	TOC (1) EPA 9060	06/11/01 00:00	0.2108	0.2108								
B1E0711-02	TOC (1) EPA 9060	06/11/01 00:00	0.2083	0.2083								
B1E0711-03	TOC (1) EPA 9060	06/11/01 00:00	0.2681	0.2681								
B1E0711-11	TOC (1) EPA 9060	06/11/01 00:00	0.2021	0.2021								
B1E0711-12	TOC (1) EPA 9060	06/11/01 00:00	0.2011	0.2011								
B1E0711-13	TOC (1) EPA 9060	06/11/01 00:00	0.2555	0.2555								
B1E0713-01	TOC (1) EPA 9060	06/11/01 00:00	0.2398	0.2398								
B1E0713-02	TOC (1) EPA 9060	06/11/01 00:00	0.2204	0.2204								
B1E0713-03	TOC (1) EPA 9060	06/11/01 00:00	0.2244	0.2244								
B1E0713-04	TOC (1) EPA 9060	06/11/01 00:00	0.2191	0.2191								
B1E0713-05	TOC (1) EPA 9060	06/11/01 00:00	0.2373	0.2373								
B1E0713-06	TOC (1) EPA 9060	06/11/01 00:00	0.2261	0.2261								
B1E0713-07	TOC (1) EPA 9060	06/11/01 00:00	0.2113	0.2113								
B1E0713-08	TOC (1) EPA 9060	06/11/01 00:00	0.2728	0.2728								
B1E0713-09	TOC (1) EPA 9060	06/11/01 00:00	0.2152	0.2152								

Batch Comments

Shawna Jackson 6/13/01
Spiking Witnessed By — Date

Preparation Reviewed By — Date

Extracts Received By — Date

5 VRCHP 6/17

PREPARATION BENCH SHEET

1F12005

North Creek Analytical - Bothell

Printed: 6/12/01 5:11:19PM

Matrix: Soil — **Prepared using: Wet Chem - General Preparation** — **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (g)	Final (ml)	Spike ID	Source ID	ul Spike	ul Surrogate	Initials Samp	Initials To Vol	Initials Spk	Extraction Comments
1F12005-BLK1	QC	06/11/01 00:00	0.1919	0.1919								
1F12005-BS1	QC	06/11/01 00:00	0.2313	0.2313	1030060		231.3					
1F12005-BSD1	QC	06/11/01 00:00	0.2175	0.2175	1030060		217.5					
1F12005-DUP1	QC	06/11/01 00:00	0.2255	0.2255		B1E0713-10						
1F12005-DUP2	QC	06/11/01 00:00	0.2004	0.2004		B1F0075-06						
1F12005-MS1	QC	06/11/01 00:00	0.1016	0.1016	1050084	B1F0075-03	100					
1F12005-MSD1	QC	06/11/01 00:00	0.1226	0.1226	1050084	B1F0075-03	100					
B1E0713-10	TOC (1) EPA 9060	06/11/01 00:00	0.2175	0.2175								
B1E0713-11	TOC (1) EPA 9060	06/11/01 00:00	0.2076	0.2076								
B1E0713-12	TOC (1) EPA 9060	06/11/01 00:00	0.2315	0.2315								
B1E0713-13	TOC (1) EPA 9060	06/11/01 00:00	0.2377	0.2377								
B1E0713-14	TOC (1) EPA 9060	06/11/01 00:00	0.3141	0.3141								
B1E0713-15	TOC (1) EPA 9060	06/11/01 00:00	0.2943	0.2943								
B1F0075-03	TOC (1) EPA 9060	06/11/01 00:00	0.2014	0.2014								
B1F0075-04	TOC (1) EPA 9060	06/11/01 00:00	0.1911	0.1911								
B1F0075-06	TOC (1) EPA 9060	06/11/01 00:00	0.2004	0.2004								
B1F0075-08	TOC (1) EPA 9060	06/11/01 00:00	0.1873	0.1873								

Batch Comments

Shawnna Jackson 6/13/01

Spiking Witnessed By — Date

✓ 6/12

Preparation Reviewed By — Date

Extracts Received By — Date

PREPARATION BENCH SHEET

1F13023

North Creek Analytical - Bothell

Printed: 7/5/01 1:12:56PM

Matrix: Soil **Prepared using: Wet Chem - General Preparation** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (g)	Final (ml)	Spike ID	Source ID	ul Spike	ul Surrogate	Initials Samp	Initials To Vol	Initials Spk	Extraction Comments
1F13023-BLK1	QC	06/12/01 00:00	0.2325	0.2325								
1F13023-BS1	QC	06/12/01 00:00	0.2335	0.2335	1030060		233.5					
1F13023-BSD1	QC	06/12/01 00:00	0.2232	0.2232	1030060		223.2					
1F13023-MS1	QC	06/12/01 00:00	0.1414	0.1414	1050084	B1E0711-06R	100					
1F13023-MSD1	QC	06/12/01 00:00	0.1039	0.1039	1050084	B1E0711-06R	100					
B1E0711-06RE1	TOC (1) EPA 9060	06/12/01 00:00	0.2064	0.2064								From 1F12002 by LMC on 06/13/01
B1E0711-09	TOC (1) EPA 9060	06/12/01 00:00	0.2294	0.2294								

Batch Comments

Spiking Witnessed By Date

Preparation Reviewed By Date

Extracts Received By Date

Analytical Standard Record

North Creek Analytical - Bothell

1030060

Description:	Soil LCS	Expires:	03/14/02
Standard Type:	Analyte Spike	Prepared:	03/14/01
Solvent:	NA	Prepared By:	Lynne Cox
Final Volume (mls):	1	Department:	Wet Chem
Vials:	1	Last Edit:	03/14/01 09:58 by LMC

TOC/NH3 as N Lot 1106 Cat #542; Range:10200-15300 mg/kg

Analyte	CAS Number	Concentration (ppm)
Total Organic Carbon	NA	12700
Total Organic Carbon - Average	NA	12700
Total Organic Carbon - High	NA	12700
Total Organic Carbon - Low	NA	12700

Reviewed By Date

Analytical Standard Record

North Creek Analytical - Bothell

1050084

Description:	2.7% Sucrose	Expires:	05/17/02
Standard Type:	Analyte Spike	Prepared:	05/17/01
Solvent:	Solvent Lot #	Prepared By:	Shawnna Jackson
Final Volume (mls):	100	Department:	Wet Chem
Vials:	1	Last Edit:	06/12/01 09:37 by LMC

6.4125g of sucrose (Fisher lot #986609) diluted to 100 mLs

Analyte	CAS Number	Concentration (ppm)
Total Organic Carbon	NA	27000

Reviewed By Date

Non-Conformances?
Circle Y or N
(If Y, see other side)

'NCA SAMPLE RECEIPT CHECKLIST

Received By:
Date: 5/29/01
Time: 0930
Initials: PB

Checked-in By:
Date: 5-30-01
Time: 12:40
Initials: SY

Work Order No. B1E0710
Client: Roy Weston
Project: Lake Roosevelt

Container Type:
✓ Cooler
___ Box
✓ Other 5-30-01 SY

COC Seals:
___ Ship. Container
___ On Bottles
✓ None

Packing Material:
___ Bubble Bags
___ Foam Packs
___ Styrofoam
✓ Other Vermiculite

Refrigerant:
___ Gel Ice Pack
✓ Loose Ice
___ Other ___

Received Via:
✓ Fed Ex
___ UPS
___ DHL
___ Client
___ Courier ___
___ Other ___

Cooler Temperature: 5.9 °C CA#: ___

Sample Containers:		ID	CA#
Intact?	Y or N	___	___
Correct Type?	Y or N	___	___
Adequately Labeled? (ID, date and time)	Y or N	___	___
#Containers match COC?	Y or N	___	___
IDs match COC?	Y or N	___	___
Properly Preserved?	Y or N	___	___
Adequate Volume? (for tests requested)	Y or N	___	___

			ID	CA#
Soil VOAs:	Headspace?	Y or N	___	___
Water VOAs:	Headspace?	Y or N	___	___
	Preserved?	Y or N	___	___

PROJECT MANAGEMENT

Is the Chain of Custody complete? ~~Y or N~~

Is client information in ELEMENT accurate?
Address? ~~Y or N~~
Phone #? ~~Y or N~~
PM? ~~Y or N~~

Is project information in ELEMENT accurate?
Proj. Name? Y or N ?
Proj. #? Y or N ?
Contact? ~~Y or N~~
Bid/Prices? ~~Y or N~~
Invoice info? ~~Y or N~~
Tax info? ~~Y or N~~
Analyses? ~~Y or N~~

Has client been contacted regarding non-conformances? Y or N If Y, ___/___
Date Time
PM Initials: [illegible] Date: 5/22/01 Time: ___

Non-Conformances?
Circle Y or N
(If Y, see other side)

NCA SAMPLE RECEIPT CHECKLIST

Received By:
Date: 5/29/01
Time: 0930
Initials: PB

Checked-in By:
Date: 5-30-01
Time: 13:50
Initials: [illegible]

Work Order No. B1E0711
Client: Roy F. Weston
Project: Lake Roosevelt

Container Type:
✓ Cooler
___ Box
___ Other

COC Seals:
___ Ship. Container
___ On Bottles
✓ None

Packing Material:
___ Bubble Bags
___ Foam Packs
___ Styrofoam
✓ Other Vermiculite

Refrigerant:
___ Gel Ice Pack
✓ Loose Ice
___ Other ___

Received Via:
✓ Fed Ex
___ UPS
___ DHL
___ Client
___ Courier ___
___ Other ___

Cooler Temperature: 4.6 °C CA#: ___

Sample Containers:		ID	CA#
Intact?	(Y) or N	___	___
Correct Type?	(Y) or N	___	___
Adequately Labeled? (ID, date and time)	(Y) or N	___	___
#Containers match COC?	(Y) or N	___	___
IDs match COC?	(Y) or N	___	___
Properly Preserved?	(Y) or N	___	___
Adequate Volume? (for tests requested)	(Y) or N	___	___

			ID	CA#
Soil VOAs:	Headspace?	Y or N	___	___
Water VOAs:	Headspace?	Y or N	___	___
	Preserved?	Y or N	___	___

PROJECT MANAGEMENT

Is the Chain of Custody complete? ✓ or N

Is client information in ELEMENT accurate?
Address? ✓ or N
Phone #? ✓ or N
PM? ✓ or N

Is project information in ELEMENT accurate?
Proj. Name? Y or (N) ?
Proj. #? Y or (N)
Contact? ✓ or N
Bid/Prices? ✓ or N
Invoice info? ✓ or N
Tax info? ✓ or N
Analyses? ✓ or N

Has client been contacted regarding non-conformances? Y or N If Y, ___/___
Date Time
PM Initials: AW Date: 5/29/01 Time: ___

Non-Conformances?
Circle (Y) or N
(If Y, see other side)

NCA SAMPLE RECEIPT CHECKLIST

Received By:
Date: 5/29/01
Time: 0930
Initials: PR

Checked-in By:
Date: 5/30/01
Time: 12:40
Initials: SG

Work Order No. B1E0713
Client: ROY F. WESTON
Project: LAKE ROOSEVELT

Container Type:
✓ Cooler
___ Box
___ Other

COC Seals:
___ Ship. Container
___ On Bottles
✓ None

Packing Material:
___ Bubble Bags
___ Foam Packs
___ Styrofoam
✓ Other Vermiculite

Refrigerant:
___ Gel Ice Pack
✓ Loose Ice
X Other ~~None~~ SY 5-30-01

Received Via:
✓ Fed Ex
___ UPS
___ DHL
___ Client
___ Courier
___ Other

Cooler Temperature: 10.6 °C CA#: 1

Sample Containers:		ID	CA#
Intact?	(Y) or N		
Correct Type?	(Y) or N		
Adequately Labeled? (ID, date and time)	(Y) or N		
#Containers match COC?	(Y) or N		
IDs match COC?	(Y) or N		
Properly Preserved?	(Y) or N		
Adequate Volume? (for tests requested)	(Y) or N		

			ID	CA#
Soil VOAs:	Headspace?	Y or N		
Water VOAs:	Headspace?	Y or N		
	Preserved?	Y or N		

Element is correct
MW. Pauw Smith

PROJECT MANAGEMENT

Is the Chain of Custody complete? ✓ Y or N

Is client information in ELEMENT accurate?
Address? ✓ Y or N
Phone #? ✓ Y or N
PM? ✓ Y or N

Is project information in ELEMENT accurate?
Proj. Name? ✓ Y or (N) ?
Proj. #? ✓ Y or (N) ?
Contact? ✓ Y or N
Bid/Prices? ✓ Y or N
Invoice info? ✓ Y or N
Tax info? ✓ Y or N
Analyses? ✓ Y or N

Has client been contacted regarding non-conformances? (Y) or N If Y, Heather / Stacy
Settlis not

Date Time
PM Initials: AWc Date: 5/29/01 Time: _____

Non-Conformances?
Circle Y or N
(If Y, see other side)

NCA Sample Receiving

Corrective Action Form

Date: 5/29/01
Time: 1000
Initials: PJ

Work Order No. B
Client:
Project:

Describe Corrective Action:

CA #	CA #	CA #
____ Salvaged Sample	____ Replaced Bottle	____ Replaced Lid
____ Verified ID w/client	____ Notified PM	____ Notified Client
____ Preserved Sample w/ _____		

Cooler Temperature: 10.6 °C CA#: 1 Stamp COC and select either comment below

☐ **Comment:** Samples were received outside the recommended temperature range (4°C±2°C). Samples were received within 4 hours of collection and may not have had sufficient time to equilibrate with coolant. A temperature range of 2 to 15°C is considered acceptable. The samples will be analyzed as scheduled unless otherwise directed by the client.

☒ **Comment:** Samples were received outside the recommended temperature range (4°C±2°C). Samples will be analyzed as scheduled unless otherwise directed by the client.

Comments or Other Actions Taken:

Reviewed and approved by: _____ _____
PM Signature Date

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20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT

Work Order #: B1E0710

CLIENT: Roy F Weston
REPORT TO: Heather Williams
ADDRESS: 190 Queen Anne Ave N, Suite 200 Seattle, WA 98109
PHONE: (206) 521.7613 FAX (206) 521.7601
PROJECT NAME: Columbia River/Lake Roosevelt
PROJECT NUMBER: 12644.001.002.0101
SAMPLED BY: Susan Fitzgerald

INVOICE TO: Same As Client
P.O. NUMBER:

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: 10 (STD.) | 7 | 5 | 4 | 3 | 2 | 1 | <1
Petroleum Hydrocarbon Analyses: 5 (STD.) | 4 | 3 | 2 | 1 | <1
OTHER — Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TOC-EPA SW-846 9060M	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. 012410 2	5/21/01 1030	X	S	1	—	01
2. 012410 4	5/21/01 1050	X	S	1	—	02
3. 012410 6	5/21/01 1200	X	S	1	—	03
4. 012410 8	5/21/01 1245	X	S	1	—	04
5. 012410 10	5/21/01 1330	X	S	1	—	05
6. 012410 12	5/21/01 1445	X	S	1	—	06
7. 012410 14	5/21/01 1415	X	S	1	—	07
8. 012410 16	5/21/01 1545	X	S	1	—	08
9. 012410 18	5/21/01 1645	X	S	1	—	09
10. 012410 20	5/21/01 1800	X	S	1	—	10
11. 012410 22	5/22/01 1000	X	S	1	—	11
12. 012410 24	5/22/01 1100	X	S	1	—	12
13. 012410 26	5/22/01 1200	X	S	1	—	13
14. 012410 28	5/22/01 1400	X	S	1	—	14
15. 012410 30	5/22/01 1500	X	S	1	—	15

RELINQUISHED BY:	DATE: 5/25/01	RECEIVED BY:	DATE: 5-29-01
PRINT NAME: Susan Fitzgerald FIRM: Roy F Weston	TIME: 0900	PRINT NAME: P. TONY FIRM: NCA	TIME: 0930
RELINQUISHED BY:	DATE:	RECEIVED BY: 5-29-01	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS: Airbill # 8245.2414.6987

W/O

TEMP: 4.9

PAGE 1 OF 1

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CHAIN OF CUSTODY REPORT

Work Order #: B1E0711

CLIENT: Roy F Weston
REPORT TO: Heather Williams
ADDRESS: 190 Queen Anne Ave N, Ste 200
Seattle WA 98109
PHONE (206) 521-7613 FAX: (206) 521-7601
PROJECT NAME: Columbia River / Lake Roosevelt
PROJECT NUMBER: 12614.001.002.0101.00
SAMPLED BY: Susan FitzGerald

INVOICE TO: Same as client
P.O. NUMBER:

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: 10 | 7 | 5 | 4 | 3 | 2 | 1 | <1 (STD. 5)
Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | <1 (STD. 5)
OTHER — Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES: TPH-Dx SW-846 9060M

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TPH-Dx SW-846 9060M	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1.	0120415	5/17/01 1445	X	S	1	—	01
2.	0120416	5/17/01 1600	X	S	1	—	02
3.	0120417	5/17/01 1700	X	S	1	—	03
4.	0120418	5/18/01 1030	X	S	1	—	04
5.	0120419	5/18/01 1100	X	S	1	—	05
6.	0120420	5/18/01 1230	X	S	1	MS/MSD	06
7.	0120421	5/18/01 1330	X	S	1	—	07
8.	0120422	5/18/01 1430	X	S	1	—	08
9.	0120423	5/18/01 1530	X	S	1	—	09
10.	0120424	5/18/01 1545	X	S	1	—	10
11.	0120425	5/19/01 900	X	S	1	—	11
12.	0120426	5/19/01 1045	X	S	1	—	12
13.	0120427	5/19/01 1130	X	S	1	—	13
14.							
15.							

RELINQUISHED BY: [signature] DATE: 5/25/01
PRINT NAME: Susan FitzGerald FIRM: RF Weston TIME: 0900
RECEIVED BY: [signature] DATE: 5/29/01
PRINT NAME: GRANT TONK FIRM: NCA TIME: 0930

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:
RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS: Airbill # 8245 2414 7001 W/O
TEMP: 4.6
COC REV 3/99 PAGE OF

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CHAIN OF CUSTODY REPORT

Work Order #: B1E0713

CLIENT: Roy F Weston
REPORT TO: Heather Williams
ADDRESS: 190 Queen Anne Ave N., Suite 200
Seattle, WA. 98109
PHONE: (206) 521-7613 FAX: (206) 521-7601
PROJECT NAME: Columbia River/Lake Roosevelt
PROJECT NUMBER: 12644.001.002.0101.00
SAMPLED BY: Susan FitzGerald

INVOICE TO: SAME as Client
P.O. NUMBER:

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: 10 (STD.) | 7 | 5 | 4 | 3 | 2 | 1 | <1
Petroleum Hydrocarbon Analyses: 5 (STD.) | 4 | 3 | 2 | 1 | <1
OTHER — Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TPC SW-846 9060	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1.	01214~~2332~~ 32	5/22/01 1630	X	S	1	—	-01
2.	01214134	5/23/01 1015	X	S	1	—	-02
3.	01214136	5/23/01 1130	X	S	1	—	-03
4.	01214138	5/23/01 1245	X	S	1	—	-04
5.	01214140	5/23/01 1330	X	S	1	—	-05
6.	01214142	5/23/01 1400	X	S	1	—	-06
7.	01214144	5/23/01 1515	X	S	1	—	-07
8.	01204104	5/14/01 1900	X	S	1	—	-08
9.	01204106	5/14/01 1800	X	S	1	—	-09
10.	01204107	5/15/01 1300	X	S	1	—	-10
11.	01204110	5/17/01 1000	X	S	1	—	-11
12.	01204111	5/17/01 1045	X	S	1	—	-12
13.	01204112	5/17/01 1130	X	S	1	—	-13
14.	01204113	5/17/01 1230	X	S	1	—	-14
15.	01204114	5/17/01 1415	X	S	1	—	-15

RELINQUISHED BY: [signature]	DATE: 5-25-01	RECEIVED BY:	DATE: 5/29/01
PRINT NAME: Susan FitzGerald FIRM: Roy F. Weston	TIME: 0900	PRINT NAME: FIRM: NCA	TIME: 0930
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS: Airbill #: 8245 2414 6998
2-60 UPON RECEIPT
W/o
TEMP: 10.6
PAGE 1 OF 1

WESTON

INORGANICS DATA REVIEW CHECKLIST

Method: ☐ ICP ☐ ICP-MS ☐ GFA ☐ CVA Other TOC

Analysis Date: 06/20/01

B1F0075	Reviewer	Comment
Analyst, Date, Method Information	AB	✓
Sample IDs	AB	✓
Standard/QC Solution IDs Recorded	AB	✓
Dilution Factors	AB	NA
Blank and Standard Intensities	AB	✓
Standard Deviations	AB	✓
Curve Fit	AB	✓
ICV/CCV	AB	✓
ICB/CCB	AB	✓
RSDs and SDs	AB	NA
Internal Standards	AB	NA
Carry-Over	AB	NA
CRI-CRA	AB	NA
ICSA/ICSAB	AB	NA
Post Spikes/Serial Dilutions	AB	NA
Analytic Spikes	AB	NA
SRM/LCS	AB	✓
Matrix Spikes	AB	✓
Matrix Duplicates	AB	✓
Method Blanks	AB	✓
Necessary Analysts Notes and CAFs		

Adrienne Barnes AB
8/2/01

WESTON

INORGANICS DATA REVIEW CHECKLIST

Method: ☐ ICP ☐ ICP-MS ☐ GFA ☐ CVA Other TOC

Analysis Date: 10/22/01

B1F0188	Reviewer	Comment
Analyst, Date, Method Information	AB	✓
Sample IDs	AB	✓
Standard/QC Solution IDs Recorded	AB	✓
Dilution Factors	AB	NA
Blank and Standard Intensities	AB	✓
Standard Deviations	AB	✓
Curve Fit	AB	✓
ICV/CCV	AB	✓
ICB/CCB	AB	✓
RSDs and SDs	AB	NA
Internal Standards	AB	NA
Carry-Over	AB	NA
CRI-CRA	AB	NA
ICSA/ICSAB	AB	NA
Post Spikes/Serial Dilutions	AB	NA
Analytic Spikes	AB	NA
SRM/LCS	AB	✓
Matrix Spikes	AB	(1)
Matrix Duplicates	AB	(2)
Method Blanks	AB	✓
Necessary Analysts Notes and CAFs		

(1) 1F25014-MS1, 1F25014-MS2 recoveries were below est. control limits. 34.6%/31.2%

(2) 1F25014-MSD2 recovery was below est. control limit 20.5%

Adrienne Barnes AB 8/8/01

WESTON

INORGANICS DATA REVIEW CHECKLIST

Method: ☐ ICP ☐ ICP-MS ☐ GFA ☐ CVA Other TOC

Analysis Date: 6/23/01

B1F0266	Reviewer	Comment
Analyst, Date, Method Information	AB	✓
Sample IDs	AB	✓
Standard/QC Solution IDs Recorded	AB	✓
Dilution Factors	AB	NA
Blank and Standard Intensities	AB	✓
Standard Deviations	AB	✓
Curve Fit	AB	✓
ICV/CCV	AB	✓
ICB/CCB	AB	✓
RSDs and SDs	AB	NA
Internal Standards	AB	NA
Carry-Over	AB	NA
CRI-CRA	AB	NA
ICSA/ICSAB	AB	NA
Post Spikes/Serial Dilutions	AB	NA
Analytic Spikes	AB	NA
SRM/LCS	AB	✓
Matrix Spikes	AB	(1)
Matrix Duplicates	AB	(2)
Method Blanks	AB	✓
Necessary Analysts Notes and CAFs		

(1) 1F25014-MS1, 1F25014-MS2 - recovery of TOC was below est. control limit 46.4% / 48%

(2) 1F25014-MSD2 recovery for TOC was below est. control limit

Aileen Baum AB 8/8

Data Package

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JUL 1 2 2001

Client: Roy F. Weston, Inc.

Project: Upper Columbia/Lake Roosevelt ESI

Project Number: 12644.001.002.0101.00

Laboratory Work Orders: B1F0075, B1F0188 and B1F0266

July 5, 2001

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Case Narrative

Sample Receiving

B1F0075:
Seven soil samples were collected on 05/31/01 between 10:45 and 16:30. Six soil samples were collected on 06/01/01 between 09:30 and 14:15. One sample was collected on 06/03/01 at 13:15. The samples were received at North Creek Analytical, Inc. (NCA) on 06/05/01 with all of the containers intact at a temperature of 4.4°C. 14

The samples were received with headspace in the containers.

B1F0188:
Six soil samples were collected on 06/04/01 between 10:30 and 18:30. Four soil samples were collected on 06/05/01 between 09:45 and 14:30. Five soil samples were collected on 06/06/01 between 11:00 and 16:45. The samples were received at North Creek Analytical, Inc. (NCA) on 06/08/01 with all of the containers intact at a temperature of 6.7°C. The established acceptance criteria for sample storage is 4 +/- 2° C. 15

B1F0266:
Nine soil samples were collected on 06/08/01 between 09:45 and 16:45. Three soil samples were collected on 06/09/01 between 09:30 and 15:30. The samples were received at North Creek Analytical, Inc. (NCA) on 06/12/01 with all of the containers intact at a temperature of 2.1°C. 12

Sample Preparation

- **EPA 9060M for Total Organic Carbon** - The samples were prepared in four analytical batches (1F21001, 1F12005, 1F25013 and 1F25014) in accordance with EPA 9060M.

Analysis

- **EPA 9060M for Total Organic Carbon** - The samples were analyzed in accordance with EPA 9060M without dilutions.

  The initial calibration verification check was outside acceptance criteria on 06/11/01 and biased slightly low. Based on the recoveries of the Laboratory Control Sample and LCSD, analyzed subsequent to the ICV and prior to the samples, this low bias does not significantly affect the sample recoveries, and reanalysis would not significantly alter the sample results.

Quality Assurance

Per client request, samples 01224153 (B1F0075-03), 01224157 (B1F0075-07), 01234073 (B1F0188-03), 01234099 (B1F0188-12) and 01234141 (B1F0266-11) were prepared as matrix spike/matrix spike duplicates.

- **EPA 9060M for Total Organic Carbon** - All of the recoveries for the monitored target analytes were within the established acceptance criteria or qualified in this narrative.

  1F25013-MSD2: The recoveries for Total Organic Carbon were below the established control limits. Since the recoveries for Total Organic Carbon in the LCS/LCSD/MS were within the established control limits, no further corrective action was taken.

  1F25014-MS2/MSD2: The recoveries for Total Organic Carbon were below the established control limits. Since the recoveries for Total Organic Carbon in the LCS/LCSD were within the established control limits, no further corrective action was taken.

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1F25014-MS1: The recoveries for Total Organic Carbon were below the established control limits. Since the recoveries for Total Organic Carbon in the LCS/LCSD/MSD were within the established control limits, no further corrective action was taken.

" I certify that this data package is in compliance with the Contract both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Director or his designee, as verified by the following signatures:"

7/11/01

/Prepared by Anne Conrad, QA Associate

7/11/01

Reviewed by Dave Wunderlich, QA Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Amended Report**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	Issued: 07/10/01 21:35

ANALYTICAL REPORT FOR SAMPLES - Amended

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
01224150	B1F0075-01	Soil	05/31/01 10:45	06/05/01 09:30
01224151	B1F0075-02	Soil	05/31/01 12:15	06/05/01 09:30
01224153	B1F0075-03	Soil	05/31/01 13:45	06/05/01 09:30
01224154	B1F0075-04	Soil	05/31/01 14:30	06/05/01 09:30
01224155	B1F0075-05	Soil	05/31/01 15:15	06/05/01 09:30
01224156	B1F0075-06	Soil	05/31/01 15:45	06/05/01 09:30
01224157	B1F0075-07	Soil	05/31/01 16:30	06/05/01 09:30
01224160	B1F0075-08	Soil	06/01/01 09:30	06/05/01 09:30
01224161	B1F0075-09	Soil	06/01/01 11:00	06/05/01 09:30
01224162	B1F0075-10	Soil	06/01/01 11:45	06/05/01 09:30
01224163	B1F0075-11	Soil	06/01/01 12:30	06/05/01 09:30
01224164	B1F0075-12	Soil	06/01/01 14:15	06/05/01 09:30
01224165	B1F0075-13	Soil	06/01/01 13:30	06/05/01 09:30
01234052	B1F0075-14	Soil	06/03/01 13:15	06/05/01 09:30

JB 8/8/0

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Scott A. Woerman, Project Manager

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Roy F. Weston, Inc. 190 Queen Anne Avenue North, Suite 200 Seattle WA, 98109-4926	Project: Upper Columbia/Lake Roosevelt ESI Project Number: 12644.001.002.0101.00 Project Manager: R. Paul Swift, Ph.D.	**Amended Report** Issued: 07/10/01 21:35

Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01224150 (B1F0075-01) Soil	**Sampled: 05/31/01 10:45**	**Received: 06/05/01 09:30**							
Total Organic Carbon	ND	1000	mg/kg dry	1	1F21001	06/20/01	06/20/01	EPA 9060 mod.	
01224151 (B1F0075-02) Soil	**Sampled: 05/31/01 12:15**	**Received: 06/05/01 09:30**							
Total Organic Carbon	**5250**	1000	mg/kg dry	1	1F21001	06/20/01	06/20/01	EPA 9060 mod.	
01224153 (B1F0075-03) Soil	**Sampled: 05/31/01 13:45**	**Received: 06/05/01 09:30**							
Total Organic Carbon	**4980**	1000	mg/kg dry	1	1F12005	06/11/01	06/11/01	EPA 9060 mod.	
01224154 (B1F0075-04) Soil	**Sampled: 05/31/01 14:30**	**Received: 06/05/01 09:30**							
Total Organic Carbon	**1210**	1000	mg/kg dry	1	1F12005	06/11/01	06/11/01	EPA 9060 mod.	
01224155 (B1F0075-05) Soil	**Sampled: 05/31/01 15:15**	**Received: 06/05/01 09:30**							
Total Organic Carbon	**2160**	1000	mg/kg dry	1	1F21001	06/20/01	06/20/01	EPA 9060 mod.	
01224156 (B1F0075-06) Soil	**Sampled: 05/31/01 15:45**	**Received: 06/05/01 09:30**							
Total Organic Carbon	**57700**	1000	mg/kg dry	1	1F12005	06/11/01	06/11/01	EPA 9060 mod.	
01224157 (B1F0075-07) Soil	**Sampled: 05/31/01 16:30**	**Received: 06/05/01 09:30**							
Total Organic Carbon	ND	1000	mg/kg dry	1	1F21001	06/20/01	06/20/01	EPA 9060 mod.	
01224160 (B1F0075-08) Soil	**Sampled: 06/01/01 09:30**	**Received: 06/05/01 09:30**							
Total Organic Carbon	ND	1000	mg/kg dry	1	1F12005	06/11/01	06/11/01	EPA 9060 mod.	
01224161 (B1F0075-09) Soil	**Sampled: 06/01/01 11:00**	**Received: 06/05/01 09:30**							
Total Organic Carbon	**13200**	1000	mg/kg dry	1	1F21001	06/20/01	06/20/01	EPA 9060 mod.	

AB 8/8/10

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Scott A. Woerman, Project Manager

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Amended Report**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	Issued: 07/10/01 21:35

Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01224162 (B1F0075-10) Soil Sampled: 06/01/01 11:45 Received: 06/05/01 09:30									
Total Organic Carbon	**8720**	1000	mg/kg dry	1	1F21001	06/20/01	06/20/01	EPA 9060 mod.	
01224163 (B1F0075-11) Soil Sampled: 06/01/01 12:30 Received: 06/05/01 09:30									
Total Organic Carbon	ND	1000	mg/kg dry	1	1F21001	06/20/01	06/20/01	EPA 9060 mod.	
01224164 (B1F0075-12) Soil Sampled: 06/01/01 14:15 Received: 06/05/01 09:30									
Total Organic Carbon	**3130**	1000	mg/kg dry	1	1F21001	06/20/01	06/20/01	EPA 9060 mod.	
01224165 (B1F0075-13) Soil Sampled: 06/01/01 13:30 Received: 06/05/01 09:30									
Total Organic Carbon	**96600**	1000	mg/kg dry	1	1F21001	06/20/01	06/20/01	EPA 9060 mod.	
01234052 (B1F0075-14) Soil Sampled: 06/03/01 13:15 Received: 06/05/01 09:30									
Total Organic Carbon	**2710**	1000	mg/kg dry	1	1F21001	06/20/01	06/20/01	EPA 9060 mod.	

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Amended Report**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	Issued: 07/10/01 21:35

Physical Parameters by APHA/ASTM/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01224150 (B1F0075-01) Soil	**Sampled: 05/31/01 10:45**	**Received: 06/05/01 09:30**							
Dry Weight	**100**	1.00	%	1	1F08002	06/08/01	06/11/01	BSOPSPL003R07	
01224151 (B1F0075-02) Soil	**Sampled: 05/31/01 12:15**	**Received: 06/05/01 09:30**							
Dry Weight	99.5	1.00	%	1	1F08002	06/08/01	06/11/01	BSOPSPL003R07	
01224153 (B1F0075-03) Soil	**Sampled: 05/31/01 13:45**	**Received: 06/05/01 09:30**							
Dry Weight	97.7	1.00	%	1	1F08002	06/08/01	06/11/01	BSOPSPL003R07	
01224154 (B1F0075-04) Soil	**Sampled: 05/31/01 14:30**	**Received: 06/05/01 09:30**							
Dry Weight	91.0	1.00	%	1	1F08002	06/08/01	06/11/01	BSOPSPL003R07	
01224155 (B1F0075-05) Soil	**Sampled: 05/31/01 15:15**	**Received: 06/05/01 09:30**							
Dry Weight	99.8	1.00	%	1	1F08002	06/08/01	06/11/01	BSOPSPL003R07	
01224156 (B1F0075-06) Soil	**Sampled: 05/31/01 15:45**	**Received: 06/05/01 09:30**							
Dry Weight	54.4	1.00	%	1	1F08002	06/08/01	06/11/01	BSOPSPL003R07	
01224157 (B1F0075-07) Soil	**Sampled: 05/31/01 16:30**	**Received: 06/05/01 09:30**							
Dry Weight	**100**	1.00	%	1	1F08002	06/08/01	06/11/01	BSOPSPL003R07	
01224160 (B1F0075-08) Soil	**Sampled: 06/01/01 09:30**	**Received: 06/05/01 09:30**							
Dry Weight	96.8	1.00	%	1	1F08002	06/08/01	06/11/01	BSOPSPL003R07	
01224161 (B1F0075-09) Soil	**Sampled: 06/01/01 11:00**	**Received: 06/05/01 09:30**							
Dry Weight	69.6	1.00	%	1	1F08002	06/08/01	06/11/01	BSOPSPL003R07	

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Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	Issued: 07/10/01 21:35

Physical Parameters by APHA/ASTM/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01224162 (B1F0075-10) Soil Sampled: 06/01/01 11:45 Received: 06/05/01 09:30									
Dry Weight	84.2	1.00	%	1	1F08002	06/08/01	06/11/01	BSOPSPL003R07	
01224163 (B1F0075-11) Soil Sampled: 06/01/01 12:30 Received: 06/05/01 09:30									
Dry Weight	100	1.00	%	1	1F08002	06/08/01	06/11/01	BSOPSPL003R07	
01224164 (B1F0075-12) Soil Sampled: 06/01/01 14:15 Received: 06/05/01 09:30									
Dry Weight	87.8	1.00	%	1	1F08002	06/08/01	06/11/01	BSOPSPL003R07	
01224165 (B1F0075-13) Soil Sampled: 06/01/01 13:30 Received: 06/05/01 09:30									
Dry Weight	79.6	1.00	%	1	1F08002	06/08/01	06/11/01	BSOPSPL003R07	
01234052 (B1F0075-14) Soil Sampled: 06/03/01 13:15 Received: 06/05/01 09:30									
Dry Weight	72.2	1.00	%	1	1F08002	06/08/01	06/11/01	BSOPSPL003R07	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F12005: Prepared 06/11/01 Using General Preparation										
Blank (1F12005-BLK1)										
Total Organic Carbon	ND	1000	mg/kg							
LCS (1F12005-BS1)										
Total Organic Carbon	12600	1000	mg/kg	12700		99.2	68-120			
LCS Dup (1F12005-BSD1)										
Total Organic Carbon	13700	1000	mg/kg	12700		108	68-120	8.37	30	
Duplicate (1F12005-DUP1)					**Source: B1E0713-10**					
Total Organic Carbon	ND	1000	mg/kg dry		ND				35	
Duplicate (1F12005-DUP2)					**Source: B1F0075-06**					
Total Organic Carbon	52000	1000	mg/kg dry		57700			10.4	35	
Matrix Spike (1F12005-MS1)					**Source: B1F0075-03**					
Total Organic Carbon	15900	1000	mg/kg dry	27200	4980	40.1	40-160			
Matrix Spike Dup (1F12005-MSD1)					**Source: B1F0075-03**					
Total Organic Carbon	14400	1000	mg/kg dry	22500	4980	41.9	40-160	9.90	35	
Batch 1F21001: Prepared 06/20/01 Using General Preparation										
Blank (1F21001-BLK1)										
Total Organic Carbon	ND	1000	mg/kg							
LCS (1F21001-BS1)										
Total Organic Carbon	14300	1000	mg/kg	12700		113	68-120			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F21001: Prepared 06/20/01 Using General Preparation										
LCS Dup (1F21001-BSD1)										
Total Organic Carbon	15200	1000	mg/kg	12700		120	68-120	6.10	30	
Duplicate (1F21001-DUP1)					**Source: B1F0075-14**					
Total Organic Carbon	3190	1000	mg/kg dry		2710			16.3	35	
Matrix Spike (1F21001-MS1)					**Source: B1F0075-07**					
Total Organic Carbon	13400	1000	mg/kg dry	26800	ND	46.4	40-160			
Matrix Spike Dup (1F21001-MSD1)					**Source: B1F0075-07**					
Total Organic Carbon	13400	1000	mg/kg dry	25900	ND	48.0	40-160	0.00	35	

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Roy F. Weston, Inc. 190 Queen Anne Avenue North, Suite 200 Seattle WA, 98109-4926	Project: Upper Columbia/Lake Roosevelt ESI Project Number: 12644.001.002.0101.00 Project Manager: R. Paul Swift, Ph.D.	**Amended Report** Issued: 07/10/01 21:35

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F08002: Prepared 06/08/01 Using Dry Weight										
Blank (1F08002-BLK1)										
Dry Weight	100	1.00	%							

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Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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ANALYTICAL REPORT FOR SAMPLES - Amended

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
01234068	B1F0188-01	Soil	06/04/01 10:30	06/08/01 09:30
01234054	B1F0188-02	Soil	06/04/01 14:30	06/08/01 09:30
01234073	B1F0188-03	Soil	06/04/01 11:05	06/08/01 09:30
01234075	B1F0188-04	Soil	06/04/01 18:30	06/08/01 09:30
01234077	B1F0188-05	Soil	06/04/01 17:15	06/08/01 09:30
01234076	B1F0188-06	Soil	06/04/01 17:45	06/08/01 09:30
01234081	B1F0188-07	Soil	06/05/01 11:45	06/08/01 09:30
01234066	B1F0188-08	Soil	06/05/01 13:45	06/08/01 09:30
01234091	B1F0188-09	Soil	06/05/01 14:30	06/08/01 09:30
01234095	B1F0188-10	Soil	06/05/01 09:45	06/08/01 09:30
01234103	B1F0188-11	Soil	06/06/01 16:00	06/08/01 09:30
01234099	B1F0188-12	Soil	06/06/01 11:00	06/08/01 09:30
01234106	B1F0188-13	Soil	06/06/01 15:00	06/08/01 09:30
01234107	B1F0188-14	Soil	06/06/01 16:45	06/08/01 09:30
01234108	B1F0188-15	Soil	06/06/01 16:00	06/08/01 09:30

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North Creek Analytical - Bothell

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Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01234068 (B1F0188-01) Soil	**Sampled: 06/04/01 10:30**	**Received: 06/08/01 09:30**							
Total Organic Carbon	**43600**	1000	mg/kg dry	1	1F25013	06/22/01	06/22/01	EPA 9060 mod.	
01234054 (B1F0188-02) Soil	**Sampled: 06/04/01 14:30**	**Received: 06/08/01 09:30**							
Total Organic Carbon	**18400**	1000	mg/kg dry	1	1F25013	06/22/01	06/22/01	EPA 9060 mod.	
01234073 (B1F0188-03) Soil	**Sampled: 06/04/01 11:05**	**Received: 06/08/01 09:30**							
Total Organic Carbon	ND	1000	mg/kg dry	1	1F25013	06/22/01	06/22/01	EPA 9060 mod.	
01234075 (B1F0188-04) Soil	**Sampled: 06/04/01 18:30**	**Received: 06/08/01 09:30**							
Total Organic Carbon	**48200**	1000	mg/kg dry	1	1F25013	06/22/01	06/22/01	EPA 9060 mod.	
01234077 (B1F0188-05) Soil	**Sampled: 06/04/01 17:15**	**Received: 06/08/01 09:30**							
Total Organic Carbon	**20300**	1000	mg/kg dry	1	1F25013	06/22/01	06/22/01	EPA 9060 mod.	
01234076 (B1F0188-06) Soil	**Sampled: 06/04/01 17:45**	**Received: 06/08/01 09:30**							
Total Organic Carbon	**23100**	2200	mg/kg dry	1	1F25013	06/22/01	06/22/01	EPA 9060 mod.	
01234081 (B1F0188-07) Soil	**Sampled: 06/05/01 11:45**	**Received: 06/08/01 09:30**							
Total Organic Carbon	**19300**	3770	mg/kg dry	1	1F25013	06/22/01	06/22/01	EPA 9060 mod.	
01234066 (B1F0188-08) Soil	**Sampled: 06/05/01 13:45**	**Received: 06/08/01 09:30**							
Total Organic Carbon	**2040**	1000	mg/kg dry	1	1F25013	06/22/01	06/22/01	EPA 9060 mod.	
01234091 (B1F0188-09) Soil	**Sampled: 06/05/01 14:30**	**Received: 06/08/01 09:30**							
Total Organic Carbon	**10700**	1000	mg/kg dry	1	1F25013	06/22/01	06/22/01	EPA 9060 mod.	

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Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01234095 (B1F0188-10) Soil	**Sampled: 06/05/01 09:45**	**Received: 06/08/01 09:30**							
Total Organic Carbon	**2850**	1000	mg/kg dry	1	1F25013	06/22/01	06/22/01	EPA 9060 mod.	
01234103 (B1F0188-11) Soil	**Sampled: 06/06/01 16:00**	**Received: 06/08/01 09:30**							
Total Organic Carbon	**328000**	1000	mg/kg dry	1	1F25013	06/22/01	06/22/01	EPA 9060 mod.	
01234099 (B1F0188-12) Soil	**Sampled: 06/06/01 11:00**	**Received: 06/08/01 09:30**							
Total Organic Carbon	**20400**	1000	mg/kg dry	1	1F25013	06/22/01	06/22/01	EPA 9060 mod.	
01234106 (B1F0188-13) Soil	**Sampled: 06/06/01 15:00**	**Received: 06/08/01 09:30**							
Total Organic Carbon	**44700**	1000	mg/kg dry	1	1F25014	06/23/01	06/23/01	EPA 9060 mod.	
01234107 (B1F0188-14) Soil	**Sampled: 06/06/01 16:45**	**Received: 06/08/01 09:30**							
Total Organic Carbon	**33200**	1000	mg/kg dry	1	1F25013	06/22/01	06/22/01	EPA 9060 mod.	
01234108 (B1F0188-15) Soil	**Sampled: 06/06/01 16:00**	**Received: 06/08/01 09:30**							
Total Organic Carbon	**1310**	1000	mg/kg dry	1	1F25013	06/22/01	06/22/01	EPA 9060 mod.	

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Physical Parameters by APHA/ASTM/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01234068 (B1F0188-01) Soil	**Sampled: 06/04/01 10:30**	**Received: 06/08/01 09:30**							
Dry Weight	**91.0**	1.00	%	1	1F11002	06/11/01	06/12/01	BSOPSPL003R07	
01234054 (B1F0188-02) Soil	**Sampled: 06/04/01 14:30**	**Received: 06/08/01 09:30**							
Dry Weight	**86.1**	1.00	%	1	1F11002	06/11/01	06/12/01	BSOPSPL003R07	
01234073 (B1F0188-03) Soil	**Sampled: 06/04/01 11:05**	**Received: 06/08/01 09:30**							
Dry Weight	**82.6**	1.00	%	1	1F11002	06/11/01	06/12/01	BSOPSPL003R07	
01234075 (B1F0188-04) Soil	**Sampled: 06/04/01 18:30**	**Received: 06/08/01 09:30**							
Dry Weight	**76.6**	1.00	%	1	1F11003	06/11/01	06/12/01	BSOPSPL003R07	
01234077 (B1F0188-05) Soil	**Sampled: 06/04/01 17:15**	**Received: 06/08/01 09:30**							
Dry Weight	**52.9**	1.00	%	1	1F11003	06/11/01	06/12/01	BSOPSPL003R07	
01234076 (B1F0188-06) Soil	**Sampled: 06/04/01 17:45**	**Received: 06/08/01 09:30**							
Dry Weight	**45.4**	1.00	%	1	1F11003	06/11/01	06/12/01	BSOPSPL003R07	
01234081 (B1F0188-07) Soil	**Sampled: 06/05/01 11:45**	**Received: 06/08/01 09:30**							
Dry Weight	**26.5**	1.00	%	1	1F11003	06/11/01	06/12/01	BSOPSPL003R07	
01234066 (B1F0188-08) Soil	**Sampled: 06/05/01 13:45**	**Received: 06/08/01 09:30**							
Dry Weight	**76.8**	1.00	%	1	1F11003	06/11/01	06/12/01	BSOPSPL003R07	
01234091 (B1F0188-09) Soil	**Sampled: 06/05/01 14:30**	**Received: 06/08/01 09:30**							
Dry Weight	**93.9**	1.00	%	1	1F11003	06/11/01	06/12/01	BSOPSPL003R07	

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190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Amended Report**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	Issued: 07/10/01 21:34

Physical Parameters by APHA/ASTM/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01234095 (B1F0188-10) Soil Sampled: 06/05/01 09:45 Received: 06/08/01 09:30									
Dry Weight	69.6	1.00	%	1	1F11003	06/11/01	06/12/01	BSOPSPL003R07	
01234103 (B1F0188-11) Soil Sampled: 06/06/01 16:00 Received: 06/08/01 09:30									
Dry Weight	71.5	1.00	%	1	1F11003	06/11/01	06/12/01	BSOPSPL003R07	
01234099 (B1F0188-12) Soil Sampled: 06/06/01 11:00 Received: 06/08/01 09:30									
Dry Weight	61.0	1.00	%	1	1F11003	06/11/01	06/12/01	BSOPSPL003R07	
01234106 (B1F0188-13) Soil Sampled: 06/06/01 15:00 Received: 06/08/01 09:30									
Dry Weight	83.5	1.00	%	1	1F11003	06/11/01	06/12/01	BSOPSPL003R07	
01234107 (B1F0188-14) Soil Sampled: 06/06/01 16:45 Received: 06/08/01 09:30									
Dry Weight	83.5	1.00	%	1	1F11003	06/11/01	06/12/01	BSOPSPL003R07	
01234108 (B1F0188-15) Soil Sampled: 06/06/01 16:00 Received: 06/08/01 09:30									
Dry Weight	73.3	1.00	%	1	1F11003	06/11/01	06/12/01	BSOPSPL003R07	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F25013: Prepared 06/22/01 Using General Preparation										
Blank (1F25013-BLK1)										
Total Organic Carbon	ND	1000	mg/kg							
LCS (1F25013-BS1)										
Total Organic Carbon	13100	1000	mg/kg	12700		103	68-120			
LCS Dup (1F25013-BSD1)										
Total Organic Carbon	13600	1000	mg/kg	12700		107	68-120	3.75	30	
Duplicate (1F25013-DUP1)					**Source: B1F0188-09**					
Total Organic Carbon	8530	1000	mg/kg dry		10700			22.6	35	
Matrix Spike (1F25013-MS1)					**Source: B1F0188-03**					
Total Organic Carbon	16600	1000	mg/kg dry	31800	ND	50.7	40-160			
Matrix Spike (1F25013-MS2)					**Source: B1F0188-12**					
Total Organic Carbon	31500	1000	mg/kg dry	22800	20400	48.7	40-160			
Matrix Spike Dup (1F25013-MSD1)					**Source: B1F0188-03**					
Total Organic Carbon	15000	1000	mg/kg dry	29700	ND	48.8	40-160	10.1	35	
Matrix Spike Dup (1F25013-MSD2)					**Source: B1F0188-12**					
Total Organic Carbon	26400	1000	mg/kg dry	19600	20400	30.6	40-160	17.6	35	Q-01
Batch 1F25014: Prepared 06/23/01 Using General Preparation										
Blank (1F25014-BLK1)										
Total Organic Carbon	ND	1000	mg/kg							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F25014: Prepared 06/23/01 Using General Preparation										
LCS (1F25014-BS1)										
Total Organic Carbon	14800	1000	mg/kg	12700		117	68-120			
LCS Dup (1F25014-BSD1)										
Total Organic Carbon	13500	1000	mg/kg	12700		106	68-120	9.19	30	
Matrix Spike (1F25014-MS1)					**Source: B1F0266-07**					**Q-01**
Total Organic Carbon	21500	1000	mg/kg dry	34900	9430	34.6	40-160			
Matrix Spike (1F25014-MS2)					**Source: B1F0266-11**					**Q-01**
Total Organic Carbon	19100	1000	mg/kg dry	31500	9280	31.2	40-160			
Matrix Spike Dup (1F25014-MSD1)					**Source: B1F0266-07**					
Total Organic Carbon	26400	1000	mg/kg dry	30900	9430	54.9	40-160	20.5	35	
Matrix Spike Dup (1F25014-MSD2)					**Source: B1F0266-11**					**Q-01**
Total Organic Carbon	14500	1000	mg/kg dry	25500	9280	20.5	40-160	27.4	35	

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Physical Parameters by APHA/ASTM/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F11002: Prepared 06/11/01 Using Dry Weight										
Blank (1F11002-BLK1)										
Dry Weight	100	1.00	%							
Batch 1F11003: Prepared 06/11/01 Using Dry Weight										
Blank (1F11003-BLK1)										
Dry Weight	100	1.00	%							

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Notes and Definitions

Q-01	The spike recovery for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Roy F. Weston, Inc. 190 Queen Anne Avenue North, Suite 200 Seattle WA, 98109-4926	Project: Upper Columbia/Lake Roosevelt ESI Project Number: 12644.001.002.0101.00 Project Manager: R. Paul Swift, Ph.D.	**Amended Report** Issued: 07/10/01 21:33

ANALYTICAL REPORT FOR SAMPLES - Amended

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
01234127	B1F0266-01	Soil	06/08/01 11:20	06/12/01 17:20
01234125	B1F0266-02	Soil	06/08/01 11:30	06/12/01 17:20
01234124	B1F0266-03	Soil	06/08/01 09:45	06/12/01 17:20
01234122	B1F0266-04	Soil	06/08/01 10:00	06/12/01 17:20
01234123	B1F0266-05	Soil	06/08/01 16:15	06/12/01 17:20
01234129	B1F0266-06	Soil	06/09/01 15:30	06/12/01 17:20
01234137	B1F0266-07	Soil	06/08/01 16:45	06/12/01 17:20
01234138	B1F0266-08	Soil	06/08/01 15:00	06/12/01 17:20
01234139	B1F0266-09	Soil	06/08/01 11:45	06/12/01 17:20
01234140	B1F0266-10	Soil	06/08/01 13:00	06/12/01 17:20
01234141	B1F0266-11	Soil	06/09/01 10:30	06/12/01 17:20
01234142	B1F0266-12	Soil	06/09/01 09:30	06/12/01 17:20

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North Creek Analytical - Bothell

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Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	Issued: 07/10/01 21:33

Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01234127 (B1F0266-01) Soil	**Sampled: 06/08/01 11:20**	**Received: 06/12/01 17:20**							
Total Organic Carbon	**15800**	1000	mg/kg dry	1	1F25014	06/23/01	06/23/01	EPA 9060 mod.	
01234125 (B1F0266-02) Soil	**Sampled: 06/08/01 11:30**	**Received: 06/12/01 17:20**							
Total Organic Carbon	**45400**	1000	mg/kg dry	1	1F25014	06/23/01	06/23/01	EPA 9060 mod.	
01234124 (B1F0266-03) Soil	**Sampled: 06/08/01 09:45**	**Received: 06/12/01 17:20**							
Total Organic Carbon	**15800**	1000	mg/kg dry	1	1F25014	06/23/01	06/23/01	EPA 9060 mod.	
01234122 (B1F0266-04) Soil	**Sampled: 06/08/01 10:00**	**Received: 06/12/01 17:20**							
Total Organic Carbon	ND	1000	mg/kg dry	1	1F25014	06/23/01	06/23/01	EPA 9060 mod.	
01234123 (B1F0266-05) Soil	**Sampled: 06/08/01 16:15**	**Received: 06/12/01 17:20**							
Total Organic Carbon	**6020**	1000	mg/kg dry	1	1F25014	06/23/01	06/23/01	EPA 9060 mod.	
01234129 (B1F0266-06) Soil	**Sampled: 06/09/01 15:30**	**Received: 06/12/01 17:20**							
Total Organic Carbon	**35000**	1000	mg/kg dry	1	1F25014	06/23/01	06/23/01	EPA 9060 mod.	
01234137 (B1F0266-07) Soil	**Sampled: 06/08/01 16:45**	**Received: 06/12/01 17:20**							
Total Organic Carbon	**9430**	1000	mg/kg dry	1	1F25014	06/23/01	06/23/01	EPA 9060 mod.	
01234138 (B1F0266-08) Soil	**Sampled: 06/08/01 15:00**	**Received: 06/12/01 17:20**							
Total Organic Carbon	**30400**	1000	mg/kg dry	1	1F25014	06/23/01	06/23/01	EPA 9060 mod.	
01234139 (B1F0266-09) Soil	**Sampled: 06/08/01 11:45**	**Received: 06/12/01 17:20**							
Total Organic Carbon	**6900**	1000	mg/kg dry	1	1F25014	06/23/01	06/23/01	EPA 9060 mod.	

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Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01234140 (B1F0266-10) Soil Sampled: 06/08/01 13:00 Received: 06/12/01 17:20									
Total Organic Carbon	**7670**	1000	mg/kg dry	1	1F25014	06/23/01	06/23/01	EPA 9060 mod.	
01234141 (B1F0266-11) Soil Sampled: 06/09/01 10:30 Received: 06/12/01 17:20									
Total Organic Carbon	**9280**	1000	mg/kg dry	1	1F25014	06/23/01	06/23/01	EPA 9060 mod.	
01234142 (B1F0266-12) Soil Sampled: 06/09/01 09:30 Received: 06/12/01 17:20									
Total Organic Carbon	**42700**	1000	mg/kg dry	1	1F25014	06/23/01	06/23/01	EPA 9060 mod.	

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North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01234127 (B1F0266-01) Soil	**Sampled: 06/08/01 11:20**	**Received: 06/12/01 17:20**							
Dry Weight	78.6	1.00	%	1	1F20001	06/20/01	06/21/01	BSOPSPL003R07	
01234125 (B1F0266-02) Soil	**Sampled: 06/08/01 11:30**	**Received: 06/12/01 17:20**							
Dry Weight	84.0	1.00	%	1	1F20001	06/20/01	06/21/01	BSOPSPL003R07	
01234124 (B1F0266-03) Soil	**Sampled: 06/08/01 09:45**	**Received: 06/12/01 17:20**							
Dry Weight	57.1	1.00	%	1	1F20001	06/20/01	06/21/01	BSOPSPL003R07	
01234122 (B1F0266-04) Soil	**Sampled: 06/08/01 10:00**	**Received: 06/12/01 17:20**							
Dry Weight	80.6	1.00	%	1	1F20001	06/20/01	06/21/01	BSOPSPL003R07	
01234123 (B1F0266-05) Soil	**Sampled: 06/08/01 16:15**	**Received: 06/12/01 17:20**							
Dry Weight	97.5	1.00	%	1	1F20001	06/20/01	06/21/01	BSOPSPL003R07	
01234129 (B1F0266-06) Soil	**Sampled: 06/09/01 15:30**	**Received: 06/12/01 17:20**							
Dry Weight	89.4	1.00	%	1	1F20001	06/20/01	06/21/01	BSOPSPL003R07	
01234137 (B1F0266-07) Soil	**Sampled: 06/08/01 16:45**	**Received: 06/12/01 17:20**							
Dry Weight	66.3	1.00	%	1	1F20001	06/20/01	06/21/01	BSOPSPL003R07	
01234138 (B1F0266-08) Soil	**Sampled: 06/08/01 15:00**	**Received: 06/12/01 17:20**							
Dry Weight	58.2	1.00	%	1	1F20001	06/20/01	06/21/01	BSOPSPL003R07	
01234139 (B1F0266-09) Soil	**Sampled: 06/08/01 11:45**	**Received: 06/12/01 17:20**							
Dry Weight	76.7	1.00	%	1	1F20001	06/20/01	06/21/01	BSOPSPL003R07	

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Physical Parameters by APHA/ASTM/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01234140 (B1F0266-10) Soil Sampled: 06/08/01 13:00 Received: 06/12/01 17:20									
Dry Weight	67.2	1.00	%	1	1F20001	06/20/01	06/21/01	BSOPSPL003R07	
01234141 (B1F0266-11) Soil Sampled: 06/09/01 10:30 Received: 06/12/01 17:20									
Dry Weight	77.5	1.00	%	1	1F20001	06/20/01	06/21/01	BSOPSPL003R07	
01234142 (B1F0266-12) Soil Sampled: 06/09/01 09:30 Received: 06/12/01 17:20									
Dry Weight	70.3	1.00	%	1	1F20001	06/20/01	06/21/01	BSOPSPL003R07	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F25014: Prepared 06/23/01 Using General Preparation										
Blank (1F25014-BLK1)										
Total Organic Carbon	ND	1000	mg/kg							
LCS (1F25014-BS1)										
Total Organic Carbon	14800	1000	mg/kg	12700		117	68-120			
LCS Dup (1F25014-BSD1)										
Total Organic Carbon	13500	1000	mg/kg	12700		106	68-120	9.19	30	
Matrix Spike (1F25014-MS1)					**Source: B1F0266-07**					**Q-01**
Total Organic Carbon	21500	1000	mg/kg dry	34900	9430	34.6	40-160			
Matrix Spike (1F25014-MS2)					**Source: B1F0266-11**					**Q-01**
Total Organic Carbon	19100	1000	mg/kg dry	31500	9280	31.2	40-160			
Matrix Spike Dup (1F25014-MSD1)					**Source: B1F0266-07**					
Total Organic Carbon	26400	1000	mg/kg dry	30900	9430	54.9	40-160	20.5	35	
Matrix Spike Dup (1F25014-MSD2)					**Source: B1F0266-11**					**Q-01**
Total Organic Carbon	14500	1000	mg/kg dry	25500	9280	20.5	40-160	27.4	35	

AB
8/8/01

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Amended Report**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	Issued: 07/10/01 21:33

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F20001: Prepared 06/20/01 Using Dry Weight										
Blank (1F20001-BLK1)										
Dry Weight	100	1.00	%							

8/8

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Scott A. Woerman, Project Manager

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Amended Report**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	Issued: 07/10/01 21:33

Notes and Definitions

Q-01	The spike recovery for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

EPA 9060M
Initial and Continuing Calibration Verification

June 11, 2001

	Initial Calib. (mg/kg)			Continuing Calibration (mg/kg)						
Analyte	TRUE	Found	%R	TRUE	Found[1]	%R	Found[2]	%R	Found[3]	%R
TOC	27000	21191	**78%**	27000	24877	92%	24803	92%	23900	89%

Continuing Calibration (mg/kg)					
Analyte	TRUE	Found[4]	%R	Found[5]	%R
TOC	27000	24300	90%	22641	84%

Control Limits: 80 to 120%

JB 8/8/

EPA 9060M
Blanks

June 11, 2001

Analytes	ICB (mg/kg)	CCB (mg/kg)				Preparation Blank (mg/kg) 1F12005-BLK1
		01	02	03		
TOC	-566	-486	-537.9	-613		-625

Acceptance Criterion: ≤ 1000 mg/kg

8/8/01

Batch # IF12004
Batch # IF12005

6/11/01
Shaunna Jackson

Spike ID: 1050084
(SUC108)

BS ID: 10300600

Untitled

** SEQUENCE **

061101 Mon Jun 11 06:30:15 2001

Start Pos/Vial #: 1, Stop Pos/Vial #: 48

Pos/ Vial	Sample Name	Method	Run Type	# Rep	Mass (mg)	Remarks
1	ICV	30.0mg	Sample	1	100.00	
2	ICB	30.0mg	Sample	1	200.00	
3	BS	30.0mg	Sample	1	200.00	
4	BS DUP	30.0mg	Sample	1	200.00	
5	B1E0711-01	30.0mg	Sample	1	200.00	
6	B1E0711-01 DUP	30.0mg	Sample	1	200.00	
7	B1E0711-02	30.0mg	Sample	1	200.00	
8	B1E0711-03	30.0mg	Sample	1	200.00	
9	B1E0711-11	30.0mg	Sample	1	200.00	
10	B1E0711-12	30.0mg	Sample	1	200.00	
11	CCV	30.0mg	Sample	1	100.00	
12	CCB	30.0mg	Sample	1	200.00	
13	B1E0711-13	30.0mg	Sample	1	200.00	
14	B1E0713-01	30.0mg	Sample	1	200.00	
15	B1E0713-02	30.0mg	Sample	1	200.00	
16	B1E0713-03	30.0mg	Sample	1	200.00	
17	B1E0713-04	30.0mg	Sample	1	200.00	
18	B1E0713-05	30.0mg	Sample	1	200.00	
19	B1E0713-06	30.0mg	Sample	1	200.00	
20	B1E0713-07	30.0mg	Sample	1	200.00	
21	B1E0713-08	30.0mg	Sample	1	200.00	
22	B1E0713-09	30.0mg	Sample	1	200.00	
23	CCV	30.0mg	Sample	1	100.00	
24	CCB	30.0mg	Sample	1	200.00	
25	BS	30.0mg	Sample	1	200.00	
26	BS DUP	30.0mg	Sample	1	200.00	
27	METHOD BLANK	30.0mg	Sample	1	200.00	
28	B1E0713-10	30.0mg	Sample	1	200.00	
29	B1E0713-10 DUP	30.0mg	Sample	1	200.00	
30	B1E0713-11	30.0mg	Sample	1	200.00	
31	B1E0713-12	30.0mg	Sample	1	200.00	
32	B1E0713-13	30.0mg	Sample	1	200.00	
33	B1E0713-14	30.0mg	Sample	1	200.00	
34	B1E0713-15	30.0mg	Sample	1	200.00	
35	CCV	30.0mg	Sample	1	100.00	
36	CCB	30.0mg	Sample	1	200.00	
37	B1F0075-01	30.0mg	Sample	1	200.00	
38	B1F0075-02	30.0mg	Sample	1	200.00	
39	B1F0075-03	30.0mg	Sample	1	200.00	
40	B1F0075-04	30.0mg	Sample	1	200.00	
41	B1F0075-05	30.0mg	Sample	1	200.00	
42	B1F0075-06	30.0mg	Sample	1	200.00	
43	B1F0075-06 DUP	30.0mg	Sample	1	200.00	
44	B1F0075-07	30.0mg	Sample	1	200.00	
45	B1F0075-08	30.0mg	Sample	1	200.00	
46	B1F0075-09	30.0mg	Sample	1	200.00	
47	CCV	30.0mg	Sample	1	100.00	
48	CCB	30.0mg	Sample	1	200.00	

** RESULTS - 061101 **

Pos/Vial: 1 Name: ICV Analyzed: 11Jun2001 06:30
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds413	11Jun2001	07:24	102.40	-	-	-	7225	2.170	2.12

21191

29

Untitled

Pos/Vial: 2 Name: ICB Analyzed: 11Jun2001 07:24
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds414	11Jun2001	07:40	212.00	-	-	-	6	-0.120	-0.06	-566

****

Pos/Vial: 3 Name: BS Analyzed: 11Jun2001 07:40
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds415	11Jun2001	07:56	217.50	-	-	-	8949	2.710	1.25	12459

****

Pos/Vial: 4 Name: BS DUP Analyzed: 11Jun2001 07:56
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds416	11Jun2001	08:12	221.10	-	-	-	8752	2.650	1.20	11985

****

Pos/Vial: 5 Name: B1E0711-01 Analyzed: 11Jun2001 08:12
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds417	11Jun2001	08:42	210.80	-	-	-	632	0.080	0.04	379.5

****

Pos/Vial: 6 Name: B1E0711-01 DUP Analyzed: 11Jun2001 08:43
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds418	11Jun2001	08:58	224.20	-	-	-	449	0.020	0.01	89.2

****

Pos/Vial: 7 Name: B1E0711-02 Analyzed: 11Jun2001 08:58
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds419	11Jun2001	09:16	208.30	-	-	-	18640	5.790	2.78	27796

****

Pos/Vial: 8 Name: B1E0711-03 Analyzed: 11Jun2001 09:16
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds420	11Jun2001	09:34	268.10	-	-	-	7582	2.280	0.85	8504.3

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds434	11Jun2001	13:59	215.20	-	-	-	1488	0.350	0.16	16626.4

****

Pos/Vial: 23 Name: CCV Analyzed: 11Jun2001 13:59
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds435	11Jun2001	14:18	102.10	-	-	-	8389	2.540	2.48	24877

****

Pos/Vial: 24 Name: CCB Analyzed: 11Jun2001 14:18
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds436	11Jun2001	14:34	246.80	-	-	-	13	-0.120	-0.05	-486

****

NEW BATCH ↓
#1F12005

Pos/Vial: 25 Name: BS Analyzed: 11Jun2001 14:34
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds437	11Jun2001	14:50	231.30	-	-	-	9556	2.910	1.26	12581

****

Pos/Vial: 26 Name: BS DUP Analyzed: 11Jun2001 14:50
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds438	11Jun2001	15:30	217.50	-	-	-	9818	2.990	1.37	13747

****

Pos/Vial: 27 Name: METHOD BLANK Analyzed: 11Jun2001 15:31
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds439	11Jun2001	15:55	191.90	-	-	-	14	-0.120	-0.06	-625

****

CCV 8F6/12/01

Pos/Vial: 28 Name: ~~B1E0713-10~~ Analyzed: 11Jun2001 15:56
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds440	11Jun2001	16:18	102.00	-	-	-	8365	2.530	2.48	24803

****

6/12/01

Pos/Vial: 29 Name: B1E0713-10 ~~DUP~~ Analyzed: 11Jun2001 16:19
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds441	11Jun2001	16:57	217.50	-	-	-	163	-0.070	-0.03

-321.8

****

Pos/Vial: 30 Name: B1E0713-11 Analyzed: 11Jun2001 16:57
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds442	11Jun2001	17:14	207.60	-	-	-	3614	1.020	0.49

4913.3

****

Pos/Vial: 31 Name: B1E0713-12 Analyzed: 11Jun2001 17:14
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds443	11Jun2001	17:31	231.50	-	-	-	4288	1.240	0.53

5356.4

****

Pos/Vial: 32 Name: B1E0713-13 Analyzed: 11Jun2001 17:31
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds444	11Jun2001	17:47	237.70	-	-	-	1274	0.280	0.12

1177.9

****

Pos/Vial: 33 Name: B1E0713-14 Analyzed: 11Jun2001 17:47
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds445	11Jun2001	18:06	314.10	-	-	-	1479	0.350	0.11

1114.3

****

Pos/Vial: 34 Name: B1E0713-15 Analyzed: 11Jun2001 18:06
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds446	11Jun2001	18:22	294.30	-	-	-	5996	1.780	0.60

6048.3

****

Pos/Vial: 35 Name: CCV Analyzed: 11Jun2001 18:22
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)

1	slds447	11Jun2001	18:41	101.80	-	-	-	8055	2.430	2.39

****

Pos/Vial: 36 Name: CCB Analyzed: 11Jun2001 18:41
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds448	11Jun2001	18:58	223.10	-	-	-	9	-0.120	-0.05

-537.9

****

BIFC711-04 SJ 61201

Pos/Vial: 37 Name: ~~B1F0075-01~~ Analyzed: 11Jun2001 18:58
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds449	11Jun2001	19:14	218.30	-	-	-	7192	2.160	0.99

9894.4

****

BIF0713-10 Dup SJ 61201

Pos/Vial: 38 Name: ~~B1F0075-02~~ Analyzed: 11Jun2001 19:14
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds450	11Jun2001	19:35	225.50	-	-	-	331	-0.020	-0.01

-88.69

****

Pos/Vial: 39 Name: B1F0075-03 Analyzed: 11Jun2001 19:35
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds451	11Jun2001	19:52	201.40	-	-	-	3483	0.980	0.49

4845.9

****

BIF0075-03MS SJ 61201

Pos/Vial: 40 Name: ~~B1F0075-04~~ Analyzed: 11Jun2001 19:52
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds452	11Jun2001	20:17	203.70	-	-	-	10342	3.160	1.55

Sample = 101.6 m
Sucrose = 102.1
(spike)
203.7

15513

~~15513~~ SJ 61201 ~~31102~~ SJ 61201

****

BIF0075-03MSDUP SJ 61201

Pos/Vial: 41 Name: ~~B1F0075-05~~ Analyzed: 11Jun2001 20:17
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds453	11Jun2001	20:33	223.50	-	-	-	10341	3.150	1.41

Sample = 122.6 m
Sucrose = 100.9 m
(spike)
223.5 m

~~14093~~ SJ 61201 ~~25693~~ SJ 61201
14093

****

BIFC0754 SJ 61201

Pos/Vial: 42 Name: ~~B1F0075-06~~ Analyzed: 11Jun2001 20:33
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES Input TC TC TC TOC TOC TOC

3:

Untitled

Rep	Datafile	Date	Time	Mass (mg)	Area (cts)	Mass (mgC)	Conc (% Carbon)	Area (cts)	Mass (mgC)	Conc (% Carbon)	
1	slds454	11Jun2001	20:53	191.10	-	-	-	1055	0.210	0.11	1098.9

****

Pos/Vial: 43 Name: B1F0075-06 DUP Analyzed: 11Jun2001 20:53
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds455	11Jun2001	21:13	200.40	-	-	-	18267	5.670	2.83	28293

****

B1F0075-06 SF61201

Pos/Vial: 44 Name: ~~B1F0075-07~~ Analyzed: 11Jun2001 21:13
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds456	11Jun2001	21:37	207.20	-	-	-	20898	6.500	3.14	31370

****

Pos/Vial: 45 Name: B1F0075-08 Analyzed: 11Jun2001 21:38
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds457	11Jun2001	21:57	187.30	-	-	-	471	0.030	0.01	140.2

Sample = 92.7mg
Sucrose = 101.3mg
193.0mg

****

B1F0711-06 MS SF61201

Pos/Vial: 46 Name: ~~B1F0075-09~~ Analyzed: 11Jun2001 21:57
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds458	11Jun2001	22:13	193.00	-	-	-	10450	3.190	1.65	~~10528~~ SF61201 34412

****

Pos/Vial: 47 Name: CCV Analyzed: 11Jun2001 22:14
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds459	11Jun2001	22:29	100.70	-	-	-	7587	2.280	2.27	22641

****

Pos/Vial: 48 Name: CCB Analyzed: 11Jun2001 22:29
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds460	11Jun2001	22:47	195.50	-	-	-	9	-0.120	-0.06	-613

EPA 9060M
Initial and Continuing Calibration Verification

June 20, 2001

	Initial Calib. (mg/kg)			Continuing Calibration (mg/kg)						
Analyte	TRUE	Found	%R	TRUE	Found[1]	%R	Found[2]	%R		
TOC	27000	25915	96%	27000	25300	94%	25000	93%		

Control Limits: 80 to 120%

8/8/1
3

EPA 9060M
Blanks

June 20, 2001

Analytes	ICB (mg/kg)	CCB (mg/kg)		
		01	02	
TOC	-249	-200	-200	

Acceptance Criterion: ≤ 1000 mg/kg

JB 8/01

Batch 1F21001
~~BS#~~ 1060088
SUC1DSC
BS# 1030060
Shawonna Jackson
6/19/01

Untitled

CONFIGURATION

Analysis Mode: TOC Spl Intro: Solids Base Temp: 900 °C

CALIBRATION

SUC061901 Tue Jun 19 09:48:02 2001

Std. #	Used	Mass (mgC)
1	Yes	0.00
2	Yes	0.27
3	Yes	2.70
4	Yes	5.40
5	Yes	27.00

RF (ugc/k-cnt):	311.96
R-Squared:	0.9999
Offset (mgC):	0.0535
Calibration Mode:	TC
Allow Editing:	No

Rep	Std. 1	Std. 2	Std. 3	Std. 4	Std. 5
1	76	1232	9208	16937	86784
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-
5	-	-	-	-	-
6	-	-	-	-	-
7	-	-	-	-	-
8	-	-	-	-	-
9	-	-	-	-	-
10	-	-	-	-	-

(* = unused)

SEQUENCE

062001B Wed Jun 20 09:17:15 2001

Start Pos/Vial #: 1, Stop Pos/Vial #: 21

Pos/ Vial	Sample Name	Method	Run Type	# Rep	Mass (mg)	Remarks
1	CCV	30.0mg	Sample	1	100.00	
2	CCB	30.0mg	Sample	1	200.00	
3	BS	30.0mg	Sample	1	200.00	
4	BS DUP	30.0mg	Sample	1	200.00	
5	B1F0075-07	30.0mg	Sample	1	200.00	
6	B1F0075-07 MS	30.0mg	Sample	1	200.00	
7	B1F0075-07 MSD	30.0mg	Sample	1	200.00	
8	B1F0075-01	30.0mg	Sample	1	200.00	
9	B1F0075-02	30.0mg	Sample	1	200.00	
10	B1F0075-05	30.0mg	Sample	1	200.00	
11	CCV	30.0mg	Sample	1	100.00	
12	CCB	30.0mg	Sample	1	200.00	
13	B1F0075-09	30.0mg	Sample	1	200.00	
14	B1F0075-10	30.0mg	Sample	1	200.00	
15	B1F0075-11	30.0mg	Sample	1	200.00	
16	B1F0075-12	30.0mg	Sample	1	200.00	
17	B1F0075-13	30.0mg	Sample	1	200.00	
18	B1F0075-14	30.0mg	Sample	1	200.00	
19	B1F0075-14 DUP	30.0mg	Sample	1	200.00	
20	CCV	30.0mg	Sample	1	100.00	
21	CCB	30.0mg	Sample	1	200.00	

RESULTS - 062001B

Pos/Vial: 1 Name: CCV Analyzed: 20Jun2001 09:17
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds620	20Jun2001	09:33	103.80	-	-	-	8805	2.690	2.59	25915

****

Pos/Vial: 2 Name: CCB Analyzed: 20Jun2001 09:33
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds621	20Jun2001	09:49	200.80	-	-	-	15	-0.050	-0.02	-249

****

Pos/Vial: 3 Name: BS Analyzed: 20Jun2001 09:50
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds622	20Jun2001	10:06	208.00	-	-	-	9677	2.970	1.43	14278

****

Pos/Vial: 4 Name: BS DUP Analyzed: 20Jun2001 10:06
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds623	20Jun2001	10:22	210.40	-	-	-	10431	3.200	1.52	15209

****

Pos/Vial: 5 Name: B1F0075-07 Analyzed: 20Jun2001 10:22
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds624	20Jun2001	10:42	238.60	-	-	-	900	0.230	0.10	963.9

****

Pos/Vial: 6 Name: B1F0075-07 MS Analyzed: 20Jun2001 10:42
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds625	20Jun2001	11:03	205.40	-	-	-	9021	2.760	1.34	13437

****

Pos/Vial: 7 Name: B1F0075-07 MSD Analyzed: 20Jun2001 11:03
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds626	20Jun2001	11:41	208.10	-	-	-	9100	2.790	1.34	14271

****

Pos/Vial: 8 Name: B1F0075-01 Analyzed: 20Jun2001 11:41
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds627	20Jun2001	12:02	219.10	-	-	-	177	0.000	0.00	0

****

Pos/Vial: 9 Name: B1F0075-02 Analyzed: 20Jun2001 12:02
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds628	20Jun2001	12:23	244.90	-	-	-	4281	1.280	0.52	5226

****

Pos/Vial: 10 Name: B1F0075-05 Analyzed: 20Jun2001 12:23
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds629	20Jun2001	12:39	231.70	-	-	-	1769	0.500	0.22	2157

****

Pos/Vial: 11 Name: CCV Analyzed: 20Jun2001 12:39
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds630	20Jun2001	12:55	104.60	-	-	-	8643	2.640	2.53

****

Pos/Vial: 12 Name: CCB Analyzed: 20Jun2001 12:55
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds631	20Jun2001	13:29	210.80	-	-	-	12	-0.050	-0.02

****

Pos/Vial: 13 Name: B1F0075-09 Analyzed: 20Jun2001 13:29
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds632	20Jun2001	13:45	242.10	-	-	-	7314	2.230	0.92	9211

****

Pos/Vial: 14 Name: B1F0075-10 Analyzed: 20Jun2001 13:46
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds633	20Jun2001	14:02	204.20	-	-	-	4965	1.500	0.73	7345

****

Pos/Vial: 15 Name: B1F0075-11 Analyzed: 20Jun2001 14:02
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds634	20Jun2001	14:18	214.20	-	-	-	263	0.030	0.01	140.1

****

Pos/Vial: 16 Name: B1F0075-12 Analyzed: 20Jun2001 14:18
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds635	20Jun2001	14:35	236.10	-	-	-	2264	0.650	0.28	2753

****

Pos/Vial: 17 Name: B1F0075-13 Analyzed: 20Jun2001 14:35
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds636	20Jun2001	14:51	169.10	-	-	-	41843	13.000	7.69	76877

****

Pos/Vial: 18 Name: B1F0075-14 Analyzed: 20Jun2001 14:51
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds637	20Jun2001	15:07	312.20	-	-	-	2129	0.610	0.20	1953

****

Pos/Vial: 19 Name: B1F0075-14 DUP Analyzed: 20Jun2001 15:08
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds638	20Jun2001	15:24	226.10	-	-	-	1828	0.520	0.23	2299

****

Pos/Vial: 20 Name: CCV Analyzed: 20Jun2001 15:24
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds639	20Jun2001	15:40	105.70	-	-	-	8645	2.640	2.50

****

Pos/Vial: 21 Name: CCB Analyzed: 20Jun2001 15:40
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Input Mass	TC Area	TC Mass	TC Conc	TOC Area	TOC Mass	TOC Conc

Untitled

Rep	Datafile	Date	Time	(mg)	(cts)	(mgC)	(% Carbon)	(cts)	(mgC)	(% Carbon)
1	slds640	20Jun2001	15:57	212.00	-	-	-	15	-0.050	-0.02

EPA 9060M
Initial and Continuing Calibration Verification

June 22, 2001

	Initial Calib. (mg/kg)			Continuing Calibration (mg/kg)						
Analyte	TRUE	Found	%R	TRUE	Found[1]	%R	Found[2]	%R	Found[3]	%R
TOC	27000	25221	93%	27000	24400	90%	23400	87%	24200	90%

Control Limits: 80 to 120%

JBB 8/8/
4:

EPA 9060M
Blanks

June 22, 2001

Analytes	ICB (mg/kg)	CCB (mg/kg)			
		01	02	03	
TOC	-210	-200	-200	-300	

Acceptance Criterion: ≤ 1000 mg/kg

8/8/
4:

Shawnna Jackson
6/25/01

BS: 1030060
Sucrose: 1060088
Batch #1F25013

Untitled

****
** CALIBRATION **
****

SUC061901 Tue Jun 19 09:48:02 2001

Std. #	Used	Mass (mgC)
1	Yes	0.00
2	Yes	0.27
3	Yes	2.70
4	Yes	5.40
5	Yes	27.00

RF (ugc/k-cnt):	311.96
R-Squared:	0.9999
Offset (mgC):	0.0535
Calibration Mode:	TC
Allow Editing:	No

Rep	Std. 1	Std. 2	Std. 3	Std. 4	Std. 5
1	76	1232	9208	16937	86784
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-
5	-	-	-	-	-
6	-	-	-	-	-
7	-	-	-	-	-
8	-	-	-	-	-
9	-	-	-	-	-
10	-	-	-	-	-

(* = unused)

****
** SEQUENCE **
****

062201B Fri Jun 22 10:08:00 2001

Start Pos/Vial #: 1, Stop Pos/Vial #: 29

Pos/ Vial	Sample Name	Method	Run Type	# Rep	Mass (mg)	Remarks
1	CCV	30.0mg	Sample	1	100.00	
2	CCB	30.0mg	Sample	1	200.00	
3	BS	30.0mg	Sample	1	200.00	
4	BS DUP	30.0mg	Sample	1	200.00	
5	B1F0188-01	30.0mg	Sample	1	200.00	
6	B1F0188-02	30.0mg	Sample	1	200.00	
7	B1F0188-03	30.0mg	Sample	1	200.00	
8	B1F0188-03 MS	30.0mg	Sample	1	200.00	
9	B1F0188-03 MSD	30.0mg	Sample	1	200.00	
10	B1F0188-04	30.0mg	Sample	1	200.00	
11	B1F0188-05	30.0mg	Sample	1	200.00	
12	CCV	30.0mg	Sample	1	100.00	
13	CCB	30.0mg	Sample	1	200.00	
14	B1F0188-06	30.0mg	Sample	1	200.00	
15	B1F0188-07	30.0mg	Sample	1	200.00	
16	B1F0188-08	30.0mg	Sample	1	200.00	
17	B1F0188-09	30.0mg	Sample	1	200.00	
18	B1F0188-10	30.0mg	Sample	1	200.00	
19	B1F0188-11	30.0mg	Sample	1	200.00	
20	B1F0188-12	30.0mg	Sample	1	200.00	
21	B1F0188-12 MS	30.0mg	Sample	1	200.00	
22	B1F0188-12 MSD	30.0mg	Sample	1	200.00	
23	B1F0188-13	30.0mg	Sample	1	200.00	
24	CCV	30.0mg	Sample	1	100.00	
25	CCB	30.0mg	Sample	1	200.00	
26	B1F0188-14	30.0mg	Sample	1	200.00	
27	B1F0188-15	30.0mg	Sample	1	200.00	
28	CCV	30.0mg	Sample	1	100.00	
29	CCB	30.0mg	Sample	1	200.00	

****
** RESULTS - 062201B **
****

Pos/Vial: 1 Name: CCV Analyzed: 22Jun2001 10:08
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds672	22Jun2001	10:25	0.96	-	-	-	7973	2.430	252.21

****

Pos/Vial: 2 Name: CCB Analyzed: 22Jun2001 10:25
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds673	22Jun2001	10:41	237.70	-	-	-	10	-0.050	-0.02

-210

****

Pos/Vial: 3 Name: BS Analyzed: 22Jun2001 10:41
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds674	22Jun2001	11:01	240.60	-	-	-	10259	3.150	1.31

13092

****

Pos/Vial: 4 Name: BS DUP Analyzed: 22Jun2001 11:01
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds675	22Jun2001	11:56	210.30	-	-	-	9334	2.860	1.36

13599

****

Pos/Vial: 5 Name: B1F0188-01 Analyzed: 22Jun2001 11:56
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds676	22Jun2001	12:14	222.00	-	-	-	28416	8.810	3.97

39685

****

Pos/Vial: 6 Name: B1F0188-02 Analyzed: 22Jun2001 12:14
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds677	22Jun2001	12:40	203.80	-	-	-	10500	3.220	1.58

15800

****

Pos/Vial: 7 Name: B1F0188-03 Analyzed: 22Jun2001 12:40
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds678	22Jun2001	13:01	221.20	-	-	-	461	0.090	0.04

407

****

Pos/Vial: 8 Name: B1F0188-03 MS Analyzed: 22Jun2001 13:02
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds679	22Jun2001	13:37	204.70	-	-	-	9152	2.800	1.37

13679

****

Pos/Vial: 9 Name: B1F0188-03 MSD Analyzed: 22Jun2001 13:37
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds680	22Jun2001	14:07	211.80	-	-	-	8618	2.630	1.24

12417

****

Pos/Vial: 10 Name: B1F0188-04 Analyzed: 22Jun2001 14:07
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds681	22Jun2001	14:55	160.10	-	-	-	19119	5.910	3.69

36914

****

Pos/Vial: 11 Name: B1F0188-05 Analyzed: 22Jun2001 14:56
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds682	22Jun2001	16:13	207.20	-	-	-	7302	2.220	1.07

10714

****

Pos/Vial: 12 Name: CCV Analyzed: 22Jun2001 16:13
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds683	22Jun2001	16:33	104.40	-	-	-	8353	2.550	2.44

****

Pos/Vial: 13 Name: CCB Analyzed: 22Jun2001 16:34
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds684	22Jun2001	16:54	212.00	-	-	-	7	-0.050	-0.02

****

Pos/Vial: 14 Name: B1F0188-06 Analyzed: 22Jun2001 16:54
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)

1	slds685	22Jun2001	17:21	261.60	-	-	-	8951	2.740	1.05	10474

****

Pos/Vial: 15 Name: B1F0188-07 Analyzed: 22Jun2001 17:21
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds686	22Jun2001	17:43	315.40	-	-	-	5330	1.610	0.51	5105

****

Pos/Vial: 16 Name: B1F0188-08 Analyzed: 22Jun2001 17:43
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds687	22Jun2001	17:59	306.70	-	-	-	1713	0.480	0.16	1565

****

Pos/Vial: 17 Name: B1F0188-09 Analyzed: 22Jun2001 17:59
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds688	22Jun2001	18:16	224.90	-	-	-	7379	2.250	1.00	10004

****

Pos/Vial: 18 Name: B1F0188-10 Analyzed: 22Jun2001 18:16
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds689	22Jun2001	18:39	196.40	-	-	-	1415	0.390	0.20	1986

****

Pos/Vial: 19 Name: B1F0188-11 Analyzed: 22Jun2001 18:39
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds690	22Jun2001	18:56	65.50	-	-	-	49472	15.380	23.48	234809

****

Pos/Vial: 20 Name: B1F0188-12 Analyzed: 22Jun2001 18:56
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds691	22Jun2001	19:12	192.60	-	-	-	7842	2.390	1.24	12409

****

Pos/Vial: 21 Name: B1F0188-12 MS Analyzed: 22Jun2001 19:12
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES Input TC TC TC TOC TOC TOC

Untitled

Rep	Datafile	Date	Time	Mass (mg)	Area (cts)	Mass (mgC)	Conc (% Carbon)	Area (cts)	Mass (mgC)	Conc (% Carbon)	
1	slds692	22Jun2001	19:30	194.10	-	-	-	12131	3.730	1.92	19217

****

Pos/Vial: 22 Name: B1F0188-12 MSD Analyzed: 22Jun2001 19:30
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds693	22Jun2001	19:47	226.50	-	-	-	11854	3.640	1.61	16071

****

B1E0188-09 DUP 8J 6/25/01

Pos/Vial: 23 Name: ~~B1F0188-13~~ Analyzed: 22Jun2001 19:48
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds694	22Jun2001	20:07	219.70	-	-	-	5804	1.760	0.80	8011

****

Pos/Vial: 24 Name: CCV Analyzed: 22Jun2001 20:07
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds695	22Jun2001	20:23	104.80	-	-	-	8035	2.450	2.34

****

Pos/Vial: 25 Name: CCB Analyzed: 22Jun2001 20:23
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds696	22Jun2001	20:39	223.10	-	-	-	12	-0.050	-0.02

****

Pos/Vial: 26 Name: B1F0188-14 Analyzed: 22Jun2001 20:39
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds697	22Jun2001	20:55	168.50	-	-	-	15159	4.680	2.77	27774

****

Pos/Vial: 27 Name: B1F0188-15 Analyzed: 22Jun2001 20:55
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds698	22Jun2001	21:11	332.20	-	-	-	1184	0.320	0.10	963

****

Pos/Vial: 28 Name: CCV Analyzed: 22Jun2001 21:11

Untitled

Run ID: 1 Meth: 30 Mass (mg): 100.00

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds699	22Jun2001	21:39	104.40	-	-	-	8283	2.530	2.42

SAMPLES

****

Pos/Vial: 29 Name: CCB Analyzed: 22Jun2001 21:39
Run ID: 1 Meth: 30 Mass (mg): 200.00

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds700	22Jun2001	22:02	184.60	-	-	-	18	-0.050	-0.03

SAMPLES

****
** CONFIGURATION **
****

Analysis Mode: TOC Spl Intro: Solids Base Temp: 900 °C

****
** CALIBRATION **
****

SUC061901 Tue Jun 19 09:48:02 2001

Std. #	Used	Mass (mgC)
1	Yes	0.00
2	Yes	0.27
3	Yes	2.70
4	Yes	5.40
5	Yes	27.00

RF (ugc/k-cnt): 311.96
R-Squared: 0.9999
Offset (mgC): 0.0535

Calibration Mode: TC
Allow Editing: No

Rep	Std. 1	Std. 2	Std. 3	Std. 4	Std. 5
1	76	1232	9208	16937	86784
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-
5	-	-	-	-	-
6	-	-	-	-	-
7	-	-	-	-	-
8	-	-	-	-	-
9	-	-	-	-	-
10	-	-	-	-	-

(* = unused)

****
** SEQUENCE **
****

062301 Sat Jun 23 08:25:26 2001

Start Pos/Vial #: 1, Stop Pos/Vial #: 29

Pos/ Vial	Sample Name	Method	Run Type	# Rep	Mass (mg)	Remarks
1	CCV	30.0mg	Sample	1	100.00	
2	CCB	30.0mg	Sample	1	200.00	
3	BS	30.0mg	Sample	1	200.00	
4	BS DUP	30.0mg	Sample	1	200.00	
5	B1F0266-01	30.0mg	Sample	1	200.00	
6	B1F0266-02	30.0mg	Sample	1	200.00	
7	B1F0266-03	30.0mg	Sample	1	200.00	
8	B1F0188-13	30.0mg	Sample	1	200.00	
9	B1F0266-04	30.0mg	Sample	1	200.00	
10	B1F0266-05	30.0mg	Sample	1	200.00	

EPA 9060M
Initial and Continuing Calibration Verification

June 23, 2001

	Initial Calib. (mg/kg)			Continuing Calibration (mg/kg)						
Analyte	TRUE	Found	%R	TRUE	Found[1]	%R	Found[2]	%R		
TOC	27000	24800	92%	27000	23932	89%	23100	86%		

Control Limits: 80 to 120%

JB 8/8/0

EPA 9060M
Blanks

June 23, 2001

Analytes	ICB (mg/kg)	CCB (mg/kg)		
		01	02	
TOC	-247	-200	-300	

Acceptance Criterion: ≤ 1000 mg/kg

JB 8/8

NEW Batch
Ran By: Emily V.
Reported By: Shawnna
BS: 1030060
Sucrose: 1060088
Batch # 1F25014

Untitled

****
** SEQUENCE **
****

062301 Sat Jun 23 08:25:26 2001

Start Pos/Vial #: 1, Stop Pos/Vial #: 29

Pos/ Vial	Sample Name	Method	Run Type	# Rep	Mass (mg)	Remarks
1	CCV	30.0mg	Sample	1	100.00	
2	CCB	30.0mg	Sample	1	200.00	
3	BS	30.0mg	Sample	1	200.00	
4	BS DUP	30.0mg	Sample	1	200.00	
5	B1F0266-01	30.0mg	Sample	1	200.00	
6	B1F0266-02	30.0mg	Sample	1	200.00	
7	B1F0266-03	30.0mg	Sample	1	200.00	
8	B1F0188-13	30.0mg	Sample	1	200.00	
9	B1F0266-04	30.0mg	Sample	1	200.00	
10	B1F0266-05	30.0mg	Sample	1	200.00	
11	B1F0266-06	30.0mg	Sample	1	200.00	
12	CCV	30.0mg	Sample	1	100.00	
13	CCB	30.0mg	Sample	1	200.00	
14	B1F0266-07	30.0mg	Sample	1	200.00	
15	B1F0266-07 MS	30.0mg	Sample	1	200.00	
16	B1F0266-07 MSD	30.0mg	Sample	1	200.00	
17	B1F0266-08	30.0mg	Sample	1	200.00	
18	B1F0266-09	30.0mg	Sample	1	200.00	
19	B1F0266-10	30.0mg	Sample	1	200.00	
20	B1F0266-11	30.0mg	Sample	1	200.00	
21	B1F0266-11 MS	30.0mg	Sample	1	200.00	
22	B1F0266-11 MSD	30.0mg	Sample	1	200.00	
23	B1F0266-12	30.0mg	Sample	1	200.00	
24	CCV	30.0mg	Sample	1	100.00	
25	CCB	30.0mg	Sample	1	200.00	
26		30.0mg	Sample	1	200.00	
27		30.0mg	Sample	1	200.00	
28		30.0mg	Sample	1	100.00	
29		30.0mg	Sample	1	200.00	

****
** RESULTS - 062301 **
****

Pos/Vial: 1 Name: CCV Analyzed: 23Jun2001 11:22
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds705	23Jun2001	11:38	104.40	-	-	-	8472	2.590	2.48

****

Pos/Vial: 2 Name: CCB Analyzed: 23Jun2001 11:38
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds706	23Jun2001	11:57	202.30	-	-	-	11	-0.050	-0.02

-247

****

Pos/Vial: 3 Name: BS Analyzed: 23Jun2001 11:58
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)

1	slds707	23Jun2001	12:14	219.80	-	-	-	10632	3.260	1.48	14832

****

Pos/Vial: 4 Name: BS DUP Analyzed: 23Jun2001 12:14
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds708	23Jun2001	12:32	204.80	-	-	-	9036	2.770	1.35	13525

****

Pos/Vial: 5 Name: B1F0266-01 Analyzed: 23Jun2001 12:32
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds709	23Jun2001	12:52	235.60	-	-	-	9559	2.930	1.24	12436

****

Pos/Vial: 6 Name: B1F0266-02 Analyzed: 23Jun2001 12:52
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds710	23Jun2001	13:26	232.70	-	-	-	28622	8.880	3.81	38161

****

Pos/Vial: 7 Name: B1F0266-03 Analyzed: 23Jun2001 13:26
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds711	23Jun2001	13:42	250.30	-	-	-	7423	2.260	0.90	9029

****

Pos/Vial: 8 Name: B1F0188-13 Analyzed: 23Jun2001 13:43
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds712	23Jun2001	13:58	211.00	-	-	-	25384	7.870	3.73	37298

****

Pos/Vial: 9 Name: B1F0266-04 Analyzed: 23Jun2001 13:59
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds713	23Jun2001	14:14	287.60	-	-	-	125	-0.010	-0.01	-34.8

****

Pos/Vial: 10 Name: B1F0266-05 Analyzed: 23Jun2001 14:15
Run ID: 1 Meth: 30 Mass (mg): 200.00

Untitled

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds714	23Jun2001	14:33	201.10	-	-	-	3946	1.180	0.59	5868

****

Pos/Vial: 11 Name: B1F0266-06 Analyzed: 23Jun2001 14:33
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds715	23Jun2001	14:50	200.90	-	-	-	20321	6.290	3.13	31309

****

Pos/Vial: 12 Name: CCV Analyzed: 23Jun2001 14:50
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds716	23Jun2001	15:06	105.30	-	-	-	8257	2.520	2.40	23932

****

Pos/Vial: 13 Name: CCB Analyzed: 23Jun2001 15:06
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds717	23Jun2001	15:22	231.40	-	-	-	37	-0.040	-0.02

****

Pos/Vial: 14 Name: B1F0266-07 Analyzed: 23Jun2001 15:22
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds718	23Jun2001	15:38	246.40	-	-	-	5104	1.540	0.62	4250

****

Pos/Vial: 15 Name: B1F0266-07 MS Analyzed: 23Jun2001 15:39
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds719	23Jun2001	15:55	219.60	-	-	-	10217	3.130	1.43	14253

****

Pos/Vial: 16 Name: B1F0266-07 MSD Analyzed: 23Jun2001 15:55
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)	
1	slds720	23Jun2001	16:11	238.40	-	-	-	13537	4.170	1.75	17492

****

Untitled

Pos/Vial: 17 Name: B1F0266-08 Analyzed: 23Jun2001 16:11
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds721	23Jun2001	16:28	231.90	-	-	-	13323	4.100	1.77

17680

****

Pos/Vial: 18 Name: B1F0266-09 Analyzed: 23Jun2001 16:29
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds722	23Jun2001	16:45	183.50	-	-	-	3281	0.970	0.53

5286

****

Pos/Vial: 19 Name: B1F0266-10 Analyzed: 23Jun2001 16:45
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds723	23Jun2001	17:01	254.10	-	-	-	4377	1.310	0.52

5155

****

Pos/Vial: 20 Name: B1F0266-11 Analyzed: 23Jun2001 17:01
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds724	23Jun2001	17:17	261.20	-	-	-	6208	1.880	0.72

7198

****

Pos/Vial: 21 Name: B1F0266-11 MS Analyzed: 23Jun2001 17:17
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds725	23Jun2001	17:33	215.00	-	-	-	10371	3.180	1.48

14790

****

Pos/Vial: 22 Name: B1F0266-11 MSD Analyzed: 23Jun2001 17:33
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds726	23Jun2001	17:50	241.90	-	-	-	8901	2.720	1.13

11244

****

Pos/Vial: 23 Name: B1F0266-12 Analyzed: 23Jun2001 17:50
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds727	23Jun2001	18:13	175.40	-	-	-	17067	5.270	3.00

30046

****

Pos/Vial: 24 Name: CCV Analyzed: 23Jun2001 18:13
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds728	23Jun2001	18:29	105.60	-	-	-	7981	2.440	2.31

****

Pos/Vial: 25 Name: CCB Analyzed: 23Jun2001 18:29
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds729	23Jun2001	18:46	188.80	-	-	-	19	-0.050	-0.03

****

Pos/Vial: 26 Name: Analyzed: 23Jun2001 18:47
Run ID: 1 Meth: 30 Mass (mg): 200.00

Sequence Aborted 23Jun2001 18:52

Untitled

****
** CALIBRATION **
****

SUC061901 Tue Jun 19 09:48:02 2001

Std. #	Used	Mass (mgC)
1	Yes	0.00
2	Yes	0.27
3	Yes	2.70
4	Yes	5.40
5	Yes	27.00

RF (ugc/k-cnt):	311.96
R-Squared:	0.9999
Offset (mgC):	0.0535
Calibration Mode:	TC
Allow Editing:	No

Rep	Std. 1	Std. 2	Std. 3	Std. 4	Std. 5
1	76	1232	9208	16937	86784
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-
5	-	-	-	-	-
6	-	-	-	-	-
7	-	-	-	-	-
8	-	-	-	-	-
9	-	-	-	-	-
10	-	-	-	-	-

(* = unused)

PREPARATION BENCH SHEET

1F12005

North Creek Analytical - Bothell

Printed: 7/5/01 9:19:50AM

Matrix: Soil **Prepared using: Wet Chem - General Preparation** (No Surrogate)

Lab Number	Analysis	Prepared	Initial (g)	Final (ml)	Spike ID	Source ID	ul Spike	ul Surrogate	Initials Samp	Initials To Vol	Initials Spk	Extraction Comments
1F12005-BLK1	QC	06/11/01 00:00	0.1919	0.1919								
1F12005-BS1	QC	06/11/01 00:00	0.2313	0.2313	1030060		231.3					
1F12005-BSD1	QC	06/11/01 00:00	0.2175	0.2175	1030060		217.5					
1F12005-DUP1	QC	06/11/01 00:00	0.2255	0.2255		B1E0713-10						
1F12005-DUP2	QC	06/11/01 00:00	0.2004	0.2004		B1F0075-06						
1F12005-MS1	QC	06/11/01 00:00	0.1016	0.1016	1050084	B1F0075-03	100					
1F12005-MSD1	QC	06/11/01 00:00	0.1226	0.1226	1050084	B1F0075-03	100					
B1E0713-10	TOC (1) EPA 9060	06/11/01 00:00	0.2175	0.2175								
B1E0713-11	TOC (1) EPA 9060	06/11/01 00:00	0.2076	0.2076								
B1E0713-12	TOC (1) EPA 9060	06/11/01 00:00	0.2315	0.2315								
B1E0713-13	TOC (1) EPA 9060	06/11/01 00:00	0.2377	0.2377								
B1E0713-14	TOC (1) EPA 9060	06/11/01 00:00	0.3141	0.3141								
B1E0713-15	TOC (1) EPA 9060	06/11/01 00:00	0.2943	0.2943								
B1F0075-03	TOC (1) EPA 9060	06/11/01 00:00	0.2014	0.2014								
B1F0075-04	TOC (1) EPA 9060	06/11/01 00:00	0.1911	0.1911								
B1F0075-06	TOC (1) EPA 9060	06/11/01 00:00	0.2004	0.2004								
B1F0075-08	TOC (1) EPA 9060	06/11/01 00:00	0.1873	0.1873								

Batch Comments

Spiking Witnessed By Date Preparation Reviewed By Date Extracts Received By Date

PREPARATION BENCH SHEET

1F21001

North Creek Analytical - Bothell

Printed: 6/21/01 8:10:49AM

Matrix: Soil **Prepared using: Wet Chem - General Preparation** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (g)	Final (ml)	Spike ID	Source ID	ul Spike	ul Surrogate	Initials Samp	Initials To Vol	Initials Spk	Extraction Comments
1F21001-BLK1	QC	06/20/01 00:00	0.2008	0.2008								
1F21001-BS1	QC	06/20/01 00:00	0.208	0.208	1030060		208					
1F21001-BSD1	QC	06/20/01 00:00	0.2104	0.2104	1030060		210.4					
1F21001-DUP1	QC	06/20/01 00:00	0.2261	0.2261		B1F0075-14						
1F21001-MS1	QC	06/20/01 00:00	0.1009	0.1009	1060088	B1F0075-07	100					
1F21001-MSD1	QC	06/20/01 00:00	0.1043	0.1043	1060088	B1F0075-07	100					
B1F0075-01	TOC (1) EPA 9060	06/20/01 00:00	0.2119	0.2119								
B1F0075-02	TOC (1) EPA 9060	06/20/01 00:00	0.2449	0.2449								
B1F0075-05	TOC (1) EPA 9060	06/20/01 00:00	0.2317	0.2317								
B1F0075-07	TOC (1) EPA 9060	06/20/01 00:00	0.2386	0.2386								
B1F0075-09	TOC (1) EPA 9060	06/20/01 00:00	0.2421	0.2421								
B1F0075-10	TOC (1) EPA 9060	06/20/01 00:00	0.2042	0.2042								
B1F0075-11	TOC (1) EPA 9060	06/20/01 00:00	0.2142	0.2142								
B1F0075-12	TOC (1) EPA 9060	06/20/01 00:00	0.2361	0.2361								
B1F0075-13	TOC (1) EPA 9060	06/20/01 00:00	0.1691	0.1691								
B1F0075-14	TOC (1) EPA 9060	06/20/01 00:00	0.3122	0.3122								

Batch Comments

Shawna Jackson 6/21/01

Spiking Witnessed By Date

Preparation Reviewed By Date

Extracts Received By Date

PREPARATION BENCH SHEET

1F25013

North Creek Analytical - Bothell

Printed: 7/5/01 9:19:59AM

Matrix: Soil **Prepared using: Wet Chem - General Preparation** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (g)	Final (ml)	Spike ID	Source ID	ul Spike	ul Surrogate	Initials Samp	Initials To Vol	Initials Spk	Extraction Comments
1F25013-BLK1	QC	06/23/01 00:00	0.2377	0.2377								
1F25013-BS1	QC	06/23/01 00:00	0.2406	0.2406	1030060		240.6					
1F25013-BSD1	QC	06/23/01 00:00	0.2103	0.2103	1030060		210.3					
1F25013-DUP1	QC	06/23/01 00:00	0.2197	0.2197		B1F0188-09						
1F25013-MS1	QC	06/23/01 00:00	0.1028	0.1028	1060088	B1F0188-03	100					
1F25013-MS2	QC	06/23/01 00:00	0.1941	0.1941	1060088	B1F0188-12	100					
1F25013-MSD1	QC	06/23/01 00:00	0.11	0.11	1060088	B1F0188-03	100					
1F25013-MSD2	QC	06/23/01 00:00	0.2265	0.2265	1060088	B1F0188-12	100					
B1F0188-01	TOC (1) EPA 9060	06/23/01 00:00	0.222	0.222								
B1F0188-02	TOC (1) EPA 9060	06/23/01 00:00	0.2038	0.2038								
B1F0188-03	TOC (1) EPA 9060	06/23/01 00:00	0.2212	0.2212								
B1F0188-04	TOC (1) EPA 9060	06/23/01 00:00	0.1601	0.1601								
B1F0188-05	TOC (1) EPA 9060	06/23/01 00:00	0.2072	0.2072								
B1F0188-06	TOC (1) EPA 9060	06/23/01 00:00	0.2616	0.2616								
B1F0188-07	TOC (1) EPA 9060	06/23/01 00:00	0.3154	0.3154								
B1F0188-08	TOC (1) EPA 9060	06/23/01 00:00	0.3067	0.3067								
B1F0188-09	TOC (1) EPA 9060	06/23/01 00:00	0.2249	0.2249								
B1F0188-10	TOC (1) EPA 9060	06/23/01 00:00	0.1964	0.1964								
B1F0188-11	TOC (1) EPA 9060	06/23/01 00:00	0.0655	0.0655								
B1F0188-12	TOC (1) EPA 9060	06/23/01 00:00	0.1926	0.1926								
B1F0188-14	TOC (1) EPA 9060	06/23/01 00:00	0.1685	0.1685								
B1F0188-15	TOC (1) EPA 9060	06/23/01 00:00	0.3322	0.3322								

Spiking Witnessed By Date Preparation Reviewed By Date Extracts Received By Date

PREPARATION BENCH SHEET

1F25014

North Creek Analytical - Bothell

Printed: 7/5/01 9:20:05AM

Matrix: Soil **Prepared using: Wet Chem - General Preparation** (No Surrogate)

Lab Number	Analysis	Prepared	Initial (g)	Final (ml)	Spike ID	Source ID	ul Spike	ul Surrogate	Initials Samp	To Vol	Spk	Extraction Comments
1F25014-BLK1	QC	06/24/01 00:00	0.2023	0.2023								
1F25014-BS1	QC	06/24/01 00:00	0.2198	0.2198	1030060		219.8					
1F25014-BSD1	QC	06/24/01 00:00	0.2048	0.2048	1030060		204.8					
1F25014-MS1	QC	06/24/01 00:00	0.1169	0.1169	1060088	B1F0266-07	100					
1F25014-MS2	QC	06/24/01 00:00	0.1105	0.1105	1060088	B1F0266-11	100					
1F25014-MSD1	QC	06/24/01 00:00	0.132	0.132	1060088	B1F0266-07	100					
1F25014-MSD2	QC	06/24/01 00:00	0.1367	0.1367	1060088	B1F0266-11	100					
B1F0188-13	TOC (1) EPA 9060	06/24/01 00:00	0.211	0.211								
B1F0266-01	TOC (1) EPA 9060	06/24/01 00:00	0.2356	0.2356								
B1F0266-02	TOC (1) EPA 9060	06/24/01 00:00	0.2327	0.2327								
B1F0266-03	TOC (1) EPA 9060	06/24/01 00:00	0.2503	0.2503								
B1F0266-04	TOC (1) EPA 9060	06/24/01 00:00	0.2876	0.2876								
B1F0266-05	TOC (1) EPA 9060	06/24/01 00:00	0.2011	0.0211								
B1F0266-06	TOC (1) EPA 9060	06/24/01 00:00	0.2009	0.2009								
B1F0266-07	TOC (1) EPA 9060	06/24/01 00:00	0.2464	0.2464								
B1F0266-08	TOC (1) EPA 9060	06/24/01 00:00	0.2319	0.2319								
B1F0266-09	TOC (1) EPA 9060	06/24/01 00:00	0.1835	0.1835								
B1F0266-10	TOC (1) EPA 9060	06/24/01 00:00	0.2541	0.2541								
B1F0266-11	TOC (1) EPA 9060	06/24/01 00:00	0.2612	0.2612								
B1F0266-12	TOC (1) EPA 9060	06/24/01 00:00	0.1754	0.1754								

Batch Comments

Spiking Witnessed By Date Preparation Reviewed By Date Extracts Received By Date

Analytical Standard Record

North Creek Analytical - Bothell

1030060

Description:	Soil LCS	Expires:	03/14/02
Standard Type:	Analyte Spike	Prepared:	03/14/01
Solvent:	NA	Prepared By:	Lynne Cox
Final Volume (mls):	1	Department:	Wet Chem
Vials:	1	Last Edit:	03/14/01 09:58 by LMC

TOC/NH3 as N Lot 1106 Cat #542; Range:10200-15300 mg/kg

Analyte	CAS Number	Concentration (ppm)
Total Organic Carbon	NA	12700
Total Organic Carbon - Average	NA	12700
Total Organic Carbon - High	NA	12700
Total Organic Carbon - Low	NA	12700

Reviewed By Date

WESTON

INORGANICS DATA REVIEW CHECKLIST

Method: ☐ ICP ☐ ICP-MS ☐ GFA ☐ CVA Other TOC

Analysis Date: 7/7/01

31G0068	Reviewer	Comment
Analyst, Date, Method Information	AB	✓
Sample IDs	AB	✓
Standard/QC Solution IDs Recorded	AB	✓
Dilution Factors	AB	NA
Blank and Standard Intensities	AB	✓
Standard Deviations	AB	✓
Curve Fit	AB	✓
ICV/CCV	AB	✓
ICB/CCB	AB	✓
RSDs and SDs	AB	NA
Internal Standards	AB	NA
Carry-Over	AB	NA
CRI-CRA	AB	NA
ICSA/ICSAB	AB	NA
Post Spikes/Serial Dilutions	AB	NA
Analytic Spikes	AB	NA
SRM/LCS	AB	✓
Matrix Spikes	AB	✓
Matrix Duplicates	AB	✓
Method Blanks	AB	✓
Necessary Analysts Notes and CAFs		

MS2/MSD2 RPD out (41.4%)

Admin Rev AB 8/7/01

RECEIVED
JUL 30 2001

Data Package

Client: Roy F. Weston, Inc.

Project: Upper Columbia/Lake Roosevelt ESI

Project Number: 12644.001.002.0101.00

Laboratory Work Order: B1G0068

July 24, 2001

North Creek Analytical, Inc. (Lab ID: UST-011)
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Initial Calibration Data	011	011		
Preparation Bench Sheets	**017**	**017**	✓	✓
Analytical Standards	**018**	**019**	✓	✓
Work Order and Cooler Receipt Forms	**020**	**023**	✓	✓
Chain of Custody	**024**	**024**	✓	✓

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Case Narrative

Sample Receiving

Three soil samples were collected on 06/25/01 between 09:45 and 13:15. Three soil samples were collected on 06/26/01 between 10:00 and 16:15. Four soil samples were collected on 06/27/01 between 09:00 and 16:30. Three soil samples were collected on 06/28/01 between 09:30 and 13:00. The samples were received in a single shipment at North Creek Analytical, Inc. (NCA) on 07/02/01 with all of the containers intact and at a temperature of 16.4°C. The established acceptance criteria for sample storage is 4 ±2°C. The samples were logged in as work order B1G0068. 13

Sample Preparation

Method recommended hold times were met for all preparations and analyses.

- **EPA Method 9060M for Total Organic Carbon** – The samples were prepared in analytical batch 1G09030 in accordance with EPA Method 9060M.

Analysis

- **EPA Method 9060M for Total Organic Carbon** – The samples were analyzed in accordance with EPA 9060M without dilutions.

Quality Assurance

Per client request, sample 01264056 (B1G0068-08) was prepared as a matrix spike and a matrix spike duplicate.

- **EPA Method 9060M for Total Organic Carbon** – All of the recoveries for the monitored target analytes were within the established acceptance criteria or qualified in this narrative.

  Matrix Spike Duplicate (1G09030-MSD2): The RPD for Total Organic Carbon is outside of the established control limits. Since the recoveries and RPDs of these compounds are all within the established control limits for the LCS, LCSD, MS1, MSD1, and MS2, the RPD value does not represent an out of control condition for the batch.

" I certify that this data package is in compliance with the Contract both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Director or his designee, as verified by the following signatures:"

Philip Patten — 25 July 2001

Prepared by Philip Patten, QA Associate

7/25/01

Reviewed by Anne Conrad, QA Associate

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Reported:**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	07/18/01 07:44

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
01264050	B1G0068-01	Soil	06/25/01 09:45	07/02/01 09:30
01264051	B1G0068-02	Soil	06/25/01 13:15	07/02/01 09:30
01264059	B1G0068-03	Soil	06/25/01 12:15	07/02/01 09:30
01264060	B1G0068-04	Soil	06/26/01 12:30	07/02/01 09:30
01264062	B1G0068-05	Soil	06/26/01 16:15	07/02/01 09:30
01264058	B1G0068-06	Soil	06/26/01 10:00	07/02/01 09:30
01264068	B1G0068-07	Soil	06/27/01 09:00	07/02/01 09:30
01264056	B1G0068-08	Soil	06/27/01 14:30	07/02/01 09:30
01264072	B1G0068-09	Soil	06/27/01 15:15	07/02/01 09:30
01264065	B1G0068-10	Soil	06/27/01 16:30	07/02/01 09:30
01264070	B1G0068-11	Soil	06/28/01 09:30	07/02/01 09:30
01264073	B1G0068-12	Soil	06/28/01 10:45	07/02/01 09:30
01264075	B1G0068-13	Soil	06/28/01 13:00	07/02/01 09:30

JB/8/7/0

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Scott A. Woerman, Project Manager

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Reported:**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	07/18/01 07:44

Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01264050 (B1G0068-01) Soil	**Sampled: 06/25/01 09:45**	**Received: 07/02/01 09:30**							
Total Organic Carbon	**7380**	1000	mg/kg dry	1	1G09030	07/07/01	07/07/01	EPA 9060 mod.	
01264051 (B1G0068-02) Soil	**Sampled: 06/25/01 13:15**	**Received: 07/02/01 09:30**							
Total Organic Carbon	**5470**	1000	mg/kg dry	1	1G09030	07/07/01	07/07/01	EPA 9060 mod.	
01264059 (B1G0068-03) Soil	**Sampled: 06/25/01 12:15**	**Received: 07/02/01 09:30**							
Total Organic Carbon	**4710**	1000	mg/kg dry	1	1G09030	07/07/01	07/07/01	EPA 9060 mod.	
01264060 (B1G0068-04) Soil	**Sampled: 06/26/01 12:30**	**Received: 07/02/01 09:30**							
Total Organic Carbon	ND	1000	mg/kg dry	1	1G09030	07/07/01	07/07/01	EPA 9060 mod.	
01264062 (B1G0068-05) Soil	**Sampled: 06/26/01 16:15**	**Received: 07/02/01 09:30**							
Total Organic Carbon	**309000**	6640	mg/kg dry	1	1G09030	07/07/01	07/07/01	EPA 9060 mod.	
01264058 (B1G0068-06) Soil	**Sampled: 06/26/01 10:00**	**Received: 07/02/01 09:30**							
Total Organic Carbon	**4230**	1000	mg/kg dry	1	1G09030	07/07/01	07/07/01	EPA 9060 mod.	
01264068 (B1G0068-07) Soil	**Sampled: 06/27/01 09:00**	**Received: 07/02/01 09:30**							
Total Organic Carbon	**17100**	1000	mg/kg dry	1	1G09030	07/07/01	07/07/01	EPA 9060 mod.	
01264056 (B1G0068-08) Soil	**Sampled: 06/27/01 14:30**	**Received: 07/02/01 09:30**							
Total Organic Carbon	**9060**	1000	mg/kg dry	1	1G09030	07/07/01	07/07/01	EPA 9060 mod.	
01264072 (B1G0068-09) Soil	**Sampled: 06/27/01 15:15**	**Received: 07/02/01 09:30**							
Total Organic Carbon	**2770**	1000	mg/kg dry	1	1G09030	07/07/01	07/07/01	EPA 9060 mod.	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Scott A. Woerman, Project Manager

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Reported:**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	07/18/01 07:44

Conventional Chemistry Parameters by APHA/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01264065 (B1G0068-10) Soil	**Sampled: 06/27/01 16:30**	**Received: 07/02/01 09:30**							
Total Organic Carbon	**8750**	1000	mg/kg dry	1	1G09030	07/07/01	07/07/01	EPA 9060 mod.	
01264070 (B1G0068-11) Soil	**Sampled: 06/28/01 09:30**	**Received: 07/02/01 09:30**							
Total Organic Carbon	ND	1000	mg/kg dry	1	1G09030	07/07/01	07/07/01	EPA 9060 mod.	
01264073 (B1G0068-12) Soil	**Sampled: 06/28/01 10:45**	**Received: 07/02/01 09:30**							
Total Organic Carbon	**1310**	1000	mg/kg dry	1	1G09030	07/07/01	07/07/01	EPA 9060 mod.	
01264075 (B1G0068-13) Soil	**Sampled: 06/28/01 13:00**	**Received: 07/02/01 09:30**							
Total Organic Carbon	**19000**	1000	mg/kg dry	1	1G09030	07/07/01	07/07/01	EPA 9060 mod.	

8/1

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Scott A. Woerman, Project Manager

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Reported:**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	07/18/01 07:44

Physical Parameters by APHA/ASTM/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01264050 (B1G0068-01) Soil	**Sampled: 06/25/01 09:45**	**Received: 07/02/01 09:30**							
Dry Weight	72.3	1.00	%	1	1G09007	07/09/01	07/10/01	BSOPSPL003R07	
01264051 (B1G0068-02) Soil	**Sampled: 06/25/01 13:15**	**Received: 07/02/01 09:30**							
Dry Weight	81.6	1.00	%	1	1G09007	07/09/01	07/10/01	BSOPSPL003R07	
01264059 (B1G0068-03) Soil	**Sampled: 06/25/01 12:15**	**Received: 07/02/01 09:30**							
Dry Weight	81.3	1.00	%	1	1G09007	07/09/01	07/10/01	BSOPSPL003R07	
01264060 (B1G0068-04) Soil	**Sampled: 06/26/01 12:30**	**Received: 07/02/01 09:30**							
Dry Weight	79.9	1.00	%	1	1G09007	07/09/01	07/10/01	BSOPSPL003R07	
01264062 (B1G0068-05) Soil	**Sampled: 06/26/01 16:15**	**Received: 07/02/01 09:30**							
Dry Weight	15.1	1.00	%	1	1G09007	07/09/01	07/10/01	BSOPSPL003R07	
01264058 (B1G0068-06) Soil	**Sampled: 06/26/01 10:00**	**Received: 07/02/01 09:30**							
Dry Weight	86.9	1.00	%	1	1G09007	07/09/01	07/10/01	BSOPSPL003R07	
01264068 (B1G0068-07) Soil	**Sampled: 06/27/01 09:00**	**Received: 07/02/01 09:30**							
Dry Weight	65.2	1.00	%	1	1G09007	07/09/01	07/10/01	BSOPSPL003R07	
01264056 (B1G0068-08) Soil	**Sampled: 06/27/01 14:30**	**Received: 07/02/01 09:30**							
Dry Weight	80.9	1.00	%	1	1G09007	07/09/01	07/10/01	BSOPSPL003R07	
01264072 (B1G0068-09) Soil	**Sampled: 06/27/01 15:15**	**Received: 07/02/01 09:30**							
Dry Weight	78.4	1.00	%	1	1G09007	07/09/01	07/10/01	BSOPSPL003R07	

JB 8/7/01

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	Reported:
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	07/18/01 07:44

Physical Parameters by APHA/ASTM/EPA Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
01264065 (B1G0068-10) Soil	**Sampled: 06/27/01 16:30**	**Received: 07/02/01 09:30**							
Dry Weight	**76.8**	1.00	%	1	1G09007	07/09/01	07/10/01	BSOPSPL003R07	
01264070 (B1G0068-11) Soil	**Sampled: 06/28/01 09:30**	**Received: 07/02/01 09:30**							
Dry Weight	**80.6**	1.00	%	1	1G09007	07/09/01	07/10/01	BSOPSPL003R07	
01264073 (B1G0068-12) Soil	**Sampled: 06/28/01 10:45**	**Received: 07/02/01 09:30**							
Dry Weight	**83.8**	1.00	%	1	1G09007	07/09/01	07/10/01	BSOPSPL003R07	
01264075 (B1G0068-13) Soil	**Sampled: 06/28/01 13:00**	**Received: 07/02/01 09:30**							
Dry Weight	**88.7**	1.00	%	1	1G09007	07/09/01	07/10/01	BSOPSPL003R07	

JB 8/7/01

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Reported:**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	07/18/01 07:44

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1G09030: Prepared 07/07/01 Using General Preparation										
Blank (1G09030-BLK1)										
Total Organic Carbon	ND	1000	mg/kg							
LCS (1G09030-BS1)										
Total Organic Carbon	14700	1000	mg/kg	12700		116	68-120			
LCS Dup (1G09030-BSD1)										
Total Organic Carbon	14400	1000	mg/kg	12700		113	68-120	2.06	30	
Matrix Spike (1G09030-MS1)					**Source: B1G0068-04**					
Total Organic Carbon	24100	1000	mg/kg dry	22800	ND	102	40-160			
Matrix Spike (1G09030-MS2)					**Source: B1G0068-08**					
Total Organic Carbon	33500	1000	mg/kg dry	29900	9060	81.7	40-160			
Matrix Spike Dup (1G09030-MSD1)					**Source: B1G0068-04**					
Total Organic Carbon	28900	1000	mg/kg dry	29300	ND	95.9	40-160	18.1	35	
Matrix Spike Dup (1G09030-MSD2)					**Source: B1G0068-08**					
Total Organic Carbon	22000	1000	mg/kg dry	20200	9060	64.1	40-160	41.4	35	Q-07

JB
8/7/01

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
190 Queen Anne Avenue North, Suite 200	Project Number: 12644.001.002.0101.00	**Reported:**
Seattle WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	07/18/01 07:44

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1G09007: Prepared 07/09/01 Using Dry Weight										
Blank (1G09007-BLK1)										
Dry Weight	100	1.00	%							

WB
8/7/01

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Roy F. Weston, Inc.	Project: Upper Columbia/Lake Roosevelt ESI	
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Seattle-WA, 98109-4926	Project Manager: R. Paul Swift, Ph.D.	07/18/01 07:44

Notes and Definitions

Q-07	The RPD value for this QC sample is above the established control limit. Review of associated QC indicates the high RPD does not represent an out-of-control condition for the batch.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

EPA 9060M
Initial and Continuing Calibration Verification

July 7, 2001

	Initial Calib. (mg/kg)			Continuing Calibration (mg/kg)						
Analyte	TRUE	Found	%R	TRUE	Found[1]	%R	Found[2]	%R	Found[3]	%R
TOC	27000	26300	97%	27000	25000	93%	25000	93%	25300	94%

Acceptance Criteron: 80 to 120%

JB 8/7/01

EPA Method 9060M
Blanks

July 7, 2001

Analyte	ICB (mg/kg)	CCB (mg/kg)		
		1	2	3
TOC	-186	-200	-200	-300

Acceptance Criterion: < 1000 mg/kg

WB 8/7/01

011

Batch # 1609030

Ran By: ECV
Reported By: Shawnna Jackson

BS: 1030060
Sucrose: 1060088

DM 7/13/01

Untitled

****
** CALIBRATION **
****

SUC061901 Tue Jun 19 09:48:02 2001

Std. #	Used	Mass (mgC)
1	Yes	0.00
2	Yes	0.27
3	Yes	2.70
4	Yes	5.40
5	Yes	27.00

RF (ugc/k-cnt):	311.96
R-Squared:	0.9999
Offset (mgC):	0.0535
Calibration Mode:	TC
Allow Editing:	No

Rep	Std. 1	Std. 2	Std. 3	Std. 4	Std. 5
1	76	1232	9208	16937	86784
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-
5	-	-	-	-	-
6	-	-	-	-	-
7	-	-	-	-	-
8	-	-	-	-	-
9	-	-	-	-	-
10	-	-	-	-	-

(* = unused)

****
** SEQUENCE **
****

070701 Sat Jul 07 08:16:00 2001

Start Pos/Vial #: 1, Stop Pos/Vial #: 28

Pos/ Vial	Sample Name	Method	Run Type	# Rep	Mass (mg)	Remarks
1	ICV	30.0mg	Sample	1	100.00	
2	ICB	30.0mg	Sample	1	200.00	
3	BS	30.0mg	Sample	1	200.00	
4	BSD	30.0mg	Sample	1	200.00	
5	B1G0054-01	30.0mg	Sample	1	200.00	
6	B1G0068-01	30.0mg	Sample	1	200.00	
7	B1G0068-02	30.0mg	Sample	1	200.00	
8	B1G0068-03	30.0mg	Sample	1	200.00	
9	B1G0068-04	30.0mg	Sample	1	200.00	
10	B1G0068-04MS	30.0mg	Sample	1	200.00	
11	CCV	30.0mg	Sample	1	100.00	
12	CCB	30.0mg	Sample	1	200.00	
13	B1G0068-04MSD	30.0mg	Sample	1	200.00	
14	B1G0068-05	30.0mg	Sample	1	200.00	
15	B1G0068-06	30.0mg	Sample	1	200.00	
16	B1G0068-07	30.0mg	Sample	1	200.00	
17	B1G0068-08	30.0mg	Sample	1	200.00	
18	B1G0068-08MS	30.0mg	Sample	1	200.00	
19	B1G0068-08MSD	30.0mg	Sample	1	200.00	
20	CCV	30.0mg	Sample	1	100.00	
21	CCB	30.0mg	Sample	1	200.00	
22	B1G0068-09	30.0mg	Sample	1	200.00	
23	B1G0068-10	30.0mg	Sample	1	200.00	
24	B1G0068-11	30.0mg	Sample	1	200.00	
25	B1G0068-12	30.0mg	Sample	1	200.00	
26	B1G0068-13	30.0mg	Sample	1	200.00	
27	CCV	30.0mg	Sample	1	100.00	
28	CCB	3.0mg	Sample	1	200.00	

****
** RESULTS - 070701 **
****

Pos/Vial: 1 Name: ICV Analyzed: 07Jul2001 09:04
Run ID: 1 Meth: 30 Mass (mg): 100.00

Untitled

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds916	07Jul2001	09:20	104.50	-	-	-	8978	2.750	2.63

****

Pos/Vial: 2 Name: ICB Analyzed: 07Jul2001 09:20
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds917	07Jul2001	09:36	214.80	-	-	-	37	-0.040	-0.02

186

****

Pos/Vial: 3 Name: BS Analyzed: 07Jul2001 09:36
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds918	07Jul2001	09:59	242.50	-	-	-	11614	3.570	1.47

14722

****

Pos/Vial: 4 Name: BSD Analyzed: 07Jul2001 09:59
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds919	07Jul2001	10:15	210.70	-	-	-	9872	3.030	1.44

14381

****

Pos/Vial: 5 Name: B1G0054-01 Analyzed: 07Jul2001 10:15
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds920	07Jul2001	10:42	281.60	-	-	-	21111	6.530	2.32

23189

****

Pos/Vial: 6 Name: B1G0068-01 Analyzed: 07Jul2001 10:42
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds921	07Jul2001	11:01	170.60	-	-	-	3088	0.910	0.53

5334

****

Pos/Vial: 7 Name: B1G0068-02 Analyzed: 07Jul2001 11:01
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds922	07Jul2001	11:17	250.90	-	-	-	3755	1.120	0.45

4464

****

Untitled

Pos/Vial: 8 Name: B1G0068-03 Analyzed: 07Jul2001 11:17
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds923	07Jul2001	11:33	292.70	-	-	-	3775	1.120	0.38

3826

****

Pos/Vial: 9 Name: B1G0068-04 Analyzed: 07Jul2001 11:33
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds924	07Jul2001	11:50	204.50	-	-	-	579	0.130	0.06

636

****

Sample weight = 0.1480
Sucrose Spike = 0.1046

Pos/Vial: 10 Name: B1G0068-04MS Analyzed: 07Jul2001 11:51
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds925	07Jul2001	12:08	~~252.60~~ 148.0	-	-	-	9305	2.850	1.13

~~11283~~ 19237 DM 7/11

****

Pos/Vial: 11 Name: CCV Analyzed: 07Jul2001 12:08
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds926	07Jul2001	12:24	101.30	-	-	-	8290	2.530	2.50

****

Pos/Vial: 12 Name: CCB Analyzed: 07Jul2001 12:24
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds927	07Jul2001	12:40	233.50	-	-	-	21	-0.050	-0.02

****

Sample weight = 0.1152
Sucrose Spike = 0.0999

Pos/Vial: 13 Name: B1G0068-04MSD Analyzed: 07Jul2001 12:40
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds928	07Jul2001	13:03	~~215.10~~ 115.0	-	-	-	8686	2.660	1.23

~~12366~~ 23090 DM 7/11

****

Pos/Vial: 14 Name: B1G0068-05 Analyzed: 07Jul2001 13:04
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds929	07Jul2001	13:20	186.10	-	-	-	27914	8.650	4.65

46480

****

Pos/Vial: 15 Name: B1G0068-06 Analyzed: 07Jul2001 13:20
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds930	07Jul2001	13:36	231.30	-	-	-	2888	0.850	0.37

3675

****

Pos/Vial: 16 Name: B1G0068-07 Analyzed: 07Jul2001 13:36
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds931	07Jul2001	14:03	246.20	-	-	-	8979	2.750	1.12

11170

****

Pos/Vial: 17 Name: B1G0068-08 Analyzed: 07Jul2001 14:03
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds932	07Jul2001	14:19	240.10	-	-	-	5803	1.760	0.73

7330

****

Pos/Vial: 18 Name: B1G0068-08MS Analyzed: 07Jul2001 14:19
Run ID: 1 Meth: 30 Mass (mg): 200.00

Sample Weight = 0
Sucrose = 0.

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds933	07Jul2001	14:37	~~211.70~~ 111.6	-	-	-	9838	3.020	1.42

~~11265~~ 27061 DA 7/11/

****

Sample weight = 0.1
Sucrose Spike = 0.09

Pos/Vial: 19 Name: B1G0068-08MSD Analyzed: 07Jul2001 14:37
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds934	07Jul2001	14:53	~~262.60~~ 165	-	-	-	9575	2.930	1.12

~~11158~~ 17758 DA 7/11/

****

Pos/Vial: 20 Name: CCV Analyzed: 07Jul2001 14:53
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds935	07Jul2001	15:09	105.40	-	-	-	8609	2.630	2.50

****

Pos/Vial: 21 Name: CCB Analyzed: 07Jul2001 15:09
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Input Mass	TC Area	TC Mass	TC Conc	TOC Area	TOC Mass	TOC Conc

Untitled

Rep	Datafile	Date	Time	(mg)	(cts)	(mgC)	(% Carbon)	(cts)	(mgC)	(% Carbon)
1	slds936	07Jul2001	15:25	256.80	-	-	-	28	-0.040	-0.02

****

Pos/Vial: 22 Name: B1G0068-09 Analyzed: 07Jul2001 15:25
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds937	07Jul2001	15:41	285.70	-	-	-	2165	0.620	0.22

2170

****

Pos/Vial: 23 Name: B1G0068-10 Analyzed: 07Jul2001 15:41
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds938	07Jul2001	15:57	195.10	-	-	-	4384	1.310	0.67

6715

****

Pos/Vial: 24 Name: B1G0068-11 Analyzed: 07Jul2001 15:57
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds939	07Jul2001	16:13	207.00	-	-	-	644	0.150	0.07

725

****

Pos/Vial: 25 Name: B1G0068-12 Analyzed: 07Jul2001 16:13
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds940	07Jul2001	16:29	263.50	-	-	-	1097	0.290	0.11

1101

****

Pos/Vial: 26 Name: B1G0068-13 Analyzed: 07Jul2001 16:29
Run ID: 1 Meth: 30 Mass (mg): 200.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds941	07Jul2001	16:45	191.10	-	-	-	10506	3.220	1.69

16850

****

Pos/Vial: 27 Name: CCV Analyzed: 07Jul2001 16:45
Run ID: 1 Meth: 30 Mass (mg): 100.00

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds942	07Jul2001	17:01	104.30	-	-	-	8638	2.640	2.53

****

Pos/Vial: 28 Name: CCB Analyzed: 07Jul2001 17:02
Run ID: 1 Meth: 3 Mass (mg): 200.00

Untitled

SAMPLES

Rep	Datafile	Date	Time	Input Mass (mg)	TC Area (cts)	TC Mass (mgC)	TC Conc (% Carbon)	TOC Area (cts)	TOC Mass (mgC)	TOC Conc (% Carbon)
1	slds943	07Jul2001	17:15	175.70	-	-	-	11	-0.050	-0.03

PREPARATION BENCH SHEET

1G09030

North Creek Analytical - Bothell

Printed: 7/9/01 10:59:27AM

Matrix: Soil — **Prepared using: Wet Chem - General Preparation** — (No Surrogate)

Lab Number	Analysis	Prepared	Initial (g)	Final (ml)	Spike ID	Source ID	ul Spike	ul Surrogate	Initials Samp	Initials To Vol	Initials Spk	Extraction Comments
1G09030-BLK1	QC	07/07/01 00:00	0.2148	0.2148								
1G09030-BS1	QC	07/07/01 00:00	0.2425	0.2425	1060088		242.5					
1G09030-BSD1	QC	07/07/01 00:00	0.2107	0.2107	1060088		210.7					
1G09030-MS1	QC	07/07/01 00:00	0.148	0.148	1060088	B1G0068-04	100					
1G09030-MS2	QC	07/07/01 00:00	0.1116	0.1116	1060088	B1G0068-08	100					
1G09030-MSD	QC	07/07/01 00:00	0.1152	0.1152	1060088	B1G0068-04	100					
1G09030-MSD	QC	07/07/01 00:00	0.165	0.165	1060088	B1G0068-08	100					
B1G0054-01	TOC (1) EPA 9060	07/07/01 00:00	0.2816	0.2816								
B1G0068-01	TOC (1) EPA 9060	07/07/01 00:00	0.1706	0.1706								
B1G0068-02	TOC (1) EPA 9060	07/07/01 00:00	0.2509	0.2509								
B1G0068-03	TOC (1) EPA 9060	07/07/01 00:00	0.2927	0.2927								
B1G0068-04	TOC (1) EPA 9060	07/07/01 00:00	0.2045	0.2045								
B1G0068-05	TOC (1) EPA 9060	07/07/01 00:00	0.1861	0.1861								
B1G0068-06	TOC (1) EPA 9060	07/07/01 00:00	0.2313	0.2313								
B1G0068-07	TOC (1) EPA 9060	07/07/01 00:00	0.2462	0.2462								
B1G0068-08	TOC (1) EPA 9060	07/07/01 00:00	0.2401	0.2401								
B1G0068-09	TOC (1) EPA 9060	07/07/01 00:00	0.2857	0.2857								
B1G0068-10	TOC (1) EPA 9060	07/07/01 00:00	0.1951	0.1951								
B1G0068-11	TOC (1) EPA 9060	07/07/01 00:00	0.207	0.207								
B1G0068-12	TOC (1) EPA 9060	07/07/01 00:00	0.2635	0.2635								
B1G0068-13	TOC (1) EPA 9060	07/07/01 00:00	0.1911	0.1911								

Batch Comments

Spiking Witnessed By: [signature] Date: 7/9/01

Preparation Reviewed By: _____ Date: _____

Extracts Received By: DA Date: 7/13

617

Analytical Standard Record

North Creek Analytical - Bothell

1030060

Description:	Soil LCS	Expires:	03/14/02
Standard Type:	Analyte Spike	Prepared:	03/14/01
Solvent:	NA	Prepared By:	Lynne Cox
Final Volume (mls):	1	Department:	Wet Chem
Vials:	1	Last Edit:	03/14/01 09:58 by LMC

TOC/NH3 as N Lot 1106 Cat #542; Range:10200-15300 mg/kg

Analyte	CAS Number	Concentration (ppm)
Total Organic Carbon	NA	12700
Total Organic Carbon - Average	NA	12700
Total Organic Carbon - High	NA	12700
Total Organic Carbon - Low	NA	12700

JKB 03/7/10

Reviewed By Date

Analytical Standard Record

North Creek Analytical - Bothell

1060088

Description:	2.7% Sucrose	Expires:	06/19/02
Standard Type:	Analyte Spike	Prepared:	06/19/01
Solvent:	Solvent Lot #	Prepared By:	Shawnna Jackson
Final Volume (mls):	100	Department:	Wet Chem
Vials:	1	Last Edit:	06/19/01 08:34 by SJ

6.4125g of sucrose (Fisher lot #986609) diluted to 100 mLs

Analyte	CAS Number	Concentration (ppm)
Total Organic Carbon	NA	27000

Reviewed By

Date 6/7/01

Non-Conformances?
Circle Y or N
(If Y, see other side)

NCA SAMPLE RECEIPT CHECKLIST

Received By:
Date: 7/2/01
Time: 11:30
Initials: MG

Checked-in By:
Date: 7-3-01
Time: 19:00
Initials: MG

Work Order No. B
Client: Roy F. Weston
Project: Upper Columbia / Lake Roosevelt ESI

Container Type:
X Cooler
___ Box
___ Other

COC Seals:
X Ship. Container
___ On Bottles
___ None

Packing Material:
___ Bubble Bags
___ Foam Packs
___ Styrofoam
X Other Vermiculite

Refrigerant:
___ Gel Ice Pack
X Loose Ice → Water
___ Other ___

Received Via:
X Fed Ex
___ UPS
___ DHL
___ Client
___ Courier ___
___ Other ___

Cooler Temperature: 16.4 °C
CA#: 1

Sample Containers:		ID	CA#
Intact?	Y or N		
Correct Type?	Y or N		
Adequately Labeled? (ID, date and time)	Y or N		
#Containers match COC?	Y or N		
IDs match COC?	Y or N		
Properly Preserved?	Y or N		
Adequate Volume? (for tests requested)	Y or N		

			ID	CA#
Soil VOAs:	Headspace?	Y or N		
Water VOAs:	Headspace?	Y or N		
	Preserved?	Y or N		

"DP"

PROJECT MANAGEMENT

Is the Chain of Custody complete? ~~Y~~ or N

Is client information in ELEMENT accurate?
Address? ~~Y~~ or N
Phone #? ~~Y~~ or N
PM? ~~Y~~ or N

Is project information in ELEMENT accurate?
Proj. Name? ~~Y~~ or N
Proj. #? ~~Y~~ or N
Contact? ~~Y~~ or N
Bid/Prices? ~~Y~~ or N
Invoice info? ~~Y~~ or N
Tax info? ~~Y~~ or N
Analyses? ~~Y~~ or N

Has client been contacted regarding non-conformances? Y or N If Y, ___/___
Date Time
PM Initials: MW Date: 7/2/01 Time: ___

Non-Conformances?
Circle Y or N
(If Y, see other side)

NCA Sample Receiving

Corrective Action Form

Date: 7-3-07
Time: 1900
Initials: [illegible]

Work Order No. B
Client:
Project:

Describe Corrective Action:

CA #
____ Salvaged Sample
____ Verified ID w/client
____ Preserved Sample w/ _____

CA #
____ Replaced Bottle
____ Notified PM

CA #
____ Replaced Lid
____ Notified Client

Cooler Temperature: 16.4 °C CA#: 1 Stamp COC and select either comment below

☐ **Comment:** Samples were received outside the recommended temperature range (4°C±2°C). Samples were received within 4 hours of collection and may not have had sufficient time to equilibrate with coolant. A temperature range of 2 to 15°C is considered acceptable. The samples will be analyzed as scheduled unless otherwise directed by the client.

☒ **Comment:** Samples were received outside the recommended temperature range (4°C±2°C). Samples will be analyzed as scheduled unless otherwise directed by the client.

Comments or Other Actions Taken:

~~CA #~~

Reviewed and approved by: _____ PM Signature _____ Date

WORK ORDER

Printed: 7/23/01 7:49:39P

B1G0068

North Creek Analytical - Bothell

Client: Roy F. Weston, Inc.	**Project Manager:** Scott A. Woerman
Project: Upper Columbia/Lake Roosevelt ESI	**Project Number:** 12644.001.002.0101.00

Report To:
Roy F. Weston, Inc.
R. Paul Swift, Ph.D.
190 Queen Anne Avenue North, Suite 200
Seattle, WA 98109-4926
Phone: 206/521-7600
Fax: 206/521-7601

Invoice To:
Roy F. Weston, Inc.
Dawn Madore
190 Queen Anne Avenue North, Suite 200
Seattle, WA 98109-4926
Phone :206/521-7600
Fax: 206/521-7601

Date Due:	07/17/01 18:00 (10 day TAT)		
Received By:	Sandra Yakamavich	Date Received:	07/02/01 09:30
Logged In By:	Sandra Yakamavich	Date Logged In:	07/03/01 19:31

Samples Received at:	16.4°C	also need to send deliverable package , process in SDGs.
All containers intact:	Yes	
Sample labels/COC agree:	Yes	
Samples Preserved Properly:	No	
Custody Seals Present:	Yes	

Analysis	Due	TAT	Expires	Comments
B1G0068-01 01264050 [Soil] Sampled 06/25/01 09:45 Pacific				
Data Pkg-Wet Chem	07/17/01 12:00	10	12/22/01 09:45	
Dry Weight	07/17/01 12:00	10	07/23/01 09:45	
TOC (1) EPA 9060	07/17/01 12:00	10	07/23/01 09:45	site-specific QC; data package
B1G0068-02 01264051 [Soil] Sampled 06/25/01 13:15 Pacific				
Data Pkg-Wet Chem	07/17/01 12:00	10	12/22/01 13:15	
Dry Weight	07/17/01 12:00	10	07/23/01 13:15	
TOC (1) EPA 9060	07/17/01 12:00	10	07/23/01 13:15	site-specific QC; data package
B1G0068-03 01264059 [Soil] Sampled 06/25/01 12:15 Pacific				
Data Pkg-Wet Chem	07/17/01 12:00	10	12/22/01 12:15	
Dry Weight	07/17/01 12:00	10	07/23/01 12:15	
TOC (1) EPA 9060	07/17/01 12:00	10	07/23/01 12:15	site-specific QC; data package
B1G0068-04 01264060 [Soil] Sampled 06/26/01 12:30 Pacific				
Data Pkg-Wet Chem	07/17/01 12:00	10	12/23/01 12:30	
Dry Weight	07/17/01 12:00	10	07/24/01 12:30	
TOC (1) EPA 9060	07/17/01 12:00	10	07/24/01 12:30	site-specific QC; data package
B1G0068-05 01264062 [Soil] Sampled 06/26/01 16:15 Pacific				
Data Pkg-Wet Chem	07/17/01 12:00	10	12/23/01 16:15	
Dry Weight	07/17/01 12:00	10	07/24/01 16:15	
TOC (1) EPA 9060	07/17/01 12:00	10	07/24/01 16:15	site-specific QC; data package

WORK ORDER

Printed: 7/23/01 7:49:39P

B1G0068

North Creek Analytical - Bothell

Client: Roy F. Weston, Inc.
Project: Upper Columbia/Lake Roosevelt ESI

Project Manager: Scott A. Woerman
Project Number: 12644.001.002.0101.00

Analysis	Due	TAT	Expires	Comments
B1G0068-06 01264058 [Soil] Sampled 06/26/01 10:00 Pacific				
Data Pkg-Wet Chem	07/17/01 12:00	10	12/23/01 10:00	
Dry Weight	07/17/01 12:00	10	07/24/01 10:00	
TOC (1) EPA 9060	07/17/01 12:00	10	07/24/01 10:00	site-specific QC; data package
B1G0068-07 01264068 [Soil] Sampled 06/27/01 09:00 Pacific				
Data Pkg-Wet Chem	07/17/01 12:00	10	12/24/01 09:00	
Dry Weight	07/17/01 12:00	10	07/25/01 09:00	
TOC (1) EPA 9060	07/17/01 12:00	10	07/25/01 09:00	site-specific QC; data package
B1G0068-08 01264056 [Soil] Sampled 06/27/01 14:30 Pacific				**DO MS/MSD**
Data Pkg-Wet Chem	07/17/01 12:00	10	12/24/01 14:30	
Dry Weight	07/17/01 12:00	10	07/25/01 14:30	
TOC (1) EPA 9060	07/17/01 12:00	10	07/25/01 14:30	site-specific QC; data package
B1G0068-09 01264072 [Soil] Sampled 06/27/01 15:15 Pacific				
Data Pkg-Wet Chem	07/17/01 12:00	10	12/24/01 15:15	
Dry Weight	07/17/01 12:00	10	07/25/01 15:15	
TOC (1) EPA 9060	07/17/01 12:00	10	07/25/01 15:15	site-specific QC; data package
B1G0068-10 01264065 [Soil] Sampled 06/27/01 16:30 Pacific				
Data Pkg-Wet Chem	07/17/01 12:00	10	12/24/01 16:30	
Dry Weight	07/17/01 12:00	10	07/25/01 16:30	
TOC (1) EPA 9060	07/17/01 12:00	10	07/25/01 16:30	site-specific QC; data package
B1G0068-11 01264070 [Soil] Sampled 06/28/01 09:30 Pacific				
Data Pkg-Wet Chem	07/17/01 12:00	10	12/25/01 09:30	
Dry Weight	07/17/01 12:00	10	07/26/01 09:30	
TOC (1) EPA 9060	07/17/01 12:00	10	07/26/01 09:30	site-specific QC; data package
B1G0068-12 01264073 [Soil] Sampled 06/28/01 10:45 Pacific				
Data Pkg-Wet Chem	07/17/01 12:00	10	12/25/01 10:45	
Dry Weight	07/17/01 12:00	10	07/26/01 10:45	
TOC (1) EPA 9060	07/17/01 12:00	10	07/26/01 10:45	site-specific QC; data package
B1G0068-13 01264075 [Soil] Sampled 06/28/01 13:00 Pacific				
Data Pkg-Wet Chem	07/17/01 12:00	10	12/25/01 13:00	
Dry Weight	07/17/01 12:00	10	07/26/01 13:00	
TOC (1) EPA 9060	07/17/01 12:00	10	07/26/01 13:00	site-specific QC; data package

Reviewed By _____ Date _____

nca™
North Creek Analytical, Inc.
Environmental Laboratory Network
www.ncalabs.com

11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244 (425) 420-9200 FAX 420-9210
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FAX 906-9210
20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT

Work Order #: B1G0068

CLIENT: ROY F. WESTON

REPORT TO: PAUL SWIFT

ADDRESS: 190 QUEEN ANNE AVE N, STE 200
SEATTLE, WA 98109

PHONE: 206. 521. 7600 FAX: 206 521 7601

INVOICE TO: SAME AS CLIENT

P.O. NUMBER:

PROJECT NAME: COLUMBIA RIVER / LAKE ROOSEVELT

PROJECT NUMBER: 12644.001.002.0101.00

SAMPLED BY: KEVIN BROOM

TURNAROUND REQUEST in Business Days*

Organic & Inorganic Analyses: 10 (STD.) | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: 5 (STD.) | 4 | 3 | 2 | 1 | <1

OTHER — Please Specify

*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES: TOC - EPA Sw 9060A

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TOC - EPA Sw 9060A	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. 01264050	6/25/01 0945	X	S	1	—	01
2. 01264051	6/25/01 1315	X	S	1	—	02
3. 01264059	6/25/01 1215	X	S	1	—	03
4. 01264060	6/26/01 1230	X	S	1	—	04
5. 01264062	6/26/01 1615	X	S	1	—	05
6. 01264058	6/26/01 1000	X	S	1	—	06
7. 01264068	6/27/01 0900	X	S	1	—	07
8. 01264056	6/27/01 1430	X	S	1	MS/MSD	08
9. 01264064 72	6/27/01 1515	X	S	1	—	09
10. 01264065	6/27/01 1630	X	S	1	—	10
11. 01264070	6/28/01 0930	X	S	1	—	11
12. 01264073	6/28/01 1045	X	S	1	—	12
13. 01264075	6/28/01 1300	X	S	1	—	13
14.						
15.						

RELINQUISHED BY:	DATE: 6/28/01	RECEIVED BY:	DATE: 9:30
PRINT NAME: KEVIN BROOM FIRM: WESTON	TIME: 2315	PRINT NAME: FIRM: NCA	TIME: 7/2/01
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS: AIR BILL # 8245 2414 7229

Samples were not @2-6C Upon Receipt

TEMP: 4°

024

APPENDIX F

ANALYTICAL RESULTS

Upper Columbia River/Lake Roosevelt ESI - Full Statistical Summary for Sediment (with grain size)

Constituent	Number of Samples Analyzed	Number of Detections	Detection Frequency (%)	Minimum Detection Limit	Maximum Detection Limit	Minimum Detected Value	Maximum Detected Value	Sample Number of Maximum Detected Value	Arithmetic Mean	Median Value	Upper 95% Confidence Limit
Semi-Volatile Organic Compounds (ug/kg)											
1,1-Biphenyl	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
2,4,5-trichlorophenol	3	0	0.0	1000	1100	n/a	n/a		533.33	550	582
2,4,6-trichlorophenol	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
2,4-dichlorophenol	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
2,4-dimethylphenol	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
2,4-dinitrophenol	3	0	0.0	1000	1100	n/a	n/a		533.33	550	582
2,4-dinitrotoluene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
2,6-dinitrotoluene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
2-chloronaphthalene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
2-chlorophenol	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
2-methyl-4,6-dinitrophenol	3	0	0.0	1000	1100	n/a	n/a		533.33	550	582
2-methylnaphthalene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
2-methylphenol	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
2-nitroaniline	3	0	0.0	1000	1100	n/a	n/a		533.33	550	582
2-nitrophenol	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
3,3'-dichlorobenzidine	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
3-nitroaniline	3	0	0.0	1000	1100	n/a	n/a		533.33	550	582
4-bromophenyl Phenyl Ether	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
4-chloro-3-methylphenol	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
4-chloroaniline	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
4-chlorophenyl Phenyl Ether	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
4-Methylphenol	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
4-nitroaniline	3	0	0.0	1000	1100	n/a	n/a		533.33	550	582
4-nitrophenol	3	0	0.0	1000	1100	n/a	n/a		533.33	550	582
Acenaphthene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Acenaphthylene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Acetophenone	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Anthracene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Atrazine	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Benzaldehyde	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Benzo(a)anthracene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Benzo(b)fluoranthene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Benzo(ghi)perylene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Benzo(k)fluoranthene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Benzo-a-pyrene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55

n/a - Criteria not available
Half undetect weighting used for statistical calculations.

Upper Columbia River/Lake Roosevelt ESI - Full Statistical Summary for Sediment (with grain size)

Constituent	Number of Samples Analyzed	Number of Detections	Detection Frequency (%)	Minimum Detection Limit	Maximum Detection Limit	Minimum Detected Value	Maximum Detected Value	Sample Number of Maximum Detected Value	Arithmetic Mean	Median Value	Upper 95% Confidence Limit
Semi-Volatile Organic Compounds (ug/kg)											
Benzyl Butyl Phthalate	**3**	**2**	**66.7**	**450**	**450**	**130**	**220**	**BK-133-SD**	**191.67**	**220**	**281.8**
Bis(2-chloroethoxy)methane	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Bis(2-chloroethyl) Ether	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Bis(2-chloroisopropyl) Ether	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Bis(2-ethylhexyl) Phthalate	**3**	**1**	**33.3**	**400**	**450**	**56**	**56**	**BK-134-SD**	**160.33**	**200**	**314.11**
Caprolactam	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Carbazole	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Chrysene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Di-n-butylphthalate	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Di-n-octylphthalate	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Dibenzo(a,h)anthracene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Dibenzofuran	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Diethyl Phthalate	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Dimethyl Phthalate	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Fluoranthene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Fluorene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Hexachlorobenzene (hcb)	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Hexachlorobutadiene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Hexachlorocyclopentadiene (H	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Hexachloroethane	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Indeno (1,2,3-cd) Pyrene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Isophorone	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
N-nitrosodi-n-propylamine	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
N-nitrosodiphenylamine	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Naphthalene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Nitrobenzene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Pentachlorophenol	3	0	0.0	1000	1100	n/a	n/a		533.33	550	582
Phenanthrene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Phenol	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Pyrene	3	0	0.0	400	450	n/a	n/a		213.33	215	234.55
Pesticides/PCBs (ug/kg)											
4,4'-DDD (p,p'-DDD)	100	0	0.0	3.3	33	n/a	n/a		2.39	2.05	2.66
4,4'-DDE (p,p'-DDE)	**100**	**2**	**2.0**	**3.3**	**33**	**1.7**	**3.1**	**TR-060-SD**	**2.4**	**2.05**	**2.67**
4,4'-DDT (p,p'-DDT)	**100**	**4**	**4.0**	**3.3**	**33**	**3.5**	**10**	**TR-086-SD**	**2.53**	**2.05**	**2.84**

n/a - Criteria not available
Half undetect weighting used for statistical calculations.

Upper Columbia River/Lake Roosevelt ESI - Full Statistical Summary for Sediment (with grain size)

Constituent	Number of Samples Analyzed	Number of Detections	Detection Frequency (%)	Minimum Detection Limit	Maximum Detection Limit	Minimum Detected Value	Maximum Detected Value	Sample Number of Maximum Detected Value	Arithmetic Mean	Median Value	Upper 95% Confidence Limit
Pesticides/PCBs (ug/kg)											
Aldrin	100	0	0.0	1.7	17	n/a	n/a		1.23	1.05	1.37
Alpha-BHC	100	0	0.0	1.7	17	n/a	n/a		1.23	1.05	1.37
Alpha-chlordane	**100**	**2**	**2.0**	**1.7**	**17**	**0.73**	**0.89**	**TR-118-SD**	**1.23**	**1.05**	**1.37**
Beta-BHC	**100**	**1**	**1.0**	**1.7**	**17**	**5.9**	**5.9**	**TR-059-SD**	**1.26**	**1.05**	**1.41**
Delta-BHC	100	0	0.0	1.7	17	n/a	n/a		1.23	1.05	1.37
Dieldrin	100	0	0.0	3.3	33	n/a	n/a		2.39	2.05	2.66
Endosulfan I (alpha)	100	0	0.0	1.7	17	n/a	n/a		1.23	1.05	1.37
Endosulfan II (beta)	100	0	0.0	3.3	33	n/a	n/a		2.39	2.05	2.66
Endosulfan Sulfate	100	0	0.0	3.3	33	n/a	n/a		2.39	2.05	2.66
Endrin	**100**	**1**	**1.0**	**3.3**	**33**	**6.3**	**6.3**	**TR-043-SD**	**2.43**	**2.05**	**2.71**
Endrin Aldehyde	**100**	**2**	**2.0**	**3.3**	**33**	**0.64**	**1.5**	**TR-060-SD**	**2.38**	**2.05**	**2.65**
Endrin Ketone	100	0	0.0	3.3	33	n/a	n/a		2.39	2.05	2.66
Gamma-BHC (Lindane)	100	0	0.0	1.7	17	n/a	n/a		1.23	1.05	1.37
Gamma-chlordane	100	0	0.0	1.7	17	n/a	n/a		1.23	1.05	1.37
Heptachlor	100	0	0.0	1.7	17	n/a	n/a		1.23	1.05	1.37
Heptachlor Epoxide	100	0	0.0	1.7	17	n/a	n/a		1.23	1.05	1.37
Methoxychlor	**100**	**4**	**4.0**	**17**	**170**	**27**	**52**	**CR-029-SD**	**13.27**	**10.5**	**14.9**
PCB-1016 (Aroclor 1016)	100	0	0.0	33	330	n/a	n/a		23.91	20.5	26.58
PCB-1221 (Aroclor 1221)	100	0	0.0	67	670	n/a	n/a		48.59	41.5	54.03
PCB-1232 (Aroclor 1232)	100	0	0.0	33	330	n/a	n/a		23.91	20.5	26.58
PCB-1242 (Aroclor 1242)	100	0	0.0	33	330	n/a	n/a		23.91	20.5	26.58
PCB-1248 (Aroclor 1248)	100	0	0.0	33	330	n/a	n/a		23.91	20.5	26.58
PCB-1254 (Aroclor 1254)	**100**	**2**	**2.0**	**33**	**330**	**11**	**38**	**CR-013-SD**	**23.89**	**20.5**	**26.57**
PCB-1260 (Aroclor 1260)	**100**	**2**	**2.0**	**33**	**330**	**5.9**	**17**	**CR-013-SD**	**23.62**	**20.5**	**26.31**
Toxaphene	100	0	0.0	170	1700	n/a	n/a		123.25	105	137.04
Inorganics (Total) (mg/kg)											
Aluminum	**179**	**179**	**100.0**	**n/a**	**n/a**	**924**	**29300**	**BK-134-SD**	**8520.97**	**7960**	**9103.92**
Antimony	**179**	**96**	**53.6**	**0.6**	**34.9**	**0.63**	**2450**	**TR-145-SD**	**21.76**	**1.2**	**44.97**
Arsenic	**179**	**145**	**81.0**	**0.47**	**9.6**	**0.89**	**6180**	**TR-145-SD**	**62.72**	**4.9**	**125.48**
Barium	**179**	**179**	**100.0**	**n/a**	**n/a**	**9.7**	**2440**	**CR-052-SD**	**243.9**	**130**	**288.71**
Beryllium	**179**	**159**	**88.8**	**0.04**	**0.8**	**0.07**	**1**	**CR-052-SD**	**0.39**	**0.35**	**0.41**
Cadmium	**179**	**116**	**64.8**	**0.05**	**0.29**	**0.08**	**210**	**TR-145-SD**	**4.03**	**0.35**	**6.44**
Calcium	**179**	**179**	**100.0**	**n/a**	**n/a**	**910**	**336000**	**TR-013-SD**	**33033.88**	**12400**	**39443.75**
Chromium	**179**	**178**	**99.4**	**3**	**3**	**1.5**	**165**	**CR-052-SD**	**21.83**	**16.7**	**24.6**

n/a - Criteria not available
Half undetect weighting used for statistical calculations.

Upper Columbia River/Lake Roosevelt ESI - Full Statistical Summary for Sediment (with grain size)

Constituent	Number of Samples Analyzed	Number of Detections	Detection Frequency (%)	Minimum Detection Limit	Maximum Detection Limit	Minimum Detected Value	Maximum Detected Value	Sample Number of Maximum Detected Value	Arithmetic Mean	Median Value	Upper 95% Confidence Limit
Inorganics (Total) (mg/kg)											
Cobalt	179	176	98.3	0.61	6.5	0.44	85.7	CR-052-SD	7.87	5.6	9.16
Copper	179	179	100.0	n/a	n/a	1.7	3300	CR-052-SD	151.5	19	210.25
Iron	179	179	100.0	n/a	n/a	1030	245000	CR-052-SD	25229.66	15500	29974.96
Lead	179	177	98.9	1.5	1.8	1.2	18300	TR-145-SD	295.41	20.3	507.18
Magnesium	179	179	100.0	n/a	n/a	569	26600	CR-046-SD	5634.1	4850	6127.73
Manganese	179	179	100.0	n/a	n/a	12.2	4360	CR-052-SD	598.99	359	694.3
Nickel	179	178	99.4	2.5	2.5	1.2	66.7	BK-150-SD	16.14	15.3	17.23
Potassium	179	178	99.4	398	398	181	6120	TR-129-SD	1578.59	1380	1700.48
Selenium	179	68	38.0	0.42	2	0.48	28.4	TR-022-SD	1.18	0.6	1.47
Silver	179	125	69.8	0.16	3.2	0.18	37.4	TR-145-SD	1.41	0.49	1.86
Sodium	179	151	84.4	27.4	1010	47.6	2630	CR-052-SD	337.93	258	382.19
Thallium	179	9	5.0	0.65	4.4	0.61	4.6	CR-044-SD	0.66	0.5	0.72
Total Mercury	178	50	28.1	0.05	0.27	0.06	1.7	CR-012-SD	0.13	0.04	0.17
Vanadium	179	179	100.0	n/a	n/a	2.7	51.9	BK-142-SD	23.73	23.8	25.03
Zinc	179	179	100.0	n/a	n/a	7	24900	CR-038-SD	1545.24	90.4	2099.88
Conventional Parameters											
Total Organic Carbon (mg/kg)	97	86	88.7	1000	1000	1210	328000	TR-086-SD	20212.89	9430	28023.52
Grain Size (%)											
Percent Clay	177	177	100.0	n/a	n/a	0	60	CR-014-SD	8.74	0	10.5
Percent Gravel	177	177	100.0	n/a	n/a	0	40	TR-084-SD	2.71	0	3.37
Percent Sand	177	177	100.0	n/a	n/a	0	100	CR-049-SD	58.22	60	62.16
Percent Silt	177	177	100.0	n/a	n/a	0	100	TR-057-SD	30.37	30	33.45

n/a - Criteria not available
Half undetect weighting used for statistical calculations.

Upper Columbia River/Lake Roosevelt ESI - Full Statistical Summary for Surface Water

Constituent	Number of Samples Analyzed	Number of Detections	Detection Frequency (%)	Minimum Detection Limit	Maximum Detection Limit	Minimum Detected Value	Maximum Detected Value	Sample Number of Maximum Detected Value	Arithmetic Mean	Median Value	Upper 95% Confidence Limit
Volatile Organic Compounds (ug/l)											
1,1,1-Trichloroethane	2	0	0.0	10	10	n/a	n/a		5	5	5
1,1,2,2-Tetrachloroethane	2	0	0.0	10	10	n/a	n/a		5	5	5
1,1,2-Trichloro-1,2,2-triflu	2	0	0.0	10	10	n/a	n/a		5	5	5
1,1,2-Trichloroethane	2	0	0.0	10	10	n/a	n/a		5	5	5
1,1-Dichloroethane	2	0	0.0	10	10	n/a	n/a		5	5	5
1,1-Dichloroethene	2	0	0.0	10	10	n/a	n/a		5	5	5
1,2,4-Trichlorobenzene	2	0	0.0	10	10	n/a	n/a		5	5	5
1,2-Dibromo-3-chloropropane	2	0	0.0	10	10	n/a	n/a		5	5	5
1,2-Dibromoethane [EDB]	2	0	0.0	10	10	n/a	n/a		5	5	5
1,2-Dichlorobenzene	2	0	0.0	10	10	n/a	n/a		5	5	5
1,2-Dichloroethane	2	0	0.0	10	10	n/a	n/a		5	5	5
1,2-Dichloropropane	2	0	0.0	10	10	n/a	n/a		5	5	5
1,3-Dichlorobenzene	2	0	0.0	10	10	n/a	n/a		5	5	5
1,4-Dichlorobenzene	2	0	0.0	10	10	n/a	n/a		5	5	5
Acetone	2	0	0.0	10	100	n/a	n/a		27.5	27.5	169.57
Benzene	2	0	0.0	10	10	n/a	n/a		5	5	5
Bromodichloromethane	2	0	0.0	10	10	n/a	n/a		5	5	5
Bromoform	2	0	0.0	10	10	n/a	n/a		5	5	5
Bromomethane	2	0	0.0	10	10	n/a	n/a		5	5	5
Carbon Disulfide	2	0	0.0	10	10	n/a	n/a		5	5	5
Carbon Tetrachloride	2	0	0.0	10	10	n/a	n/a		5	5	5
Chlorobenzene	2	0	0.0	10	10	n/a	n/a		5	5	5
Chloroethane	2	0	0.0	10	10	n/a	n/a		5	5	5
Chloroform	**2**	**1**	**50.0**	**10**	**10**	**26**	**26**	**CR-002-SW**	**15.5**	**15.5**	**81.8**
Chloromethane	2	0	0.0	10	10	n/a	n/a		5	5	5
cis-1,2-Dichloroethene	2	0	0.0	10	10	n/a	n/a		5	5	5
cis-1,3-Dichloropropene	2	0	0.0	10	10	n/a	n/a		5	5	5
Cyclohexane	2	0	0.0	10	10	n/a	n/a		5	5	5
Dibromochloromethane	2	0	0.0	10	10	n/a	n/a		5	5	5
Dichlorodifluoromethane	2	0	0.0	10	10	n/a	n/a		5	5	5
Ethylbenzene	2	0	0.0	10	10	n/a	n/a		5	5	5
Isopropylbenzene	2	0	0.0	10	10	n/a	n/a		5	5	5
Methyl Acetate	2	0	0.0	10	10	n/a	n/a		5	5	5
Methyl Butyl Ketone	2	0	0.0	10	10	n/a	n/a		5	5	5
Methyl ethyl ketone (MEK)	2	0	0.0	10	10	n/a	n/a		5	5	5

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Upper Columbia River/Lake Roosevelt ESI - Full Statistical Summary for Surface Water

Constituent	Number of Samples Analyzed	Number of Detections	Detection Frequency (%)	Minimum Detection Limit	Maximum Detection Limit	Minimum Detected Value	Maximum Detected Value	Sample Number of Maximum Detected Value	Arithmetic Mean	Median Value	Upper 95% Confidence Limit
Volatile Organic Compounds (ug/l)											
Methyl Isobutyl Ketone	2	0	0.0	10	10	n/a	n/a		5	5	5
Methyl t-butyl ether (MTBE)	2	0	0.0	10	10	n/a	n/a		5	5	5
Methylcyclohexane	2	0	0.0	10	10	n/a	n/a		5	5	5
Methylene Chloride	2	0	0.0	10	10	n/a	n/a		5	5	5
Styrene	2	0	0.0	10	10	n/a	n/a		5	5	5
Tetrachloroethene	2	0	0.0	10	10	n/a	n/a		5	5	5
Toluene	2	0	0.0	10	10	n/a	n/a		5	5	5
Total Xylenes	2	0	0.0	10	10	n/a	n/a		5	5	5
trans-1,2-Dichloroethene	2	0	0.0	10	10	n/a	n/a		5	5	5
Trans-1,3-Dichloropropene	2	0	0.0	10	10	n/a	n/a		5	5	5
Trichloroethene	2	0	0.0	10	10	n/a	n/a		5	5	5
Trichlorofluoromethane	2	0	0.0	10	10	n/a	n/a		5	5	5
Vinyl Chloride	2	0	0.0	10	10	n/a	n/a		5	5	5
Semi-Volatile Organic Compounds (ug/l)											
1,1-Biphenyl	2	0	0.0	10	10	n/a	n/a		5	5	5
2,4,5-trichlorophenol	2	0	0.0	25	25	n/a	n/a		12.5	12.5	12.5
2,4,6-trichlorophenol	2	0	0.0	10	10	n/a	n/a		5	5	5
2,4-dichlorophenol	2	0	0.0	10	10	n/a	n/a		5	5	5
2,4-dimethylphenol	2	0	0.0	10	10	n/a	n/a		5	5	5
2,4-dinitrophenol	2	0	0.0	25	25	n/a	n/a		12.5	12.5	12.5
2,4-dinitrotoluene	2	0	0.0	10	10	n/a	n/a		5	5	5
2,6-dinitrotoluene	2	0	0.0	10	10	n/a	n/a		5	5	5
2-chloronaphthalene	2	0	0.0	10	10	n/a	n/a		5	5	5
2-chlorophenol	2	0	0.0	10	10	n/a	n/a		5	5	5
2-methyl-4,6-dinitrophenol	2	0	0.0	25	25	n/a	n/a		12.5	12.5	12.5
2-methylnaphthalene	2	0	0.0	10	10	n/a	n/a		5	5	5
2-methylphenol	2	0	0.0	10	10	n/a	n/a		5	5	5
2-nitroaniline	2	0	0.0	25	25	n/a	n/a		12.5	12.5	12.5
2-nitrophenol	2	0	0.0	10	10	n/a	n/a		5	5	5
3,3'-dichlorobenzidine	2	0	0.0	10	10	n/a	n/a		5	5	5
3-nitroaniline	2	0	0.0	25	25	n/a	n/a		12.5	12.5	12.5
4-bromophenyl Phenyl Ether	2	0	0.0	10	10	n/a	n/a		5	5	5
4-chloro-3-methylphenol	2	0	0.0	10	10	n/a	n/a		5	5	5
4-chloroaniline	2	0	0.0	10	10	n/a	n/a		5	5	5
4-chlorophenyl Phenyl Ether	2	0	0.0	10	10	n/a	n/a		5	5	5

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Upper Columbia River/Lake Roosevelt ESI - Full Statistical Summary for Surface Water

Constituent	Number of Samples Analyzed	Number of Detections	Detection Frequency (%)	Minimum Detection Limit	Maximum Detection Limit	Minimum Detected Value	Maximum Detected Value	Sample Number of Maximum Detected Value	Arithmetic Mean	Median Value	Upper 95% Confidence Limit
Semi-Volatile Organic Compounds (ug/l)											
4-Methylphenol	2	0	0.0	10	10	n/a	n/a		5	5	5
4-nitroaniline	2	0	0.0	25	25	n/a	n/a		12.5	12.5	12.5
4-nitrophenol	2	0	0.0	25	25	n/a	n/a		12.5	12.5	12.5
Acenaphthene	2	0	0.0	10	10	n/a	n/a		5	5	5
Acenaphthylene	2	0	0.0	10	10	n/a	n/a		5	5	5
Acetophenone	2	0	0.0	10	10	n/a	n/a		5	5	5
Anthracene	2	0	0.0	10	10	n/a	n/a		5	5	5
Benzaldehyde	2	0	0.0	10	10	n/a	n/a		5	5	5
Benzo(a)anthracene	2	0	0.0	10	10	n/a	n/a		5	5	5
Benzo(b)fluoranthene	2	0	0.0	10	10	n/a	n/a		5	5	5
Benzo(ghi)perylene	2	0	0.0	10	10	n/a	n/a		5	5	5
Benzo(k)fluoranthene	2	0	0.0	10	10	n/a	n/a		5	5	5
Benzo-a-pyrene	2	0	0.0	10	10	n/a	n/a		5	5	5
Benzyl Butyl Phthalate	2	0	0.0	10	10	n/a	n/a		5	5	5
Bis(2-chloroethoxy)methane	2	0	0.0	10	10	n/a	n/a		5	5	5
Bis(2-chloroethyl) Ether	2	0	0.0	10	10	n/a	n/a		5	5	5
Bis(2-chloroisopropyl) Ether	2	0	0.0	10	10	n/a	n/a		5	5	5
Bis(2-ethylhexyl) Phthalate	2	0	0.0	10	10	n/a	n/a		5	5	5
Caprolactam	2	0	0.0	10	10	n/a	n/a		5	5	5
Carbazole	2	0	0.0	10	10	n/a	n/a		5	5	5
Chrysene	2	0	0.0	10	10	n/a	n/a		5	5	5
Di-n-butylphthalate	2	0	0.0	10	10	n/a	n/a		5	5	5
Di-n-octylphthalate	2	0	0.0	10	10	n/a	n/a		5	5	5
Dibenzo(a,h)anthracene	2	0	0.0	10	10	n/a	n/a		5	5	5
Dibenzofuran	2	0	0.0	10	10	n/a	n/a		5	5	5
Diethyl Phthalate	2	0	0.0	10	10	n/a	n/a		5	5	5
Dimethyl Phthalate	2	0	0.0	10	10	n/a	n/a		5	5	5
Fluoranthene	2	0	0.0	10	10	n/a	n/a		5	5	5
Fluorene	2	0	0.0	10	10	n/a	n/a		5	5	5
Hexachlorobenzene (hcb)	2	0	0.0	10	10	n/a	n/a		5	5	5
Hexachlorobutadiene	2	0	0.0	10	10	n/a	n/a		5	5	5
Hexachlorocyclopentadiene (H	2	0	0.0	10	10	n/a	n/a		5	5	5
Hexachloroethane	2	0	0.0	10	10	n/a	n/a		5	5	5
Indeno (1,2,3-cd) Pyrene	2	0	0.0	10	10	n/a	n/a		5	5	5
Isophorone	2	0	0.0	10	10	n/a	n/a		5	5	5

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Semi-Volatile Organic Compounds (ug/l)											
N-nitrosodi-n-propylamine	2	0	0.0	10	10	n/a	n/a		5	5	5
N-nitrosodiphenylamine	2	0	0.0	10	10	n/a	n/a		5	5	5
Naphthalene	2	0	0.0	10	10	n/a	n/a		5	5	5
Nitrobenzene	2	0	0.0	10	10	n/a	n/a		5	5	5
Pentachlorophenol	2	0	0.0	25	25	n/a	n/a		12.5	12.5	12.5
Phenanthrene	2	0	0.0	10	10	n/a	n/a		5	5	5
Phenol	2	0	0.0	10	10	n/a	n/a		5	5	5
Pyrene	2	0	0.0	10	10	n/a	n/a		5	5	5
Pesticides/PCBs (ug/l)											
4,4'-DDD (p,p'-DDD)	2	0	0.0	0.1	0.1	n/a	n/a		0.05	0.05	0.05
4,4'-DDE (p,p'-DDE)	2	0	0.0	0.1	0.1	n/a	n/a		0.05	0.05	0.05
4,4'-DDT (p,p'-DDT)	2	0	0.0	0.1	0.1	n/a	n/a		0.05	0.05	0.05
Aldrin	2	0	0.0	0.05	0.05	n/a	n/a		0.03	0.03	0.03
Alpha-BHC	2	0	0.0	0.05	0.05	n/a	n/a		0.03	0.03	0.03
Alpha-chlordane	2	0	0.0	0.05	0.05	n/a	n/a		0.03	0.03	0.03
Beta-BHC	2	0	0.0	0.05	0.05	n/a	n/a		0.03	0.03	0.03
Delta-BHC	2	0	0.0	0.05	0.05	n/a	n/a		0.03	0.03	0.03
Dieldrin	2	0	0.0	0.1	0.1	n/a	n/a		0.05	0.05	0.05
Endosulfan I (alpha)	2	0	0.0	0.05	0.05	n/a	n/a		0.03	0.03	0.03
Endosulfan II (beta)	2	0	0.0	0.1	0.1	n/a	n/a		0.05	0.05	0.05
Endosulfan Sulfate	2	0	0.0	0.1	0.1	n/a	n/a		0.05	0.05	0.05
Endrin	2	0	0.0	0.1	0.1	n/a	n/a		0.05	0.05	0.05
Endrin Aldehyde	2	0	0.0	0.1	0.1	n/a	n/a		0.05	0.05	0.05
Endrin Ketone	2	0	0.0	0.1	0.1	n/a	n/a		0.05	0.05	0.05
Gamma-BHC (Lindane)	2	0	0.0	0.05	0.05	n/a	n/a		0.03	0.03	0.03
Gamma-chlordane	2	0	0.0	0.05	0.05	n/a	n/a		0.03	0.03	0.03
Heptachlor	2	0	0.0	0.05	0.05	n/a	n/a		0.03	0.03	0.03
Heptachlor Epoxide	2	0	0.0	0.05	0.05	n/a	n/a		0.03	0.03	0.03
Methoxychlor	2	0	0.0	0.5	0.5	n/a	n/a		0.25	0.25	0.25
PCB-1016 (Aroclor 1016)	2	0	0.0	1	1	n/a	n/a		0.5	0.5	0.5
PCB-1221 (Aroclor 1221)	2	0	0.0	2	2	n/a	n/a		1	1	1
PCB-1232 (Aroclor 1232)	2	0	0.0	1	1	n/a	n/a		0.5	0.5	0.5
PCB-1242 (Aroclor 1242)	2	0	0.0	1	1	n/a	n/a		0.5	0.5	0.5
PCB-1248 (Aroclor 1248)	2	0	0.0	1	1	n/a	n/a		0.5	0.5	0.5

n/a - Criteria not available
Half undetect weighting used for statistical calculations.

Upper Columbia River/Lake Roosevelt ESI - Full Statistical Summary for Surface Water

Constituent	Number of Samples Analyzed	Number of Detections	Detection Frequency (%)	Minimum Detection Limit	Maximum Detection Limit	Minimum Detected Value	Maximum Detected Value	Sample Number of Maximum Detected Value	Arithmetic Mean	Median Value	Upper 95% Confidence Limit
Pesticides/PCBs (ug/l)											
PCB-1254 (Aroclor 1254)	2	0	0.0	1	1	n/a	n/a		0.5	0.5	0.5
PCB-1260 (Aroclor 1260)	2	0	0.0	1	1	n/a	n/a		0.5	0.5	0.5
Toxaphene	2	0	0.0	5	5	n/a	n/a		2.5	2.5	2.5
Inorganics (Total) (ug/l)											
Aluminum	9	4	44.4	27.2	168	126	2250	BK-132-SW	449.76	84	932.99
Antimony	9	1	11.1	3	32.6	84.5	84.5	TR-148-SW	20.59	16.3	35.97
Arsenic	9	1	11.1	2.2	4	76.4	76.4	TR-148-SW	9.67	1.1	25.18
Barium	9	9	100.0	n/a	n/a	0.72	77.4	BK-151-SW	32.19	27.7	48.43
Beryllium	9	0	0.0	0.2	0.22	n/a	n/a		0.11	0.11	0.11
Cadmium	9	1	11.1	0.22	1.6	2.6	2.6	TR-148-SW	0.67	0.35	1.15
Calcium	9	8	88.9	48.6	48.6	11800	146000	BK-143-SW	42480.48	21500	71059.31
Chromium	9	0	0.0	0.7	2.8	n/a	n/a		1.17	1.4	1.45
Cobalt	9	0	0.0	1.1	6.1	n/a	n/a		2.49	3.05	3.18
Copper	9	3	33.3	3.4	3.4	0.97	6	TR-148-SW	2.06	1.7	2.99
Iron	9	5	55.6	14.3	54.6	116	1650	BK-132-SW	510.37	116	935.09
Lead	9	4	44.4	1.3	1.5	2.1	41.3	TR-148-SW	7.87	0.75	16.21
Magnesium	9	8	88.9	33.6	33.6	2050	24300	BK-151-SW	9189.64	5360	14628.48
Manganese	9	6	66.7	0.44	8.3	3.6	56.6	BK-132-SW	15.5	4.3	27.78
Nickel	9	0	0.0	1.5	9.4	n/a	n/a		3.82	4.7	4.9
Potassium	9	8	88.9	372	372	674	1690	BK-143-SW	1021.89	1020	1291.22
Selenium	9	2	22.2	2.1	3.4	3.5	4.2	BK-151-SW	1.82	1.05	2.56
Silver	9	0	0.0	0.8	3	n/a	n/a		1.26	1.5	1.56
Sodium	9	8	88.9	119	119	786	4470	CR-002-SW	2148.39	2600	2955.7
Thallium	9	0	0.0	3.2	3.9	n/a	n/a		1.68	1.6	1.77
Total Mercury	9	0	0.0	0.1	0.1	n/a	n/a		0.05	0.05	0.05
Vanadium	9	0	0.0	0.9	8.4	n/a	n/a		1.63	1.45	2.32
Zinc	9	5	55.6	1.9	13.3	5.9	284	TR-148-SW	50.57	6.65	109.42

n/a - Criteria not available
Half undetect weighting used for statistical calculations.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for Surface Water Samples

Station ID:	CW001	CW002	N/A	UW001	UW002	UW003
Sample ID:	CR-002-SW	CR-003-SW	CR-001-SW	BK-151-SW	BK-149-SW	BK-154-SW
Sample Date:	05/14/2001	05/15/2001	05/14/2001	06/27/2001	06/28/2001	06/28/2001
Constituent Depth (feet):	N/A to N/A	32 ft to N/A	N/A to N/A	0 in to N/A	0 in to N/A	0 in to N/A
Volatile Organic Compounds (ug/l)						
1,1,1-Trichloroethane	10 U	10 U				
1,1,2,2-Tetrachloroethane	10 U	10 U				
1,1,2-Trichloro-1,2,2-triflu	10 U	10 U				
1,1,2-Trichloroethane	10 U	10 U				
1,1-Dichloroethane	10 U	10 U				
1,1-Dichloroethene	10 U	10 U				
1,2,4-Trichlorobenzene	10 U	10 U				
1,2-Dibromo-3-chloropropane	10 U	10 U				
1,2-Dibromoethane [EDB]	10 U	10 U				
1,2-Dichlorobenzene	10 U	10 U				
1,2-Dichloroethane	10 U	10 U				
1,2-Dichloropropane	10 U	10 U				
1,3-Dichlorobenzene	10 U	10 U				
1,4-Dichlorobenzene	10 U	10 U				
Acetone	10 U	100 U				
Benzene	10 U	10 U				
Bromodichloromethane	10 U	10 U				
Bromoform	10 U	10 U				
Bromomethane	10 U	10 U				
Carbon Disulfide	10 U	10 U				
Carbon Tetrachloride	10 U	10 U				
Chlorobenzene	10 U	10 U				
Chloroethane	10 U	10 U				
Chloroform	26	10 U				
Chloromethane	10 U	10 U				

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for Surface Water Samples

Station ID:	CW001	CW002	N/A	UW001	UW002	UW003
Sample ID:	CR-002-SW	CR-003-SW	CR-001-SW	BK-151-SW	BK-149-SW	BK-154-SW
Sample Date:	05/14/2001	05/15/2001	05/14/2001	06/27/2001	06/28/2001	06/28/2001
Constituent / Depth (feet):	N/A to N/A	32 ft to N/A	N/A to N/A	0 in to N/A	0 in to N/A	0 in to N/A
cis-1,2-Dichloroethene	10 U	10 U				
cis-1,3-Dichloropropene	10 U	10 U				
Cyclohexane	10 U	10 U				
Dibromochloromethane	10 U	10 U				
Dichlorodifluoromethane	10 U	10 U				
Ethylbenzene	10 U	10 U				
Isopropylbenzene	10 U	10 U				
Methyl Acetate	10 U	10 U				
Methyl Butyl Ketone	10 U	10 U				
Methyl ethyl ketone (MEK)	10 U	10 U				
Methyl Isobutyl Ketone	10 U	10 U				
Methyl t-butyl ether (MTBE)	10 U	10 U				
Methylcyclohexane	10 U	10 U				
Methylene Chloride	10 U	10 U				
Styrene	10 U	10 U				
Tetrachloroethene	10 U	10 U				
Toluene	10 U	10 U				
Total Xylenes	10 U	10 U				
trans-1,2-Dichloroethene	10 U	10 U				
Trans-1,3-Dichloropropene	10 U	10 U				
Trichloroethene	10 U	10 U				
Trichlorofluoromethane	10 U	10 U				
Vinyl Chloride	10 U	10 U				
Semi-Volatile Organic Compounds (ug/l)						
1,1-Biphenyl	10 U	10 U				
2,4,5-trichlorophenol	25 U	25 U				

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for Surface Water Samples

Station ID:	CW001	CW002	N/A	UW001	UW002	UW003
Sample ID:	CR-002-SW	CR-003-SW	CR-001-SW	BK-151-SW	BK-149-SW	BK-154-SW
Sample Date:	05/14/2001	05/15/2001	05/14/2001	06/27/2001	06/28/2001	06/28/2001
Constituent / Depth (feet):	N/A to N/A	32 ft to N/A	N/A to N/A	0 in to N/A	0 in to N/A	0 in to N/A
2,4,6-trichlorophenol	10 U	10 U				
2,4-dichlorophenol	10 U	10 U				
2,4-dimethylphenol	10 U	10 U				
2,4-dinitrophenol	25 UJK	25 UJK				
2,4-dinitrotoluene	10 U	10 U				
2,6-dinitrotoluene	10 U	10 U				
2-chloronaphthalene	10 U	10 U				
2-chlorophenol	10 U	10 U				
2-methyl-4,6-dinitrophenol	25 U	25 U				
2-methylnaphthalene	10 U	10 U				
2-methylphenol	10 U	10 U				
2-nitroaniline	25 U	25 U				
2-nitrophenol	10 U	10 U				
3,3'-dichlorobenzidine	10 U	10 U				
3-nitroaniline	25 U	25 U				
4-bromophenyl Phenyl Ether	10 U	10 U				
4-chloro-3-methylphenol	10 U	10 U				
4-chloroaniline	10 UJK	10 U				
4-chlorophenyl Phenyl Ether	10 U	10 U				
4-Methylphenol	10 U	10 U				
4-nitroaniline	25 U	25 U				
4-nitrophenol	25 U	25 U				
Acenaphthene	10 U	10 U				
Acenaphthylene	10 U	10 U				
Acetophenone	10 U	10 U				
Anthracene	10 U	10 U				

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for Surface Water Samples

Station ID:	CW001	CW002	N/A	UW001	UW002	UW003
Sample ID:	CR-002-SW	CR-003-SW	CR-001-SW	BK-151-SW	BK-149-SW	BK-154-SW
Sample Date:	05/14/2001	05/15/2001	05/14/2001	06/27/2001	06/28/2001	06/28/2001
Constituent / Depth (feet):	N/A to N/A	32 ft to N/A	N/A to N/A	0 in to N/A	0 in to N/A	0 in to N/A
Atrazine	10 R	10 R				
Benzaldehyde	10 U	10 U				
Benzo(a)anthracene	10 U	10 U				
Benzo(b)fluoranthene	10 U	10 U				
Benzo(ghi)perylene	10 U	10 U				
Benzo(k)fluoranthene	10 U	10 U				
Benzo-a-pyrene	10 U	10 U				
Benzyl Butyl Phthalate	10 U	10 U				
Bis(2-chloroethoxy)methane	10 U	10 U				
Bis(2-chloroethyl) Ether	10 U	10 U				
Bis(2-chloroisopropyl) Ether	10 U	10 U				
Bis(2-ethylhexyl) Phthalate	10 U	10 U				
Caprolactam	10 U	10 U				
Carbazole	10 U	10 U				
Chrysene	10 U	10 U				
Di-n-butylphthalate	10 U	10 U				
Di-n-octylphthalate	10 U	10 U				
Dibenzo(a,h)anthracene	10 U	10 U				
Dibenzofuran	10 U	10 U				
Diethyl Phthalate	10 U	10 U				
Dimethyl Phthalate	10 U	10 U				
Fluoranthene	10 U	10 U				
Fluorene	10 U	10 U				
Hexachlorobenzene (hcb)	10 U	10 U				
Hexachlorobutadiene	10 U	10 U				
Hexachlorocyclopentadiene (H	10 U	10 UJK				

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for Surface Water Samples

Station ID:	CW001	CW002	N/A	UW001	UW002	UW003
Sample ID:	CR-002-SW	CR-003-SW	CR-001-SW	BK-151-SW	BK-149-SW	BK-154-SW
Sample Date:	05/14/2001	05/15/2001	05/14/2001	06/27/2001	06/28/2001	06/28/2001
Constituent / Depth (feet):	N/A to N/A	32 ft to N/A	N/A to N/A	0 in to N/A	0 in to N/A	0 in to N/A
Hexachloroethane	10 U	10 U				
Indeno (1,2,3-cd) Pyrene	10 U	10 U				
Isophorone	10 U	10 U				
N-nitrosodi-n-propylamine	10 U	10 U				
N-nitrosodiphenylamine	10 U	10 U				
Naphthalene	10 U	10 U				
Nitrobenzene	10 U	10 U				
Pentachlorophenol	25 U	25 UJK				
Phenanthrene	10 U	10 U				
Phenol	10 U	10 U				
Pyrene	10 U	10 U				
Pesticides/PCBs (ug/l)						
4,4'-DDD (p,p'-DDD)	0.10 U	0.10 U				
4,4'-DDE (p,p'-DDE)	0.10 U	0.10 U				
4,4'-DDT (p,p'-DDT)	0.10 U	0.10 U				
Aldrin	0.050 U	0.050 U				
Alpha-BHC	0.050 U	0.050 U				
Alpha-chlordane	0.050 U	0.050 U				
Beta-BHC	0.050 U	0.050 U				
Delta-BHC	0.050 U	0.050 U				
Dieldrin	0.10 U	0.10 U				
Endosulfan I (alpha)	0.050 U	0.050 U				
Endosulfan II (beta)	0.10 U	0.10 U				
Endosulfan Sulfate	0.10 U	0.10 U				
Endrin	0.10 U	0.10 U				
Endrin Aldehyde	0.10 U	0.10 U				

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for Surface Water Samples

Station ID:	CW001	CW002	N/A	UW001	UW002	UW003
Sample ID:	CR-002-SW	CR-003-SW	CR-001-SW	BK-151-SW	BK-149-SW	BK-154-SW
Sample Date:	05/14/2001	05/15/2001	05/14/2001	06/27/2001	06/28/2001	06/28/2001
Constituent / Depth (feet):	N/A to N/A	32 ft to N/A	N/A to N/A	0 in to N/A	0 in to N/A	0 in to N/A
Endrin Ketone	0.10 U	0.10 U				
Gamma-BHC (Lindane)	0.050 U	0.050 U				
Gamma-chlordane	0.050 U	0.050 U				
Heptachlor	0.050 U	0.050 U				
Heptachlor Epoxide	0.050 U	0.050 U				
Methoxychlor	0.50 U	0.50 U				
PCB-1016 (Aroclor 1016)	1.0 U	1.0 U				
PCB-1221 (Aroclor 1221)	2.0 U	2.0 U				
PCB-1232 (Aroclor 1232)	1.0 U	1.0 U				
PCB-1242 (Aroclor 1242)	1.0 U	1.0 U				
PCB-1248 (Aroclor 1248)	1.0 U	1.0 U				
PCB-1254 (Aroclor 1254)	1.0 U	1.0 U				
PCB-1260 (Aroclor 1260)	1.0 U	1.0 U				
Toxaphene	5.0 U	5.0 U				
Inorganics (Total) (ug/l)						
Aluminum	168 U	168 U		126 BJK	27.2 UJL	27.2 UJL
Antimony	3.0 U	3.0 U		32.6 U	32.6 U	32.6 U
Arsenic	4.0 U	4.0 U		2.2 U	2.2 U	2.2 U
Barium	31.0 B	31.8 B		77.4 B	0.72 B	8.9 B
Beryllium	0.20 U	0.20 U		0.22 U	0.22 U	0.22 U
Cadmium	0.30 U	0.30 U		1.6 U	1.6 U	1.6 U
Calcium	21400	21500		83800	48.6 U	12500
Chromium	0.70 U	0.70 U		2.8 U	2.8 U	2.8 U
Cobalt	1.1 U	1.1 U		6.1 U	6.1 U	6.1 U
Copper	1.4 BJL	0.97 BJL		3.4 U	3.4 U	3.4 U
Iron	54.6 U	54.6 U		165	14.3 U	41.2 U

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for Surface Water Samples

Station ID:	CW001	CW002	N/A	UW001	UW002	UW003
Sample ID:	CR-002-SW	CR-003-SW	CR-001-SW	BK-151-SW	BK-149-SW	BK-154-SW
Sample Date:	05/14/2001	05/15/2001	05/14/2001	06/27/2001	06/28/2001	06/28/2001
Constituent / Depth (feet):	N/A to N/A	32 ft to N/A	N/A to N/A	0 in to N/A	0 in to N/A	0 in to N/A
Lead	1.5 U	1.5 U		1.3 UJK	2.1 B	1.3 U
Magnesium	5330	5360		24300	33.6 U	2050 B
Manganese	4.3 B	3.6 B		8.3 U	0.44 U	1.1 U
Nickel	1.5 U	1.5 U		9.4 U	9.4 U	9.4 U
Potassium	1020 BJ	994 BJ		1030 B	372 U	674 B
Selenium	3.4 U	3.4 U		4.2 B	2.1 U	2.1 U
Silver	0.80 U	0.80 U		3.0 U	3.0 U	3.0 U
Sodium	4470 B	2600 B		2100 B	119 U	786 B
Thallium	3.9 U	3.9 U		3.2 U	3.2 U	3.2 U
Total Mercury	0.10 U	0.10 U		0.10 U	0.10 U	0.10 U
Vanadium	0.90 U	0.90 U		2.9 U	2.9 U	2.9 U
Zinc	8.7 B	5.9 B		116	2.1 UJK	1.9 UJK

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for Surface Water Samples

Constituent	Station ID:	UW004	UW005	UW006	UW007
	Sample ID:	BK-132-SW	BK-143-SW	BK-141-SW	TR-148-SW
	Sample Date:	06/25/2001	06/26/2001	06/26/2001	06/27/2001
	Depth (feet):	0 in to N/A	0 in to N/A	0 in to N/A	0 in to N/A
Volatile Organic Compounds (ug/l)					
1,1,1-Trichloroethane					
1,1,2,2-Tetrachloroethane					
1,1,2-Trichloro-1,2,2-triflu					
1,1,2-Trichloroethane					
1,1-Dichloroethane					
1,1-Dichloroethene					
1,2,4-Trichlorobenzene					
1,2-Dibromo-3-chloropropane					
1,2-Dibromoethane [EDB]					
1,2-Dichlorobenzene					
1,2-Dichloroethane					
1,2-Dichloropropane					
1,3-Dichlorobenzene					
1,4-Dichlorobenzene					
Acetone					
Benzene					
Bromodichloromethane					
Bromoform					
Bromomethane					
Carbon Disulfide					
Carbon Tetrachloride					
Chlorobenzene					
Chloroethane					
Chloroform					
Chloromethane					

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for Surface Water Samples

Constituent	Station ID:	UW004	UW005	UW006	UW007
	Sample ID:	BK-132-SW	BK-143-SW	BK-141-SW	TR-148-SW
	Sample Date:	06/25/2001	06/26/2001	06/26/2001	06/27/2001
	Depth (feet):	0 in to N/A	0 in to N/A	0 in to N/A	0 in to N/A
cis-1,2-Dichloroethene					
cis-1,3-Dichloropropene					
Cyclohexane					
Dibromochloromethane					
Dichlorodifluoromethane					
Ethylbenzene					
Isopropylbenzene					
Methyl Acetate					
Methyl Butyl Ketone					
Methyl ethyl ketone (MEK)					
Methyl Isobutyl Ketone					
Methyl t-butyl ether (MTBE)					
Methylcyclohexane					
Methylene Chloride					
Styrene					
Tetrachloroethene					
Toluene					
Total Xylenes					
trans-1,2-Dichloroethene					
Trans-1,3-Dichloropropene					
Trichloroethene					
Trichlorofluoromethane					
Vinyl Chloride					
Semi-Volatile Organic Compounds (ug/l)					
1,1-Biphenyl					
2,4,5-trichlorophenol					

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for Surface Water Samples

Station ID:	UW004	UW005	UW006	UW007
Sample ID:	BK-132-SW	BK-143-SW	BK-141-SW	TR-148-SW
Sample Date:	06/25/2001	06/26/2001	06/26/2001	06/27/2001
Constituent / Depth (feet):	0 in to N/A	0 in to N/A	0 in to N/A	0 in to N/A
2,4,6-trichlorophenol				
2,4-dichlorophenol				
2,4-dimethylphenol				
2,4-dinitrophenol				
2,4-dinitrotoluene				
2,6-dinitrotoluene				
2-chloronaphthalene				
2-chlorophenol				
2-methyl-4,6-dinitrophenol				
2-methylnaphthalene				
2-methylphenol				
2-nitroaniline				
2-nitrophenol				
3,3'-dichlorobenzidine				
3-nitroaniline				
4-bromophenyl Phenyl Ether				
4-chloro-3-methylphenol				
4-chloroaniline				
4-chlorophenyl Phenyl Ether				
4-Methylphenol				
4-nitroaniline				
4-nitrophenol				
Acenaphthene				
Acenaphthylene				
Acetophenone				
Anthracene				

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for Surface Water Samples

Constituent	Station ID:	UW004	UW005	UW006	UW007
	Sample ID:	BK-132-SW	BK-143-SW	BK-141-SW	TR-148-SW
	Sample Date:	06/25/2001	06/26/2001	06/26/2001	06/27/2001
	Depth (feet):	0 in to N/A	0 in to N/A	0 in to N/A	0 in to N/A
Atrazine					
Benzaldehyde					
Benzo(a)anthracene					
Benzo(b)fluoranthene					
Benzo(ghi)perylene					
Benzo(k)fluoranthene					
Benzo-a-pyrene					
Benzyl Butyl Phthalate					
Bis(2-chloroethoxy)methane					
Bis(2-chloroethyl) Ether					
Bis(2-chloroisopropyl) Ether					
Bis(2-ethylhexyl) Phthalate					
Caprolactam					
Carbazole					
Chrysene					
Di-n-butylphthalate					
Di-n-octylphthalate					
Dibenzo(a,h)anthracene					
Dibenzofuran					
Diethyl Phthalate					
Dimethyl Phthalate					
Fluoranthene					
Fluorene					
Hexachlorobenzene (hcb)					
Hexachlorobutadiene					
Hexachlorocyclopentadiene (H					

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for Surface Water Samples

Constituent	Station ID:	UW004	UW005	UW006	UW007
	Sample ID:	BK-132-SW	BK-143-SW	BK-141-SW	TR-148-SW
	Sample Date:	06/25/2001	06/26/2001	06/26/2001	06/27/2001
	Depth (feet):	0 in to N/A	0 in to N/A	0 in to N/A	0 in to N/A
Hexachloroethane					
Indeno (1,2,3-cd) Pyrene					
Isophorone					
N-nitrosodi-n-propylamine					
N-nitrosodiphenylamine					
Naphthalene					
Nitrobenzene					
Pentachlorophenol					
Phenanthrene					
Phenol					
Pyrene					
Pesticides/PCBs (ug/l)					
4,4'-DDD (p,p'-DDD)					
4,4'-DDE (p,p'-DDE)					
4,4'-DDT (p,p'-DDT)					
Aldrin					
Alpha-BHC					
Alpha-chlordane					
Beta-BHC					
Delta-BHC					
Dieldrin					
Endosulfan I (alpha)					
Endosulfan II (beta)					
Endosulfan Sulfate					
Endrin					
Endrin Aldehyde					

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for Surface Water Samples

Constituent	Station ID:	UW004	UW005	UW006	UW007
	Sample ID:	BK-132-SW	BK-143-SW	BK-141-SW	TR-148-SW
	Sample Date:	06/25/2001	06/26/2001	06/26/2001	06/27/2001
	Depth (feet):	0 in to N/A	0 in to N/A	0 in to N/A	0 in to N/A
Endrin Ketone					
Gamma-BHC (Lindane)					
Gamma-chlordane					
Heptachlor					
Heptachlor Epoxide					
Methoxychlor					
PCB-1016 (Aroclor 1016)					
PCB-1221 (Aroclor 1221)					
PCB-1232 (Aroclor 1232)					
PCB-1242 (Aroclor 1242)					
PCB-1248 (Aroclor 1248)					
PCB-1254 (Aroclor 1254)					
PCB-1260 (Aroclor 1260)					
Toxaphene					
Inorganics (Total) (ug/l)					
Aluminum		2250 JK	1240 JK	27.2 UJK	223 JL
Antimony		32.6 U	32.6 U	32.6 U	84.5
Arsenic		2.2 U	2.2 U	2.2 U	76.4
Barium		22.9 B	72.0 B	17.3 B	27.7 B
Beryllium		0.22 U	0.22 U	0.22 U	0.22 U
Cadmium		0.70 U	0.49 U	0.22 U	2.6 B
Calcium		11800	146000	47500	37800
Chromium		2.8 U	2.8 U	2.8 U	2.8 U
Cobalt		6.1 U	6.1 U	6.1 U	6.1 U
Copper		3.4 U	3.4 U	3.4 U	6.0 B
Iron		1650	1240	116	1340

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for Surface Water Samples

Station ID:	UW004	UW005	UW006	UW007
Sample ID:	BK-132-SW	BK-143-SW	BK-141-SW	TR-148-SW
Sample Date:	06/25/2001	06/26/2001	06/26/2001	06/27/2001
Constituent / Depth (feet):	0 in to N/A	0 in to N/A	0 in to N/A	0 in to N/A
Lead	13.4 JK	10.6 JK	1.3 UJK	41.3
Magnesium	2330 B	15600	7120	20600
Manganese	56.6	21.0	10.4 B	38.7
Nickel	9.4 U	9.4 U	9.4 U	9.4 U
Potassium	913 B	1690 B	1450 B	1240 B
Selenium	2.1 U	3.5 B	2.1 U	2.1 U
Silver	3.0 U	3.0 U	3.0 U	3.0 U
Sodium	1230 B	2740 B	2680 B	2670 B
Thallium	3.2 U	3.2 U	3.2 U	3.2 U
Total Mercury	0.10 U	0.10 U	0.10 U	0.10 U
Vanadium	4.6 U	8.4 U	2.9 U	2.9 U
Zinc	13.3 U	28.8	6.1 U	284

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	CS001	CS002	CS003	CS004	CS005	CS006
	Sample ID:	CR-003-SD	CR-001-SD	CR-004-SD	CR-005-SD	CR-006-SD	CR-007-SD
	Sample Date:	05/14/2001	05/14/2001	05/15/2001	05/17/2001	05/17/2001	05/17/2001
	Depth (feet):	0 in to 3 in	0 in to N/A	0 in to 4 in	0 in to 4 in	0 in to 4 in	0 in to 4 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)		4.2 U	4.1 U	4.5 U	5.4 U	5.4 U	3.9 U
4,4'-DDT (p,p'-DDT)		4.2 U	4.1 U	4.5 U	5.4 U	5.4 U	3.9 U
Alpha-chlordane		2.2 U	2.1 U	2.3 U	2.8 U	2.8 U	2.0 U
Beta-BHC		2.2 U	2.1 U	2.3 U	2.8 U	2.8 U	2.0 U
Endrin		4.2 U	4.1 U	4.5 U	5.4 U	5.4 U	3.9 U
Endrin Aldehyde		4.2 U	4.1 U	4.5 U	5.4 U	5.4 U	3.9 U
Methoxychlor		22 U	21 U	23 U	28 U	28 U	20 U
PCB-1254 (Aroclor 1254)		42 U	11 JQ	45 U	54 U	54 U	39 U
PCB-1260 (Aroclor 1260)		42 U	5.9 JQ	45 U	54 U	54 U	39 U
Inorganics (Total) (mg/kg)							
Aluminum		11300	6270	8730	13700	12100	4430
Antimony		1.3 BJL	0.74 UJK	0.81 BJL	1.5 BJL	1.6 BJL	0.76 UJK
Arsenic		6.7	4.5 U	4.0 U	7.7 U	8.1 U	2.2 BU
Barium		136	79.6	113	230	269	42.2 B
Beryllium		0.66 B	0.45 B	0.71 B	0.69 B	0.63 B	0.21 B
Cadmium		0.08 U	0.62 B	0.08 U	3.6	4.0	0.12 B
Calcium		7150	3090	5760	5970	7670	4420
Chromium		16.4	7.7	8.8	30.1	29.8	8.8
Cobalt		8.4 B	5.2 B	7.2 B	8.5 B	8.1 B	3.3 B
Copper		17.3 JL	9.8 JL	11.1 JL	48.5 JL	41.6 JL	10.4 JL
Iron		22900	16700	23000	23400	22300	8630

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	CS001	CS002	CS003	CS004	CS005	CS006
Sample ID:	CR-003-SD	CR-001-SD	CR-004-SD	CR-005-SD	CR-006-SD	CR-007-SD
Sample Date:	05/14/2001	05/14/2001	05/15/2001	05/17/2001	05/17/2001	05/17/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to N/A	0 in to 4 in	0 in to 4 in	0 in to 4 in	0 in to 4 in
Lead	11.4	22.3	6.1	219	238	6.2
Magnesium	6540	3460	4340	6990	7720	3140
Manganese	475	434	387	719	533	181
Nickel	15.6	8.0 B	8.5 B	24.6	24.1	9.6 B
Potassium	2470 JL	1250 JL	1840 JL	2570 JL	2230 JL	763 BJL
Selenium	0.87 U	0.84 U	0.91 U	1.3 U	1.2 U	0.87 U
Silver	1.2 B	0.80 B	1.0 B	1.7 B	1.6 B	0.48 B
Sodium	259 B	184 B	532 B	345 B	359 B	197 B
Thallium	1.0 U	0.97 U	1.0 U	1.5 U	1.4 U	0.99 U
Total Mercury	0.07 U	0.06 U	0.06 U	0.66	0.49	0.06 U
Vanadium	36.1	30.0	51.3	36.9	36.2	17.3
Zinc	77.9	149	54.3	523	600	36.8
Conventional Parameters						
Total Organic Carbon (mg/kg)	2150	8830	1000 U	8060	8900	1420
Grain Size (%)						
Percent Gravel	5 <	0	0	0	0	5 <
Percent Sand	30	30	0	0	0	90 >
Percent Silt	30	40	70	60	60	5 <
Percent Clay	35	30	30	40	40	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	CS007	CS008	CS009	CS010	CS011	CS012
Sample ID:	CR-008-SD	CR-009-SD	CR-010-SD	CR-011-SD	CR-012-SD	CR-013-SD
Sample Date:	05/17/2001	05/17/2001	05/17/2001	05/17/2001	05/17/2001	05/18/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 4 in	0 in to 7 in	0 in to 0.5in	0 in to 2 in	0 in to 3 in
Semi-Volatile Organic Compounds (ug/kg)						
Benzyl Butyl Phthalate						
Bis(2-ethylhexyl) Phthalate						
Pesticides/PCBs (ug/kg)						
4,4'-DDE (p,p'-DDE)	4.9 U	5.0 U	3.6 U	3.6 U	6.2 U	6.2 U
4,4'-DDT (p,p'-DDT)	4.9 U	5.0 U	3.6 U	3.6 U	6.2 U	6.2 U
Alpha-chlordane	2.5 U	2.6 U	1.9 U	1.8 U	3.2 U	3.2 U
Beta-BHC	2.5 U	2.6 U	1.9 U	1.8 U	3.2 U	3.2 U
Endrin	4.9 U	5.0 U	3.6 U	3.6 U	6.2 U	6.2 U
Endrin Aldehyde	4.9 U	5.0 U	3.6 U	3.6 U	6.2 U	6.2 U
Methoxychlor	25 U	26 U	19 U	18 U	32 U	32 U
PCB-1254 (Aroclor 1254)	49 U	50 U	36 U	36 U	62 U	38 JQ
PCB-1260 (Aroclor 1260)	49 U	50 U	36 U	36 U	62 U	17 JQ
Inorganics (Total) (mg/kg)						
Aluminum	4700	8240	7440	21200	14300	14300
Antimony	0.85 UJK	0.97 BJL	0.65 UJK	0.63 UJK	3.6 BJL	3.3 BJL
Arsenic	4.0 U	5.1 U	6.6	5.0	13.7	14.9
Barium	57.4	105	61.1	227	512	596
Beryllium	0.24 B	0.42 B	0.29 B	0.84 B	0.77 B	0.78 B
Cadmium	0.33 B	0.73 B	0.25 B	4.4	8.1	9.4
Calcium	2510	13200	3350	4920	14100	15900
Chromium	15.7	23.3	20.4	14.0	35.7	35.9
Cobalt	3.6 B	6.9 B	6.7 B	5.8 B	9.4 B	9.4 B
Copper	11.8 JL	22.5 JL	21.9 JL	33.9 JL	91.7 JL	86.8 JL
Iron	14400	16600	16500	14300	28300	29600

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	CS007	CS008	CS009	CS010	CS011	CS012
	Sample ID:	CR-008-SD	CR-009-SD	CR-010-SD	CR-011-SD	CR-012-SD	CR-013-SD
	Sample Date:	05/17/2001	05/17/2001	05/17/2001	05/17/2001	05/17/2001	05/18/2001
	Depth (feet):	0 in to 2 in	0 in to 4 in	0 in to 7 in	0 in to 0.5in	0 in to 2 in	0 in to 3 in
Lead		21.5	24.4	16.7	86.6	464	535
Magnesium		2760	5990	4860	3220	11200	12400
Manganese		267	376	250	347	808	698
Nickel		10.5 B	21.0	21.0	14.4	27.0	27.4
Potassium		672 BJL	1770 JL	1070 BJL	1400 JL	2520 JL	2500 JL
Selenium		0.96 U	1.1 U	0.74 U	0.72 U	1.5 U	1.4 U
Silver		0.71 B	0.94 B	0.85 B	0.76 B	2.7 B	2.7 B
Sodium		200 B	289 B	231 B	287 B	406 B	429 B
Thallium		1.1 U	1.3 U	0.85 U	0.82 U	1.7 U	1.7 U
Total Mercury		0.07 U	0.08 U	0.05 U	0.14	1.7	0.97
Vanadium		27.7	32.0	27.9	26.7	39.9	40.6
Zinc		77.9	99.0	90.9	230	1060	1210
Conventional Parameters							
Total Organic Carbon (mg/kg)		2040	9250	1000 U	29400	17200	13400
Grain Size (%)							
Percent Gravel		0	0	0	0	0	0
Percent Sand		65	60	90	0	0	0
Percent Silt		15	30	5	60	60	60
Percent Clay		20	10	5	40	40	40

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	CS013	CS014	CS015	CS016	CS017	CS017
	Sample ID:	CR-014-SD	CR-015-SD	CR-016-SD	CR-017-SD	CR-018-SD	CR-066-SD
	Sample Date:	05/18/2001	05/18/2001	05/18/2001	05/18/2001	05/18/2001	05/18/2001
	Depth (feet):	0 in to 4 in	0 in to 4 in	0 in to 8 in	0 in to 1 in	0 in to 6 in	18 in to 24 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)		4.1 U	7.2 U	3.8 U	3.5 U	4.2 U	4.1 U
4,4'-DDT (p,p'-DDT)		4.1 U	7.2 U	3.8 U	3.5 U	4.2 U	4.1 U
Alpha-chlordane		2.1 U	3.7 U	2.0 U	1.8 U	2.2 U	2.1 U
Beta-BHC		2.1 U	3.7 U	2.0 U	1.8 U	2.2 U	2.1 U
Endrin		4.1 U	7.2 U	3.8 U	3.5 U	4.2 U	4.1 U
Endrin Aldehyde		4.1 U	7.2 U	3.8 U	3.5 U	4.2 U	4.1 U
Methoxychlor		21 U	37 U	20 U	18 U	22 U	21 U
PCB-1254 (Aroclor 1254)		41 U	72 U	38 U	35 U	42 U	41 U
PCB-1260 (Aroclor 1260)		41 U	72 U	38 U	35 U	42 U	41 U
Inorganics (Total) (mg/kg)							
Aluminum		12800	15400	9120	13600	9540	15600
Antimony		3.2 BJL	4.1 BJL	1.5 BJL	1.5 BJL	2.4 BJL	0.72 UJK
Arsenic		19.0	12.3	6.2	8.5	13.1	2.8
Barium		755	468	229	261	1030	175
Beryllium		0.64 B	0.83 B	0.46 B	0.71 B	0.53 B	0.55 B
Cadmium		11.1	7.5	3.4	3.8	8.6	0.43 B
Calcium		27000	12100	7040	7150	34900	5560
Chromium		25.9	38.0	21.1	28.6	25.2	9.4
Cobalt		7.4 B	10 B	5.9 B	8.7 B	6.5 B	4.0 B
Copper		73.4 JL	111 JL	49.2 JL	73.0 JL	67.7 JL	15.6 JL
Iron		26800	29400	16800	23800	25900	11500

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	CS013	CS014	CS015	CS016	CS017	CS017
	Sample ID:	CR-014-SD	CR-015-SD	CR-016-SD	CR-017-SD	CR-018-SD	CR-066-SD
	Sample Date:	05/18/2001	05/18/2001	05/18/2001	05/18/2001	05/18/2001	05/18/2001
	Depth (feet):	0 in to 4 in	0 in to 4 in	0 in to 8 in	0 in to 1 in	0 in to 6 in	18 in to 24 in
Lead		841	440	190	162	439	26.8
Magnesium		18100	10300	6130	7240	21400	2970
Manganese		515	610	294	572	420	315
Nickel		21.9	28.5	16.5	24.0	22.7	9.2 B
Potassium		1970 JL	2680 JL	1630 JL	2290 JL	1590 JL	1060 B
Selenium		0.83 U	1.7 U	0.76 U	0.84 B	0.86 U	0.82 U
Silver		1.9 B	2.9 B	1.4 B	1.7 B	1.8 B	0.32 B
Sodium		301 B	490 B	249 B	248 B	276 B	381 B
Thallium		0.95 U	1.9 U	0.87 U	0.80 U	0.98 U	0.94 U
Total Mercury		1.6	1.0	0.54	0.31	0.93	0.06 U
Vanadium		38.5	42.4	25.8	37.2	33.9	19.2
Zinc		1460	1000	470	462	1180	84.2
Conventional Parameters							
Total Organic Carbon (mg/kg)		11900	22600	8630	23100	16600	10400
Grain Size (%)							
Percent Gravel		5 <	0	0	0	0	10
Percent Sand		1 <	0	20	5 <	20	20
Percent Silt		35	40	40	40	50	40
Percent Clay		60	60	40	55	30	30

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	CS018	CS019	CS020	CS021	CS022	CS023
	Sample ID:	CR-019-SD	CR-020-SD	CR-023-SD	CR-022-SD	CR-024-SD	CR-025-SD
	Sample Date:	05/19/2001	05/19/2001	05/19/2001	05/21/2001	05/21/2001	05/21/2001
	Depth (feet):	0 in to 6.5in	0 in to 5 in	0 in to 4 in	0 in to 4 in	0 in to 4 in	0 in to .25in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)		3.8 U	7.8 U	8.2 U	6.7 U	8.7 U	3.3 U
4,4'-DDT (p,p'-DDT)		3.8 U	7.8 U	8.2 U	6.7 U	8.7 U	3.3 U
Alpha-chlordane		1.9 U	4.0 U	4.2 U	3.5 U	4.5 U	1.7 U
Beta-BHC		1.9 U	4.0 U	4.2 U	3.5 U	4.5 U	1.7 U
Endrin		3.8 U	7.8 U	8.2 U	6.7 U	8.7 U	3.3 U
Endrin Aldehyde		3.8 U	7.8 U	8.2 U	6.7 U	8.7 U	3.3 U
Methoxychlor		19 U	40 U	42 U	35 U	45 U	17 U
PCB-1254 (Aroclor 1254)		38 U	78 U	82 U	67 U	87 U	33 U
PCB-1260 (Aroclor 1260)		38 U	78 U	82 U	67 U	87 U	33 U
Inorganics (Total) (mg/kg)							
Aluminum		8180	11900	6670	12800	11600	10400
Antimony		1.7 BJL	2.1 BJL	5.4 BJL	3.6 BJL	3.4 BJL	1.0 BJL
Arsenic		7.8	4.5 B	6.8	9.5	10.3	4.2
Barium		422	231	180	364	240	190
Beryllium		0.43 B	0.62 B	0.39 B	0.69 B	0.60 B	0.63 B
Cadmium		4.9	1.4 B	1.8 B	6.5	5.9	1.6
Calcium		12400	9340	7630	8230	7740	5470
Chromium		18.9	20.4	17.0	33.1	30.4	25.7
Cobalt		5.4 B	7.4 B	5.4 B	9.2 B	7.9 B	8.2 B
Copper		40.6 JL	41.8 JL	66.7 JL	88.2 JL	67.6 JL	53.9 JL
Iron		17400	20400	15500	25200	22400	18000

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	CS018	CS019	CS020	CS021	CS022	CS023
Sample ID:	CR-019-SD	CR-020-SD	CR-023-SD	CR-022-SD	CR-024-SD	CR-025-SD
Sample Date:	05/19/2001	05/19/2001	05/19/2001	05/21/2001	05/21/2001	05/21/2001
Constituent / Depth (feet):	0 in to 6.5in	0 in to 5 in	0 in to 4 in	0 in to 4 in	0 in to 4 in	0 in to .25in
Lead	232	64.9	72.7	441	282	93.8
Magnesium	8970	7000	5610	8200	7930	6150
Manganese	337	392	303	673	392	392
Nickel	16.6	18.7 B	13.6 B	25.9	23.2 B	23.0
Potassium	1490	2020 B	1270 B	2440	2280 B	2390
Selenium	0.77 U	1.9 U	1.9 U	1.5 U	2.0 U	0.68 U
Silver	0.78 B	0.75 B	1.1 B	2.0 B	1.5 B	0.98 B
Sodium	242 B	480 B	426 B	471 B	623 B	186 B
Thallium	0.89 U	2.2 U	2.2 U	1.8 U	2.3 U	0.78 U
Total Mercury	0.43	0.14 U	0.13 U	1.2	0.90	0.25
Vanadium	24.2	26.7 B	20.2 B	35.8	33.7	32.1
Zinc	581	250	455	901	617	280
Conventional Parameters						
Total Organic Carbon (mg/kg)	10700	21500	26400	12600	10200	15500
Grain Size (%)						
Percent Gravel	0	0	0	0	0	0
Percent Sand	40	1 <	10	1 <	0	50
Percent Silt	40	60	50	60	60	40
Percent Clay	20	40	40	40	40	10

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	CS024	CS025	CS026	CS027	CS028	CS029
	Sample ID:	CR-062-SD	CR-026-SD	CR-029-SD	CR-027-SD	CR-028-SD	CR-030-SD
	Sample Date:	06/08/2001	05/21/2001	05/21/2001	05/21/2001	05/21/2001	05/21/2001
	Depth (feet):	18 in to 24 in	0 in to 3 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 2 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)		5.0 U	7.8 U	5.4 U	5.5 U	7.2 U	3.4 U
4,4'-DDT (p,p'-DDT)		5.0 U	7.8 U	5.4 U	5.5 U	7.2 U	3.4 U
Alpha-chlordane		2.6 U	4.0 U	2.8 U	2.8 U	3.7 U	1.7 U
Beta-BHC		2.6 U	4.0 U	2.8 U	2.8 U	3.7 U	1.7 U
Endrin		5.0 U	7.8 U	5.4 U	5.5 U	7.2 U	3.4 U
Endrin Aldehyde		5.0 U	7.8 U	5.4 U	5.5 U	7.2 U	3.4 U
Methoxychlor		26 U	40 U	52	28 U	37 U	17 U
PCB-1254 (Aroclor 1254)		50 U	78 U	54 U	55 U	72 U	34 U
PCB-1260 (Aroclor 1260)		50 U	78 U	54 U	55 U	72 U	34 U
Inorganics (Total) (mg/kg)							
Aluminum		6810	9920	8000	9090	12400	7150
Antimony		1.6 BUJK	4.9 BJL	4.8 BJL	1.3 BJL	3.9 BJL	1.9 BJL
Arsenic		5.8	10.6	9.5	3.4 B	9.7	7.0
Barium		147	505	375	113	370	342
Beryllium		0.29 B	0.54 B	0.44 B	0.58 B	0.67 B	0.37 B
Cadmium		0.10 U	4.3	2.9	0.29 B	2.8	3.2
Calcium		162000	21200	16600	4800	16100	11500
Chromium		12.9	25.0	21.9	21.1	30.1	17.7
Cobalt		4.7 B	7.9 B	7.7 B	6.0 B	9.6 B	5.0 B
Copper		18.1 JL	120 JL	118 JL	25.0 JL	114 JL	65.7 JL
Iron		11700	27500	23000	16000	29000	15900

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	CS024	CS025	CS026	CS027	CS028	CS029
	Sample ID:	CR-062-SD	CR-026-SD	CR-029-SD	CR-027-SD	CR-028-SD	CR-030-SD
	Sample Date:	06/08/2001	05/21/2001	05/21/2001	05/21/2001	05/21/2001	05/21/2001
	Depth (feet):	18 in to 24 in	0 in to 3 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 2 in
Lead		6.7 JL	211	159	21.3	149	208
Magnesium		5090	13800	11100	5190	11900	7940
Manganese		327	528	411	284	589	256
Nickel		14.3	21.4	18.0	16.2	24.8	14.1
Potassium		1330 B	1960 B	1560 B	1380 B	2480	1250
Selenium		1.2 U	1.8 U	1.2 U	1.3 U	1.6 U	0.68 U
Silver		0.32 BU	2.0 B	1.8 B	0.52 B	1.7 B	1.5 B
Sodium		337 BU	483 B	354 B	385 B	397 B	200 B
Thallium		1.3 U	2.1 U	1.4 U	1.5 U	1.9 U	0.78 U
Total Mercury		0.08 U	0.49	0.20	0.09 U	0.17 B	0.53
Vanadium		16.6 B	30.5	25.6	29.0	36.7	21.4
Zinc		42.3	855	940	104	787	600
Conventional Parameters							
Total Organic Carbon (mg/kg)		15800	24600	13700	18100	21200	11900
Grain Size (%)							
Percent Gravel		1	0	0	0	0	0
Percent Sand		45	25	35	35	25	30
Percent Silt		45	40	40	40	40	40
Percent Clay		10 <	35	25	25	35	30

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	CS030	CS031	CS032	CS033	CS034	CS035
	Sample ID:	CR-031-SD	CR-032-SD	CR-033-SD	CR-034-SD	CR-036-SD	CR-035-SD
	Sample Date:	05/21/2001	05/21/2001	05/22/2001	05/22/2001	05/22/2001	05/22/2001
	Depth (feet):	0 in to 1 in	0 in to 2 in	0 in to 1 in	0 in to 5 in	0 in to 1 in	0 in to .25in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)		3.4 U	5.2 U	3.6 U	4.0 U	3.5 U	3.4 U
4,4'-DDT (p,p'-DDT)		3.4 U	5.2 U	3.6 U	4.0 U	3.5 U	3.4 U
Alpha-chlordane		1.8 U	2.7 U	1.8 U	2.1 U	1.8 U	1.7 U
Beta-BHC		1.8 U	2.7 U	1.8 U	2.1 U	1.8 U	1.7 U
Endrin		3.4 U	5.2 U	3.6 U	4.0 U	3.5 U	3.4 U
Endrin Aldehyde		3.4 U	5.2 U	3.6 U	4.0 U	3.5 U	3.4 U
Methoxychlor		18 U	27 U	18 U	21 U	18 U	17 U
PCB-1254 (Aroclor 1254)		34 U	52 U	36 U	40 U	35 U	34 U
PCB-1260 (Aroclor 1260)		34 U	52 U	36 U	40 U	35 U	34 U
Inorganics (Total) (mg/kg)							
Aluminum		11200	6940	9410	9240	8720	8540
Antimony		4.7 BJL	21.5 JL	4.7 BJL	7.0 BJL	5.7 BJL	2.2 BJL
Arsenic		11.1	11.5	8.7	13.0	10.7	7.9
Barium		624	533	295	618	391	255
Beryllium		0.62 B	0.38 B	0.54 B	0.51 B	0.49 B	0.45 B
Cadmium		7.2	4.3	3.5	6.9	3.6	2.3
Calcium		20500	26300	15400	26100	19600	10800
Chromium		30.6	29.9	26.4	29.4	25.8	23.4
Cobalt		9.0 B	10.7 B	8.6 B	9.0 B	8.6 B	7.3 B
Copper		205 JL	387 JL	150 JL	251 JL	156 JL	76.8 JL
Iron		26800	36300	24700	28900	25500	19800

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	CS030	CS031	CS032	CS033	CS034	CS035
	Sample ID:	CR-031-SD	CR-032-SD	CR-033-SD	CR-034-SD	CR-036-SD	CR-035-SD
	Sample Date:	05/21/2001	05/21/2001	05/22/2001	05/22/2001	05/22/2001	05/22/2001
	Depth (feet):	0 in to 1 in	0 in to 2 in	0 in to 1 in	0 in to 5 in	0 in to 1 in	0 in to .25in
Lead		369	256	165	392	190	112
Magnesium		14200	11800	10200	15300	12800	8570
Manganese		388	661	481	435	545	467
Nickel		23.1	16.0	21.1	20.9	19.8	19.1
Potassium		1820	1440 B	1900	1620	1760	1610
Selenium		1.1	1.6 B	0.97 B	1.2	0.69 U	0.68 U
Silver		3.1	3.4	2.1 B	3.2	2.2	1.2 B
Sodium		258 B	374 B	266 B	269 B	207 B	237 B
Thallium		0.80 U	1.6 B	0.84 U	0.92 U	0.79 U	0.78 U
Total Mercury		1.1	0.40	0.19	0.73	0.32	0.16
Vanadium		33.1	23.6	29.4	30.2	28.6	28.3
Zinc		1250	2560	1030	1660	1100	592
Conventional Parameters							
Total Organic Carbon (mg/kg)		27800	9170	29300	20900	18700	15800
Grain Size (%)							
Percent Gravel		0	0	0	0	0	5
Percent Sand		30	70	30-40	40	30	30
Percent Silt		40	27	60	45	40	55
Percent Clay		30	3	10 <	15	25	10

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	CS036	CS037	CS038	CS039	CS040	CS041
	Sample ID:	CR-037-SD	CR-038-SD	CR-039-SD	CR-040-SD	CR-041-SD	CR-042-SD
	Sample Date:	05/22/2001	05/22/2001	05/23/2001	05/23/2001	05/23/2001	05/23/2001
	Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 3 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)		3.4 U	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U
4,4'-DDT (p,p'-DDT)		3.4 U	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U
Alpha-chlordane		1.8 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Beta-BHC		1.8 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Endrin		3.4 U	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U
Endrin Aldehyde		3.4 U	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U
Methoxychlor		18 U	17 U	17 U	18 U	17 U	17 U
PCB-1254 (Aroclor 1254)		34 U	34 U	34 U	35 U	34 U	33 U
PCB-1260 (Aroclor 1260)		34 U	34 U	34 U	35 U	34 U	33 U
Inorganics (Total) (mg/kg)							
Aluminum		8790	18900	12400 JL	4950 JL	6520 JL	6550 JL
Antimony		10.8 BJL	17.2 JL	10.4 BJL	3.4 BUJ	19.2 JL	17.2 JL
Arsenic		10.4	26.9	17.3 JH	9.6 JH	9.1 JH	8.7 JH
Barium		438	1070	603 JK	768 JK	452 JK	495 JK
Beryllium		0.39 B	0.74 B	0.53 B	0.28 B	0.34 B	0.32 B
Cadmium		2.8	2.8	2.1	5.3	1.9	2.1
Calcium		22300	49600	28900 JL	46900 JL	24700 JL	28200 JL
Chromium		28.1	59.1	35.1 JL	12.5 JL	27.1 JL	32.8 JL
Cobalt		10.6	22.3	15.1 JL	4.1 BJL	12.0 JL	13.7 JL
Copper		309 JL	1460 JL	823	102	362	451
Iron		42300	176000	109000 JL	25000 JL	37600 JL	48200 JL

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	CS036	CS037	CS038	CS039	CS040	CS041
	Sample ID:	CR-037-SD	CR-038-SD	CR-039-SD	CR-040-SD	CR-041-SD	CR-042-SD
	Sample Date:	05/22/2001	05/22/2001	05/23/2001	05/23/2001	05/23/2001	05/23/2001
	Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 3 in
Lead		209	1590	784 JL	289 JL	172 JL	175 JL
Magnesium		10300	7230	5020 JL	25000 JL	9750 JL	9960 JL
Manganese		946	3390	2090 JL	442 JL	743 JL	908 JL
Nickel		15.0	10.3	8.5	10.9	11.1	10.2
Potassium		1400	3620	2300 JL	883 BJL	1330 JL	1260 JL
Selenium		1.4	0.68 U	4.2	0.82 B	1.8	2.1
Silver		2.1	4.0	2.9	0.63 B	2.1	2.2
Sodium		384 B	1310	723 B	228 B	377 B	475 B
Thallium		0.81 B	4.0	2.4	1.1 B	1.2 B	0.78 U
Total Mercury		0.16	0.07 B	0.13	0.29	0.08 B	0.07 B
Vanadium		27.1	39.0	29.5 JL	23.0 JL	21.5 JL	21.4 JL
Zinc		3090	24900	13900	1990	2770	3760
Conventional Parameters							
Total Organic Carbon (mg/kg)		9450	1380	1680	4830	5510	3460
Grain Size (%)							
Percent Gravel		1 <	5	15	0	1	1 <
Percent Sand		60	60	55	65-70	74	90
Percent Silt		40	30	30	30	25	10
Percent Clay		1 <	5	0	5 <	0	1 <

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	CS042	CS043	CS044	CS045	CS046	CS047
	Sample ID:	CR-043-SD	CR-044-SD	CR-045-SD	CR-046-SD	CR-047-SD	CR-048-SD
	Sample Date:	05/23/2001	05/23/2001	05/31/2001	05/31/2001	05/31/2001	05/31/2001
	Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 4 in	0 in to 3 in	0 in to 1 in	0 in to 1 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)		3.3 U	3.4 U	3.3 U	3.3 U	3.6 U	3.3 U
4,4'-DDT (p,p'-DDT)		3.3 U	3.4 U	3.3 U	3.3 U	3.6 U	3.3 U
Alpha-chlordane		1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.7 U
Beta-BHC		1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.7 U
Endrin		3.3 U	3.4 U	3.3 U	3.3 U	3.6 U	3.3 U
Endrin Aldehyde		3.3 U	3.4 U	3.3 U	3.3 U	3.6 U	3.3 U
Methoxychlor		17 U	17 U	17 U	17 U	19 U	17 U
PCB-1254 (Aroclor 1254)		33 U	34 U	33 U	33 U	36 U	33 U
PCB-1260 (Aroclor 1260)		33 U	34 U	33 U	33 U	36 U	33 U
Inorganics (Total) (mg/kg)							
Aluminum		9280 JL	15500 JL	21100	4710	17400	17800
Antimony		20.7 JL	27.1 JL	53.5	9.9 B	57.5	45.2
Arsenic		13.9 JH	20.3 JH	25.5	7.6	30.3	21.6
Barium		632 JK	1140 JK	2160	486	1970	1690
Beryllium		0.43 B	0.69 B	0.99 B	0.27 B	0.86 B	0.77 B
Cadmium		1.6	1.6	0.06 U	4.8	0.07 U	0.19 B
Calcium		26500 JL	46900 JL	69900	54000	57600	66400
Chromium		44.8 JL	76.8 JL	142	20.7	135	112
Cobalt		17.7 JL	35.2 JL	59.0	8.4 B	73.5	47.3
Copper		720	1550	2900 JL	245 JL	2520 JL	2160 JL
Iron		79700 JL	137000 JL	239000	28000	176000	178000

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	CS042	CS043	CS044	CS045	CS046	CS047
	Sample ID:	CR-043-SD	CR-044-SD	CR-045-SD	CR-046-SD	CR-047-SD	CR-048-SD
	Sample Date:	05/23/2001	05/23/2001	05/31/2001	05/31/2001	05/31/2001	05/31/2001
	Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 4 in	0 in to 3 in	0 in to 1 in	0 in to 1 in
Lead		446 JL	1040 JL	316	199	409	417
Magnesium		5520 JL	5780 JL	5770 JL	26600 JL	5040 JL	10000 JL
Manganese		1500 JL	3060 JL	4040	585	3680	3240
Nickel		9.6	12.2	17.0	10.4	15.6	14.4
Potassium		1740 JL	3750 JL	4300	888 B	3580	3490
Selenium		3.2	4.5	0.68 UJK	0.67 UJK	1.4 JL	0.68 UJK
Silver		3.9	5.7	7.5	1.6 B	10.2	7.4
Sodium		666 B	1660	2210	269 B	2230	1610
Thallium		2.3	4.6	0.78 U	0.77 U	0.87 U	0.78 U
Total Mercury		0.13	0.06 B	0.05 U	0.06 B	0.06 U	0.05 U
Vanadium		26.2 JL	39.2 JL	42.3	22.1	39.1	37.7
Zinc		8710	15000	20100	2430	17500	18200
Conventional Parameters							
Total Organic Carbon (mg/kg)		1950	1000 U	1000 U	5250	1210	2160
Grain Size (%)							
Percent Gravel		0	10	0	1	5	1 <
Percent Sand		90	90	90-100	80	95	99-100
Percent Silt		10	0	10 <	20 <	0	0
Percent Clay		0	0	0	0	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	CS048	CS049	CS050	CS051	CS052	TS001
	Sample ID:	CR-049-SD	CR-050-SD	CR-051-SD	CR-052-SD	CR-053-SD	TR-056-SD
	Sample Date:	05/31/2001	06/01/2001	06/01/2001	06/01/2001	06/01/2001	06/05/2001
	Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 2 in	0 in to 4 in	0 in to 3 in	0 in to 2 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)		3.3 U	3.4 U	3.9 U	3.3 U	3.8 U	
4,4'-DDT (p,p'-DDT)		3.3 U	3.4 U	3.9 U	3.3 U	3.8 U	
Alpha-chlordane		1.7 U	1.8 U	2.0 U	1.7 U	1.9 U	
Beta-BHC		1.7 U	1.8 U	2.0 U	1.7 U	1.9 U	
Endrin		3.3 U	3.4 U	3.9 U	3.3 U	3.8 U	
Endrin Aldehyde		3.3 U	3.4 U	3.9 U	3.3 U	3.8 U	
Methoxychlor		17 U	18 U	20 U	17 U	19 U	
PCB-1254 (Aroclor 1254)		33 U	34 U	39 U	33 U	38 U	
PCB-1260 (Aroclor 1260)		33 U	34 U	39 U	33 U	38 U	
Inorganics (Total) (mg/kg)							
Aluminum		18100	18700	8170	21100	11000	13600
Antimony		34.9	7.4 B	20.0	61.3	51.4	1.1 B
Arsenic		30.3	7.6	11.8	42.8	23.1	6.2
Barium		1660	681	763	2440	989	172
Beryllium		0.75 B	0.71 B	0.38 B	1.0 B	0.57 B	0.67 B
Cadmium		0.06 U	0.06 U	2.4	0.06 U	0.07 U	0.52 B
Calcium		58600	46900	25300	72400	30800	5080
Chromium		113	64.0	30.2	165	72.0	24.8
Cobalt		33.8	15.0	7.9 B	85.7	33.4	7.8 B
Copper		2160 JL	997 JL	444 JL	3300 JL	1330 JL	19.0
Iron		179000	165000	67100	245000	96900	18700 JK

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	CS048	CS049	CS050	CS051	CS052	TS001
Sample ID:	CR-049-SD	CR-050-SD	CR-051-SD	CR-052-SD	CR-053-SD	TR-056-SD
Sample Date:	05/31/2001	06/01/2001	06/01/2001	06/01/2001	06/01/2001	06/05/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 2 in	0 in to 4 in	0 in to 3 in	0 in to 2 in
Lead	317	282	309	512	276	37.7
Magnesium	6030 JL	5750 JL	8540 JL	5970 JL	3990 JL	5060
Manganese	3130	2950	1080	4360	1990	588
Nickel	13.0	8.1 B	12.5	19.4	13.6	20.1
Potassium	3480	3770	1400	4330	2160	3100 JL
Selenium	1.4 JL	2.1 JL	1.4 JL	0.68 UJK	1.5 JL	0.89 B
Silver	5.9	3.7	2.7	12.6	8.5	0.67 B
Sodium	1530	1050	385 B	2630	1000 B	258 B
Thallium	0.76 U	0.79 U	0.91 U	0.78 U	0.89 U	0.92 U
Total Mercury	0.05 U	0.05 U	0.29	0.05 U	0.06 U	0.06 U
Vanadium	36.3	38.2	28.8	45.0	28.6	31.0
Zinc	16500	15400	4900	22300	8820	85.8
Conventional Parameters						
Total Organic Carbon (mg/kg)	1000 U	1000 U	8720	1000 U	3130	
Grain Size (%)						
Percent Gravel	0	0	1	0	0	0
Percent Sand	100	100	74	100	85	5
Percent Silt	0	0	25	0	15	90
Percent Clay	0	0	1 <	0	0	5

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS002	TS003	TS004	TS005	TS006	TS007
	Sample ID:	TR-057-SD	TR-058-SD	TR-059-SD	TR-061-SD	TR-062-SD	TR-060-SD
	Sample Date:	06/05/2001	06/03/2001	06/05/2001	06/03/2001	06/05/2001	06/04/2001
	Depth (feet):	0 in to 0.5in	0 in to 3 in	0 in to 3 in	0 in to 2 in	0 in to 2 in	0 in to 4 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)				13 U	4.6 U		3.1 JQ
4,4'-DDT (p,p'-DDT)				13 U	4.6 U		3.7 U
Alpha-chlordane				6.8 U	2.4 U		0.73 JQ
Beta-BHC				5.9 JQ	2.4 U		1.9 U
Endrin				13 U	4.6 U		3.7 U
Endrin Aldehyde				13 U	4.6 U		1.5 JQ
Methoxychlor				68 U	27		19 U
PCB-1254 (Aroclor 1254)				130 U	46 U		37 U
PCB-1260 (Aroclor 1260)				130 U	46 U		37 U
Inorganics (Total) (mg/kg)							
Aluminum		12900	14400	8360	3170	7830	12500
Antimony		0.89 B	0.76 UJK	2.9 U	0.94 UJK	1.0 U	0.68 UJK
Arsenic		6.6	6.2 U	4.6 B	3.7 U	4.7	5.7 U
Barium		155	159	130 B	49.3 B	140	151
Beryllium		0.69 B	0.72 B	0.45 B	0.20 B	0.40 B	0.55 B
Cadmium		0.30 B	0.08 U	0.29 U	0.09 U	0.10 U	0.38 B
Calcium		9080	7180	13400	1630	15800	31800
Chromium		32.0	29.4	19.8	8.9	18.3	24.5
Cobalt		9.4 B	9.0 B	6.1 B	2.4 B	5.3 B	7.6 B
Copper		23.9	25.2 JL	12.8 B	4.7 BJL	9.9	21.6 JL
Iron		21800 JK	21700	17000 JK	6600	12800 JK	17200

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	TS002	TS003	TS004	TS005	TS006	TS007
Sample ID:	TR-057-SD	TR-058-SD	TR-059-SD	TR-061-SD	TR-062-SD	TR-060-SD
Sample Date:	06/05/2001	06/03/2001	06/05/2001	06/03/2001	06/05/2001	06/04/2001
Constituent / Depth (feet):	0 in to 0.5in	0 in to 3 in	0 in to 3 in	0 in to 2 in	0 in to 2 in	0 in to 4 in
Lead	27.7	14.8	8.6	2.9	8.1	26.6
Magnesium	7920	6720	3520 B	1580	3590	5030
Manganese	546	612	939	172	907	453
Nickel	27.5	25.3	15.7 B	6.4 B	14.4	21.3
Potassium	3100 JL	3530	1560 BJL	629 B	1590 BJL	2810
Selenium	1.1 B	1.1 BJH	3.7 B	1.1 U	2.2	0.82 BJH
Silver	0.75 B	0.66 B	0.77 U	0.25 U	0.61 B	0.48 B
Sodium	344 B	326 B	685 B	265 BU	394 B	309 B
Thallium	0.90 U	0.99 U	3.7 U	1.2 U	1.3 U	0.88 U
Total Mercury	0.05 U	0.06 U	0.24 U	0.08 U	0.08 U	0.06 U
Vanadium	41.4	37.7	19.4 B	8.5 B	19.9	23.8
Zinc	84.5	85.8	49.2	19.5	49.1	73.5
Conventional Parameters						
Total Organic Carbon (mg/kg)			19300	2710		18400
Grain Size (%)						
Percent Gravel	0	5	0	0	0	5
Percent Sand	1 <	30	30	90	60	75
Percent Silt	100	65	70	10	40	20
Percent Clay	0	0	1 <	0	1 <	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS008	TS009	TS010	TS011	TS012	TS013
	Sample ID:	TR-064-SD	TR-063-SD	TR-065-SD	TR-066-SD	TR-068-SD	TR-067-SD
	Sample Date:	06/05/2001	06/04/2001	06/04/2001	06/05/2001	06/03/2001	06/04/2001
	Depth (feet):	0 in to 1 in	0 in to 3 in	0 in to 3 in	0 in to 2 in	0 in to 3 in	0 in to 4 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)							
4,4'-DDT (p,p'-DDT)							
Alpha-chlordane							
Beta-BHC							
Endrin							
Endrin Aldehyde							
Methoxychlor							
PCB-1254 (Aroclor 1254)							
PCB-1260 (Aroclor 1260)							
Inorganics (Total) (mg/kg)							
Aluminum		12100	14000	3770	13100	13200	5060
Antimony		0.95 B	0.80 BJL	1.3 U	0.89 B	0.81 BJL	1.0 UJK
Arsenic		4.6	6.2	4.6	3.7	3.5 U	5.4 U
Barium		160	201	157	218	108	106
Beryllium		0.60 B	0.64 B	0.20 B	0.66 B	0.65 B	0.22 B
Cadmium		0.79 B	0.07 U	0.18 B	0.70 B	0.08 B	0.10 B
Calcium		6970	31200	131000	32200	6460	65700
Chromium		22.7	29.9	21.0	27.5	30.5	15.3
Cobalt		6.7 B	8.5 B	2.5 B	6.6 B	7.0 B	3.4 B
Copper		18.8	23.7 JL	9.4 B	24.4	22.2 JL	9.3 JL
Iron		17200 JK	19900	5460 JK	18100 JK	19100	10300

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	TS008	TS009	TS010	TS011	TS012	TS013
Sample ID:	TR-064-SD	TR-063-SD	TR-065-SD	TR-066-SD	TR-068-SD	TR-067-SD
Sample Date:	06/05/2001	06/04/2001	06/04/2001	06/05/2001	06/03/2001	06/04/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 3 in	0 in to 3 in	0 in to 2 in	0 in to 3 in	0 in to 4 in
Lead	44.9	15.9	5.6	53.4	14.8	6.4
Magnesium	5010	9140	2700	6800	6740	3290
Manganese	540	482	170	652	249	122
Nickel	17.6	24.9	10 B	20.2	20.6	14.3
Potassium	3890 JL	3770	830 BJL	3180 JL	2720	818 B
Selenium	0.76 U	0.78 U	3.6	0.82 U	0.81 U	1.1 U
Silver	0.59 B	0.50 B	0.36 U	0.53 B	0.60 B	0.27 U
Sodium	295 B	372 B	411 B	370 B	376 B	341 BU
Thallium	0.87 U	0.89 U	1.7 U	0.94 U	0.93 U	1.3 U
Total Mercury	0.06 U	0.06 U	0.11 U	0.06 U	0.06 U	0.08 U
Vanadium	28.1	32.9	9.2 B	32.8	28.8	13.6 B
Zinc	127	68.8	30.9	81.8	71.0	35.2
Conventional Parameters						
Total Organic Carbon (mg/kg)						
Grain Size (%)						
Percent Gravel	0	0	20	0	0	0
Percent Sand	15	100	80	10	40	75
Percent Silt	85	0	0	80	60	25
Percent Clay	0	0	0	10	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID	TS014	TS015	TS016	TS017	TS018	TS019
	Sample ID	TR-069-SD	TR-070-SD	TR-071-SD	TR-072-SD	TR-073-SD	TR-074-SD
	Sample Date	06/04/2001	06/03/2001	06/05/2001	06/05/2001	06/06/2001	06/06/2001
	Depth (feet)	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 2 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)							
4,4'-DDT (p,p'-DDT)							
Alpha-chlordane							
Beta-BHC							
Endrin							
Endrin Aldehyde							
Methoxychlor							
PCB-1254 (Aroclor 1254)							
PCB-1260 (Aroclor 1260)							
Inorganics (Total) (mg/kg)							
Aluminum		5890	5940	5600	11800	10800	6920
Antimony		1 4 U	1 5 UJK	0 96 BUJK	1 0 BJL	0 71 UJK	0 66 UJK
Arsenic		2 8 B	9 5 U	10	3 8	3 3	3 8
Barium		144	90 8 B	68 9	139	120	71 3
Beryllium		0 34 B	0 28 B	0 28 B	0 58 B	0 51 B	0 29 B
Cadmium		0 14 U	0 15 B	0 07 U	0 07 U	0 07 U	0 07 U
Calcium		168000	8190	3720 JK	4650 JK	16100 JK	10800 JK
Chromium		14 1	20 8	12 2	21 8	23 6	17 1
Cobalt		3 5 B	6 0 B	4 2 B	6 5 B	6 0 B	5 5 B
Copper		11 9	15 6 JL	18 0 JL	17 1 JL	19 1 JL	14 1 JL
Iron		8310 JK	14200	10800	16200	15700	15000

A blank cell indicates analysis was not performed or the result was rejected during analysis

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	TS014	TS015	TS016	TS017	TS018	TS019
Sample ID:	TR-069-SD	TR-070-SD	TR-071-SD	TR-072-SD	TR-073-SD	TR-074-SD
Sample Date:	06/04/2001	06/03/2001	06/05/2001	06/05/2001	06/06/2001	06/06/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 2 in
Lead	5.8	8.0	10.2 JH	17.3 JH	11.7 JH	8.4 JH
Magnesium	4500	3890	2930	4900	7110	4930
Manganese	292	1130	284	438	397	297
Nickel	11.4 B	15.3 B	12.4	17.5	17.7	23.8
Potassium	1580 BJL	1090 B	1420	3110	3420	1730
Selenium	1.6 B	1.7 U	0.74 U	0.76 U	0.80 U	0.75 U
Silver	0.37 U	0.52 B	0.32 B	0.49 B	0.34 B	0.39 B
Sodium	472 B	544 B	204 B	260 B	295 B	198 B
Thallium	1.8 U	2.0 U	0.85 U	0.87 U	0.92 U	0.86 U
Total Mercury	0.12 U	0.12 U	0.06 U	0.06 U	0.06 U	0.06 U
Vanadium	14.8 B	21.1 B	19.1	25.8	26.4	18.9
Zinc	30.7	46.9	45.6	64.1	60.6	43.9
Conventional Parameters						
Total Organic Carbon (mg/kg)						
Grain Size (%)						
Percent Gravel	0	0	0	0	0	20
Percent Sand	90	60	50	20	10	65
Percent Silt	10	40	50	80	80	15
Percent Clay	0	0	1 <	0	10	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS020	TS021	TS022	TS023	TS024	TS025
	Sample ID:	TR-075-SD	TR-076-SD	TR-077-SD	TR-078-SD	TR-079-SD	TR-080-SD
	Sample Date:	06/03/2001	06/03/2001	06/06/2001	06/06/2001	06/06/2001	06/06/2001
	Depth (feet):	0 in to 2.5in	0 in to 1.5in	0 in to 2 in	0 in to 1.5in	0 in to 3 in	0 in to 5 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)				5.0 U			
4,4'-DDT (p,p'-DDT)				5.0 U			
Alpha-chlordane				2.6 U			
Beta-BHC				2.6 U			
Endrin				5.0 U			
Endrin Aldehyde				5.0 U			
Methoxychlor				26 U			
PCB-1254 (Aroclor 1254)				50 U			
PCB-1260 (Aroclor 1260)				50 U			
Inorganics (Total) (mg/kg)							
Aluminum		6450	11400	7770	10100	13400	9340
Antimony		2.1 BJL	0.84 BJL	1.5 BJL	1.3 UJK	1.1 BUJK	1.1 BUJK
Arsenic		4.4 BU	6.6	3.5 B	5.3	4.9	4.5
Barium		78.6 B	146	173	201	143	74.5
Beryllium		0.35 B	0.58 B	0.37 B	0.55 B	0.70 B	0.41 B
Cadmium		0.15 U	0.29 B	0.13 B	0.13 U	0.06 U	0.06 U
Calcium		10900	13300	34300 JK	83500 JK	5340 JK	3400 JK
Chromium		17.6	26.8	20.9	23.6	35.1	20.5
Cobalt		3.4 B	7.5 B	5.3 B	7.1 B	10.8	6.9 B
Copper		12.9 JL	23.3 JL	13.4 JL	21.1 JL	26.7 JL	16.9 JL
Iron		9740	19300	13800	16200	24100	16100

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS020	TS021	TS022	TS023	TS024	TS025
	Sample ID:	TR-075-SD	TR-076-SD	TR-077-SD	TR-078-SD	TR-079-SD	TR-080-SD
	Sample Date:	06/03/2001	06/03/2001	06/06/2001	06/06/2001	06/06/2001	06/06/2001
	Depth (feet):	0 in to 2.5in	0 in to 1.5in	0 in to 2 in	0 in to 1.5in	0 in to 3 in	0 in to 5 in
Lead		8.5	24.9	8.6 JH	11.0 JH	14.7 JH	16.8 JH
Magnesium		3070	7320	4150	7170	7090	4660
Manganese		291	439	363	414	594	359
Nickel		10.2 B	24.7	19.8	21.1	31.9	19.6
Potassium		1300 B	2980	1430 B	2580	3950	1900
Selenium		2.2 BJH	0.71 U	1.3 U	1.4 U	0.72 U	0.72 U
Silver		0.40 U	0.63 B	0.38 B	0.36 B	0.78 B	0.49 B
Sodium		480 BU	337 B	378 B	476 B	197 B	188 B
Thallium		2.0 U	0.82 U	1.5 U	1.7 U	0.83 U	0.83 U
Total Mercury		0.12 U	0.05 U	0.09 U	0.11 U	0.05 U	0.05 U
Vanadium		16.2 B	40.6	27.5	31.8	36.9	24.6
Zinc		50.2	110	63.1	77.1	82.8	68.8
Conventional Parameters							
Total Organic Carbon (mg/kg)				20400			
Grain Size (%)							
Percent Gravel		0	0	0	0	1 <	0
Percent Sand		10	20	60	10	30	65
Percent Silt		50	55	30	90	65	35
Percent Clay		40	25	10	1 <	5 <	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS026	TS027	TS028	TS029	TS030	TS031
	Sample ID:	TR-081-SD	TR-082-SD	TR-083-SD	TR-084-SD	TR-085-SD	TR-086-SD
	Sample Date:	06/03/2001	06/04/2001	06/06/2001	06/03/2001	06/06/2001	06/06/2001
	Depth (feet):	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 1.5in	0 in to 8 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)							4.5 U
4,4'-DDT (p,p'-DDT)							10 JL
Alpha-chlordane							2.3 U
Beta-BHC							2.3 U
Endrin							4.5 U
Endrin Aldehyde							4.5 U
Methoxychlor							23 U
PCB-1254 (Aroclor 1254)							45 U
PCB-1260 (Aroclor 1260)							45 U
Inorganics (Total) (mg/kg)							
Aluminum		4500	8890	8550	6760	6090	3010
Antimony		1.1 UJK	1.4 B	1.7 BJL	0.73 BJL	0.67 UJK	4.9 BJL
Arsenic		3.1 BU	4.1	7.2	5.7 U	4.2	5.8
Barium		46.1 B	160	164	74.5	59.4	72.5
Beryllium		0.25 B	0.44 B	0.39 B	0.23 B	0.27 B	0.13 B
Cadmium		0.11 U	0.15 B	0.16 U	13.1	0.17 B	2.4
Calcium		2340	7610	22800 JK	136000	4500 JK	7750 JK
Chromium		7.6	14.8	18.6	11.7	13.4	5.2
Cobalt		1.9 B	6.0 B	7.1 B	4.3 B	4.4 B	2.2 B
Copper		3.7 BJL	14.5	21.8 JL	18.6 JL	13.4 JL	11.8 JL
Iron		6280	12600 JK	16300	12100	11000	5420

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS026	TS027	TS028	TS029	TS030	TS031
	Sample ID:	TR-081-SD	TR-082-SD	TR-083-SD	TR-084-SD	TR-085-SD	TR-086-SD
	Sample Date:	06/03/2001	06/04/2001	06/06/2001	06/03/2001	06/06/2001	06/06/2001
	Depth (feet):	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 1.5in	0 in to 8 in
Lead		3.1	16.7	18.3 JH	17.9	8.6 JH	115 JH
Magnesium		1670 B	3650	4510	4870	3200	1450
Manganese		106	2020	1010	183	285	157
Nickel		5.1 B	14.4 B	22.1	45.6	13.7	6.8 B
Potassium		868 B	1790 BJL	1680 B	1110 B	1050 B	1280 B
Selenium		1.2 U	2.2	1.8 U	0.76 U	0.76 U	1.4
Silver		0.32 B	0.59 B	0.55 B	0.22 B	0.31 B	0.25 B
Sodium		358 BU	334 B	427 B	253 B	168 B	228 B
Thallium		1.4 U	1.4 U	2.1 U	0.87 U	0.88 U	1.1 U
Total Mercury		0.08 U	0.09 U	0.13 U	0.06 U	0.06 U	0.13 B
Vanadium		9.1 B	20.7	22.5 B	29.0	17.8	8.8 B
Zinc		21.4	62.5	90.4	727	54.7	180
Conventional Parameters							
Total Organic Carbon (mg/kg)							328000
Grain Size (%)							
Percent Gravel		10	0	0	40	0	0
Percent Sand		40	35	60	30	65	100
Percent Silt		50	65	40	30	20	0
Percent Clay		0	0	1 <	1 <	15	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID	TS032	TS033	TS034	TS035	TS036	TS037
	Sample ID.	TR-087-SD	TR-088-SD	TR-089-SD	TR-128-SD	TR-129-SD	TR-090-SD
	Sample Date.	06/07/2001	06/03/2001	06/07/2001	06/09/2001	06/09/2001	06/04/2001
	Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 3 in	0 in to 4 in	0 in to 6 in	0 in to 4 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)						3 6 U	
4,4'-DDT (p,p'-DDT)						3 6 U	
Alpha-chlordane						1 9 U	
Beta-BHC						1 9 U	
Endrin						3 6 U	
Endrin Aldehyde						3 6 U	
Methoxychlor						19 U	
PCB-1254 (Aroclor 1254)						36 U	
PCB-1260 (Aroclor 1260)						36 U	
Inorganics (Total) (mg/kg)							
Aluminum		6880	12200	4270	8030	20000	5010
Antimony		0 69 UJK	3 4 UJK	0 67 UJK	0 82 UJK	0 67 UJK	1 0 B
Arsenic		4 6	8 5 BU	1 7 B	6 4 JL	5 5 JL	3 2
Barium		73 1	188 B	50 1	163	301	45 1
Beryllium		0 33 B	0 64 B	0 22 B	0 35 B	0 98 B	0 27 B
Cadmium		0 07 U	0 94 B	0 07 U	0 33 B	0 20 B	0 47 B
Calcium		17800 JK	23100	9770 JK	151000	7790	5320
Chromium		12 0	16 3	9 6	15 8	40 1	10 3
Cobalt		5 0 B	4 9 B	3 1 B	5 2 B	14 1	3 0 B
Copper		15 8 JL	21 7 BJL	7 9 JL	17 9 JL	39 9 JL	8 3
Iron		13700	14600	8030	12300	27800	7960 JK

A blank cell indicates analysis was not performed or the result was rejected during analysis

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID	TS032	TS033	TS034	TS035	TS036	TS037
	Sample ID	TR-087-SD	TR-088-SD	TR-089-SD	TR-128-SD	TR-129-SD	TR-090-SD
	Sample Date	06/07/2001	06/03/2001	06/07/2001	06/09/2001	06/09/2001	06/04/2001
	Depth (feet)	0 in to 2 in	0 in to 2 in	0 in to 3 in	0 in to 4 in	0 in to 6 in	0 in to 4 in
Lead		8 8 JH	14 5	5 1 JH	12 2 JL	37 3 JL	23 7
Magnesium		3760	3860 B	3170	4860	8670	2150
Manganese		251	548	194	348	836	213
Nickel		16 7	17 4 B	9 3	18 0	38 4	7 9 B
Potassium		1200	1740 B	944 B	1620	6120	1100 JL
Selenium		0 78 U	4 8 BJH	0 76 U	1 5	0 76 U	0 74 U
Silver		0 41 B	0 91 U	0 18 B	0 26 B	0 99 B	0 38 B
Sodium		189 B	1010 BU	182 B	299 B	279 B	181 B
Thallium		0 90 U	4 4 U	0 87 U	1 1 U	0 87 U	0 84 U
Total Mercury		0 06 U	0 27 U	0 06 U	0 07 U	0 06 U	0 05 U
Vanadium		17 2	24 7 B	14 0	20 6	44 8	13 7
Zinc		53 0	95 8	33 6	61 2	120	67 7
Conventional Parameters							
Total Organic Carbon (mg/kg)						35000	
Grain Size (%)							
Percent Gravel		5	0	0	1 <	1 <	0
Percent Sand		80	10	100	60	5	100
Percent Silt		15	80	0	35	65	0
Percent Clay		0	10	0	5 <	30	0

A blank cell indicates analysis was not performed or the result was rejected during analysis

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS038	TS039	TS040	TS041	TS042	TS043
	Sample ID:	TR-091-SD	TR-093-SD	TR-094-SD	TR-095-SD	TR-096-SD	TR-097-SD
	Sample Date:	06/04/2001	06/07/2001	06/07/2001	06/07/2001	06/07/2001	06/04/2001
	Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 4 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)		3.5 U					
4,4'-DDT (p,p'-DDT)		3.5 U					
Alpha-chlordane		1.8 U					
Beta-BHC		1.8 U					
Endrin		3.5 U					
Endrin Aldehyde		3.5 U					
Methoxychlor		18 U					
PCB-1254 (Aroclor 1254)		35 U					
PCB-1260 (Aroclor 1260)		35 U					
Inorganics (Total) (mg/kg)							
Aluminum		14800	4430	5120	5610	8280	3500
Antimony		1.6 BJL	0.84 UJK	0.81 BJL	0.86 UJK	2.6 BUJK	1.1 BJL
Arsenic		19.3	1.4 B	2.4	3.5	5.6	2.9 U
Barium		315	43.3 B	51.5	54.7 B	153	30.3 B
Beryllium		0.71 B	0.21 B	0.23 B	0.28 B	0.39 B	0.16 B
Cadmium		0.74 B	0.08 U	0.06 U	0.09 U	0.70 B	2.0
Calcium		6750	6760 JK	9240	3690 JK	61100 JK	1780
Chromium		35.1	8.8	9.4	12.8	11.4	6.1
Cobalt		13.5	2.2 B	3.0 B	3.8 B	5.2 B	1.7 B
Copper		39.6 JL	6.5 BJL	7.9 JL	9.6 JL	18.7 JL	5.5 JL
Iron		30100	7670	8670	10800	12800	5010

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	TS038	TS039	TS040	TS041	TS042	TS043
Sample ID:	TR-091-SD	TR-093-SD	TR-094-SD	TR-095-SD	TR-096-SD	TR-097-SD
Sample Date:	06/04/2001	06/07/2001	06/07/2001	06/07/2001	06/07/2001	06/04/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 4 in
Lead	95.6	5.1 JH	6.7 JL	5.6 JH	11.5 JH	34.9
Magnesium	6710	2650	4470	3320	4950	1240
Manganese	803	152	146	326	235	670
Nickel	41.6	6.9 B	8.2 B	11.3 B	18.3 B	3.8 B
Potassium	3920	791 B	1180	1070 B	1620 B	595 B
Selenium	0.74 U	0.95 U	0.72 U	0.97 U	2.7	0.74 U
Silver	1.0 B	0.25 B	0.37 BU	0.30 B	0.41 B	0.28 B
Sodium	259 B	245 B	212 BU	221 B	453 B	219 BU
Thallium	0.85 U	1.1 U	0.82 U	1.1 U	1.8 U	0.84 U
Total Mercury	0.11	0.07 U	0.05 U	0.07 U	0.12 U	0.05 U
Vanadium	48.5	19.2	14.4	18.1	24.4	9.2 B
Zinc	147	46.4	37.3	35.0	99.4	739
Conventional Parameters						
Total Organic Carbon (mg/kg)	43600					
Grain Size (%)						
Percent Gravel	10	5	0	0	0	0
Percent Sand	70	95	100	60	50	70
Percent Silt	20	0	0	40	50	30
Percent Clay	0	0	0	0	0	1

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS044	TS045	TS046	TS047	TS048	TS049
	Sample ID:	TR-104-SD	TR-105-SD	TR-106-SD	TR-107-SD	TR-098-SD	TR-099-SD
	Sample Date:	06/06/2001	06/04/2001	06/04/2001	06/04/2001	06/04/2001	06/07/2001
	Depth (feet):	0 in to 4 in	0 in to 7 in	0 in to 1.5in	0 in to 2 in	0 in to 2 in	0 in to 2 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)		1.7 JQ	4.2 U	6.1 U	6.3 U	3.8 U	
4,4'-DDT (p,p'-DDT)		3.8 U	4.2 U	3.5 JQ	6.3 U	3.8 U	
Alpha-chlordane		2.0 U	2.2 U	3.1 U	3.3 U	1.9 U	
Beta-BHC		2.0 U	2.2 U	3.1 U	3.3 U	1.9 U	
Endrin		3.8 U	4.2 U	6.1 U	6.3 U	3.8 U	
Endrin Aldehyde		3.8 U	4.2 U	6.1 U	6.3 U	3.8 U	
Methoxychlor		20 U	22 U	31 U	33 U	19 U	
PCB-1254 (Aroclor 1254)		38 U	42 U	61 U	63 U	38 U	
PCB-1260 (Aroclor 1260)		38 U	42 U	61 U	63 U	38 U	
Inorganics (Total) (mg/kg)							
Aluminum		8460	7050	11700	8700	1550	3870
Antimony		0.73 UJK	1.1 BJL	2.2 BJL	1.2 U	0.76 U	0.63 UJK
Arsenic		5.9 JL	5.3 U	9.6 U	3.9 BU	1.4 BU	1.7 B
Barium		145	202	101	132	9.7 B	33.5 B
Beryllium		0.33 B	0.28 B	0.45 B	0.46 B	0.10 B	0.23 B
Cadmium		0.58 B	0.51 B	0.14 U	0.12 U	0.08 U	0.06 U
Calcium		98700	152000	43400	10900	1150 B	2440 JK
Chromium		13.0	10.5	24.7	12.8	2.0 B	5.9
Cobalt		4.6 B	3.9 B	10.4 B	5.0 B	0.53 B	2.1 B
Copper		17.5 JL	21.2 JL	26.8 JL	10.4	2.1 B	9.9 JL
Iron		11900	10100	23400	14000 JK	3220 JK	5980

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	TS044	TS045	TS046	TS047	TS048	TS049
Sample ID:	TR-104-SD	TR-105-SD	TR-106-SD	TR-107-SD	TR-098-SD	TR-099-SD
Sample Date:	06/06/2001	06/04/2001	06/04/2001	06/04/2001	06/04/2001	06/07/2001
Constituent / Depth (feet):	0 in to 4 in	0 in to 7 in	0 in to 1.5in	0 in to 2 in	0 in to 2 in	0 in to 2 in
Lead	17.9 JL	12.4	13.2	11.0	1.2	6.8 JH
Magnesium	6770	3310	7910	4850	646 B	1780
Manganese	257	431	372	390	47.4	126
Nickel	14.3	12.6	24.1	11.8 B	1.2 B	5.1 B
Potassium	1640	1540	1700 B	1390 BJL	422 BJL	790 B
Selenium	1.7	1.1 BJH	1.6 U	1.3 U	0.86 U	0.72 U
Silver	0.43 B	0.30 B	0.73 B	0.65 B	0.20 U	0.17 U
Sodium	287 B	345 B	479 BU	391 B	209 B	169 B
Thallium	0.94 U	1.0 U	1.9 U	1.5 U	0.99 U	0.83 U
Total Mercury	0.06 U	0.06 U	0.21 B	0.10 U	0.06 U	0.05 U
Vanadium	23.7	17.4	40.9	21.3	5.4 B	12.6
Zinc	92.3	68.2	71.9	57.3	7.5	23.2
Conventional Parameters						
Total Organic Carbon (mg/kg)	44700	48200	23100	20300	1000 U	
Grain Size (%)						
Percent Gravel	0	1	1 <	1	20	0
Percent Sand	90	5 <	40	15	80	100
Percent Silt	10	90	60	40	1 <	0
Percent Clay	0	5	0	44	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS050	TS051	TS052	TS053	TS054	TS055
	Sample ID:	TR-125-SD	TR-100-SD	TR-101-SD	TR-102-SD	TR-103-SD	TR-108-SD
	Sample Date:	06/09/2001	06/07/2001	06/07/2001	06/07/2001	06/07/2001	06/04/2001
	Depth (feet):	0 in to 3 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 2 in	0 in to 1 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)							
4,4'-DDT (p,p'-DDT)							
Alpha-chlordane							
Beta-BHC							
Endrin							
Endrin Aldehyde							
Methoxychlor							
PCB-1254 (Aroclor 1254)							
PCB-1260 (Aroclor 1260)							
Inorganics (Total) (mg/kg)							
Aluminum		3760	8560	2040	3080	3670	3740
Antimony		1.1 BUJK	0.91 BJL	0.66 UJK	0.70 UJK	0.60 UJK	0.88 U
Arsenic		1.1 U	2.1 B	1.7 B	1.5 B	1.2 B	2.8 BU
Barium		25.9 B	87.4	36.8 B	25.8 B	42.4	72.2
Beryllium		0.15 B	0.41 B	0.14 B	0.20 B	0.22 B	0.23 B
Cadmium		0.08 U	0.56 B	0.07 U	0.07 U	0.06 U	0.09 U
Calcium		1850	10100	2490 JK	1420	2470	13800
Chromium		9.4	21.5	3.9	5.9	8.4	9.9
Cobalt		1.9 B	4.6 B	1.9 B	1.9 B	3.7 B	2.6 B
Copper		13.6 JL	27.0 JL	6.7 JL	6.4 JL	7.3 JL	5.7 B
Iron		5970	11200	5480	5700	6800	7270 JK

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS050	TS051	TS052	TS053	TS054	TS055
	Sample ID:	TR-125-SD	TR-100-SD	TR-101-SD	TR-102-SD	TR-103-SD	TR-108-SD
	Sample Date:	06/09/2001	06/07/2001	06/07/2001	06/07/2001	06/07/2001	06/04/2001
	Depth (feet):	0 in to 3 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 2 in	0 in to 1 in
Lead		5.8 JL	34.0 JL	8.4 JH	3.9 JL	6.0 JL	3.9
Magnesium		1920	3580	1210	1430	2440	2310
Manganese		77.5	338	449	109	243	288
Nickel		5.8 B	12.3	3.8 B	4.8 B	8.4	7.5 B
Potassium		576 B	1870	581 B	792 B	1120	937 BJL
Selenium		0.91 U	1.3 B	0.75 U	0.79 U	0.68 U	1.0 U
Silver		0.45 BU	0.60 BU	0.18 U	0.23 BU	0.38 BU	0.34 B
Sodium		303 BU	255 BU	139 B	178 BU	193 BU	315 B
Thallium		1.0 U	1.0 U	0.86 U	0.91 U	0.79 U	1.1 U
Total Mercury		0.07 U	0.07 U	0.06 U	0.06 U	0.05 U	0.07 U
Vanadium		10.6 B	22.4	6.7 B	10.7 B	12.8	12.0 B
Zinc		20.7	65.8	17.5	15.8	22.4	24.8
Conventional Parameters							
Total Organic Carbon (mg/kg)							
Grain Size (%)							
Percent Gravel		1 <	0	0	0	0	0
Percent Sand		70	70	100	85	100	90
Percent Silt		20	30	0	15	0	5
Percent Clay		10	0	0	0	0	5

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS056	TS057	TS058	TS059	TS060	TS061
	Sample ID:	TR-109-SD	TR-110-SD	TR-111-SD	TR-112-SD	TR-113-SD	TR-123-SD
	Sample Date:	06/06/2001	06/06/2001	06/06/2001	06/09/2001	06/06/2001	06/06/2001
	Depth (feet):	0 in to 1.5in	0 in to 3 in	0 in to 4 in	0 in to 5 in	0 in to 1 in	0 in to 3 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)		3.9 U	4.1 U				
4,4'-DDT (p,p'-DDT)		3.9 U	4.1 U				
Alpha-chlordane		2.0 U	2.1 U				
Beta-BHC		2.0 U	2.1 U				
Endrin		3.9 U	4.1 U				
Endrin Aldehyde		3.9 U	4.1 U				
Methoxychlor		20 U	21 U				
PCB-1254 (Aroclor 1254)		39 U	41 U				
PCB-1260 (Aroclor 1260)		39 U	41 U				
Inorganics (Total) (mg/kg)							
Aluminum		5370	4340	1210	4410	8190	8100
Antimony		0.74 UJK	0.78 UJK	0.84 UJK	0.91 BUJK	1.0 BJL	1.9 BUJK
Arsenic		4.3 JL	4.5 JL	1.1 UJK	1.4 B	25.5	30.0
Barium		114	71.2	11.0 B	57.4	75.4	110
Beryllium		0.21 B	0.11 B	0.07 B	0.22 B	0.34 B	0.45 B
Cadmium		0.07 U	0.08 U	0.08 U	0.08 U	0.06 U	2.1
Calcium		161000	82800	910 B	22800	16700	10800 JK
Chromium		9.8	9.5	1.6 B	15.8	31.4	16.1
Cobalt		3.4 B	2.7 B	0.60 B	2.5 B	7.0 B	9.3 B
Copper		12.2 JL	7.5 JL	1.7 BJL	8.2 JL	15.6 JL	29.9 JL
Iron		8940	11300	2040	8030	17300	19500

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS056	TS057	TS058	TS059	TS060	TS061
	Sample ID:	TR-109-SD	TR-110-SD	TR-111-SD	TR-112-SD	TR-113-SD	TR-123-SD
	Sample Date:	06/06/2001	06/06/2001	06/06/2001	06/09/2001	06/06/2001	06/06/2001
	Depth (feet):	0 in to 1.5in	0 in to 3 in	0 in to 4 in	0 in to 5 in	0 in to 1 in	0 in to 3 in
Lead		8.0 JL	4.7 JL	1.5 UJK	6.5 JL	7.8 JL	18.0 JH
Magnesium		4540	3740	569 B	2780	5960	4530
Manganese		220	172	64.4	134	296	599
Nickel		9.6 B	9.5 B	1.2 B	7.4 B	28.4	24.9
Potassium		1170 B	607 B	298 B	767 B	1020	1390
Selenium		0.84 U	1.1 B	0.95 U	0.92 B	0.69 U	0.76 U
Silver		0.20 U	0.21 B	0.22 U	0.34 BU	0.60 BU	0.64 B
Sodium		274 B	201 B	203 B	254 BU	216 BU	188 B
Thallium		0.96 U	1.0 U	1.1 U	1.0 U	0.79 U	0.87 U
Total Mercury		0.06 U	0.06 U	0.07 U	0.07 U	0.05 U	0.06 U
Vanadium		12.8	12.8 B	3.4 B	13.3	28.0	25.7
Zinc		55.5	34.4	7.0	32.2	55.6	540
Conventional Parameters							
Total Organic Carbon (mg/kg)		33200	1310				
Grain Size (%)							
Percent Gravel		0	0	0	10	15	5
Percent Sand		80	80	100	70	75	90
Percent Silt		20	20	0	10	10	5
Percent Clay		0	0	0	10	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS062	TS063	TS064	TS065	TS066	TS067
	Sample ID:	TR-124-SD	TR-126-SD	TR-037-SD	TR-038-SD	TR-039-SD	TR-114-SD
	Sample Date:	06/06/2001	06/08/2001	06/08/2001	06/08/2001	06/08/2001	06/05/2001
	Depth (feet):	0 in to 7 in	0 in to 4 in	0 in to 3.5in	0 in to 1 in	0 in to 1.5in	0 in to 2 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)			3.4 U	4.2 U	3.8 U		4.1 U
4,4'-DDT (p,p'-DDT)			3.4 U	4.2 U	3.8 U		4.1 U
Alpha-chlordane			1.7 U	2.2 U	1.9 U		2.1 U
Beta-BHC			1.7 U	2.2 U	1.9 U		2.1 U
Endrin			3.4 U	4.2 U	3.8 U		4.1 U
Endrin Aldehyde			3.4 U	4.2 U	3.8 U		4.1 U
Methoxychlor			17 U	22 U	19 U		21 U
PCB-1254 (Aroclor 1254)			34 U	42 U	38 U		41 U
PCB-1260 (Aroclor 1260)			34 U	42 U	38 U		41 U
Inorganics (Total) (mg/kg)							
Aluminum		2600	6790	5210	10300	7350	1900
Antimony		0.78 UJK	0.61 BUJK	0.79 UJK	1.5 BUJK	2.5 BUJK	0.81 U
Arsenic		2.5 BJL	9.2	5.8 JL	10.7	2.1 U	1.3 B
Barium		40.2 B	73.4	156	124	167	11.5 B
Beryllium		0.12 B	0.23 B	0.18 B	0.45 B	0.34 B	0.12 B
Cadmium		0.08 U	0.06 U	0.39 B	0.88 B	0.50 B	0.08 U
Calcium		3960	33400	174000	12500	106000	1790
Chromium		6.5	17.6	11.2	20.1	21.4	3.2
Cobalt		1.7 B	5.6 B	4.0 B	7.9 B	4.6 B	0.91 B
Copper		5.0 BJL	22.0 JL	14.3 JL	30.0 JL	19.4 JL	1.7 B
Iron		5240	16500	9450	18600	13200	3370 JK

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	TS062	TS063	TS064	TS065	TS066	TS067
Sample ID:	TR-124-SD	TR-126-SD	TR-037-SD	TR-038-SD	TR-039-SD	TR-114-SD
Sample Date:	06/06/2001	06/08/2001	06/08/2001	06/08/2001	06/08/2001	06/05/2001
Constituent / Depth (feet):	0 in to 7 in	0 in to 4 in	0 in to 3.5in	0 in to 1 in	0 in to 1.5in	0 in to 2 in
Lead	5.1 JL	8.5 JL	28.7 JL	65.5 JL	20.6 JL	1.8 U
Magnesium	1680	7750	4080	5340	6700	1620
Manganese	129	250	293	421	167	56.7
Nickel	4.9 B	17.9	11.3	19.2	15.1 B	2.3 B
Potassium	532 B	1160	824 B	2860	1760 B	431 BJL
Selenium	0.88 U	0.68 U	0.89 U	0.80 U	3.8	0.92 U
Silver	0.24 B	0.73 BU	0.21 U	0.86 BU	0.56 BU	0.22 U
Sodium	210 B	282 B	275 B	265 BU	562 BU	222 B
Thallium	1.0 U	0.78 U	1.0 U	0.92 U	2.1 U	1.1 U
Total Mercury	0.07 U	0.05 U	0.07 U	0.05 U	0.13 U	0.07 U
Vanadium	9.0 B	30.7	11.4 B	28.3	20.1 B	5.3 B
Zinc	20.2	50.5	52.0	123	102	7.6
Conventional Parameters						
Total Organic Carbon (mg/kg)		6020	15800	45400		2040
Grain Size (%)						
Percent Gravel	0	2	5	1 <	0	10
Percent Sand	90	98	75	60	40	90
Percent Silt	0	0	20	40	55-60	0
Percent Clay	10	0	1 <	1 <	5 <	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS068	TS069	TS070	TS071	TS072	TS073
	Sample ID:	TR-115-SD	TR-119-SD	TR-116-SD	TR-117-SD	TR-118-SD	TR-120-SD
	Sample Date:	06/06/2001	06/05/2001	06/05/2001	06/05/2001	06/05/2001	06/05/2001
	Depth (feet):	0 in to 1 in	0 in to 3 in	0 in to 8 in	0 in to 2 in	0 in to 3 in	0 in to 3 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)						3.5 U	
4,4'-DDT (p,p'-DDT)						3.5 U	
Alpha-chlordane						0.89 JQ	
Beta-BHC						1.8 U	
Endrin						3.5 U	
Endrin Aldehyde						0.64 JQ	
Methoxychlor						18 U	
PCB-1254 (Aroclor 1254)						35 U	
PCB-1260 (Aroclor 1260)						35 U	
Inorganics (Total) (mg/kg)							
Aluminum		7960	6430	5530	7360	5870	4190
Antimony		1.0 BJL	0.89 U	1.5 B	1.6 B	1.7 B	0.82 U
Arsenic		14.9 JL	4.0	14.2	42.5	17.9	2.5 BU
Barium		116	49.4 B	73.4	153	106	31.8 B
Beryllium		0.42 B	0.38 B	0.36 B	0.41 B	0.37 B	0.25 B
Cadmium		0.06 U	0.09 U	0.66 B	0.07 U	0.12 B	0.08 U
Calcium		21000	2280	3720	25400	47900	12400
Chromium		21.1	13.6	13.3	21.5	12.6	8.4
Cobalt		7.9 B	4.0 B	5.8 B	8.8 B	7.4 B	2.4 B
Copper		28.8 JL	8.8	20.6	49.0	59.0	5.6 B
Iron		25000	12900 JK	18900 JK	27400 JK	22200 JK	6660 JK

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	TS068	TS069	TS070	TS071	TS072	TS073
Sample ID:	TR-115-SD	TR-119-SD	TR-116-SD	TR-117-SD	TR-118-SD	TR-120-SD
Sample Date:	06/06/2001	06/05/2001	06/05/2001	06/05/2001	06/05/2001	06/05/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 3 in	0 in to 8 in	0 in to 2 in	0 in to 3 in	0 in to 3 in
Lead	14.2 JL	7.1	62.2	14.7	11.2	3.4
Magnesium	5170	3640	2710	4570	5210	6860
Manganese	452	191	230	602	495	140
Nickel	24.1	13.3	14.8	31.9	21.9	6.3 B
Potassium	1210	910 BJL	1330 JL	1230 JL	812 BJL	741 BJL
Selenium	0.78 B	1.0 U	1.2	1.0 B	0.71 U	0.95 B
Silver	0.77 B	0.47 B	0.63 B	0.78 B	0.51 B	0.26 B
Sodium	164 B	219 B	200 B	182 B	178 B	261 B
Thallium	0.82 U	1.2 U	0.93 U	1.1 B	0.81 U	1.1 U
Total Mercury	0.05 U	0.08 U	0.08 B	0.05 U	0.05 U	0.07 U
Vanadium	33.0	24.7	25.5	35.1	24.8	10.2 B
Zinc	78.5	34.5	83.8	59.7	76.0	16.8
Conventional Parameters						
Total Organic Carbon (mg/kg)					10700	
Grain Size (%)						
Percent Gravel	10	5	0	0	10	0
Percent Sand	75	95	90	85	90	100
Percent Silt	15	0	10	15	0	0
Percent Clay	0	0	0	0	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS074	TS075	TS076	TS077	TS078	TS079
	Sample ID:	TR-121-SD	TR-122-SD	TR-001-SD	TR-002-SD	TR-005-SD	TR-004-SD
	Sample Date:	06/05/2001	06/05/2001	05/21/2001	05/22/2001	05/22/2001	05/22/2001
	Depth (feet):	0 in to 5 in	0 in to 2 in	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 1 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)			4.6 U				
4,4'-DDT (p,p'-DDT)			4.6 U				
Alpha-chlordane			2.4 U				
Beta-BHC			2.4 U				
Endrin			4.6 U				
Endrin Aldehyde			4.6 U				
Methoxychlor			24 U				
PCB-1254 (Aroclor 1254)			46 U				
PCB-1260 (Aroclor 1260)			46 U				
Inorganics (Total) (mg/kg)							
Aluminum		2840	4530	7070 JL	7770 JL	9190 JL	8750 JL
Antimony		0.79 U	0.87 UJK	1.0 BJL	9.4 BJL	3.3 BJL	3.4 BJL
Arsenic		1.6 BU	1.4 B	3.2 JH	25.4 JH	54.0 JH	23.5 JH
Barium		33.6 B	42.6 B	74.5 JK	406 JK	183 JK	128 JK
Beryllium		0.16 B	0.30 B	0.32 B	0.30 B	0.45 B	0.36 B
Cadmium		0.08 U	0.09 U	0.86 B	15.3	2.1	2.5
Calcium		43700	2870 JK	6540 JL	17500 JL	5390 JL	24100 JL
Chromium		6.2	13.1	14.4 JL	12.5 JL	12.4 JL	14.5 JL
Cobalt		1.5 B	3.1 B	4.2 BJL	5.4 BJL	8.1 BJL	6.4 BJL
Copper		3.5 B	7.3 JL	11.2	33.5	31.4	30.3
Iron		4650 JK	9730	11600 JL	15300 JL	22700 JL	17500 JL

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS074	TS075	TS076	TS077	TS078	TS079
	Sample ID:	TR-121-SD	TR-122-SD	TR-001-SD	TR-002-SD	TR-005-SD	TR-004-SD
	Sample Date:	06/05/2001	06/05/2001	05/21/2001	05/22/2001	05/22/2001	05/22/2001
	Depth (feet):	0 in to 5 in	0 in to 2 in	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 1 in
Lead		2.3	3.9 JH	47.4 JL	603 JL	85.5 JL	107 JL
Magnesium		4080	2860	3390 JL	4520 JL	3860 JL	6170 JL
Manganese		110	151	190 JL	997 JL	716 JL	659 JL
Nickel		4.4 B	8.7 B	11.6	14.2	17.6	17.8
Potassium		419 BJL	714 B	1710 JL	2020 JL	2820 JL	1870 JL
Selenium		0.89 U	0.99 U	0.69 U	1.6 B	1.5	3.0
Silver		0.21 U	0.25 B	0.30 B	0.66 B	0.62 B	0.55 B
Sodium		242 B	264 B	168 B	260 B	154 B	222 B
Thallium		1.0 U	1.1 U	0.79 U	1.3 U	0.83 U	1.0 UJK
Total Mercury		0.07 U	0.07 U	0.14	0.22	0.05 U	0.09 B
Vanadium		8.1 B	20.8	19.7 JL	23.1 JL	27.3 JL	21.9 JL
Zinc		12.4	24.5	78.1	585	146	202
Conventional Parameters							
Total Organic Carbon (mg/kg)			2850				
Grain Size (%)							
Percent Gravel		15	0	0	0	15	15
Percent Sand		75	100	20	33	50	50
Percent Silt		10	0	40	67	35	35
Percent Clay		0	0	20	0	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	TS080	TS081	TS082	TS083	TS084	TS085
Sample ID:	TR-006-SD	TR-007-SD	TR-008-SD	TR-009-SD	TR-010-SD	TR-011-SD
Sample Date:	05/22/2001	05/22/2001	05/22/2001	05/23/2001	05/23/2001	05/23/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 2 in	0 in to 2 in	0 in to 0.5in
Semi-Volatile Organic Compounds (ug/kg)						
Benzyl Butyl Phthalate						
Bis(2-ethylhexyl) Phthalate						
Pesticides/PCBs (ug/kg)						
4,4'-DDE (p,p'-DDE)						
4,4'-DDT (p,p'-DDT)						
Alpha-chlordane						
Beta-BHC						
Endrin						
Endrin Aldehyde						
Methoxychlor						
PCB-1254 (Aroclor 1254)						
PCB-1260 (Aroclor 1260)						
Inorganics (Total) (mg/kg)						
Aluminum	6080 JL	5770 JL	5650 JL	6290 JL	3350 JL	3510 JL
Antimony	1.8 BJL	2.6 BJL	2.4 BJL	3.5 BJL	0.61 UJK	1.3 BJL
Arsenic	9.8 JH	3.1 U	6.3 JH	4.1 JH	1.8 BJH	6.2 JH
Barium	130 JK	114 BJK	152 JK	115 JK	37.7 BJK	72.9 JK
Beryllium	0.21 B	0.23 B	0.24 B	0.25 B	0.16 B	0.13 B
Cadmium	0.23 B	1.4 B	2.4	8.4	0.07 B	0.32 B
Calcium	102000 JL	59900 JL	82600 JL	34300 JL	1780 JL	19500 JL
Chromium	16.7 JL	13.8 JL	12.0 JL	14.1 JL	6.8 JL	10.2 JL
Cobalt	5.8 BJL	3.1 BJL	3.9 BJL	3.4 BJL	2.4 BJL	2.1 BJL
Copper	15.5	27.9	18.9	41.3	5.5	10.1
Iron	12700 JL	9180 JL	9040 JL	10700 JL	6340 JL	9260 JL

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	TS080	TS081	TS082	TS083	TS084	TS085
Sample ID:	TR-006-SD	TR-007-SD	TR-008-SD	TR-009-SD	TR-010-SD	TR-011-SD
Sample Date:	05/22/2001	05/22/2001	05/22/2001	05/23/2001	05/23/2001	05/23/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 2 in	0 in to 2 in	0 in to 0.5in
Lead	13.8 JL	54.3 JL	79.4 JL	128 JL	5.3 JL	15.7 JL
Magnesium	5740 JL	6130 JL	4970 JL	5130 JL	1610 JL	3890 JL
Manganese	340 JL	133 JL	289 JL	288 JL	114 JL	95.1 JL
Nickel	18.8	19.3 B	11.7	33.5	6.0 B	9.7 B
Potassium	1070 BJL	1540 BJL	1540 JL	1460 BJL	689 BJL	647 BJL
Selenium	2.2	5.0	1.1 B	3.8	0.69 U	1.8
Silver	0.31 U	0.61 U	0.25 B	0.43 B	0.16 U	0.24 U
Sodium	380 B	611 B	237 B	350 B	141 B	244 B
Thallium	1.5 UJK	3.0 UJK	0.98 UJK	1.2 UJK	0.79 UJK	1.2 UJK
Total Mercury	0.09 U	0.19 U	0.10 B	0.11 B	0.05 U	0.07 U
Vanadium	17.9 BJL	14.9 BJL	13.8 JL	28.9 JL	10.8 JL	12.2 BJL
Zinc	79.4	117	185	212	27.4	103
Conventional Parameters						
Total Organic Carbon (mg/kg)						
Grain Size (%)						
Percent Gravel	0	0	0	0	0	0
Percent Sand	60	30	30	40	95	25
Percent Silt	30	60	30	30	5	75
Percent Clay	10	10	40	30	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS086	TS087	TS088	TS089	TS090	TS091
	Sample ID:	TR-012-SD	TR-013-SD	TR-014-SD	TR-016-SD	TR-040-SD	TR-127-SD
	Sample Date:	05/23/2001	05/23/2001	05/23/2001	05/23/2001	06/08/2001	06/08/2001
	Depth (feet):	UNK to UNK	0 in to 1 in	0 in to 1 in	0 in to 2 in	0 in to 3 in	0 in to 6 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)						4.4 U	
4,4'-DDT (p,p'-DDT)						4.4 U	
Alpha-chlordane						2.3 U	
Beta-BHC						2.3 U	
Endrin						4.4 U	
Endrin Aldehyde						4.4 U	
Methoxychlor						23 U	
PCB-1254 (Aroclor 1254)						44 U	
PCB-1260 (Aroclor 1260)						44 U	
Inorganics (Total) (mg/kg)							
Aluminum		1120 JL	924 JL	9000 JL	5300	5940	8710
Antimony		1.2 BJL	0.80 UJK	2.5 BJL	2.1 B	0.90 UJK	9.6 BJL
Arsenic		2.3 JH	2.6 BJH	7.0 JH	5.0	9.7	12.0
Barium		119 JK	145 JK	126 BJK	98.0	42.6 B	288
Beryllium		0.04 U	0.05 U	0.35 B	0.19 B	0.20 B	0.37 B
Cadmium		0.41 B	0.77 B	5.1	3.7	0.09 U	10.5
Calcium		306000 JL	336000 JL	42800 JL	11400	4590	5510
Chromium		1.5 BJL	1.7 BJL	19.7 JL	7.6	16.6	12.3
Cobalt		0.48 BJL	0.44 BJL	5.2 BJL	2.6 B	4.7 B	4.5 B
Copper		4.0 B	6.3 B	36.0	15.9 JL	10.6 JL	15.1 JL
Iron		1440 JL	1030 JL	11700 JL	8440	12500	11400

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	TS086	TS087	TS088	TS089	TS090	TS091
Sample ID:	TR-012-SD	TR-013-SD	TR-014-SD	TR-016-SD	TR-040-SD	TR-127-SD
Sample Date:	05/23/2001	05/23/2001	05/23/2001	05/23/2001	06/08/2001	06/08/2001
Constituent / Depth (feet):	UNK to UNK	0 in to 1 in	0 in to 1 in	0 in to 2 in	0 in to 3 in	0 in to 6 in
Lead	10.8 JL	18.9 JL	21.8 JL	105	7.2 JL	405 JL
Magnesium	2980 JL	3800 JL	4100 JL	2690 JL	4240	2770
Manganese	41.4 JL	46.6 JL	238 JL	326	192	1210
Nickel	3.3 B	2.9 B	35.0	7.4 B	25.9	10.8
Potassium	296 BJL	265 BJL	1320 BJL	1140 B	771 B	1490
Selenium	0.73 U	0.91 U	3.3	1.4 JL	1.0 U	0.88 U
Silver	0.17 U	0.21 U	0.70 B	0.41 B	0.75 BU	0.72 BU
Sodium	205 B	276 B	723 B	213 B	408 B	273 BU
Thallium	0.84 UJK	1.0 UJK	2.5 UJK	1.1 U	1.2 U	1.0 U
Total Mercury	0.05 U	0.06 U	0.16 U	0.07 U	0.07 U	0.08 B
Vanadium	3.6 BJL	2.7 BJL	24.6 BJL	13.3 B	29.3	17.7
Zinc	28.5	55.7	135	421	37.0	495
Conventional Parameters						
Total Organic Carbon (mg/kg)					9430	
Grain Size (%)						
Percent Gravel		10	0	1	5 <	0
Percent Sand		60	60	90	85	70
Percent Silt		30	35	10	10	30
Percent Clay		0	5	0	1 <	1 <

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	TS092	TS093	TS094	TS095	TS096	TS097
Sample ID:	TR-041-SD	TR-017-SD	TR-018-SD	TR-019-SD	TR-042-SD	TR-020-SD
Sample Date:	06/08/2001	05/24/2001	05/24/2001	05/24/2001	06/08/2001	05/24/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 5 in	0 in to 3 in
Semi-Volatile Organic Compounds (ug/kg)						
Benzyl Butyl Phthalate						
Bis(2-ethylhexyl) Phthalate						
Pesticides/PCBs (ug/kg)						
4,4'-DDE (p,p'-DDE)	5.1 U				4.4 U	
4,4'-DDT (p,p'-DDT)	5.1 U				4.4 U	
Alpha-chlordane	2.6 U				2.3 U	
Beta-BHC	2.6 U				2.3 U	
Endrin	5.1 U				4.4 U	
Endrin Aldehyde	5.1 U				4.4 U	
Methoxychlor	26 U				23 U	
PCB-1254 (Aroclor 1254)	51 U				44 U	
PCB-1260 (Aroclor 1260)	51 U				44 U	
Inorganics (Total) (mg/kg)						
Aluminum	4900	7530 JL	8880	1200	4190	5740
Antimony	1.5 UJK	1.2 BJL	0.63 B	1.7 U	1.2 BUJK	1.2 U
Arsenic	5.2	7.7 JH	7.0	2.2 U	4.8	4.8 JL
Barium	105	84.6 JK	108	59.8 B	42.4 B	148
Beryllium	0.17 B	0.31 B	0.34 B	0.11 U	0.21 B	0.24 B
Cadmium	0.16 B	1.3	1.1	0.23 B	0.08 U	1.0 B
Calcium	49100	3030 JL	5440	91500	13700	121000
Chromium	14.9	16.8 JL	19.9	3.7 B	11.3	14.7
Cobalt	3.6 B	5.5 BJL	4.7 B	0.61 U	3.9 B	4.3 B
Copper	11.5 BJL	15.5	13.7 JL	3.6 BJL	10.2 JL	16.1 JL
Iron	9410	13500 JL	16000	2600	10900	9520

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	TS092	TS093	TS094	TS095	TS096	TS097
Sample ID:	TR-041-SD	TR-017-SD	TR-018-SD	TR-019-SD	TR-042-SD	TR-020-SD
Sample Date:	06/08/2001	05/24/2001	05/24/2001	05/24/2001	06/08/2001	05/24/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 5 in	0 in to 3 in
Lead	11.3 JL	50.2 JL	44.0	5.5	9.3 JL	22.2
Magnesium	3210	3700 JL	4300 JL	1290 BJL	3480	3410 JL
Manganese	993	352 JL	450	73.0	183	564
Nickel	9.9 B	14.8	18.8	2.9 B	11.7	16.7
Potassium	705 B	1910 JL	1460	300 B	571 B	1140 B
Selenium	1.7 U	0.82 B	0.71 UJK	1.9 UJK	0.88 U	2.1 JL
Silver	0.49 BU	0.40 B	0.60 B	0.44 U	0.51 BU	0.39 B
Sodium	523 BU	217 B	133 B	317 B	237 BU	291 B
Thallium	1.9 U	0.85 UJK	0.81 U	2.2 U	1.0 U	1.6 U
Total Mercury	0.12 U	0.05 U	0.05 U	0.13 U	0.06 U	0.10 U
Vanadium	16.7 B	24.9 JL	23.7	4.2 B	20.0	16.1 B
Zinc	42.2	97.0	109	16.2	48.4	95.2
Conventional Parameters						
Total Organic Carbon (mg/kg)	30400				6900	
Grain Size (%)						
Percent Gravel	0	0	1	0	5	0
Percent Sand	60	50	40	60	85	40
Percent Silt	30	40	50	40	10	40
Percent Clay	10 <	10	10	0	0	20

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	TS098	TS099	TS100	TS101	TS102	TS103
Sample ID:	TR-022-SD	TR-043-SD	TR-023-SD	TR-044-SD	TR-024-SD	TR-025-SD
Sample Date:	05/24/2001	06/08/2001	05/24/2001	06/09/2001	05/24/2001	05/24/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 4 in	0 in to 1.5in	0 in to 4 in	0 in to 1 in	0 in to 3 in
Semi-Volatile Organic Compounds (ug/kg)						
Benzyl Butyl Phthalate						
Bis(2-ethylhexyl) Phthalate						
Pesticides/PCBs (ug/kg)						
4,4'-DDE (p,p'-DDE)		4.4 U		4.0 U		
4,4'-DDT (p,p'-DDT)		4.4 U		4.0 U		
Alpha-chlordane		2.3 U		2.1 U		
Beta-BHC		2.3 U		2.1 U		
Endrin		6.3		4.0 U		
Endrin Aldehyde		4.4 U		4.0 U		
Methoxychlor		23 U		21 U		
PCB-1254 (Aroclor 1254)		44 U		40 U		
PCB-1260 (Aroclor 1260)		44 U		40 U		
Inorganics (Total) (mg/kg)						
Aluminum	7140	3090	11500	6750	11300	2300
Antimony	3.3 B	0.83 UJK	4.8 B	0.91 BUJK	1.8 B	1.4 U
Arsenic	8.6	1.6 B	15.9	3.8	7.7	1.9 U
Barium	273	41.5 B	210	60.2	219	198
Beryllium	0.32 B	0.17 B	0.60 B	0.26 B	0.60 B	0.09 U
Cadmium	21.5	0.17 B	11.4	0.11 B	3.4	0.86 B
Calcium	155000	6380	16900	36200	8070	185000
Chromium	21.3	4.6	23.1	15.7	23.6	4.8
Cobalt	5.5 B	1.6 B	8.0 B	4.6 B	6.6 B	1.0 B
Copper	42.5 JL	3.9 BJL	42.2 JL	12.7 JL	51.8 JL	4.9 BJL
Iron	11700	6230	19300	13900	20200	3160

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS098	TS099	TS100	TS101	TS102	TS103
	Sample ID:	TR-022-SD	TR-043-SD	TR-023-SD	TR-044-SD	TR-024-SD	TR-025-SD
	Sample Date:	05/24/2001	06/08/2001	05/24/2001	06/09/2001	05/24/2001	05/24/2001
	Depth (feet):	0 in to 3 in	0 in to 4 in	0 in to 1.5in	0 in to 4 in	0 in to 1 in	0 in to 3 in
Lead		84.8	13.2 JL	478	8.1 JL	208	10.8
Magnesium		4990 JL	2790	5630 JL	4910	6580 JL	2910 JL
Manganese		277	113	594	208	193	301
Nickel		36.8	4.3 B	20.7	16.0	19.5	4.1 B
Potassium		1340 B	701 B	2540	1380	1290	571 B
Selenium		28.4 JL	0.95 U	0.92 UJK	0.92 U	1.4 JL	1.6 UJK
Silver		0.71 B	0.40 BU	1.1 B	0.59 BU	1.0 B	0.37 U
Sodium		236 B	241 BU	174 B	297 BU	173 B	327 B
Thallium		1.2 U	1.1 U	1.1 U	1.1 U	0.81 U	1.8 U
Total Mercury		0.07 U	0.06 U	0.14 B	0.06 U	0.14	0.11 U
Vanadium		21.1	11.9 B	31.7	26.6	33.8	5.2 B
Zinc		403	98.4	581	138	379	31.4
Conventional Parameters							
Total Organic Carbon (mg/kg)			7670		9280		
Grain Size (%)							
Percent Gravel			0	0	3	0	0
Percent Sand			97	75	87	20	85
Percent Silt			3	25	10	80	15
Percent Clay			0	0	0	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS104	TS105	TS106	TS107	TS108	TS109
	Sample ID:	TR-045-SD	TR-047-SD	TR-026-SD	TR-027-SD	TR-028-SD	TR-029-SD
	Sample Date:	06/09/2001	06/08/2001	05/31/2001	05/31/2001	05/31/2001	06/01/2001
	Depth (feet):	0 in to 2 in	0 in to 4 in	0 in to 2 in	0 in to 4 in	0 in to 4.5in	0 in to 3 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate							
Bis(2-ethylhexyl) Phthalate							
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)		4.6 U	4.0 U	3.4 U		6.0 U	5.0 U
4,4'-DDT (p,p'-DDT)		4.6 U	4.0 U	3.4 U		5.2 J	5.0 U
Alpha-chlordane		2.4 U	2.1 U	1.8 U		3.1 U	2.6 U
Beta-BHC		2.4 U	2.1 U	1.8 U		3.1 U	2.6 U
Endrin		4.6 U	4.0 U	3.4 U		6.0 U	5.0 U
Endrin Aldehyde		4.6 U	4.0 U	3.4 U		6.0 U	5.0 U
Methoxychlor		24 U	21 U	18 U		34	36
PCB-1254 (Aroclor 1254)		46 U	40 U	34 U		60 U	50 U
PCB-1260 (Aroclor 1260)		46 U	40 U	34 U		60 U	50 U
Inorganics (Total) (mg/kg)							
Aluminum		6480	3480	9470	8840	5890	8130
Antimony		1.1 BJL	0.74 UJK	0.62 UJK	0.81 B	2.4 B	0.89 U
Arsenic		3.7	2.6	7.7	7.0	4.5	4.9
Barium		121	28.4 B	104	155	102	127
Beryllium		0.31 B	0.13 B	0.69 B	0.48 B	0.30 B	0.19 B
Cadmium		1.8	0.07 U	0.06 U	0.54 B	4.8	0.79 B
Calcium		110000	3330	6120	10500	5630	15600
Chromium		20.6	7.4	31.8	26.1	14.4	13.8
Cobalt		4.5 B	2.1 B	7.0 B	6.7 B	5.3 B	8.5 B
Copper		18.3 JL	6.7 JL	21.4 JL	26.8 JL	22.3 JL	26.7 JL
Iron		10800	6850	18800	18700	14300	19100

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	TS104	TS105	TS106	TS107	TS108	TS109
	Sample ID:	TR-045-SD	TR-047-SD	TR-026-SD	TR-027-SD	TR-028-SD	TR-029-SD
	Sample Date:	06/09/2001	06/08/2001	05/31/2001	05/31/2001	05/31/2001	06/01/2001
	Depth (feet):	0 in to 2 in	0 in to 4 in	0 in to 2 in	0 in to 4 in	0 in to 4.5in	0 in to 3 in
Lead		29.3 JL	3.3 JL	23.7	73.8	151	16.5
Magnesium		4210	2470	6030	7400 JL	3120 JL	4290 JL
Manganese		223	123	348	291	139	358
Nickel		17.4	8.3 B	24.6	20.2	12.1 B	29.8
Potassium		1450	596 B	1290	1270	1540 B	694 B
Selenium		1.7	0.84 U	0.70 U	1.8 JL	2.4 JL	1.6 JL
Silver		0.47 B	0.37 BU	0.69 B	0.74 B	0.67 B	0.79 B
Sodium		294 BU	255 BU	345 B	260 B	148 B	139 B
Thallium		1.1 U	0.96 U	0.80 U	0.90 U	1.4 UJK	1.2 UJK
Total Mercury		0.07 U	0.06 U	0.08 B	0.18	0.09 U	0.07 U
Vanadium		22.5	12.4	39.5	32.3	24.9	18.2
Zinc		148	21.2	78.8	238	220	134
Conventional Parameters							
Total Organic Carbon (mg/kg)		42700	1000 U	4980		57700	13200
Grain Size (%)							
Percent Gravel		1	5	10	10	0	5
Percent Sand		70	95	50	50	50	55
Percent Silt		25	0	40	30	40	30
Percent Clay		5	0	0	10 <	10	10

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	TS110	US001	US002	US003	US004	US005
Sample ID:	TR-030-SD	BK-150-SD	BK-152-SD	BK-153-SD	BK-155-SD	BK-130-SD
Sample Date:	06/01/2001	06/27/2001	06/28/2001	06/28/2001	06/28/2001	06/25/2001
Constituent / Depth (feet):	0 in to 8 in	0 in to 3 in	0 in to 2 in	0 in to 4 in	0 in to 2 in	0 in to 3 in
Semi-Volatile Organic Compounds (ug/kg)						
Benzyl Butyl Phthalate						
Bis(2-ethylhexyl) Phthalate						
Pesticides/PCBs (ug/kg)						
4,4'-DDE (p,p'-DDE)	4.3 U	5.1 U	4.2 U	3.8 U	3.9 U	5.3 U
4,4'-DDT (p,p'-DDT)	5.9 JQ	5.1 U	4.2 U	3.8 U	3.9 U	5.3 U
Alpha-chlordane	2.2 U	2.6 U	2.2 U	2.0 U	2.0 U	2.7 U
Beta-BHC	2.2 U	2.6 U	2.2 U	2.0 U	2.0 U	2.7 U
Endrin	4.3 U	5.1 U	4.2 U	3.8 U	3.9 U	5.3 U
Endrin Aldehyde	4.3 U	5.1 U	4.2 U	3.8 U	3.9 U	5.3 U
Methoxychlor	22 U	26 U	22 U	20 U	20 U	27 U
PCB-1254 (Aroclor 1254)	43 U	51 U	42 U	38 U	39 U	53 U
PCB-1260 (Aroclor 1260)	43 U	51 U	42 U	38 U	39 U	53 U
Inorganics (Total) (mg/kg)						
Aluminum	6850	3750	5120	9960	7950	3410
Antimony	14.3 JL	9.2 U	7.2 U	6.8 U	6.5 U	8.6 U
Arsenic	21.4	6.7	1.5 B	0.47 U	2.6	1.9 B
Barium	51.4	166	34.2 B	19.2 B	68.4	50.8 B
Beryllium	0.26 B	0.20 U	0.17 U	0.17 U	0.36 U	0.20 U
Cadmium	2.8	46.2 JK	0.35 BJK	0.05 UJK	0.38 BJK	0.06 BJK
Calcium	2480	214000 JK	1160 BJK	915 BJK	1520 JK	1760 JK
Chromium	12.6	7.0	7.9	16.4	14.1	2.2 B
Cobalt	2.2 B	2.2 B	4.8 B	10.5 B	9.3 B	1.6 U
Copper	22.7 JL	28.5 JK	6.1 BJK	8.7 JK	12.7 JK	3.7 BJK
Iron	10900	7050	14300	24500	13600	4520

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	TS110	US001	US002	US003	US004	US005
Sample ID:	TR-030-SD	BK-150-SD	BK-152-SD	BK-153-SD	BK-155-SD	BK-130-SD
Sample Date:	06/01/2001	06/27/2001	06/28/2001	06/28/2001	06/28/2001	06/25/2001
Constituent / Depth (feet):	0 in to 8 in	0 in to 3 in	0 in to 2 in	0 in to 4 in	0 in to 2 in	0 in to 3 in
Lead	589	20.3	6.4	5.0	14.8	2.7
Magnesium	3480	2660	2230	4490	3290	799 B
Manganese	176	177	178	235	699	387
Nickel	8.0 B	66.7	19.9	20.0	20.3	2.5 U
Potassium	1660	353 B	335 B	233 B	556 B	508 B
Selenium	0.81 BJH	0.60 U	0.76 B	0.44 U	0.42 U	0.56 U
Silver	1.1 B	0.85 UJL	0.67 UJL	0.63 UJL	0.60 UJL	0.80 UJL
Sodium	326 B	83.6 B	27.4 U	29.9 U	36.4 U	123 B
Thallium	0.88 U	0.91 U	0.72 U	0.68 U	0.65 U	0.86 U
Total Mercury	0.19	0.08 U	0.06 U	0.06 U	0.06 U	0.07 U
Vanadium	17.8	12.3 B	14.0	6.2 B	10.9 B	9.2 B
Zinc	279	1880	60.0	49.0	54.7	18.3
Conventional Parameters						
Total Organic Carbon (mg/kg)	96600	17100	1000 U	1310	19000	7380
Grain Size (%)						
Percent Gravel	1	10	5	5	3	3
Percent Sand	85	85	85	90	92	87
Percent Silt	13	5	10	5	5	10
Percent Clay	1	0	0	0	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	US006	US007	US008	US009	US010	US011
	Sample ID:	BK-131-SD	BK-134-SD	BK-135-SD	BK-133-SD	BK-139-SD	BK-142-SD
	Sample Date:	06/25/2001	06/25/2001	06/25/2001	06/25/2001	06/25/2001	06/26/2001
	Depth (feet):	0 in to 3 in	0 in to 4 in	0 in to 6 in	0 in to 8 in	0 in to 4 in	2 in to 10 in
Semi-Volatile Organic Compounds (ug/kg)							
Benzyl Butyl Phthalate			130 JQ	450 U	220 JQ		
Bis(2-ethylhexyl) Phthalate			56 JQ	450 U	400 U		
Pesticides/PCBs (ug/kg)							
4,4'-DDE (p,p'-DDE)		4.0 U	4.4 U	4.6 U	4.1 U	4.2 U	33 U
4,4'-DDT (p,p'-DDT)		4.0 U	4.4 U	4.6 U	4.1 U	4.2 U	33 U
Alpha-chlordane		2.0 U	2.3 U	2.3 U	2.1 U	2.2 U	17 U
Beta-BHC		2.0 U	2.3 U	2.3 U	2.1 U	2.2 U	17 U
Endrin		4.0 U	4.4 U	4.6 U	4.1 U	4.2 U	33 U
Endrin Aldehyde		4.0 U	4.4 U	4.6 U	4.1 U	4.2 U	33 U
Methoxychlor		20 U	23 U	23 U	21 U	22 U	170 U
PCB-1254 (Aroclor 1254)		40 U	44 U	46 U	41 U	42 U	330 U
PCB-1260 (Aroclor 1260)		40 U	44 U	46 U	41 U	42 U	330 U
Inorganics (Total) (mg/kg)							
Aluminum		4860	29300	27000	16000	8660	2260 JK
Antimony		7.2 U	8.2 U	8.2 U	7.0 U	7.4 U	34.9 UJK
Arsenic		1.3 B	4.5	7.0	1.5 B	0.51 U	2.4 UJK
Barium		31.1 B	166	214	197	52.3	66.5 BJK
Beryllium		0.27 U	0.79 U	0.80 U	0.59 U	0.74 U	0.24 UJK
Cadmium		0.05 UJK	0.28 BJK	3.3 JK	0.05 UJK	0.05 UJK	1.7 BJK
Calcium		3740 JK	6860 JK	1510 JK	2100 JK	1720 JK	68500 JK
Chromium		6.1	21.5	9.8	10.3	12.3	3.0 UJK
Cobalt		2.7 B	7.5 B	8.1 B	6.2 B	3.9 B	6.5 UJK
Copper		5.1 BJK	13.9 JK	9.8 JK	6.4 JK	4.6 BJK	13.0 BJK
Iron		7020	19200	17800	13200	13200	2310 JK

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	US006	US007	US008	US009	US010	US011
Sample ID:	BK-131-SD	BK-134-SD	BK-135-SD	BK-133-SD	BK-139-SD	BK-142-SD
Sample Date:	06/25/2001	06/25/2001	06/25/2001	06/25/2001	06/25/2001	06/26/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 4 in	0 in to 6 in	0 in to 8 in	0 in to 4 in	2 in to 10 in
Lead	8.0	19.2	139	8.4	5.4	16.1 JK
Magnesium	1860	5190	1640	2300	2750	2260 BJK
Manganese	148	501	2340	501	194	12.2 BJK
Nickel	8.2 B	15.9	10.2 B	10.8	9.9 B	14.1 BJK
Potassium	509 B	1210 B	764 B	885 B	1210 B	398 UJK
Selenium	0.47 U	0.89 B	0.69 B	0.96 B	0.73 B	12.1 JK
Silver	0.66 UJL	0.75 UJL	0.76 UJL	0.64 UJL	0.69 UJL	3.2 UJK
Sodium	131 B	419 B	193 B	140 B	90.9 B	213 BJK
Thallium	0.71 U	0.81 U	0.81 U	0.69 U	0.74 U	3.5 UJK
Total Mercury	0.06 U	0.07 U	0.07 U	0.06 U	0.06 U	0.30 R
Vanadium	10.1 B	27.2	25.4	15.6	14.5	51.9 BJK
Zinc	20.0	135	901	80.6	32.3	42.0 JK
Conventional Parameters						
Total Organic Carbon (mg/kg)	5470				4710	309000
Grain Size (%)						
Percent Gravel	10	0	0	0	15	0
Percent Sand	85	50	75	80	85	0
Percent Silt	5	40	20	20	0	95
Percent Clay	0	10	5	0	0	5

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Constituent	Station ID:	US012	US013	US014	US015	US016
	Sample ID:	BK-140-SD	BK-138-SD	TR-147-SD	TR-145-SD	TR-136-SD
	Sample Date:	06/26/2001	06/26/2001	06/27/2001	06/27/2001	06/27/2001
	Depth (feet):	0 in to 1 in	0 in to 4 in	0 in to 3 in	0 in to 2 in	0 in to 5 in
Semi-Volatile Organic Compounds (ug/kg)						
Benzyl Butyl Phthalate						
Bis(2-ethylhexyl) Phthalate						
Pesticides/PCBs (ug/kg)						
4,4'-DDE (p,p'-DDE)		4.1 U	3.8 U	4.3 U	4.1 U	3.9 U
4,4'-DDT (p,p'-DDT)		4.1 U	3.8 U	4.3 U	4.1 U	3.9 U
Alpha-chlordane		2.1 U	2.0 U	2.2 U	2.1 U	2.0 U
Beta-BHC		2.1 U	2.0 U	2.2 U	2.1 U	2.0 U
Endrin		4.1 U	3.8 U	4.3 U	4.1 U	3.9 U
Endrin Aldehyde		4.1 U	3.8 U	4.3 U	4.1 U	3.9 U
Methoxychlor		21 U	20 U	22 U	21 U	20 U
PCB-1254 (Aroclor 1254)		41 U	38 U	43 U	41 U	39 U
PCB-1260 (Aroclor 1260)		41 U	38 U	43 U	41 U	39 U
Inorganics (Total) (mg/kg)						
Aluminum		4440	10000	10500	8960	10300
Antimony		7.3 U	7.2 U	28.0	2450	637
Arsenic		1.2 B	0.89 B	862	6180	2850
Barium		26.4 B	18.5 B	52.4 B	55.6	59.5
Beryllium		0.16 U	0.19 U	0.38 U	0.67 U	0.63 U
Cadmium		0.05 UJK	0.05 UJK	9.8 JK	210 JK	152 JK
Calcium		2510 JK	2620 JK	4890 JK	14400 JK	9120 JK
Chromium		7.3	13.2	28.8	16.9	20.9
Cobalt		2.5 B	5.9 B	12.8 B	23.0	20.1
Copper		5.9 BJK	4.2 BJK	25.8 JL	279 JK	106 JK
Iron		10200	22800	29400	62800	63500

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-1 - Sediment Sample Detected Concentrations

Station ID:	US012	US013	US014	US015	US016
Sample ID:	BK-140-SD	BK-138-SD	TR-147-SD	TR-145-SD	TR-136-SD
Sample Date:	06/26/2001	06/26/2001	06/27/2001	06/27/2001	06/27/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 4 in	0 in to 3 in	0 in to 2 in	0 in to 5 in
Lead	3.3	6.4	494	18300	14100
Magnesium	2160	4260	9140	19200	12800
Manganese	206	292	985	3520	2300
Nickel	8.9 B	17.0	21.6	23.6	23.9
Potassium	696 B	181 B	822 B	1010 B	847 B
Selenium	0.48 B	0.57 B	0.51 U	0.48 U	0.45 U
Silver	0.67 UJL	0.66 UJL	0.80 BJL	37.4 JL	24.4 JL
Sodium	65.3 B	73.9 B	47.6 B	40.0 U	55.4 B
Thallium	0.72 U	0.71 U	0.77 U	0.73 U	1.4 U
Total Mercury	0.06 U	0.06 U	0.07 U	0.35	0.06 U
Vanadium	9.4 B	12.0 B	31.5	35.4	38.7
Zinc	18.3	41.2	1330	23600	12300
Conventional Parameters					
Total Organic Carbon (mg/kg)	1000 U	4230	8750	2770	9060
Grain Size (%)					
Percent Gravel	0	10	5	10	10
Percent Sand	95	85	90	85	85
Percent Silt	5	5	5	5	5
Percent Clay	0	0	0	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-2 - Surface Water Sample Detected Concentrations

Constituent	Station ID:	CW001	CW002	N/A	UW001	UW002	UW003
	Sample ID:	CR-002-SW	CR-003-SW	CR-001-SW	BK-151-SW	BK-149-SW	BK-154-SW
	Sample Date:	05/14/2001	05/15/2001	05/14/2001	06/27/2001	06/28/2001	06/28/2001
	Depth (feet):	N/A to N/A	32 ft to N/A	N/A to N/A	0 in to N/A	0 in to N/A	0 in to N/A
Volatile Organic Compounds (ug/l)							
Chloroform		26	10 U				
Semi-Volatile Organic Compounds (ug/l)							
Atrazine		10 R	10 R				
Inorganics (Total) (ug/l)							
Aluminum		168 U	168 U		126 BJK	27.2 UJL	27.2 UJL
Antimony		3.0 U	3.0 U		32.6 U	32.6 U	32.6 U
Arsenic		4.0 U	4.0 U		2.2 U	2.2 U	2.2 U
Barium		31.0 B	31.8 B		77.4 B	0.72 B	8.9 B
Cadmium		0.30 U	0.30 U		1.6 U	1.6 U	1.6 U
Calcium		21400	21500		83800	48.6 U	12500
Copper		1.4 BJL	0.97 BJL		3.4 U	3.4 U	3.4 U
Iron		54.6 U	54.6 U		165	14.3 U	41.2 U
Lead		1.5 U	1.5 U		1.3 UJK	2.1 B	1.3 U
Magnesium		5330	5360		24300	33.6 U	2050 B
Manganese		4.3 B	3.6 B		8.3 U	0.44 U	1.1 U
Potassium		1020 BJ	994 BJ		1030 B	372 U	674 B
Selenium		3.4 U	3.4 U		4.2 B	2.1 U	2.1 U
Sodium		4470 B	2600 B		2100 B	119 U	786 B
Zinc		8.7 B	5.9 B		116	2.1 UJK	1.9 UJK

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Table 2-2 - Surface Water Sample Detected Concentrations

Constituent	Station ID:	UW004	UW005	UW006	UW007
	Sample ID:	BK-132-SW	BK-143-SW	BK-141-SW	TR-148-SW
	Sample Date:	06/25/2001	06/26/2001	06/26/2001	06/27/2001
	Depth (feet):	0 in to N/A	0 in to N/A	0 in to N/A	0 in to N/A
Volatile Organic Compounds (ug/l)					
Chloroform					
Semi-Volatile Organic Compounds (ug/l)					
Atrazine					
Inorganics (Total) (ug/l)					
Aluminum		2250 JK	1240 JK	27.2 UJK	223 JL
Antimony		32.6 U	32.6 U	32.6 U	84.5
Arsenic		2.2 U	2.2 U	2.2 U	76.4
Barium		22.9 B	72.0 B	17.3 B	27.7 B
Cadmium		0.70 U	0.49 U	0.22 U	2.6 B
Calcium		11800	146000	47500	37800
Copper		3.4 U	3.4 U	3.4 U	6.0 B
Iron		1650	1240	116	1340
Lead		13.4 JK	10.6 JK	1.3 UJK	41.3
Magnesium		2330 B	15600	7120	20600
Manganese		56.6	21.0	10.4 B	38.7
Potassium		913 B	1690 B	1450 B	1240 B
Selenium		2.1 U	3.5 B	2.1 U	2.1 U
Sodium		1230 B	2740 B	2680 B	2670 B
Zinc		13.3 U	28.8	6.1 U	284

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	CS001	CS002	CS003	CS004	CS005	CS006
	Sample ID:	CR-003-SD	CR-001-SD	CR-004-SD	CR-005-SD	CR-006-SD	CR-007-SD
	Sample Date:	05/14/2001	05/14/2001	05/15/2001	05/17/2001	05/17/2001	05/17/2001
Constituent	Depth (feet):	0 in to 3 in	0 in to N/A	0 in to 4 in	0 in to 4 in	0 in to 4 in	0 in to 4 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	CS001	CS002	CS003	CS004	CS005	CS006
	Sample ID:	CR-003-SD	CR-001-SD	CR-004-SD	CR-005-SD	CR-006-SD	CR-007-SD
	Sample Date:	05/14/2001	05/14/2001	05/15/2001	05/17/2001	05/17/2001	05/17/2001
Constituent	Depth (feet):	0 in to 3 in	0 in to N/A	0 in to 4 in	0 in to 4 in	0 in to 4 in	0 in to 4 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS001	CS002	CS003	CS004	CS005	CS006
Sample ID:	CR-003-SD	CR-001-SD	CR-004-SD	CR-005-SD	CR-006-SD	CR-007-SD
Sample Date:	05/14/2001	05/14/2001	05/15/2001	05/17/2001	05/17/2001	05/17/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to N/A	0 in to 4 in	0 in to 4 in	0 in to 4 in	0 in to 4 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)	4.2 U	4.1 U	4.5 U	5.4 U	5.4 U	3.9 U
4,4'-DDE (p,p'-DDE)	4.2 U	4.1 U	4.5 U	5.4 U	5.4 U	3.9 U
4,4'-DDT (p,p'-DDT)	4.2 U	4.1 U	4.5 U	5.4 U	5.4 U	3.9 U
Aldrin	2.2 U	2.1 U	2.3 U	2.8 U	2.8 U	2.0 U
Alpha-BHC	2.2 U	2.1 U	2.3 U	2.8 U	2.8 U	2.0 U
Alpha-chlordane	2.2 U	2.1 U	2.3 U	2.8 U	2.8 U	2.0 U
Beta-BHC	2.2 U	2.1 U	2.3 U	2.8 U	2.8 U	2.0 U
Delta-BHC	2.2 U	2.1 U	2.3 U	2.8 U	2.8 U	2.0 U
Dieldrin	4.2 U	4.1 U	4.5 U	5.4 U	5.4 U	3.9 U
Endosulfan I (alpha)	2.2 U	2.1 U	2.3 U	2.8 U	2.8 U	2.0 U
Endosulfan II (beta)	4.2 U	4.1 U	4.5 U	5.4 U	5.4 U	3.9 U

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS001	CS002	CS003	CS004	CS005	CS006
Sample ID:	CR-003-SD	CR-001-SD	CR-004-SD	CR-005-SD	CR-006-SD	CR-007-SD
Sample Date:	05/14/2001	05/14/2001	05/15/2001	05/17/2001	05/17/2001	05/17/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to N/A	0 in to 4 in	0 in to 4 in	0 in to 4 in	0 in to 4 in
Endosulfan Sulfate	4.2 U	4.1 U	4.5 U	5.4 U	5.4 U	3.9 U
Endrin	4.2 U	4.1 U	4.5 U	5.4 U	5.4 U	3.9 U
Endrin Aldehyde	4.2 U	4.1 U	4.5 U	5.4 U	5.4 U	3.9 U
Endrin Ketone	4.2 U	4.1 U	4.5 U	5.4 U	5.4 U	3.9 U
Gamma-BHC (Lindane)	2.2 U	2.1 U	2.3 U	2.8 U	2.8 U	2.0 U
Gamma-chlordane	2.2 U	2.1 U	2.3 U	2.8 U	2.8 U	2.0 U
Heptachlor	2.2 U	2.1 U	2.3 U	2.8 U	2.8 U	2.0 U
Heptachlor Epoxide	2.2 U	2.1 U	2.3 U	2.8 U	2.8 U	2.0 U
Methoxychlor	22 U	21 U	23 U	28 U	28 U	20 U
PCB-1016 (Aroclor 1016)	42 U	41 U	45 U	54 U	54 U	39 U
PCB-1221 (Aroclor 1221)	85 U	84 U	92 U	110 U	110 U	80 U
PCB-1232 (Aroclor 1232)	42 U	41 U	45 U	54 U	54 U	39 U
PCB-1242 (Aroclor 1242)	42 U	41 U	45 U	54 U	54 U	39 U
PCB-1248 (Aroclor 1248)	42 U	41 U	45 U	54 U	54 U	39 U
PCB-1254 (Aroclor 1254)	42 U	11 JQ	45 U	54 U	54 U	39 U
PCB-1260 (Aroclor 1260)	42 U	5.9 JQ	45 U	54 U	54 U	39 U
Toxaphene	220 U	210 U	230 U	280 U	280 U	200 U
Inorganics (Total) (mg/kg)						
Aluminum	11300	6270	8730	13700	12100	4430
Antimony	1.3 BJL	0.74 UJK	0.81 BJL	1.5 BJL	1.6 BJL	0.76 UJK
Arsenic	6.7	4.5 U	4.0 U	7.7 U	8.1 U	2.2 BU
Barium	136	79.6	113	230	269	42.2 B
Beryllium	0.66 B	0.45 B	0.71 B	0.69 B	0.63 B	0.21 B
Cadmium	0.08 U	0.62 B	0.08 U	3.6	4.0	0.12 B
Calcium	7150	3090	5760	5970	7670	4420
Chromium	16.4	7.7	8.8	30.1	29.8	8.8

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS001	CS002	CS003	CS004	CS005	CS006
Sample ID:	CR-003-SD	CR-001-SD	CR-004-SD	CR-005-SD	CR-006-SD	CR-007-SD
Sample Date:	05/14/2001	05/14/2001	05/15/2001	05/17/2001	05/17/2001	05/17/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to N/A	0 in to 4 in	0 in to 4 in	0 in to 4 in	0 in to 4 in
Cobalt	8.4 B	5.2 B	7.2 B	8.5 B	8.1 B	3.3 B
Copper	17.3 JL	9.8 JL	11.1 JL	48.5 JL	41.6 JL	10.4 JL
Iron	22900	16700	23000	23400	22300	8630
Lead	11.4	22.3	6.1	219	238	6.2
Magnesium	6540	3460	4340	6990	7720	3140
Manganese	475	434	387	719	533	181
Nickel	15.6	8.0 B	8.5 B	24.6	24.1	9.6 B
Potassium	2470 JL	1250 JL	1840 JL	2570 JL	2230 JL	763 BJL
Selenium	0.87 U	0.84 U	0.91 U	1.3 U	1.2 U	0.87 U
Silver	1.2 B	0.80 B	1.0 B	1.7 B	1.6 B	0.48 B
Sodium	259 B	184 B	532 B	345 B	359 B	197 B
Thallium	1.0 U	0.97 U	1.0 U	1.5 U	1.4 U	0.99 U
Total Mercury	0.07 U	0.06 U	0.06 U	0.66	0.49	0.06 U
Vanadium	36.1	30.0	51.3	36.9	36.2	17.3
Zinc	77.9	149	54.3	523	600	36.8
Conventional Parameters						
Total Organic Carbon (mg/kg)	2150	8830	1000 U	8060	8900	1420
Grain Size (%)						
Percent Gravel	5 <	0	0	0	0	5 <
Percent Sand	30	30	0	0	0	90 >
Percent Silt	30	40	70	60	60	5 <
Percent Clay	35	30	30	40	40	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS007	CS008	CS009	CS010	CS011	CS012
Sample ID:	CR-008-SD	CR-009-SD	CR-010-SD	CR-011-SD	CR-012-SD	CR-013-SD
Sample Date:	05/17/2001	05/17/2001	05/17/2001	05/17/2001	05/17/2001	05/18/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 4 in	0 in to 7 in	0 in to 0.5in	0 in to 2 in	0 in to 3 in
Semi-Volatile Organic Compounds (ug/kg)						
1,1-Biphenyl						
2,4,5-trichlorophenol						
2,4,6-trichlorophenol						
2,4-dichlorophenol						
2,4-dimethylphenol						
2,4-dinitrophenol						
2,4-dinitrotoluene						
2,6-dinitrotoluene						
2-chloronaphthalene						
2-chlorophenol						
2-methyl-4,6-dinitrophenol						
2-methylnaphthalene						
2-methylphenol						
2-nitroaniline						
2-nitrophenol						
3,3'-dichlorobenzidine						
3-nitroaniline						
4-bromophenyl Phenyl Ether						
4-chloro-3-methylphenol						
4-chloroaniline						
4-chlorophenyl Phenyl Ether						
4-Methylphenol						
4-nitroaniline						
4-nitrophenol						
Acenaphthene						

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	CS007	CS008	CS009	CS010	CS011	CS012
	Sample ID:	CR-008-SD	CR-009-SD	CR-010-SD	CR-011-SD	CR-012-SD	CR-013-SD
	Sample Date:	05/17/2001	05/17/2001	05/17/2001	05/17/2001	05/17/2001	05/18/2001
Constituent	Depth (feet):	0 in to 2 in	0 in to 4 in	0 in to 7 in	0 in to 0.5in	0 in to 2 in	0 in to 3 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS007	CS008	CS009	CS010	CS011	CS012
Sample ID:	CR-008-SD	CR-009-SD	CR-010-SD	CR-011-SD	CR-012-SD	CR-013-SD
Sample Date:	05/17/2001	05/17/2001	05/17/2001	05/17/2001	05/17/2001	05/18/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 4 in	0 in to 7 in	0 in to 0.5in	0 in to 2 in	0 in to 3 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)	4.9 U	5.0 U	3.6 U	3.6 U	6.2 U	6.2 U
4,4'-DDE (p,p'-DDE)	4.9 U	5.0 U	3.6 U	3.6 U	6.2 U	6.2 U
4,4'-DDT (p,p'-DDT)	4.9 U	5.0 U	3.6 U	3.6 U	6.2 U	6.2 U
Aldrin	2.5 U	2.6 U	1.9 U	1.8 U	3.2 U	3.2 U
Alpha-BHC	2.5 U	2.6 U	1.9 U	1.8 U	3.2 U	3.2 U
Alpha-chlordane	2.5 U	2.6 U	1.9 U	1.8 U	3.2 U	3.2 U
Beta-BHC	2.5 U	2.6 U	1.9 U	1.8 U	3.2 U	3.2 U
Delta-BHC	2.5 U	2.6 U	1.9 U	1.8 U	3.2 U	3.2 U
Dieldrin	4.9 U	5.0 U	3.6 U	3.6 U	6.2 U	6.2 U
Endosulfan I (alpha)	2.5 U	2.6 U	1.9 U	1.8 U	3.2 U	3.2 U
Endosulfan II (beta)	4.9 U	5.0 U	3.6 U	3.6 U	6.2 U	6.2 U

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS007	CS008	CS009	CS010	CS011	CS012
Sample ID:	CR-008-SD	CR-009-SD	CR-010-SD	CR-011-SD	CR-012-SD	CR-013-SD
Sample Date:	05/17/2001	05/17/2001	05/17/2001	05/17/2001	05/17/2001	05/18/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 4 in	0 in to 7 in	0 in to 0.5in	0 in to 2 in	0 in to 3 in
Endosulfan Sulfate	4.9 U	5.0 U	3.6 U	3.6 U	6.2 U	6.2 U
Endrin	4.9 U	5.0 U	3.6 U	3.6 U	6.2 U	6.2 U
Endrin Aldehyde	4.9 U	5.0 U	3.6 U	3.6 U	6.2 U	6.2 U
Endrin Ketone	4.9 U	5.0 U	3.6 U	3.6 U	6.2 U	6.2 U
Gamma-BHC (Lindane)	2.5 U	2.6 U	1.9 U	1.8 U	3.2 U	3.2 U
Gamma-chlordane	2.5 U	2.6 U	1.9 U	1.8 U	3.2 U	3.2 U
Heptachlor	2.5 U	2.6 U	1.9 U	1.8 U	3.2 U	3.2 U
Heptachlor Epoxide	2.5 U	2.6 U	1.9 U	1.8 U	3.2 U	3.2 U
Methoxychlor	25 U	26 U	19 U	18 U	32 U	32 U
PCB-1016 (Aroclor 1016)	49 U	50 U	36 U	36 U	62 U	62 U
PCB-1221 (Aroclor 1221)	100 U	100 U	73 U	72 U	130 U	130 U
PCB-1232 (Aroclor 1232)	49 U	50 U	36 U	36 U	62 U	62 U
PCB-1242 (Aroclor 1242)	49 U	50 U	36 U	36 U	62 U	62 U
PCB-1248 (Aroclor 1248)	49 U	50 U	36 U	36 U	62 U	62 U
PCB-1254 (Aroclor 1254)	49 U	50 U	36 U	36 U	62 U	38 JQ
PCB-1260 (Aroclor 1260)	49 U	50 U	36 U	36 U	62 U	17 JQ
Toxaphene	250 U	260 U	190 U	180 U	320 U	320 U
Inorganics (Total) (mg/kg)						
Aluminum	4700	8240	7440	21200	14300	14300
Antimony	0.85 UJK	0.97 BJL	0.65 UJK	0.63 UJK	3.6 BJL	3.3 BJL
Arsenic	4.0 U	5.1 U	6.6	5.0	13.7	14.9
Barium	57.4	105	61.1	227	512	596
Beryllium	0.24 B	0.42 B	0.29 B	0.84 B	0.77 B	0.78 B
Cadmium	0.33 B	0.73 B	0.25 B	4.4	8.1	9.4
Calcium	2510	13200	3350	4920	14100	15900
Chromium	15.7	23.3	20.4	14.0	35.7	35.9

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS007	CS008	CS009	CS010	CS011	CS012
Sample ID:	CR-008-SD	CR-009-SD	CR-010-SD	CR-011-SD	CR-012-SD	CR-013-SD
Sample Date:	05/17/2001	05/17/2001	05/17/2001	05/17/2001	05/17/2001	05/18/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 4 in	0 in to 7 in	0 in to 0.5in	0 in to 2 in	0 in to 3 in
Cobalt	3.6 B	6.9 B	6.7 B	5.8 B	9.4 B	9.4 B
Copper	11.8 JL	22.5 JL	21.9 JL	33.9 JL	91.7 JL	86.8 JL
Iron	14400	16600	16500	14300	28300	29600
Lead	21.5	24.4	16.7	86.6	464	535
Magnesium	2760	5990	4860	3220	11200	12400
Manganese	267	376	250	347	808	698
Nickel	10.5 B	21.0	21.0	14.4	27.0	27.4
Potassium	672 BJL	1770 JL	1070 BJL	1400 JL	2520 JL	2500 JL
Selenium	0.96 U	1.1 U	0.74 U	0.72 U	1.5 U	1.4 U
Silver	0.71 B	0.94 B	0.85 B	0.76 B	2.7 B	2.7 B
Sodium	200 B	289 B	231 B	287 B	406 B	429 B
Thallium	1.1 U	1.3 U	0.85 U	0.82 U	1.7 U	1.7 U
Total Mercury	0.07 U	0.08 U	0.05 U	0.14	1.7	0.97
Vanadium	27.7	32.0	27.9	26.7	39.9	40.6
Zinc	77.9	99.0	90.9	230	1060	1210
Conventional Parameters						
Total Organic Carbon (mg/kg)	2040	9250	1000 U	29400	17200	13400
Grain Size (%)						
Percent Gravel	0	0	0	0	0	0
Percent Sand	65	60	90	0	0	0
Percent Silt	15	30	5	60	60	60
Percent Clay	20	10	5	40	40	40

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	CS013	CS014	CS015	CS016	CS017	CS017
	Sample ID:	CR-014-SD	CR-015-SD	CR-016-SD	CR-017-SD	CR-018-SD	CR-066-SD
	Sample Date:	05/18/2001	05/18/2001	05/18/2001	05/18/2001	05/18/2001	05/18/2001
Constituent	Depth (feet):	0 in to 4 in	0 in to 4 in	0 in to 8 in	0 in to 1 in	0 in to 6 in	18 in to 24 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	CS013	CS014	CS015	CS016	CS017	CS017
	Sample ID:	CR-014-SD	CR-015-SD	CR-016-SD	CR-017-SD	CR-018-SD	CR-066-SD
	Sample Date:	05/18/2001	05/18/2001	05/18/2001	05/18/2001	05/18/2001	05/18/2001
Constituent	Depth (feet):	0 in to 4 in	0 in to 4 in	0 in to 8 in	0 in to 1 in	0 in to 6 in	18 in to 24 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS013	CS014	CS015	CS016	CS017	CS017
Sample ID:	CR-014-SD	CR-015-SD	CR-016-SD	CR-017-SD	CR-018-SD	CR-066-SD
Sample Date:	05/18/2001	05/18/2001	05/18/2001	05/18/2001	05/18/2001	05/18/2001
Constituent / Depth (feet):	0 in to 4 in	0 in to 4 in	0 in to 8 in	0 in to 1 in	0 in to 6 in	18 in to 24 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)	4.1 U	7.2 U	3.8 U	3.5 U	4.2 U	4.1 U
4,4'-DDE (p,p'-DDE)	4.1 U	7.2 U	3.8 U	3.5 U	4.2 U	4.1 U
4,4'-DDT (p,p'-DDT)	4.1 U	7.2 U	3.8 U	3.5 U	4.2 U	4.1 U
Aldrin	2.1 U	3.7 U	2.0 U	1.8 U	2.2 U	2.1 U
Alpha-BHC	2.1 U	3.7 U	2.0 U	1.8 U	2.2 U	2.1 U
Alpha-chlordane	2.1 U	3.7 U	2.0 U	1.8 U	2.2 U	2.1 U
Beta-BHC	2.1 U	3.7 U	2.0 U	1.8 U	2.2 U	2.1 U
Delta-BHC	2.1 U	3.7 U	2.0 U	1.8 U	2.2 U	2.1 U
Dieldrin	4.1 U	7.2 U	3.8 U	3.5 U	4.2 U	4.1 U
Endosulfan I (alpha)	2.1 U	3.7 U	2.0 U	1.8 U	2.2 U	2.1 U
Endosulfan II (beta)	4.1 U	7.2 U	3.8 U	3.5 U	4.2 U	4.1 U

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS013	CS014	CS015	CS016	CS017	CS017
Sample ID:	CR-014-SD	CR-015-SD	CR-016-SD	CR-017-SD	CR-018-SD	CR-066-SD
Sample Date:	05/18/2001	05/18/2001	05/18/2001	05/18/2001	05/18/2001	05/18/2001
Constituent / Depth (feet):	0 in to 4 in	0 in to 4 in	0 in to 8 in	0 in to 1 in	0 in to 6 in	18 in to 24 in
Endosulfan Sulfate	4.1 U	7.2 U	3.8 U	3.5 U	4.2 U	4.1 U
Endrin	4.1 U	7.2 U	3.8 U	3.5 U	4.2 U	4.1 U
Endrin Aldehyde	4.1 U	7.2 U	3.8 U	3.5 U	4.2 U	4.1 U
Endrin Ketone	4.1 U	7.2 U	3.8 U	3.5 U	4.2 U	4.1 U
Gamma-BHC (Lindane)	2.1 U	3.7 U	2.0 U	1.8 U	2.2 U	2.1 U
Gamma-chlordane	2.1 U	3.7 U	2.0 U	1.8 U	2.2 U	2.1 U
Heptachlor	2.1 U	3.7 U	2.0 U	1.8 U	2.2 U	2.1 U
Heptachlor Epoxide	2.1 U	3.7 U	2.0 U	1.8 U	2.2 U	2.1 U
Methoxychlor	21 U	37 U	20 U	18 U	22 U	21 U
PCB-1016 (Aroclor 1016)	41 U	72 U	38 U	35 U	42 U	41 U
PCB-1221 (Aroclor 1221)	84 U	140 U	77 U	71 U	85 U	83 U
PCB-1232 (Aroclor 1232)	41 U	72 U	38 U	35 U	42 U	41 U
PCB-1242 (Aroclor 1242)	41 U	72 U	38 U	35 U	42 U	41 U
PCB-1248 (Aroclor 1248)	41 U	72 U	38 U	35 U	42 U	41 U
PCB-1254 (Aroclor 1254)	41 U	72 U	38 U	35 U	42 U	41 U
PCB-1260 (Aroclor 1260)	41 U	72 U	38 U	35 U	42 U	41 U
Toxaphene	210 U	370 U	200 U	180 U	220 U	210 U
Inorganics (Total) (mg/kg)						
Aluminum	12800	15400	9120	13600	9540	15600
Antimony	3.2 BJL	4.1 BJL	1.5 BJL	1.5 BJL	2.4 BJL	0.72 UJK
Arsenic	19.0	12.3	6.2	8.5	13.1	2.8
Barium	755	468	229	261	1030	175
Beryllium	0.64 B	0.83 B	0.46 B	0.71 B	0.53 B	0.55 B
Cadmium	11.1	7.5	3.4	3.8	8.6	0.43 B
Calcium	27000	12100	7040	7150	34900	5560
Chromium	25.9	38.0	21.1	28.6	25.2	9.4

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS013	CS014	CS015	CS016	CS017	CS017
Sample ID:	CR-014-SD	CR-015-SD	CR-016-SD	CR-017-SD	CR-018-SD	CR-066-SD
Sample Date:	05/18/2001	05/18/2001	05/18/2001	05/18/2001	05/18/2001	05/18/2001
Constituent / Depth (feet):	0 in to 4 in	0 in to 4 in	0 in to 8 in	0 in to 1 in	0 in to 6 in	18 in to 24 in
Cobalt	7.4 B	10 B	5.9 B	8.7 B	6.5 B	4.0 B
Copper	73.4 JL	111 JL	49.2 JL	73.0 JL	67.7 JL	15.6 JL
Iron	26800	29400	16800	23800	25900	11500
Lead	841	440	190	162	439	26.8
Magnesium	18100	10300	6130	7240	21400	2970
Manganese	515	610	294	572	420	315
Nickel	21.9	28.5	16.5	24.0	22.7	9.2 B
Potassium	1970 JL	2680 JL	1630 JL	2290 JL	1590 JL	1060 B
Selenium	0.83 U	1.7 U	0.76 U	0.84 B	0.86 U	0.82 U
Silver	1.9 B	2.9 B	1.4 B	1.7 B	1.8 B	0.32 B
Sodium	301 B	490 B	249 B	248 B	276 B	381 B
Thallium	0.95 U	1.9 U	0.87 U	0.80 U	0.98 U	0.94 U
Total Mercury	1.6	1.0	0.54	0.31	0.93	0.06 U
Vanadium	38.5	42.4	25.8	37.2	33.9	19.2
Zinc	1460	1000	470	462	1180	84.2
Conventional Parameters						
Total Organic Carbon (mg/kg)	11900	22600	8630	23100	16600	10400
Grain Size (%)						
Percent Gravel	5 <	0	0	0	0	10
Percent Sand	1 <	0	20	5 <	20	20
Percent Silt	35	40	40	40	50	40
Percent Clay	60	60	40	55	30	30

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	CS018	CS019	CS020	CS021	CS022	CS023
	Sample ID:	CR-019-SD	CR-020-SD	CR-023-SD	CR-022-SD	CR-024-SD	CR-025-SD
	Sample Date:	05/19/2001	05/19/2001	05/19/2001	05/21/2001	05/21/2001	05/21/2001
Constituent	Depth (feet):	0 in to 6.5in	0 in to 5 in	0 in to 4 in	0 in to 4 in	0 in to 4 in	0 in to .25in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS018	CS019	CS020	CS021	CS022	CS023
Sample ID:	CR-019-SD	CR-020-SD	CR-023-SD	CR-022-SD	CR-024-SD	CR-025-SD
Sample Date:	05/19/2001	05/19/2001	05/19/2001	05/21/2001	05/21/2001	05/21/2001
Constituent / Depth (feet):	0 in to 6.5in	0 in to 5 in	0 in to 4 in	0 in to 4 in	0 in to 4 in	0 in to .25in
Acenaphthylene						
Acetophenone						
Anthracene						
Atrazine						
Benzaldehyde						
Benzo(a)anthracene						
Benzo(b)fluoranthene						
Benzo(ghi)perylene						
Benzo(k)fluoranthene						
Benzo-a-pyrene						
Benzyl Butyl Phthalate						
Bis(2-chloroethoxy)methane						
Bis(2-chloroethyl) Ether						
Bis(2-chloroisopropyl) Ether						
Bis(2-ethylhexyl) Phthalate						
Caprolactam						
Carbazole						
Chrysene						
Di-n-butylphthalate						
Di-n-octylphthalate						
Dibenzo(a,h)anthracene						
Dibenzofuran						
Diethyl Phthalate						
Dimethyl Phthalate						
Fluoranthene						
Fluorene						

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS018	CS019	CS020	CS021	CS022	CS023
Sample ID:	CR-019-SD	CR-020-SD	CR-023-SD	CR-022-SD	CR-024-SD	CR-025-SD
Sample Date:	05/19/2001	05/19/2001	05/19/2001	05/21/2001	05/21/2001	05/21/2001
Constituent / Depth (feet):	0 in to 6.5in	0 in to 5 in	0 in to 4 in	0 in to 4 in	0 in to 4 in	0 in to .25in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)	3.8 U	7.8 U	8.2 U	6.7 U	8.7 U	3.3 U
4,4'-DDE (p,p'-DDE)	3.8 U	7.8 U	8.2 U	6.7 U	8.7 U	3.3 U
4,4'-DDT (p,p'-DDT)	3.8 U	7.8 U	8.2 U	6.7 U	8.7 U	3.3 U
Aldrin	1.9 U	4.0 U	4.2 U	3.5 U	4.5 U	1.7 U
Alpha-BHC	1.9 U	4.0 U	4.2 U	3.5 U	4.5 U	1.7 U
Alpha-chlordane	1.9 U	4.0 U	4.2 U	3.5 U	4.5 U	1.7 U
Beta-BHC	1.9 U	4.0 U	4.2 U	3.5 U	4.5 U	1.7 U
Delta-BHC	1.9 U	4.0 U	4.2 U	3.5 U	4.5 U	1.7 U
Dieldrin	3.8 U	7.8 U	8.2 U	6.7 U	8.7 U	3.3 U
Endosulfan I (alpha)	1.9 U	4.0 U	4.2 U	3.5 U	4.5 U	1.7 U
Endosulfan II (beta)	3.8 U	7.8 U	8.2 U	6.7 U	8.7 U	3.3 U

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS018	CS019	CS020	CS021	CS022	CS023
Sample ID:	CR-019-SD	CR-020-SD	CR-023-SD	CR-022-SD	CR-024-SD	CR-025-SD
Sample Date:	05/19/2001	05/19/2001	05/19/2001	05/21/2001	05/21/2001	05/21/2001
Constituent / Depth (feet):	0 in to 6.5in	0 in to 5 in	0 in to 4 in	0 in to 4 in	0 in to 4 in	0 in to .25in
Endosulfan Sulfate	3.8 U	7.8 U	8.2 U	6.7 U	8.7 U	3.3 U
Endrin	3.8 U	7.8 U	8.2 U	6.7 U	8.7 U	3.3 U
Endrin Aldehyde	3.8 U	7.8 U	8.2 U	6.7 U	8.7 U	3.3 U
Endrin Ketone	3.8 U	7.8 U	8.2 U	6.7 U	8.7 U	3.3 U
Gamma-BHC (Lindane)	1.9 U	4.0 U	4.2 U	3.5 U	4.5 U	1.7 U
Gamma-chlordane	1.9 U	4.0 U	4.2 U	3.5 U	4.5 U	1.7 U
Heptachlor	1.9 U	4.0 U	4.2 U	3.5 U	4.5 U	1.7 U
Heptachlor Epoxide	1.9 U	4.0 U	4.2 U	3.5 U	4.5 U	1.7 U
Methoxychlor	19 U	40 U	42 U	35 U	45 U	17 U
PCB-1016 (Aroclor 1016)	38 U	78 U	82 U	67 U	87 U	33 U
PCB-1221 (Aroclor 1221)	76 U	160 U	170 U	140 U	180 U	68 U
PCB-1232 (Aroclor 1232)	38 U	78 U	82 U	67 U	87 U	33 U
PCB-1242 (Aroclor 1242)	38 U	78 U	82 U	67 U	87 U	33 U
PCB-1248 (Aroclor 1248)	38 U	78 U	82 U	67 U	87 U	33 U
PCB-1254 (Aroclor 1254)	38 U	78 U	82 U	67 U	87 U	33 U
PCB-1260 (Aroclor 1260)	38 U	78 U	82 U	67 U	87 U	33 U
Toxaphene	190 U	400 U	420 U	350 U	450 U	170 U
Inorganics (Total) (mg/kg)						
Aluminum	8180	11900	6670	12800	11600	10400
Antimony	1.7 BJL	2.1 BJL	5.4 BJL	3.6 BJL	3.4 BJL	1.0 BJL
Arsenic	7.8	4.5 B	6.8	9.5	10.3	4.2
Barium	422	231	180	364	240	190
Beryllium	0.43 B	0.62 B	0.39 B	0.69 B	0.60 B	0.63 B
Cadmium	4.9	1.4 B	1.8 B	6.5	5.9	1.6
Calcium	12400	9340	7630	8230	7740	5470
Chromium	18.9	20.4	17.0	33.1	30.4	25.7

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS018	CS019	CS020	CS021	CS022	CS023
Sample ID:	CR-019-SD	CR-020-SD	CR-023-SD	CR-022-SD	CR-024-SD	CR-025-SD
Sample Date:	05/19/2001	05/19/2001	05/19/2001	05/21/2001	05/21/2001	05/21/2001
Constituent / Depth (feet):	0 in to 6.5in	0 in to 5 in	0 in to 4 in	0 in to 4 in	0 in to 4 in	0 in to .25in
Cobalt	5.4 B	7.4 B	5.4 B	9.2 B	7.9 B	8.2 B
Copper	40.6 JL	41.8 JL	66.7 JL	88.2 JL	67.6 JL	53.9 JL
Iron	17400	20400	15500	25200	22400	18000
Lead	232	64.9	72.7	441	282	93.8
Magnesium	8970	7000	5610	8200	7930	6150
Manganese	337	392	303	673	392	392
Nickel	16.6	18.7 B	13.6 B	25.9	23.2 B	23.0
Potassium	1490	2020 B	1270 B	2440	2280 B	2390
Selenium	0.77 U	1.9 U	1.9 U	1.5 U	2.0 U	0.68 U
Silver	0.78 B	0.75 B	1.1 B	2.0 B	1.5 B	0.98 B
Sodium	242 B	480 B	426 B	471 B	623 B	186 B
Thallium	0.89 U	2.2 U	2.2 U	1.8 U	2.3 U	0.78 U
Total Mercury	0.43	0.14 U	0.13 U	1.2	0.90	0.25
Vanadium	24.2	26.7 B	20.2 B	35.8	33.7	32.1
Zinc	581	250	455	901	617	280
Conventional Parameters						
Total Organic Carbon (mg/kg)	10700	21500	26400	12600	10200	15500
Grain Size (%)						
Percent Gravel	0	0	0	0	0	0
Percent Sand	40	1 <	10	1 <	0	50
Percent Silt	40	60	50	60	60	40
Percent Clay	20	40	40	40	40	10

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	CS024	CS025	CS026	CS027	CS028	CS029
	Sample ID:	CR-062-SD	CR-026-SD	CR-029-SD	CR-027-SD	CR-028-SD	CR-030-SD
	Sample Date:	06/08/2001	05/21/2001	05/21/2001	05/21/2001	05/21/2001	05/21/2001
Constituent	Depth (feet):	18 in to 24 in	0 in to 3 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 2 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	CS024	CS025	CS026	CS027	CS028	CS029
	Sample ID:	CR-062-SD	CR-026-SD	CR-029-SD	CR-027-SD	CR-028-SD	CR-030-SD
	Sample Date:	06/08/2001	05/21/2001	05/21/2001	05/21/2001	05/21/2001	05/21/2001
Constituent	Depth (feet):	18 in to 24 in	0 in to 3 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 2 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS024	CS025	CS026	CS027	CS028	CS029
Sample ID:	CR-062-SD	CR-026-SD	CR-029-SD	CR-027-SD	CR-028-SD	CR-030-SD
Sample Date:	06/08/2001	05/21/2001	05/21/2001	05/21/2001	05/21/2001	05/21/2001
Constituent / Depth (feet):	18 in to 24 in	0 in to 3 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 2 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)	5.0 U	7.8 U	5.4 U	5.5 U	7.2 U	3.4 U
4,4'-DDE (p,p'-DDE)	5.0 U	7.8 U	5.4 U	5.5 U	7.2 U	3.4 U
4,4'-DDT (p,p'-DDT)	5.0 U	7.8 U	5.4 U	5.5 U	7.2 U	3.4 U
Aldrin	2.6 U	4.0 U	2.8 U	2.8 U	3.7 U	1.7 U
Alpha-BHC	2.6 U	4.0 U	2.8 U	2.8 U	3.7 U	1.7 U
Alpha-chlordane	2.6 U	4.0 U	2.8 U	2.8 U	3.7 U	1.7 U
Beta-BHC	2.6 U	4.0 U	2.8 U	2.8 U	3.7 U	1.7 U
Delta-BHC	2.6 U	4.0 U	2.8 U	2.8 U	3.7 U	1.7 U
Dieldrin	5.0 U	7.8 U	5.4 U	5.5 U	7.2 U	3.4 U
Endosulfan I (alpha)	2.6 U	4.0 U	2.8 U	2.8 U	3.7 U	1.7 U
Endosulfan II (beta)	5.0 U	7.8 U	5.4 U	5.5 U	7.2 U	3.4 U

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS024	CS025	CS026	CS027	CS028	CS029
Sample ID:	CR-062-SD	CR-026-SD	CR-029-SD	CR-027-SD	CR-028-SD	CR-030-SD
Sample Date:	06/08/2001	05/21/2001	05/21/2001	05/21/2001	05/21/2001	05/21/2001
Constituent / Depth (feet):	18 in to 24 in	0 in to 3 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 2 in
Endosulfan Sulfate	5.0 U	7.8 U	5.4 U	5.5 U	7.2 U	3.4 U
Endrin	5.0 U	7.8 U	5.4 U	5.5 U	7.2 U	3.4 U
Endrin Aldehyde	5.0 U	7.8 U	5.4 U	5.5 U	7.2 U	3.4 U
Endrin Ketone	5.0 U	7.8 U	5.4 U	5.5 U	7.2 U	3.4 U
Gamma-BHC (Lindane)	2.6 U	4.0 U	2.8 U	2.8 U	3.7 U	1.7 U
Gamma-chlordane	2.6 U	4.0 U	2.8 U	2.8 U	3.7 U	1.7 U
Heptachlor	2.6 U	4.0 U	2.8 U	2.8 U	3.7 U	1.7 U
Heptachlor Epoxide	2.6 U	4.0 U	2.8 U	2.8 U	3.7 U	1.7 U
Methoxychlor	26 U	40 U	52	28 U	37 U	17 U
PCB-1016 (Aroclor 1016)	50 U	78 U	54 U	55 U	72 U	34 U
PCB-1221 (Aroclor 1221)	100 U	160 U	110 U	110 U	140 U	68 U
PCB-1232 (Aroclor 1232)	50 U	78 U	54 U	55 U	72 U	34 U
PCB-1242 (Aroclor 1242)	50 U	78 U	54 U	55 U	72 U	34 U
PCB-1248 (Aroclor 1248)	50 U	78 U	54 U	55 U	72 U	34 U
PCB-1254 (Aroclor 1254)	50 U	78 U	54 U	55 U	72 U	34 U
PCB-1260 (Aroclor 1260)	50 U	78 U	54 U	55 U	72 U	34 U
Toxaphene	260 U	400 U	280 U	280 U	370 U	170 U
Inorganics (Total) (mg/kg)						
Aluminum	6810	9920	8000	9090	12400	7150
Antimony	1.6 BUJK	4.9 BJL	4.8 BJL	1.3 BJL	3.9 BJL	1.9 BJL
Arsenic	5.8	10.6	9.5	3.4 B	9.7	7.0
Barium	147	505	375	113	370	342
Beryllium	0.29 B	0.54 B	0.44 B	0.58 B	0.67 B	0.37 B
Cadmium	0.10 U	4.3	2.9	0.29 B	2.8	3.2
Calcium	162000	21200	16600	4800	16100	11500
Chromium	12.9	25.0	21.9	21.1	30.1	17.7

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Constituent	Station ID:	CS024	CS025	CS026	CS027	CS028	CS029
	Sample ID:	CR-062-SD	CR-026-SD	CR-029-SD	CR-027-SD	CR-028-SD	CR-030-SD
	Sample Date:	06/08/2001	05/21/2001	05/21/2001	05/21/2001	05/21/2001	05/21/2001
	Depth (feet):	18 in to 24 in	0 in to 3 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 2 in
Cobalt		4.7 B	7.9 B	7.7 B	6.0 B	9.6 B	5.0 B
Copper		18.1 JL	120 JL	118 JL	25.0 JL	114 JL	65.7 JL
Iron		11700	27500	23000	16000	29000	15900
Lead		6.7 JL	211	159	21.3	149	208
Magnesium		5090	13800	11100	5190	11900	7940
Manganese		327	528	411	284	589	256
Nickel		14.3	21.4	18.0	16.2	24.8	14.1
Potassium		1330 B	1960 B	1560 B	1380 B	2480	1250
Selenium		1.2 U	1.8 U	1.2 U	1.3 U	1.6 U	0.68 U
Silver		0.32 BU	2.0 B	1.8 B	0.52 B	1.7 B	1.5 B
Sodium		337 BU	483 B	354 B	385 B	397 B	200 B
Thallium		1.3 U	2.1 U	1.4 U	1.5 U	1.9 U	0.78 U
Total Mercury		0.08 U	0.49	0.20	0.09 U	0.17 B	0.53
Vanadium		16.6 B	30.5	25.6	29.0	36.7	21.4
Zinc		42.3	855	940	104	787	600
Conventional Parameters							
Total Organic Carbon (mg/kg)		15800	24600	13700	18100	21200	11900
Grain Size (%)							
Percent Gravel		1	0	0	0	0	0
Percent Sand		45	25	35	35	25	30
Percent Silt		45	40	40	40	40	40
Percent Clay		10 <	35	25	25	35	30

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	CS030	CS031	CS032	CS033	CS034	CS035
	Sample ID:	CR-031-SD	CR-032-SD	CR-033-SD	CR-034-SD	CR-036-SD	CR-035-SD
	Sample Date:	05/21/2001	05/21/2001	05/22/2001	05/22/2001	05/22/2001	05/22/2001
Constituent	Depth (feet):	0 in to 1 in	0 in to 2 in	0 in to 1 in	0 in to 5 in	0 in to 1 in	0 in to .25in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	CS030	CS031	CS032	CS033	CS034	CS035
	Sample ID:	CR-031-SD	CR-032-SD	CR-033-SD	CR-034-SD	CR-036-SD	CR-035-SD
	Sample Date:	05/21/2001	05/21/2001	05/22/2001	05/22/2001	05/22/2001	05/22/2001
Constituent	Depth (feet):	0 in to 1 in	0 in to 2 in	0 in to 1 in	0 in to 5 in	0 in to 1 in	0 in to .25in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS030	CS031	CS032	CS033	CS034	CS035
Sample ID:	CR-031-SD	CR-032-SD	CR-033-SD	CR-034-SD	CR-036-SD	CR-035-SD
Sample Date:	05/21/2001	05/21/2001	05/22/2001	05/22/2001	05/22/2001	05/22/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 2 in	0 in to 1 in	0 in to 5 in	0 in to 1 in	0 in to .25in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)	3.4 U	5.2 U	3.6 U	4.0 U	3.5 U	3.4 U
4,4'-DDE (p,p'-DDE)	3.4 U	5.2 U	3.6 U	4.0 U	3.5 U	3.4 U
4,4'-DDT (p,p'-DDT)	3.4 U	5.2 U	3.6 U	4.0 U	3.5 U	3.4 U
Aldrin	1.8 U	2.7 U	1.8 U	2.1 U	1.8 U	1.7 U
Alpha-BHC	1.8 U	2.7 U	1.8 U	2.1 U	1.8 U	1.7 U
Alpha-chlordane	1.8 U	2.7 U	1.8 U	2.1 U	1.8 U	1.7 U
Beta-BHC	1.8 U	2.7 U	1.8 U	2.1 U	1.8 U	1.7 U
Delta-BHC	1.8 U	2.7 U	1.8 U	2.1 U	1.8 U	1.7 U
Dieldrin	3.4 U	5.2 U	3.6 U	4.0 U	3.5 U	3.4 U
Endosulfan I (alpha)	1.8 U	2.7 U	1.8 U	2.1 U	1.8 U	1.7 U
Endosulfan II (beta)	3.4 U	5.2 U	3.6 U	4.0 U	3.5 U	3.4 U

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS030	CS031	CS032	CS033	CS034	CS035
Sample ID:	CR-031-SD	CR-032-SD	CR-033-SD	CR-034-SD	CR-036-SD	CR-035-SD
Sample Date:	05/21/2001	05/21/2001	05/22/2001	05/22/2001	05/22/2001	05/22/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 2 in	0 in to 1 in	0 in to 5 in	0 in to 1 in	0 in to .25in
Endosulfan Sulfate	3.4 U	5.2 U	3.6 U	4.0 U	3.5 U	3.4 U
Endrin	3.4 U	5.2 U	3.6 U	4.0 U	3.5 U	3.4 U
Endrin Aldehyde	3.4 U	5.2 U	3.6 U	4.0 U	3.5 U	3.4 U
Endrin Ketone	3.4 U	5.2 U	3.6 U	4.0 U	3.5 U	3.4 U
Gamma-BHC (Lindane)	1.8 U	2.7 U	1.8 U	2.1 U	1.8 U	1.7 U
Gamma-chlordane	1.8 U	2.7 U	1.8 U	2.1 U	1.8 U	1.7 U
Heptachlor	1.8 U	2.7 U	1.8 U	2.1 U	1.8 U	1.7 U
Heptachlor Epoxide	1.8 U	2.7 U	1.8 U	2.1 U	1.8 U	1.7 U
Methoxychlor	18 U	27 U	18 U	21 U	18 U	17 U
PCB-1016 (Aroclor 1016)	34 U	52 U	36 U	40 U	35 U	34 U
PCB-1221 (Aroclor 1221)	70 U	110 U	73 U	82 U	71 U	68 U
PCB-1232 (Aroclor 1232)	34 U	52 U	36 U	40 U	35 U	34 U
PCB-1242 (Aroclor 1242)	34 U	52 U	36 U	40 U	35 U	34 U
PCB-1248 (Aroclor 1248)	34 U	52 U	36 U	40 U	35 U	34 U
PCB-1254 (Aroclor 1254)	34 U	52 U	36 U	40 U	35 U	34 U
PCB-1260 (Aroclor 1260)	34 U	52 U	36 U	40 U	35 U	34 U
Toxaphene	180 U	270 U	180 U	210 U	180 U	170 U
Inorganics (Total) (mg/kg)						
Aluminum	11200	6940	9410	9240	8720	8540
Antimony	4.7 BJL	21.5 JL	4.7 BJL	7.0 BJL	5.7 BJL	2.2 BJL
Arsenic	11.1	11.5	8.7	13.0	10.7	7.9
Barium	624	533	295	618	391	255
Beryllium	0.62 B	0.38 B	0.54 B	0.51 B	0.49 B	0.45 B
Cadmium	7.2	4.3	3.5	6.9	3.6	2.3
Calcium	20500	26300	15400	26100	19600	10800
Chromium	30.6	29.9	26.4	29.4	25.8	23.4

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS030	CS031	CS032	CS033	CS034	CS035
Sample ID:	CR-031-SD	CR-032-SD	CR-033-SD	CR-034-SD	CR-036-SD	CR-035-SD
Sample Date:	05/21/2001	05/21/2001	05/22/2001	05/22/2001	05/22/2001	05/22/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 2 in	0 in to 1 in	0 in to 5 in	0 in to 1 in	0 in to .25in
Cobalt	9.0 B	10.7 B	8.6 B	9.0 B	8.6 B	7.3 B
Copper	205 JL	387 JL	150 JL	251 JL	156 JL	76.8 JL
Iron	26800	36300	24700	28900	25500	19800
Lead	369	256	165	392	190	112
Magnesium	14200	11800	10200	15300	12800	8570
Manganese	388	661	481	435	545	467
Nickel	23.1	16.0	21.1	20.9	19.8	19.1
Potassium	1820	1440 B	1900	1620	1760	1610
Selenium	1.1	1.6 B	0.97 B	1.2	0.69 U	0.68 U
Silver	3.1	3.4	2.1 B	3.2	2.2	1.2 B
Sodium	258 B	374 B	266 B	269 B	207 B	237 B
Thallium	0.80 U	1.6 B	0.84 U	0.92 U	0.79 U	0.78 U
Total Mercury	1.1	0.40	0.19	0.73	0.32	0.16
Vanadium	33.1	23.6	29.4	30.2	28.6	28.3
Zinc	1250	2560	1030	1660	1100	592
Conventional Parameters						
Total Organic Carbon (mg/kg)	27800	9170	29300	20900	18700	15800
Grain Size (%)						
Percent Gravel	0	0	0	0	0	5
Percent Sand	30	70	30-40	40	30	30
Percent Silt	40	27	60	45	40	55
Percent Clay	30	3	10 <	15	25	10

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	CS036	CS037	CS038	CS039	CS040	CS041
	Sample ID:	CR-037-SD	CR-038-SD	CR-039-SD	CR-040-SD	CR-041-SD	CR-042-SD
	Sample Date:	05/22/2001	05/22/2001	05/23/2001	05/23/2001	05/23/2001	05/23/2001
Constituent	Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 3 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	CS036	CS037	CS038	CS039	CS040	CS041
	Sample ID:	CR-037-SD	CR-038-SD	CR-039-SD	CR-040-SD	CR-041-SD	CR-042-SD
	Sample Date:	05/22/2001	05/22/2001	05/23/2001	05/23/2001	05/23/2001	05/23/2001
Constituent	Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 3 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS036	CS037	CS038	CS039	CS040	CS041
Sample ID:	CR-037-SD	CR-038-SD	CR-039-SD	CR-040-SD	CR-041-SD	CR-042-SD
Sample Date:	05/22/2001	05/22/2001	05/23/2001	05/23/2001	05/23/2001	05/23/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 3 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)	3.4 U	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U
4,4'-DDE (p,p'-DDE)	3.4 U	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U
4,4'-DDT (p,p'-DDT)	3.4 U	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U
Aldrin	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Alpha-BHC	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Alpha-chlordane	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Beta-BHC	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Delta-BHC	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Dieldrin	3.4 U	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U
Endosulfan I (alpha)	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Endosulfan II (beta)	3.4 U	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS036	CS037	CS038	CS039	CS040	CS041
Sample ID:	CR-037-SD	CR-038-SD	CR-039-SD	CR-040-SD	CR-041-SD	CR-042-SD
Sample Date:	05/22/2001	05/22/2001	05/23/2001	05/23/2001	05/23/2001	05/23/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 3 in
Endosulfan Sulfate	3.4 U	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U
Endrin	3.4 U	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U
Endrin Aldehyde	3.4 U	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U
Endrin Ketone	3.4 U	3.4 U	3.4 U	3.5 U	3.4 U	3.3 U
Gamma-BHC (Lindane)	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Gamma-chlordane	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Heptachlor	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Heptachlor Epoxide	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Methoxychlor	18 U	17 U	17 U	18 U	17 U	17 U
PCB-1016 (Aroclor 1016)	34 U	34 U	34 U	35 U	34 U	33 U
PCB-1221 (Aroclor 1221)	70 U	68 U	68 U	70 U	68 U	68 U
PCB-1232 (Aroclor 1232)	34 U	34 U	34 U	35 U	34 U	33 U
PCB-1242 (Aroclor 1242)	34 U	34 U	34 U	35 U	34 U	33 U
PCB-1248 (Aroclor 1248)	34 U	34 U	34 U	35 U	34 U	33 U
PCB-1254 (Aroclor 1254)	34 U	34 U	34 U	35 U	34 U	33 U
PCB-1260 (Aroclor 1260)	34 U	34 U	34 U	35 U	34 U	33 U
Toxaphene	180 U	170 U	170 U	180 U	170 U	170 U
Inorganics (Total) (mg/kg)						
Aluminum	8790	18900	12400 JL	4950 JL	6520 JL	6550 JL
Antimony	10.8 BJL	17.2 JL	10.4 BJL	3.4 BUJ	19.2 JL	17.2 JL
Arsenic	10.4	26.9	17.3 JH	9.6 JH	9.1 JH	8.7 JH
Barium	438	1070	603 JK	768 JK	452 JK	495 JK
Beryllium	0.39 B	0.74 B	0.53 B	0.28 B	0.34 B	0.32 B
Cadmium	2.8	2.8	2.1	5.3	1.9	2.1
Calcium	22300	49600	28900 JL	46900 JL	24700 JL	28200 JL
Chromium	28.1	59.1	35.1 JL	12.5 JL	27.1 JL	32.8 JL

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS036	CS037	CS038	CS039	CS040	CS041
Sample ID:	CR-037-SD	CR-038-SD	CR-039-SD	CR-040-SD	CR-041-SD	CR-042-SD
Sample Date:	05/22/2001	05/22/2001	05/23/2001	05/23/2001	05/23/2001	05/23/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 3 in
Cobalt	10.6	22.3	15.1 JL	4.1 BJL	12.0 JL	13.7 JL
Copper	309 JL	1460 JL	823	102	362	451
Iron	42300	176000	109000 JL	25000 JL	37600 JL	48200 JL
Lead	209	1590	784 JL	289 JL	172 JL	175 JL
Magnesium	10300	7230	5020 JL	25000 JL	9750 JL	9960 JL
Manganese	946	3390	2090 JL	442 JL	743 JL	908 JL
Nickel	15.0	10.3	8.5	10.9	11.1	10.2
Potassium	1400	3620	2300 JL	883 BJL	1330 JL	1260 JL
Selenium	1.4	0.68 U	4.2	0.82 B	1.8	2.1
Silver	2.1	4.0	2.9	0.63 B	2.1	2.2
Sodium	384 B	1310	723 B	228 B	377 B	475 B
Thallium	0.81 B	4.0	2.4	1.1 B	1.2 B	0.78 U
Total Mercury	0.16	0.07 B	0.13	0.29	0.08 B	0.07 B
Vanadium	27.1	39.0	29.5 JL	23.0 JL	21.5 JL	21.4 JL
Zinc	3090	24900	13900	1990	2770	3760
Conventional Parameters						
Total Organic Carbon (mg/kg)	9450	1380	1680	4830	5510	3460
Grain Size (%)						
Percent Gravel	1 <	5	15	0	1	1 <
Percent Sand	60	60	55	65-70	74	90
Percent Silt	40	30	30	30	25	10
Percent Clay	1 <	5	0	5 <	0	1 <

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	CS042	CS043	CS044	CS045	CS046	CS047
	Sample ID:	CR-043-SD	CR-044-SD	CR-045-SD	CR-046-SD	CR-047-SD	CR-048-SD
	Sample Date:	05/23/2001	05/23/2001	05/31/2001	05/31/2001	05/31/2001	05/31/2001
Constituent	Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 4 in	0 in to 3 in	0 in to 1 in	0 in to 1 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	CS042	CS043	CS044	CS045	CS046	CS047
	Sample ID:	CR-043-SD	CR-044-SD	CR-045-SD	CR-046-SD	CR-047-SD	CR-048-SD
	Sample Date:	05/23/2001	05/23/2001	05/31/2001	05/31/2001	05/31/2001	05/31/2001
Constituent	Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 4 in	0 in to 3 in	0 in to 1 in	0 in to 1 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS042	CS043	CS044	CS045	CS046	CS047
Sample ID:	CR-043-SD	CR-044-SD	CR-045-SD	CR-046-SD	CR-047-SD	CR-048-SD
Sample Date:	05/23/2001	05/23/2001	05/31/2001	05/31/2001	05/31/2001	05/31/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 4 in	0 in to 3 in	0 in to 1 in	0 in to 1 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)	3.3 U	3.4 U	3.3 U	3.3 U	3.6 U	3.3 U
4,4'-DDE (p,p'-DDE)	3.3 U	3.4 U	3.3 U	3.3 U	3.6 U	3.3 U
4,4'-DDT (p,p'-DDT)	3.3 U	3.4 U	3.3 U	3.3 U	3.6 U	3.3 U
Aldrin	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.7 U
Alpha-BHC	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.7 U
Alpha-chlordane	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.7 U
Beta-BHC	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.7 U
Delta-BHC	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.7 U
Dieldrin	3.3 U	3.4 U	3.3 U	3.3 U	3.6 U	3.3 U
Endosulfan I (alpha)	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.7 U
Endosulfan II (beta)	3.3 U	3.4 U	3.3 U	3.3 U	3.6 U	3.3 U

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS042	CS043	CS044	CS045	CS046	CS047
Sample ID:	CR-043-SD	CR-044-SD	CR-045-SD	CR-046-SD	CR-047-SD	CR-048-SD
Sample Date:	05/23/2001	05/23/2001	05/31/2001	05/31/2001	05/31/2001	05/31/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 4 in	0 in to 3 in	0 in to 1 in	0 in to 1 in
Endosulfan Sulfate	3.3 U	3.4 U	3.3 U	3.3 U	3.6 U	3.3 U
Endrin	3.3 U	3.4 U	3.3 U	3.3 U	3.6 U	3.3 U
Endrin Aldehyde	3.3 U	3.4 U	3.3 U	3.3 U	3.6 U	3.3 U
Endrin Ketone	3.3 U	3.4 U	3.3 U	3.3 U	3.6 U	3.3 U
Gamma-BHC (Lindane)	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.7 U
Gamma-chlordane	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.7 U
Heptachlor	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.7 U
Heptachlor Epoxide	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.7 U
Methoxychlor	17 U	17 U	17 U	17 U	19 U	17 U
PCB-1016 (Aroclor 1016)	33 U	34 U	33 U	33 U	36 U	33 U
PCB-1221 (Aroclor 1221)	67 U	68 U	67 U	67 U	74 U	68 U
PCB-1232 (Aroclor 1232)	33 U	34 U	33 U	33 U	36 U	33 U
PCB-1242 (Aroclor 1242)	33 U	34 U	33 U	33 U	36 U	33 U
PCB-1248 (Aroclor 1248)	33 U	34 U	33 U	33 U	36 U	33 U
PCB-1254 (Aroclor 1254)	33 U	34 U	33 U	33 U	36 U	33 U
PCB-1260 (Aroclor 1260)	33 U	34 U	33 U	33 U	36 U	33 U
Toxaphene	170 U	170 U	170 U	170 U	190 U	170 U
Inorganics (Total) (mg/kg)						
Aluminum	9280 JL	15500 JL	21100	4710	17400	17800
Antimony	20.7 JL	27.1 JL	53.5	9.9 B	57.5	45.2
Arsenic	13.9 JH	20.3 JH	25.5	7.6	30.3	21.6
Barium	632 JK	1140 JK	2160	486	1970	1690
Beryllium	0.43 B	0.69 B	0.99 B	0.27 B	0.86 B	0.77 B
Cadmium	1.6	1.6	0.06 U	4.8	0.07 U	0.19 B
Calcium	26500 JL	46900 JL	69900	54000	57600	66400
Chromium	44.8 JL	76.8 JL	142	20.7	135	112

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS042	CS043	CS044	CS045	CS046	CS047
Sample ID:	CR-043-SD	CR-044-SD	CR-045-SD	CR-046-SD	CR-047-SD	CR-048-SD
Sample Date:	05/23/2001	05/23/2001	05/31/2001	05/31/2001	05/31/2001	05/31/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 4 in	0 in to 3 in	0 in to 1 in	0 in to 1 in
Cobalt	17.7 JL	35.2 JL	59.0	8.4 B	73.5	47.3
Copper	720	1550	2900 JL	245 JL	2520 JL	2160 JL
Iron	79700 JL	137000 JL	239000	28000	176000	178000
Lead	446 JL	1040 JL	316	199	409	417
Magnesium	5520 JL	5780 JL	5770 JL	26600 JL	5040 JL	10000 JL
Manganese	1500 JL	3060 JL	4040	585	3680	3240
Nickel	9.6	12.2	17.0	10.4	15.6	14.4
Potassium	1740 JL	3750 JL	4300	888 B	3580	3490
Selenium	3.2	4.5	0.68 UJK	0.67 UJK	1.4 JL	0.68 UJK
Silver	3.9	5.7	7.5	1.6 B	10.2	7.4
Sodium	666 B	1660	2210	269 B	2230	1610
Thallium	2.3	4.6	0.78 U	0.77 U	0.87 U	0.78 U
Total Mercury	0.13	0.06 B	0.05 U	0.06 B	0.06 U	0.05 U
Vanadium	26.2 JL	39.2 JL	42.3	22.1	39.1	37.7
Zinc	8710	15000	20100	2430	17500	18200
Conventional Parameters						
Total Organic Carbon (mg/kg)	1950	1000 U	1000 U	5250	1210	2160
Grain Size (%)						
Percent Gravel	0	10	0	1	5	1 <
Percent Sand	90	90	90-100	80	95	99-100
Percent Silt	10	0	10 <	20 <	0	0
Percent Clay	0	0	0	0	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	CS048	CS049	CS050	CS051	CS052	TS001
	Sample ID:	CR-049-SD	CR-050-SD	CR-051-SD	CR-052-SD	CR-053-SD	TR-056-SD
	Sample Date:	05/31/2001	06/01/2001	06/01/2001	06/01/2001	06/01/2001	06/05/2001
Constituent	Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 2 in	0 in to 4 in	0 in to 3 in	0 in to 2 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	CS048	CS049	CS050	CS051	CS052	TS001
	Sample ID:	CR-049-SD	CR-050-SD	CR-051-SD	CR-052-SD	CR-053-SD	TR-056-SD
	Sample Date:	05/31/2001	06/01/2001	06/01/2001	06/01/2001	06/01/2001	06/05/2001
Constituent	Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 2 in	0 in to 4 in	0 in to 3 in	0 in to 2 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS048	CS049	CS050	CS051	CS052	TS001
Sample ID:	CR-049-SD	CR-050-SD	CR-051-SD	CR-052-SD	CR-053-SD	TR-056-SD
Sample Date:	05/31/2001	06/01/2001	06/01/2001	06/01/2001	06/01/2001	06/05/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 2 in	0 in to 4 in	0 in to 3 in	0 in to 2 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)	3.3 U	3.4 U	3.9 U	3.3 U	3.8 U	
4,4'-DDE (p,p'-DDE)	3.3 U	3.4 U	3.9 U	3.3 U	3.8 U	
4,4'-DDT (p,p'-DDT)	3.3 U	3.4 U	3.9 U	3.3 U	3.8 U	
Aldrin	1.7 U	1.8 U	2.0 U	1.7 U	1.9 U	
Alpha-BHC	1.7 U	1.8 U	2.0 U	1.7 U	1.9 U	
Alpha-chlordane	1.7 U	1.8 U	2.0 U	1.7 U	1.9 U	
Beta-BHC	1.7 U	1.8 U	2.0 U	1.7 U	1.9 U	
Delta-BHC	1.7 U	1.8 U	2.0 U	1.7 U	1.9 U	
Dieldrin	3.3 U	3.4 U	3.9 U	3.3 U	3.8 U	
Endosulfan I (alpha)	1.7 U	1.8 U	2.0 U	1.7 U	1.9 U	
Endosulfan II (beta)	3.3 U	3.4 U	3.9 U	3.3 U	3.8 U	

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS048	CS049	CS050	CS051	CS052	TS001
Sample ID:	CR-049-SD	CR-050-SD	CR-051-SD	CR-052-SD	CR-053-SD	TR-056-SD
Sample Date:	05/31/2001	06/01/2001	06/01/2001	06/01/2001	06/01/2001	06/05/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 2 in	0 in to 4 in	0 in to 3 in	0 in to 2 in
Endosulfan Sulfate	3.3 U	3.4 U	3.9 U	3.3 U	3.8 U	
Endrin	3.3 U	3.4 U	3.9 U	3.3 U	3.8 U	
Endrin Aldehyde	3.3 U	3.4 U	3.9 U	3.3 U	3.8 U	
Endrin Ketone	3.3 U	3.4 U	3.9 U	3.3 U	3.8 U	
Gamma-BHC (Lindane)	1.7 U	1.8 U	2.0 U	1.7 U	1.9 U	
Gamma-chlordane	1.7 U	1.8 U	2.0 U	1.7 U	1.9 U	
Heptachlor	1.7 U	1.8 U	2.0 U	1.7 U	1.9 U	
Heptachlor Epoxide	1.7 U	1.8 U	2.0 U	1.7 U	1.9 U	
Methoxychlor	17 U	18 U	20 U	17 U	19 U	
PCB-1016 (Aroclor 1016)	33 U	34 U	39 U	33 U	38 U	
PCB-1221 (Aroclor 1221)	68 U	70 U	80 U	67 U	76 U	
PCB-1232 (Aroclor 1232)	33 U	34 U	39 U	33 U	38 U	
PCB-1242 (Aroclor 1242)	33 U	34 U	39 U	33 U	38 U	
PCB-1248 (Aroclor 1248)	33 U	34 U	39 U	33 U	38 U	
PCB-1254 (Aroclor 1254)	33 U	34 U	39 U	33 U	38 U	
PCB-1260 (Aroclor 1260)	33 U	34 U	39 U	33 U	38 U	
Toxaphene	170 U	180 U	200 U	170 U	190 U	
Inorganics (Total) (mg/kg)						
Aluminum	18100	18700	8170	21100	11000	13600
Antimony	34.9	7.4 B	20.0	61.3	51.4	1.1 B
Arsenic	30.3	7.6	11.8	42.8	23.1	6.2
Barium	1660	681	763	2440	989	172
Beryllium	0.75 B	0.71 B	0.38 B	1.0 B	0.57 B	0.67 B
Cadmium	0.06 U	0.06 U	2.4	0.06 U	0.07 U	0.52 B
Calcium	58600	46900	25300	72400	30800	5080
Chromium	113	64.0	30.2	165	72.0	24.8

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	CS048	CS049	CS050	CS051	CS052	TS001
Sample ID:	CR-049-SD	CR-050-SD	CR-051-SD	CR-052-SD	CR-053-SD	TR-056-SD
Sample Date:	05/31/2001	06/01/2001	06/01/2001	06/01/2001	06/01/2001	06/05/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 2 in	0 in to 4 in	0 in to 3 in	0 in to 2 in
Cobalt	33.8	15.0	7.9 B	85.7	33.4	7.8 B
Copper	2160 JL	997 JL	444 JL	3300 JL	1330 JL	19.0
Iron	179000	165000	67100	245000	96900	18700 JK
Lead	317	282	309	512	276	37.7
Magnesium	6030 JL	5750 JL	8540 JL	5970 JL	3990 JL	5060
Manganese	3130	2950	1080	4360	1990	588
Nickel	13.0	8.1 B	12.5	19.4	13.6	20.1
Potassium	3480	3770	1400	4330	2160	3100 JL
Selenium	1.4 JL	2.1 JL	1.4 JL	0.68 UJK	1.5 JL	0.89 B
Silver	5.9	3.7	2.7	12.6	8.5	0.67 B
Sodium	1530	1050	385 B	2630	1000 B	258 B
Thallium	0.76 U	0.79 U	0.91 U	0.78 U	0.89 U	0.92 U
Total Mercury	0.05 U	0.05 U	0.29	0.05 U	0.06 U	0.06 U
Vanadium	36.3	38.2	28.8	45.0	28.6	31.0
Zinc	16500	15400	4900	22300	8820	85.8
Conventional Parameters						
Total Organic Carbon (mg/kg)	1000 U	1000 U	8720	1000 U	3130	
Grain Size (%)						
Percent Gravel	0	0	1	0	0	0
Percent Sand	100	100	74	100	85	5
Percent Silt	0	0	25	0	15	90
Percent Clay	0	0	1 <	0	0	5

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS002	TS003	TS004	TS005	TS006	TS007
	Sample ID:	TR-057-SD	TR-058-SD	TR-059-SD	TR-061-SD	TR-062-SD	TR-060-SD
	Sample Date:	06/05/2001	06/03/2001	06/05/2001	06/03/2001	06/05/2001	06/04/2001
Constituent	Depth (feet):	0 in to 0.5in	0 in to 3 in	0 in to 3 in	0 in to 2 in	0 in to 2 in	0 in to 4 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS002	TS003	TS004	TS005	TS006	TS007
	Sample ID:	TR-057-SD	TR-058-SD	TR-059-SD	TR-061-SD	TR-062-SD	TR-060-SD
	Sample Date:	06/05/2001	06/03/2001	06/05/2001	06/03/2001	06/05/2001	06/04/2001
Constituent	Depth (feet):	0 in to 0.5in	0 in to 3 in	0 in to 3 in	0 in to 2 in	0 in to 2 in	0 in to 4 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS002	TS003	TS004	TS005	TS006	TS007
Sample ID:	TR-057-SD	TR-058-SD	TR-059-SD	TR-061-SD	TR-062-SD	TR-060-SD
Sample Date:	06/05/2001	06/03/2001	06/05/2001	06/03/2001	06/05/2001	06/04/2001
Constituent / Depth (feet):	0 in to 0.5in	0 in to 3 in	0 in to 3 in	0 in to 2 in	0 in to 2 in	0 in to 4 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)			13 U	4.6 U		3.7 U
4,4'-DDE (p,p'-DDE)			13 U	4.6 U		3.1 JQ
4,4'-DDT (p,p'-DDT)			13 U	4.6 U		3.7 U
Aldrin			6.8 U	2.4 U		1.9 U
Alpha-BHC			6.8 U	2.4 U		1.9 U
Alpha-chlordane			6.8 U	2.4 U		0.73 JQ
Beta-BHC			5.9 JQ	2.4 U		1.9 U
Delta-BHC			6.8 U	2.4 U		1.9 U
Dieldrin			13 U	4.6 U		3.7 U
Endosulfan I (alpha)			6.8 U	2.4 U		1.9 U
Endosulfan II (beta)			13 U	4.6 U		3.7 U

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS002	TS003	TS004	TS005	TS006	TS007
Sample ID:	TR-057-SD	TR-058-SD	TR-059-SD	TR-061-SD	TR-062-SD	TR-060-SD
Sample Date:	06/05/2001	06/03/2001	06/05/2001	06/03/2001	06/05/2001	06/04/2001
Constituent / Depth (feet):	0 in to 0.5in	0 in to 3 in	0 in to 3 in	0 in to 2 in	0 in to 2 in	0 in to 4 in
Endosulfan Sulfate			13 U	4.6 U		3.7 U
Endrin			13 U	4.6 U		3.7 U
Endrin Aldehyde			13 U	4.6 U		1.5 JQ
Endrin Ketone			13 U	4.6 U		3.7 U
Gamma-BHC (Lindane)			6.8 U	2.4 U		1.9 U
Gamma-chlordane			6.8 U	2.4 U		1.9 U
Heptachlor			6.8 U	2.4 U		1.9 U
Heptachlor Epoxide			6.8 U	2.4 U		1.9 U
Methoxychlor			68 U	27		19 U
PCB-1016 (Aroclor 1016)			130 U	46 U		37 U
PCB-1221 (Aroclor 1221)			270 U	94 U		75 U
PCB-1232 (Aroclor 1232)			130 U	46 U		37 U
PCB-1242 (Aroclor 1242)			130 U	46 U		37 U
PCB-1248 (Aroclor 1248)			130 U	46 U		37 U
PCB-1254 (Aroclor 1254)			130 U	46 U		37 U
PCB-1260 (Aroclor 1260)			130 U	46 U		37 U
Toxaphene			680 U	240 U		190 U
Inorganics (Total) (mg/kg)						
Aluminum	12900	14400	8360	3170	7830	12500
Antimony	0.89 B	0.76 UJK	2.9 U	0.94 UJK	1.0 U	0.68 UJK
Arsenic	6.6	6.2 U	4.6 B	3.7 U	4.7	5.7 U
Barium	155	159	130 B	49.3 B	140	151
Beryllium	0.69 B	0.72 B	0.45 B	0.20 B	0.40 B	0.55 B
Cadmium	0.30 B	0.08 U	0.29 U	0.09 U	0.10 U	0.38 B
Calcium	9080	7180	13400	1630	15800	31800
Chromium	32.0	29.4	19.8	8.9	18.3	24.5

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS002	TS003	TS004	TS005	TS006	TS007
Sample ID:	TR-057-SD	TR-058-SD	TR-059-SD	TR-061-SD	TR-062-SD	TR-060-SD
Sample Date:	06/05/2001	06/03/2001	06/05/2001	06/03/2001	06/05/2001	06/04/2001
Constituent / Depth (feet):	0 in to 0.5in	0 in to 3 in	0 in to 3 in	0 in to 2 in	0 in to 2 in	0 in to 4 in
Cobalt	9.4 B	9.0 B	6.1 B	2.4 B	5.3 B	7.6 B
Copper	23.9	25.2 JL	12.8 B	4.7 BJL	9.9	21.6 JL
Iron	21800 JK	21700	17000 JK	6600	12800 JK	17200
Lead	27.7	14.8	8.6	2.9	8.1	26.6
Magnesium	7920	6720	3520 B	1580	3590	5030
Manganese	546	612	939	172	907	453
Nickel	27.5	25.3	15.7 B	6.4 B	14.4	21.3
Potassium	3100 JL	3530	1560 BJL	629 B	1590 BJL	2810
Selenium	1.1 B	1.1 BJH	3.7 B	1.1 U	2.2	0.82 BJH
Silver	0.75 B	0.66 B	0.77 U	0.25 U	0.61 B	0.48 B
Sodium	344 B	326 B	685 B	265 BU	394 B	309 B
Thallium	0.90 U	0.99 U	3.7 U	1.2 U	1.3 U	0.88 U
Total Mercury	0.05 U	0.06 U	0.24 U	0.08 U	0.08 U	0.06 U
Vanadium	41.4	37.7	19.4 B	8.5 B	19.9	23.8
Zinc	84.5	85.8	49.2	19.5	49.1	73.5
Conventional Parameters						
Total Organic Carbon (mg/kg)			19300	2710		18400
Grain Size (%)						
Percent Gravel	0	5	0	0	0	5
Percent Sand	1 <	30	30	90	60	75
Percent Silt	100	65	70	10	40	20
Percent Clay	0	0	1 <	0	1 <	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS008	TS009	TS010	TS011	TS012	TS013
	Sample ID:	TR-064-SD	TR-063-SD	TR-065-SD	TR-066-SD	TR-068-SD	TR-067-SD
	Sample Date:	06/05/2001	06/04/2001	06/04/2001	06/05/2001	06/03/2001	06/04/2001
Constituent	Depth (feet):	0 in to 1 in	0 in to 3 in	0 in to 3 in	0 in to 2 in	0 in to 3 in	0 in to 4 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS008	TS009	TS010	TS011	TS012	TS013
	Sample ID:	TR-064-SD	TR-063-SD	TR-065-SD	TR-066-SD	TR-068-SD	TR-067-SD
	Sample Date:	06/05/2001	06/04/2001	06/04/2001	06/05/2001	06/03/2001	06/04/2001
Constituent	Depth (feet):	0 in to 1 in	0 in to 3 in	0 in to 3 in	0 in to 2 in	0 in to 3 in	0 in to 4 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS008	TS009	TS010	TS011	TS012	TS013
Sample ID:	TR-064-SD	TR-063-SD	TR-065-SD	TR-066-SD	TR-068-SD	TR-067-SD
Sample Date:	06/05/2001	06/04/2001	06/04/2001	06/05/2001	06/03/2001	06/04/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 3 in	0 in to 3 in	0 in to 2 in	0 in to 3 in	0 in to 4 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)						
4,4'-DDE (p,p'-DDE)						
4,4'-DDT (p,p'-DDT)						
Aldrin						
Alpha-BHC						
Alpha-chlordane						
Beta-BHC						
Delta-BHC						
Dieldrin						
Endosulfan I (alpha)						
Endosulfan II (beta)						

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Constituent	Station ID:	TS008	TS009	TS010	TS011	TS012	TS013
	Sample ID:	TR-064-SD	TR-063-SD	TR-065-SD	TR-066-SD	TR-068-SD	TR-067-SD
	Sample Date:	06/05/2001	06/04/2001	06/04/2001	06/05/2001	06/03/2001	06/04/2001
	Depth (feet):	0 in to 1 in	0 in to 3 in	0 in to 3 in	0 in to 2 in	0 in to 3 in	0 in to 4 in
Endosulfan Sulfate							
Endrin							
Endrin Aldehyde							
Endrin Ketone							
Gamma-BHC (Lindane)							
Gamma-chlordane							
Heptachlor							
Heptachlor Epoxide							
Methoxychlor							
PCB-1016 (Aroclor 1016)							
PCB-1221 (Aroclor 1221)							
PCB-1232 (Aroclor 1232)							
PCB-1242 (Aroclor 1242)							
PCB-1248 (Aroclor 1248)							
PCB-1254 (Aroclor 1254)							
PCB-1260 (Aroclor 1260)							
Toxaphene							
Inorganics (Total) (mg/kg)							
Aluminum		12100	14000	3770	13100	13200	5060
Antimony		0.95 B	0.80 BJL	1.3 U	0.89 B	0.81 BJL	1.0 UJK
Arsenic		4.6	6.2	4.6	3.7	3.5 U	5.4 U
Barium		160	201	157	218	108	106
Beryllium		0.60 B	0.64 B	0.20 B	0.66 B	0.65 B	0.22 B
Cadmium		0.79 B	0.07 U	0.18 B	0.70 B	0.08 B	0.10 B
Calcium		6970	31200	131000	32200	6460	65700
Chromium		22.7	29.9	21.0	27.5	30.5	15.3

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Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS008	TS009	TS010	TS011	TS012	TS013
Sample ID:	TR-064-SD	TR-063-SD	TR-065-SD	TR-066-SD	TR-068-SD	TR-067-SD
Sample Date:	06/05/2001	06/04/2001	06/04/2001	06/05/2001	06/03/2001	06/04/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 3 in	0 in to 3 in	0 in to 2 in	0 in to 3 in	0 in to 4 in
Cobalt	6.7 B	8.5 B	2.5 B	6.6 B	7.0 B	3.4 B
Copper	18.8	23.7 JL	9.4 B	24.4	22.2 JL	9.3 JL
Iron	17200 JK	19900	5460 JK	18100 JK	19100	10300
Lead	44.9	15.9	5.6	53.4	14.8	6.4
Magnesium	5010	9140	2700	6800	6740	3290
Manganese	540	482	170	652	249	122
Nickel	17.6	24.9	10 B	20.2	20.6	14.3
Potassium	3890 JL	3770	830 BJL	3180 JL	2720	818 B
Selenium	0.76 U	0.78 U	3.6	0.82 U	0.81 U	1.1 U
Silver	0.59 B	0.50 B	0.36 U	0.53 B	0.60 B	0.27 U
Sodium	295 B	372 B	411 B	370 B	376 B	341 BU
Thallium	0.87 U	0.89 U	1.7 U	0.94 U	0.93 U	1.3 U
Total Mercury	0.06 U	0.06 U	0.11 U	0.06 U	0.06 U	0.08 U
Vanadium	28.1	32.9	9.2 B	32.8	28.8	13.6 B
Zinc	127	68.8	30.9	81.8	71.0	35.2
Conventional Parameters						
Total Organic Carbon (mg/kg)						
Grain Size (%)						
Percent Gravel	0	0	20	0	0	0
Percent Sand	15	100	80	10	40	75
Percent Silt	85	0	0	80	60	25
Percent Clay	0	0	0	10	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS014	TS015	TS016	TS017	TS018	TS019
	Sample ID:	TR-069-SD	TR-070-SD	TR-071-SD	TR-072-SD	TR-073-SD	TR-074-SD
	Sample Date:	06/04/2001	06/03/2001	06/05/2001	06/05/2001	06/06/2001	06/06/2001
Constituent	Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 2 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS014	TS015	TS016	TS017	TS018	TS019
	Sample ID:	TR-069-SD	TR-070-SD	TR-071-SD	TR-072-SD	TR-073-SD	TR-074-SD
	Sample Date:	06/04/2001	06/03/2001	06/05/2001	06/05/2001	06/06/2001	06/06/2001
Constituent	Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 2 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Constituent	Station ID:	TS014	TS015	TS016	TS017	TS018	TS019
	Sample ID:	TR-069-SD	TR-070-SD	TR-071-SD	TR-072-SD	TR-073-SD	TR-074-SD
	Sample Date:	06/04/2001	06/03/2001	06/05/2001	06/05/2001	06/06/2001	06/06/2001
	Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 2 in
Hexachlorobenzene (hcb)							
Hexachlorobutadiene							
Hexachlorocyclopentadiene (H							
Hexachloroethane							
Indeno (1,2,3-cd) Pyrene							
Isophorone							
N-nitrosodi-n-propylamine							
N-nitrosodiphenylamine							
Naphthalene							
Nitrobenzene							
Pentachlorophenol							
Phenanthrene							
Phenol							
Pyrene							
Pesticides/PCBs (ug/kg)							
4,4'-DDD (p,p'-DDD)							
4,4'-DDE (p,p'-DDE)							
4,4'-DDT (p,p'-DDT)							
Aldrin							
Alpha-BHC							
Alpha-chlordane							
Beta-BHC							
Delta-BHC							
Dieldrin							
Endosulfan I (alpha)							
Endosulfan II (beta)							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS014	TS015	TS016	TS017	TS018	TS019
Sample ID:	TR-069-SD	TR-070-SD	TR-071-SD	TR-072-SD	TR-073-SD	TR-074-SD
Sample Date:	06/04/2001	06/03/2001	06/05/2001	06/05/2001	06/06/2001	06/06/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 2 in
Endosulfan Sulfate						
Endrin						
Endrin Aldehyde						
Endrin Ketone						
Gamma-BHC (Lindane)						
Gamma-chlordane						
Heptachlor						
Heptachlor Epoxide						
Methoxychlor						
PCB-1016 (Aroclor 1016)						
PCB-1221 (Aroclor 1221)						
PCB-1232 (Aroclor 1232)						
PCB-1242 (Aroclor 1242)						
PCB-1248 (Aroclor 1248)						
PCB-1254 (Aroclor 1254)						
PCB-1260 (Aroclor 1260)						
Toxaphene						
Inorganics (Total) (mg/kg)						
Aluminum	5890	5940	5600	11800	10800	6920
Antimony	1.4 U	1.5 UJK	0.96 BUJK	1.0 BJL	0.71 UJK	0.66 UJK
Arsenic	2.8 B	9.5 U	10	3.8	3.3	3.8
Barium	144	90.8 B	68.9	139	120	71.3
Beryllium	0.34 B	0.28 B	0.28 B	0.58 B	0.51 B	0.29 B
Cadmium	0.14 U	0.15 B	0.07 U	0.07 U	0.07 U	0.07 U
Calcium	168000	8190	3720 JK	4650 JK	16100 JK	10800 JK
Chromium	14.1	20.8	12.2	21.8	23.6	17.1

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS014	TS015	TS016	TS017	TS018	TS019
Sample ID:	TR-069-SD	TR-070-SD	TR-071-SD	TR-072-SD	TR-073-SD	TR-074-SD
Sample Date:	06/04/2001	06/03/2001	06/05/2001	06/05/2001	06/06/2001	06/06/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 2 in
Cobalt	3.5 B	6.0 B	4.2 B	6.5 B	6.0 B	5.5 B
Copper	11.9	15.6 JL	18.0 JL	17.1 JL	19.1 JL	14.1 JL
Iron	8310 JK	14200	10800	16200	15700	15000
Lead	5.8	8.0	10.2 JH	17.3 JH	11.7 JH	8.4 JH
Magnesium	4500	3890	2930	4900	7110	4930
Manganese	292	1130	284	438	397	297
Nickel	11.4 B	15.3 B	12.4	17.5	17.7	23.8
Potassium	1580 BJL	1090 B	1420	3110	3420	1730
Selenium	1.6 B	1.7 U	0.74 U	0.76 U	0.80 U	0.75 U
Silver	0.37 U	0.52 B	0.32 B	0.49 B	0.34 B	0.39 B
Sodium	472 B	544 B	204 B	260 B	295 B	198 B
Thallium	1.8 U	2.0 U	0.85 U	0.87 U	0.92 U	0.86 U
Total Mercury	0.12 U	0.12 U	0.06 U	0.06 U	0.06 U	0.06 U
Vanadium	14.8 B	21.1 B	19.1	25.8	26.4	18.9
Zinc	30.7	46.9	45.6	64.1	60.6	43.9
Conventional Parameters						
Total Organic Carbon (mg/kg)						
Grain Size (%)						
Percent Gravel	0	0	0	0	0	20
Percent Sand	90	60	50	20	10	65
Percent Silt	10	40	50	80	80	15
Percent Clay	0	0	1 <	0	10	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS020	TS021	TS022	TS023	TS024	TS025
	Sample ID:	TR-075-SD	TR-076-SD	TR-077-SD	TR-078-SD	TR-079-SD	TR-080-SD
	Sample Date:	06/03/2001	06/03/2001	06/06/2001	06/06/2001	06/06/2001	06/06/2001
Constituent	Depth (feet):	0 in to 2.5in	0 in to 1.5in	0 in to 2 in	0 in to 1.5in	0 in to 3 in	0 in to 5 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Constituent	Station ID:	TS020	TS021	TS022	TS023	TS024	TS025
	Sample ID:	TR-075-SD	TR-076-SD	TR-077-SD	TR-078-SD	TR-079-SD	TR-080-SD
	Sample Date:	06/03/2001	06/03/2001	06/06/2001	06/06/2001	06/06/2001	06/06/2001
	Depth (feet):	0 in to 2.5in	0 in to 1.5in	0 in to 2 in	0 in to 1.5in	0 in to 3 in	0 in to 5 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS020	TS021	TS022	TS023	TS024	TS025
Sample ID:	TR-075-SD	TR-076-SD	TR-077-SD	TR-078-SD	TR-079-SD	TR-080-SD
Sample Date:	06/03/2001	06/03/2001	06/06/2001	06/06/2001	06/06/2001	06/06/2001
Constituent / Depth (feet):	0 in to 2.5in	0 in to 1.5in	0 in to 2 in	0 in to 1.5in	0 in to 3 in	0 in to 5 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)			5.0 U			
4,4'-DDE (p,p'-DDE)			5.0 U			
4,4'-DDT (p,p'-DDT)			5.0 U			
Aldrin			2.6 U			
Alpha-BHC			2.6 U			
Alpha-chlordane			2.6 U			
Beta-BHC			2.6 U			
Delta-BHC			2.6 U			
Dieldrin			5.0 U			
Endosulfan I (alpha)			2.6 U			
Endosulfan II (beta)			5.0 U			

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS020	TS021	TS022	TS023	TS024	TS025
Sample ID:	TR-075-SD	TR-076-SD	TR-077-SD	TR-078-SD	TR-079-SD	TR-080-SD
Sample Date:	06/03/2001	06/03/2001	06/06/2001	06/06/2001	06/06/2001	06/06/2001
Constituent / Depth (feet):	0 in to 2.5in	0 in to 1.5in	0 in to 2 in	0 in to 1.5in	0 in to 3 in	0 in to 5 in
Endosulfan Sulfate			5.0 U			
Endrin			5.0 U			
Endrin Aldehyde			5.0 U			
Endrin Ketone			5.0 U			
Gamma-BHC (Lindane)			2.6 U			
Gamma-chlordane			2.6 U			
Heptachlor			2.6 U			
Heptachlor Epoxide			2.6 U			
Methoxychlor			26 U			
PCB-1016 (Aroclor 1016)			50 U			
PCB-1221 (Aroclor 1221)			100 U			
PCB-1232 (Aroclor 1232)			50 U			
PCB-1242 (Aroclor 1242)			50 U			
PCB-1248 (Aroclor 1248)			50 U			
PCB-1254 (Aroclor 1254)			50 U			
PCB-1260 (Aroclor 1260)			50 U			
Toxaphene			260 U			
Inorganics (Total) (mg/kg)						
Aluminum	6450	11400	7770	10100	13400	9340
Antimony	2.1 BJL	0.84 BJL	1.5 BJL	1.3 UJK	1.1 BUJK	1.1 BUJK
Arsenic	4.4 BU	6.6	3.5 B	5.3	4.9	4.5
Barium	78.6 B	146	173	201	143	74.5
Beryllium	0.35 B	0.58 B	0.37 B	0.55 B	0.70 B	0.41 B
Cadmium	0.15 U	0.29 B	0.13 B	0.13 U	0.06 U	0.06 U
Calcium	10900	13300	34300 JK	83500 JK	5340 JK	3400 JK
Chromium	17.6	26.8	20.9	23.6	35.1	20.5

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS020	TS021	TS022	TS023	TS024	TS025
Sample ID:	TR-075-SD	TR-076-SD	TR-077-SD	TR-078-SD	TR-079-SD	TR-080-SD
Sample Date:	06/03/2001	06/03/2001	06/06/2001	06/06/2001	06/06/2001	06/06/2001
Constituent / Depth (feet):	0 in to 2.5in	0 in to 1.5in	0 in to 2 in	0 in to 1.5in	0 in to 3 in	0 in to 5 in
Cobalt	3.4 B	7.5 B	5.3 B	7.1 B	10.8	6.9 B
Copper	12.9 JL	23.3 JL	13.4 JL	21.1 JL	26.7 JL	16.9 JL
Iron	9740	19300	13800	16200	24100	16100
Lead	8.5	24.9	8.6 JH	11.0 JH	14.7 JH	16.8 JH
Magnesium	3070	7320	4150	7170	7090	4660
Manganese	291	439	363	414	594	359
Nickel	10.2 B	24.7	19.8	21.1	31.9	19.6
Potassium	1300 B	2980	1430 B	2580	3950	1900
Selenium	2.2 BJH	0.71 U	1.3 U	1.4 U	0.72 U	0.72 U
Silver	0.40 U	0.63 B	0.38 B	0.36 B	0.78 B	0.49 B
Sodium	480 BU	337 B	378 B	476 B	197 B	188 B
Thallium	2.0 U	0.82 U	1.5 U	1.7 U	0.83 U	0.83 U
Total Mercury	0.12 U	0.05 U	0.09 U	0.11 U	0.05 U	0.05 U
Vanadium	16.2 B	40.6	27.5	31.8	36.9	24.6
Zinc	50.2	110	63.1	77.1	82.8	68.8
Conventional Parameters						
Total Organic Carbon (mg/kg)			20400			
Grain Size (%)						
Percent Gravel	0	0	0	0	1 <	0
Percent Sand	10	20	60	10	30	65
Percent Silt	50	55	30	90	65	35
Percent Clay	40	25	10	1 <	5 <	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS026	TS027	TS028	TS029	TS030	TS031
	Sample ID:	TR-081-SD	TR-082-SD	TR-083-SD	TR-084-SD	TR-085-SD	TR-086-SD
	Sample Date:	06/03/2001	06/04/2001	06/06/2001	06/03/2001	06/06/2001	06/06/2001
Constituent	Depth (feet):	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 1.5in	0 in to 8 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS026	TS027	TS028	TS029	TS030	TS031
	Sample ID:	TR-081-SD	TR-082-SD	TR-083-SD	TR-084-SD	TR-085-SD	TR-086-SD
	Sample Date:	06/03/2001	06/04/2001	06/06/2001	06/03/2001	06/06/2001	06/06/2001
Constituent	Depth (feet):	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 1.5in	0 in to 8 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS026	TS027	TS028	TS029	TS030	TS031
Sample ID:	TR-081-SD	TR-082-SD	TR-083-SD	TR-084-SD	TR-085-SD	TR-086-SD
Sample Date:	06/03/2001	06/04/2001	06/06/2001	06/03/2001	06/06/2001	06/06/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 1.5in	0 in to 8 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)						4.5 U
4,4'-DDE (p,p'-DDE)						4.5 U
4,4'-DDT (p,p'-DDT)						10 JL
Aldrin						2.3 U
Alpha-BHC						2.3 U
Alpha-chlordane						2.3 U
Beta-BHC						2.3 U
Delta-BHC						2.3 U
Dieldrin						4.5 U
Endosulfan I (alpha)						2.3 U
Endosulfan II (beta)						4.5 U

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS026	TS027	TS028	TS029	TS030	TS031
Sample ID:	TR-081-SD	TR-082-SD	TR-083-SD	TR-084-SD	TR-085-SD	TR-086-SD
Sample Date:	06/03/2001	06/04/2001	06/06/2001	06/03/2001	06/06/2001	06/06/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 1.5in	0 in to 8 in
Endosulfan Sulfate						4.5 U
Endrin						4.5 U
Endrin Aldehyde						4.5 U
Endrin Ketone						4.5 U
Gamma-BHC (Lindane)						2.3 U
Gamma-chlordane						2.3 U
Heptachlor						2.3 U
Heptachlor Epoxide						2.3 U
Methoxychlor						23 U
PCB-1016 (Aroclor 1016)						45 U
PCB-1221 (Aroclor 1221)						92 U
PCB-1232 (Aroclor 1232)						45 U
PCB-1242 (Aroclor 1242)						45 U
PCB-1248 (Aroclor 1248)						45 U
PCB-1254 (Aroclor 1254)						45 U
PCB-1260 (Aroclor 1260)						45 U
Toxaphene						230 U
Inorganics (Total) (mg/kg)						
Aluminum	4500	8890	8550	6760	6090	3010
Antimony	1.1 UJK	1.4 B	1.7 BJL	0.73 BJL	0.67 UJK	4.9 BJL
Arsenic	3.1 BU	4.1	7.2	5.7 U	4.2	5.8
Barium	46.1 B	160	164	74.5	59.4	72.5
Beryllium	0.25 B	0.44 B	0.39 B	0.23 B	0.27 B	0.13 B
Cadmium	0.11 U	0.15 B	0.16 U	13.1	0.17 B	2.4
Calcium	2340	7610	22800 JK	136000	4500 JK	7750 JK
Chromium	7.6	14.8	18.6	11.7	13.4	5.2

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Constituent	Station ID:	TS026	TS027	TS028	TS029	TS030	TS031
	Sample ID:	TR-081-SD	TR-082-SD	TR-083-SD	TR-084-SD	TR-085-SD	TR-086-SD
	Sample Date:	06/03/2001	06/04/2001	06/06/2001	06/03/2001	06/06/2001	06/06/2001
	Depth (feet):	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 1.5in	0 in to 8 in
Cobalt		1.9 B	6.0 B	7.1 B	4.3 B	4.4 B	2.2 B
Copper		3.7 BJL	14.5	21.8 JL	18.6 JL	13.4 JL	11.8 JL
Iron		6280	12600 JK	16300	12100	11000	5420
Lead		3.1	16.7	18.3 JH	17.9	8.6 JH	115 JH
Magnesium		1670 B	3650	4510	4870	3200	1450
Manganese		106	2020	1010	183	285	157
Nickel		5.1 B	14.4 B	22.1	45.6	13.7	6.8 B
Potassium		868 B	1790 BJL	1680 B	1110 B	1050 B	1280 B
Selenium		1.2 U	2.2	1.8 U	0.76 U	0.76 U	1.4
Silver		0.32 B	0.59 B	0.55 B	0.22 B	0.31 B	0.25 B
Sodium		358 BU	334 B	427 B	253 B	168 B	228 B
Thallium		1.4 U	1.4 U	2.1 U	0.87 U	0.88 U	1.1 U
Total Mercury		0.08 U	0.09 U	0.13 U	0.06 U	0.06 U	0.13 B
Vanadium		9.1 B	20.7	22.5 B	29.0	17.8	8.8 B
Zinc		21.4	62.5	90.4	727	54.7	180
Conventional Parameters							
Total Organic Carbon (mg/kg)							328000
Grain Size (%)							
Percent Gravel		10	0	0	40	0	0
Percent Sand		40	35	60	30	65	100
Percent Silt		50	65	40	30	20	0
Percent Clay		0	0	1 <	1 <	15	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS032	TS033	TS034	TS035	TS036	TS037
	Sample ID:	TR-087-SD	TR-088-SD	TR-089-SD	TR-128-SD	TR-129-SD	TR-090-SD
	Sample Date:	06/07/2001	06/03/2001	06/07/2001	06/09/2001	06/09/2001	06/04/2001
Constituent	Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 3 in	0 in to 4 in	0 in to 6 in	0 in to 4 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS032	TS033	TS034	TS035	TS036	TS037
	Sample ID:	TR-087-SD	TR-088-SD	TR-089-SD	TR-128-SD	TR-129-SD	TR-090-SD
	Sample Date:	06/07/2001	06/03/2001	06/07/2001	06/09/2001	06/09/2001	06/04/2001
Constituent	Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 3 in	0 in to 4 in	0 in to 6 in	0 in to 4 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS032	TS033	TS034	TS035	TS036	TS037
Sample ID:	TR-087-SD	TR-088-SD	TR-089-SD	TR-128-SD	TR-129-SD	TR-090-SD
Sample Date:	06/07/2001	06/03/2001	06/07/2001	06/09/2001	06/09/2001	06/04/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 3 in	0 in to 4 in	0 in to 6 in	0 in to 4 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)					3.6 U	
4,4'-DDE (p,p'-DDE)					3.6 U	
4,4'-DDT (p,p'-DDT)					3.6 U	
Aldrin					1.9 U	
Alpha-BHC					1.9 U	
Alpha-chlordane					1.9 U	
Beta-BHC					1.9 U	
Delta-BHC					1.9 U	
Dieldrin					3.6 U	
Endosulfan I (alpha)					1.9 U	
Endosulfan II (beta)					3.6 U	

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS032	TS033	TS034	TS035	TS036	TS037
Sample ID:	TR-087-SD	TR-088-SD	TR-089-SD	TR-128-SD	TR-129-SD	TR-090-SD
Sample Date:	06/07/2001	06/03/2001	06/07/2001	06/09/2001	06/09/2001	06/04/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 3 in	0 in to 4 in	0 in to 6 in	0 in to 4 in
Endosulfan Sulfate					3.6 U	
Endrin					3.6 U	
Endrin Aldehyde					3.6 U	
Endrin Ketone					3.6 U	
Gamma-BHC (Lindane)					1.9 U	
Gamma-chlordane					1.9 U	
Heptachlor					1.9 U	
Heptachlor Epoxide					1.9 U	
Methoxychlor					19 U	
PCB-1016 (Aroclor 1016)					36 U	
PCB-1221 (Aroclor 1221)					74 U	
PCB-1232 (Aroclor 1232)					36 U	
PCB-1242 (Aroclor 1242)					36 U	
PCB-1248 (Aroclor 1248)					36 U	
PCB-1254 (Aroclor 1254)					36 U	
PCB-1260 (Aroclor 1260)					36 U	
Toxaphene					190 U	
Inorganics (Total) (mg/kg)						
Aluminum	6880	12200	4270	8030	20000	5010
Antimony	0.69 UJK	3.4 UJK	0.67 UJK	0.82 UJK	0.67 UJK	1.0 B
Arsenic	4.6	8.5 BU	1.7 B	6.4 JL	5.5 JL	3.2
Barium	73.1	188 B	50.1	163	301	45.1
Beryllium	0.33 B	0.64 B	0.22 B	0.35 B	0.98 B	0.27 B
Cadmium	0.07 U	0.94 B	0.07 U	0.33 B	0.20 B	0.47 B
Calcium	17800 JK	23100	9770 JK	151000	7790	5320
Chromium	12.0	16.3	9.6	15.8	40.1	10.3

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS032	TS033	TS034	TS035	TS036	TS037
Sample ID:	TR-087-SD	TR-088-SD	TR-089-SD	TR-128-SD	TR-129-SD	TR-090-SD
Sample Date:	06/07/2001	06/03/2001	06/07/2001	06/09/2001	06/09/2001	06/04/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 2 in	0 in to 3 in	0 in to 4 in	0 in to 6 in	0 in to 4 in
Cobalt	5.0 B	4.9 B	3.1 B	5.2 B	14.1	3.0 B
Copper	15.8 JL	21.7 BJL	7.9 JL	17.9 JL	39.9 JL	8.3
Iron	13700	14600	8030	12300	27800	7960 JK
Lead	8.8 JH	14.5	5.1 JH	12.2 JL	37.3 JL	23.7
Magnesium	3760	3860 B	3170	4860	8670	2150
Manganese	251	548	194	348	836	213
Nickel	16.7	17.4 B	9.3	18.0	38.4	7.9 B
Potassium	1200	1740 B	944 B	1620	6120	1100 JL
Selenium	0.78 U	4.8 BJH	0.76 U	1.5	0.76 U	0.74 U
Silver	0.41 B	0.91 U	0.18 B	0.26 B	0.99 B	0.38 B
Sodium	189 B	1010 BU	182 B	299 B	279 B	181 B
Thallium	0.90 U	4.4 U	0.87 U	1.1 U	0.87 U	0.84 U
Total Mercury	0.06 U	0.27 U	0.06 U	0.07 U	0.06 U	0.05 U
Vanadium	17.2	24.7 B	14.0	20.6	44.8	13.7
Zinc	53.0	95.8	33.6	61.2	120	67.7
Conventional Parameters						
Total Organic Carbon (mg/kg)					35000	
Grain Size (%)						
Percent Gravel	5	0	0	1 <	1 <	0
Percent Sand	80	10	100	60	5	100
Percent Silt	15	80	0	35	65	0
Percent Clay	0	10	0	5 <	30	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS038	TS039	TS040	TS041	TS042	TS043
	Sample ID:	TR-091-SD	TR-093-SD	TR-094-SD	TR-095-SD	TR-096-SD	TR-097-SD
	Sample Date:	06/04/2001	06/07/2001	06/07/2001	06/07/2001	06/07/2001	06/04/2001
Constituent	Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 4 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS038	TS039	TS040	TS041	TS042	TS043
	Sample ID:	TR-091-SD	TR-093-SD	TR-094-SD	TR-095-SD	TR-096-SD	TR-097-SD
	Sample Date:	06/04/2001	06/07/2001	06/07/2001	06/07/2001	06/07/2001	06/04/2001
Constituent	Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 4 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Constituent	Station ID:	TS038	TS039	TS040	TS041	TS042	TS043
	Sample ID:	TR-091-SD	TR-093-SD	TR-094-SD	TR-095-SD	TR-096-SD	TR-097-SD
	Sample Date:	06/04/2001	06/07/2001	06/07/2001	06/07/2001	06/07/2001	06/04/2001
	Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 4 in
Hexachlorobenzene (hcb)							
Hexachlorobutadiene							
Hexachlorocyclopentadiene (H							
Hexachloroethane							
Indeno (1,2,3-cd) Pyrene							
Isophorone							
N-nitrosodi-n-propylamine							
N-nitrosodiphenylamine							
Naphthalene							
Nitrobenzene							
Pentachlorophenol							
Phenanthrene							
Phenol							
Pyrene							
Pesticides/PCBs (ug/kg)							
4,4'-DDD (p,p'-DDD)		3.5 U					
4,4'-DDE (p,p'-DDE)		3.5 U					
4,4'-DDT (p,p'-DDT)		3.5 U					
Aldrin		1.8 U					
Alpha-BHC		1.8 U					
Alpha-chlordane		1.8 U					
Beta-BHC		1.8 U					
Delta-BHC		1.8 U					
Dieldrin		3.5 U					
Endosulfan I (alpha)		1.8 U					
Endosulfan II (beta)		3.5 U					

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS038	TS039	TS040	TS041	TS042	TS043
Sample ID:	TR-091-SD	TR-093-SD	TR-094-SD	TR-095-SD	TR-096-SD	TR-097-SD
Sample Date:	06/04/2001	06/07/2001	06/07/2001	06/07/2001	06/07/2001	06/04/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 4 in
Endosulfan Sulfate	3.5 U					
Endrin	3.5 U					
Endrin Aldehyde	3.5 U					
Endrin Ketone	3.5 U					
Gamma-BHC (Lindane)	1.8 U					
Gamma-chlordane	1.8 U					
Heptachlor	1.8 U					
Heptachlor Epoxide	1.8 U					
Methoxychlor	18 U					
PCB-1016 (Aroclor 1016)	35 U					
PCB-1221 (Aroclor 1221)	72 U					
PCB-1232 (Aroclor 1232)	35 U					
PCB-1242 (Aroclor 1242)	35 U					
PCB-1248 (Aroclor 1248)	35 U					
PCB-1254 (Aroclor 1254)	35 U					
PCB-1260 (Aroclor 1260)	35 U					
Toxaphene	180 U					
Inorganics (Total) (mg/kg)						
Aluminum	14800	4430	5120	5610	8280	3500
Antimony	1.6 BJL	0.84 UJK	0.81 BJL	0.86 UJK	2.6 BUJK	1.1 BJL
Arsenic	19.3	1.4 B	2.4	3.5	5.6	2.9 U
Barium	315	43.3 B	51.5	54.7 B	153	30.3 B
Beryllium	0.71 B	0.21 B	0.23 B	0.28 B	0.39 B	0.16 B
Cadmium	0.74 B	0.08 U	0.06 U	0.09 U	0.70 B	2.0
Calcium	6750	6760 JK	9240	3690 JK	61100 JK	1780
Chromium	35.1	8.8	9.4	12.8	11.4	6.1

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS038	TS039	TS040	TS041	TS042	TS043
Sample ID:	TR-091-SD	TR-093-SD	TR-094-SD	TR-095-SD	TR-096-SD	TR-097-SD
Sample Date:	06/04/2001	06/07/2001	06/07/2001	06/07/2001	06/07/2001	06/04/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 1 in	0 in to 4 in
Cobalt	13.5	2.2 B	3.0 B	3.8 B	5.2 B	1.7 B
Copper	39.6 JL	6.5 BJL	7.9 JL	9.6 JL	18.7 JL	5.5 JL
Iron	30100	7670	8670	10800	12800	5010
Lead	95.6	5.1 JH	6.7 JL	5.6 JH	11.5 JH	34.9
Magnesium	6710	2650	4470	3320	4950	1240
Manganese	803	152	146	326	235	670
Nickel	41.6	6.9 B	8.2 B	11.3 B	18.3 B	3.8 B
Potassium	3920	791 B	1180	1070 B	1620 B	595 B
Selenium	0.74 U	0.95 U	0.72 U	0.97 U	2.7	0.74 U
Silver	1.0 B	0.25 B	0.37 BU	0.30 B	0.41 B	0.28 B
Sodium	259 B	245 B	212 BU	221 B	453 B	219 BU
Thallium	0.85 U	1.1 U	0.82 U	1.1 U	1.8 U	0.84 U
Total Mercury	0.11	0.07 U	0.05 U	0.07 U	0.12 U	0.05 U
Vanadium	48.5	19.2	14.4	18.1	24.4	9.2 B
Zinc	147	46.4	37.3	35.0	99.4	739
Conventional Parameters						
Total Organic Carbon (mg/kg)	43600					
Grain Size (%)						
Percent Gravel	10	5	0	0	0	0
Percent Sand	70	95	100	60	50	70
Percent Silt	20	0	0	40	50	30
Percent Clay	0	0	0	0	0	1

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS044	TS045	TS046	TS047	TS048	TS049
	Sample ID:	TR-104-SD	TR-105-SD	TR-106-SD	TR-107-SD	TR-098-SD	TR-099-SD
	Sample Date:	06/06/2001	06/04/2001	06/04/2001	06/04/2001	06/04/2001	06/07/2001
Constituent	Depth (feet):	0 in to 4 in	0 in to 7 in	0 in to 1.5in	0 in to 2 in	0 in to 2 in	0 in to 2 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS044	TS045	TS046	TS047	TS048	TS049
	Sample ID:	TR-104-SD	TR-105-SD	TR-106-SD	TR-107-SD	TR-098-SD	TR-099-SD
	Sample Date:	06/06/2001	06/04/2001	06/04/2001	06/04/2001	06/04/2001	06/07/2001
Constituent	Depth (feet):	0 in to 4 in	0 in to 7 in	0 in to 1.5in	0 in to 2 in	0 in to 2 in	0 in to 2 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS044	TS045	TS046	TS047	TS048	TS049
Sample ID:	TR-104-SD	TR-105-SD	TR-106-SD	TR-107-SD	TR-098-SD	TR-099-SD
Sample Date:	06/06/2001	06/04/2001	06/04/2001	06/04/2001	06/04/2001	06/07/2001
Constituent / Depth (feet):	0 in to 4 in	0 in to 7 in	0 in to 1.5in	0 in to 2 in	0 in to 2 in	0 in to 2 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)	3.8 U	4.2 U	6.1 U	6.3 U	3.8 U	
4,4'-DDE (p,p'-DDE)	1.7 JQ	4.2 U	6.1 U	6.3 U	3.8 U	
4,4'-DDT (p,p'-DDT)	3.8 U	4.2 U	3.5 JQ	6.3 U	3.8 U	
Aldrin	2.0 U	2.2 U	3.1 U	3.3 U	1.9 U	
Alpha-BHC	2.0 U	2.2 U	3.1 U	3.3 U	1.9 U	
Alpha-chlordane	2.0 U	2.2 U	3.1 U	3.3 U	1.9 U	
Beta-BHC	2.0 U	2.2 U	3.1 U	3.3 U	1.9 U	
Delta-BHC	2.0 U	2.2 U	3.1 U	3.3 U	1.9 U	
Dieldrin	3.8 U	4.2 U	6.1 U	6.3 U	3.8 U	
Endosulfan I (alpha)	2.0 U	2.2 U	3.1 U	3.3 U	1.9 U	
Endosulfan II (beta)	3.8 U	4.2 U	6.1 U	6.3 U	3.8 U	

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS044	TS045	TS046	TS047	TS048	TS049
Sample ID:	TR-104-SD	TR-105-SD	TR-106-SD	TR-107-SD	TR-098-SD	TR-099-SD
Sample Date:	06/06/2001	06/04/2001	06/04/2001	06/04/2001	06/04/2001	06/07/2001
Constituent / Depth (feet):	0 in to 4 in	0 in to 7 in	0 in to 1.5in	0 in to 2 in	0 in to 2 in	0 in to 2 in
Endosulfan Sulfate	3.8 U	4.2 U	6.1 U	6.3 U	3.8 U	
Endrin	3.8 U	4.2 U	6.1 U	6.3 U	3.8 U	
Endrin Aldehyde	3.8 U	4.2 U	6.1 U	6.3 U	3.8 U	
Endrin Ketone	3.8 U	4.2 U	6.1 U	6.3 U	3.8 U	
Gamma-BHC (Lindane)	2.0 U	2.2 U	3.1 U	3.3 U	1.9 U	
Gamma-chlordane	2.0 U	2.2 U	3.1 U	3.3 U	1.9 U	
Heptachlor	2.0 U	2.2 U	3.1 U	3.3 U	1.9 U	
Heptachlor Epoxide	2.0 U	2.2 U	3.1 U	3.3 U	1.9 U	
Methoxychlor	20 U	22 U	31 U	33 U	19 U	
PCB-1016 (Aroclor 1016)	38 U	42 U	61 U	63 U	38 U	
PCB-1221 (Aroclor 1221)	78 U	86 U	120 U	130 U	76 U	
PCB-1232 (Aroclor 1232)	38 U	42 U	61 U	63 U	38 U	
PCB-1242 (Aroclor 1242)	38 U	42 U	61 U	63 U	38 U	
PCB-1248 (Aroclor 1248)	38 U	42 U	61 U	63 U	38 U	
PCB-1254 (Aroclor 1254)	38 U	42 U	61 U	63 U	38 U	
PCB-1260 (Aroclor 1260)	38 U	42 U	61 U	63 U	38 U	
Toxaphene	200 U	220 U	310 U	330 U	190 U	
Inorganics (Total) (mg/kg)						
Aluminum	8460	7050	11700	8700	1550	3870
Antimony	0.73 UJK	1.1 BJL	2.2 BJL	1.2 U	0.76 U	0.63 UJK
Arsenic	5.9 JL	5.3 U	9.6 U	3.9 BU	1.4 BU	1.7 B
Barium	145	202	101	132	9.7 B	33.5 B
Beryllium	0.33 B	0.28 B	0.45 B	0.46 B	0.10 B	0.23 B
Cadmium	0.58 B	0.51 B	0.14 U	0.12 U	0.08 U	0.06 U
Calcium	98700	152000	43400	10900	1150 B	2440 JK
Chromium	13.0	10.5	24.7	12.8	2.0 B	5.9

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS044	TS045	TS046	TS047	TS048	TS049
Sample ID:	TR-104-SD	TR-105-SD	TR-106-SD	TR-107-SD	TR-098-SD	TR-099-SD
Sample Date:	06/06/2001	06/04/2001	06/04/2001	06/04/2001	06/04/2001	06/07/2001
Constituent / Depth (feet):	0 in to 4 in	0 in to 7 in	0 in to 1.5in	0 in to 2 in	0 in to 2 in	0 in to 2 in
Cobalt	4.6 B	3.9 B	10.4 B	5.0 B	0.53 B	2.1 B
Copper	17.5 JL	21.2 JL	26.8 JL	10.4	2.1 B	9.9 JL
Iron	11900	10100	23400	14000 JK	3220 JK	5980
Lead	17.9 JL	12.4	13.2	11.0	1.2	6.8 JH
Magnesium	6770	3310	7910	4850	646 B	1780
Manganese	257	431	372	390	47.4	126
Nickel	14.3	12.6	24.1	11.8 B	1.2 B	5.1 B
Potassium	1640	1540	1700 B	1390 BJL	422 BJL	790 B
Selenium	1.7	1.1 BJH	1.6 U	1.3 U	0.86 U	0.72 U
Silver	0.43 B	0.30 B	0.73 B	0.65 B	0.20 U	0.17 U
Sodium	287 B	345 B	479 BU	391 B	209 B	169 B
Thallium	0.94 U	1.0 U	1.9 U	1.5 U	0.99 U	0.83 U
Total Mercury	0.06 U	0.06 U	0.21 B	0.10 U	0.06 U	0.05 U
Vanadium	23.7	17.4	40.9	21.3	5.4 B	12.6
Zinc	92.3	68.2	71.9	57.3	7.5	23.2
Conventional Parameters						
Total Organic Carbon (mg/kg)	44700	48200	23100	20300	1000 U	
Grain Size (%)						
Percent Gravel	0	1	1 <	1	20	0
Percent Sand	90	5 <	40	15	80	100
Percent Silt	10	90	60	40	1 <	0
Percent Clay	0	5	0	44	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS050	TS051	TS052	TS053	TS054	TS055
Sample ID:	TR-125-SD	TR-100-SD	TR-101-SD	TR-102-SD	TR-103-SD	TR-108-SD
Sample Date:	06/09/2001	06/07/2001	06/07/2001	06/07/2001	06/07/2001	06/04/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 2 in	0 in to 1 in
Semi-Volatile Organic Compounds (ug/kg)						
1,1-Biphenyl						
2,4,5-trichlorophenol						
2,4,6-trichlorophenol						
2,4-dichlorophenol						
2,4-dimethylphenol						
2,4-dinitrophenol						
2,4-dinitrotoluene						
2,6-dinitrotoluene						
2-chloronaphthalene						
2-chlorophenol						
2-methyl-4,6-dinitrophenol						
2-methylnaphthalene						
2-methylphenol						
2-nitroaniline						
2-nitrophenol						
3,3'-dichlorobenzidine						
3-nitroaniline						
4-bromophenyl Phenyl Ether						
4-chloro-3-methylphenol						
4-chloroaniline						
4-chlorophenyl Phenyl Ether						
4-Methylphenol						
4-nitroaniline						
4-nitrophenol						
Acenaphthene						

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS050	TS051	TS052	TS053	TS054	TS055
	Sample ID:	TR-125-SD	TR-100-SD	TR-101-SD	TR-102-SD	TR-103-SD	TR-108-SD
	Sample Date:	06/09/2001	06/07/2001	06/07/2001	06/07/2001	06/07/2001	06/04/2001
Constituent	Depth (feet):	0 in to 3 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 2 in	0 in to 1 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Constituent	Station ID:	TS050	TS051	TS052	TS053	TS054	TS055
	Sample ID:	TR-125-SD	TR-100-SD	TR-101-SD	TR-102-SD	TR-103-SD	TR-108-SD
	Sample Date:	06/09/2001	06/07/2001	06/07/2001	06/07/2001	06/07/2001	06/04/2001
	Depth (feet):	0 in to 3 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 2 in	0 in to 1 in
Hexachlorobenzene (hcb)							
Hexachlorobutadiene							
Hexachlorocyclopentadiene (H							
Hexachloroethane							
Indeno (1,2,3-cd) Pyrene							
Isophorone							
N-nitrosodi-n-propylamine							
N-nitrosodiphenylamine							
Naphthalene							
Nitrobenzene							
Pentachlorophenol							
Phenanthrene							
Phenol							
Pyrene							
Pesticides/PCBs (ug/kg)							
4,4'-DDD (p,p'-DDD)							
4,4'-DDE (p,p'-DDE)							
4,4'-DDT (p,p'-DDT)							
Aldrin							
Alpha-BHC							
Alpha-chlordane							
Beta-BHC							
Delta-BHC							
Dieldrin							
Endosulfan I (alpha)							
Endosulfan II (beta)							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS050	TS051	TS052	TS053	TS054	TS055
Sample ID:	TR-125-SD	TR-100-SD	TR-101-SD	TR-102-SD	TR-103-SD	TR-108-SD
Sample Date:	06/09/2001	06/07/2001	06/07/2001	06/07/2001	06/07/2001	06/04/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 2 in	0 in to 1 in
Endosulfan Sulfate						
Endrin						
Endrin Aldehyde						
Endrin Ketone						
Gamma-BHC (Lindane)						
Gamma-chlordane						
Heptachlor						
Heptachlor Epoxide						
Methoxychlor						
PCB-1016 (Aroclor 1016)						
PCB-1221 (Aroclor 1221)						
PCB-1232 (Aroclor 1232)						
PCB-1242 (Aroclor 1242)						
PCB-1248 (Aroclor 1248)						
PCB-1254 (Aroclor 1254)						
PCB-1260 (Aroclor 1260)						
Toxaphene						
Inorganics (Total) (mg/kg)						
Aluminum	3760	8560	2040	3080	3670	3740
Antimony	1.1 BUJK	0.91 BJL	0.66 UJK	0.70 UJK	0.60 UJK	0.88 U
Arsenic	1.1 U	2.1 B	1.7 B	1.5 B	1.2 B	2.8 BU
Barium	25.9 B	87.4	36.8 B	25.8 B	42.4	72.2
Beryllium	0.15 B	0.41 B	0.14 B	0.20 B	0.22 B	0.23 B
Cadmium	0.08 U	0.56 B	0.07 U	0.07 U	0.06 U	0.09 U
Calcium	1850	10100	2490 JK	1420	2470	13800
Chromium	9.4	21.5	3.9	5.9	8.4	9.9

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Constituent	Station ID:	TS050	TS051	TS052	TS053	TS054	TS055
	Sample ID:	TR-125-SD	TR-100-SD	TR-101-SD	TR-102-SD	TR-103-SD	TR-108-SD
	Sample Date:	06/09/2001	06/07/2001	06/07/2001	06/07/2001	06/07/2001	06/04/2001
	Depth (feet):	0 in to 3 in	0 in to 3 in	0 in to 4 in	0 in to 2 in	0 in to 2 in	0 in to 1 in
Cobalt		1.9 B	4.6 B	1.9 B	1.9 B	3.7 B	2.6 B
Copper		13.6 JL	27.0 JL	6.7 JL	6.4 JL	7.3 JL	5.7 B
Iron		5970	11200	5480	5700	6800	7270 JK
Lead		5.8 JL	34.0 JL	8.4 JH	3.9 JL	6.0 JL	3.9
Magnesium		1920	3580	1210	1430	2440	2310
Manganese		77.5	338	449	109	243	288
Nickel		5.8 B	12.3	3.8 B	4.8 B	8.4	7.5 B
Potassium		576 B	1870	581 B	792 B	1120	937 BJL
Selenium		0.91 U	1.3 B	0.75 U	0.79 U	0.68 U	1.0 U
Silver		0.45 BU	0.60 BU	0.18 U	0.23 BU	0.38 BU	0.34 B
Sodium		303 BU	255 BU	139 B	178 BU	193 BU	315 B
Thallium		1.0 U	1.0 U	0.86 U	0.91 U	0.79 U	1.1 U
Total Mercury		0.07 U	0.07 U	0.06 U	0.06 U	0.05 U	0.07 U
Vanadium		10.6 B	22.4	6.7 B	10.7 B	12.8	12.0 B
Zinc		20.7	65.8	17.5	15.8	22.4	24.8
Conventional Parameters							
Total Organic Carbon (mg/kg)							
Grain Size (%)							
Percent Gravel		1 <	0	0	0	0	0
Percent Sand		70	70	100	85	100	90
Percent Silt		20	30	0	15	0	5
Percent Clay		10	0	0	0	0	5

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS056	TS057	TS058	TS059	TS060	TS061
	Sample ID:	TR-109-SD	TR-110-SD	TR-111-SD	TR-112-SD	TR-113-SD	TR-123-SD
	Sample Date:	06/06/2001	06/06/2001	06/06/2001	06/09/2001	06/06/2001	06/06/2001
Constituent	Depth (feet):	0 in to 1.5in	0 in to 3 in	0 in to 4 in	0 in to 5 in	0 in to 1 in	0 in to 3 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS056	TS057	TS058	TS059	TS060	TS061
	Sample ID:	TR-109-SD	TR-110-SD	TR-111-SD	TR-112-SD	TR-113-SD	TR-123-SD
	Sample Date:	06/06/2001	06/06/2001	06/06/2001	06/09/2001	06/06/2001	06/06/2001
Constituent	Depth (feet):	0 in to 1.5in	0 in to 3 in	0 in to 4 in	0 in to 5 in	0 in to 1 in	0 in to 3 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS056	TS057	TS058	TS059	TS060	TS061
Sample ID:	TR-109-SD	TR-110-SD	TR-111-SD	TR-112-SD	TR-113-SD	TR-123-SD
Sample Date:	06/06/2001	06/06/2001	06/06/2001	06/09/2001	06/06/2001	06/06/2001
Constituent / Depth (feet):	0 in to 1.5in	0 in to 3 in	0 in to 4 in	0 in to 5 in	0 in to 1 in	0 in to 3 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)	3.9 U	4.1 U				
4,4'-DDE (p,p'-DDE)	3.9 U	4.1 U				
4,4'-DDT (p,p'-DDT)	3.9 U	4.1 U				
Aldrin	2.0 U	2.1 U				
Alpha-BHC	2.0 U	2.1 U				
Alpha-chlordane	2.0 U	2.1 U				
Beta-BHC	2.0 U	2.1 U				
Delta-BHC	2.0 U	2.1 U				
Dieldrin	3.9 U	4.1 U				
Endosulfan I (alpha)	2.0 U	2.1 U				
Endosulfan II (beta)	3.9 U	4.1 U				

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS056	TS057	TS058	TS059	TS060	TS061
Sample ID:	TR-109-SD	TR-110-SD	TR-111-SD	TR-112-SD	TR-113-SD	TR-123-SD
Sample Date:	06/06/2001	06/06/2001	06/06/2001	06/09/2001	06/06/2001	06/06/2001
Constituent / Depth (feet):	0 in to 1.5in	0 in to 3 in	0 in to 4 in	0 in to 5 in	0 in to 1 in	0 in to 3 in
Endosulfan Sulfate	3.9 U	4.1 U				
Endrin	3.9 U	4.1 U				
Endrin Aldehyde	3.9 U	4.1 U				
Endrin Ketone	3.9 U	4.1 U				
Gamma-BHC (Lindane)	2.0 U	2.1 U				
Gamma-chlordane	2.0 U	2.1 U				
Heptachlor	2.0 U	2.1 U				
Heptachlor Epoxide	2.0 U	2.1 U				
Methoxychlor	20 U	21 U				
PCB-1016 (Aroclor 1016)	39 U	41 U				
PCB-1221 (Aroclor 1221)	80 U	83 U				
PCB-1232 (Aroclor 1232)	39 U	41 U				
PCB-1242 (Aroclor 1242)	39 U	41 U				
PCB-1248 (Aroclor 1248)	39 U	41 U				
PCB-1254 (Aroclor 1254)	39 U	41 U				
PCB-1260 (Aroclor 1260)	39 U	41 U				
Toxaphene	200 U	210 U				
Inorganics (Total) (mg/kg)						
Aluminum	5370	4340	1210	4410	8190	8100
Antimony	0.74 UJK	0.78 UJK	0.84 UJK	0.91 BUJK	1.0 BJL	1.9 BUJK
Arsenic	4.3 JL	4.5 JL	1.1 UJK	1.4 B	25.5	30.0
Barium	114	71.2	11.0 B	57.4	75.4	110
Beryllium	0.21 B	0.11 B	0.07 B	0.22 B	0.34 B	0.45 B
Cadmium	0.07 U	0.08 U	0.08 U	0.08 U	0.06 U	2.1
Calcium	161000	82800	910 B	22800	16700	10800 JK
Chromium	9.8	9.5	1.6 B	15.8	31.4	16.1

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS056	TS057	TS058	TS059	TS060	TS061
Sample ID:	TR-109-SD	TR-110-SD	TR-111-SD	TR-112-SD	TR-113-SD	TR-123-SD
Sample Date:	06/06/2001	06/06/2001	06/06/2001	06/09/2001	06/06/2001	06/06/2001
Constituent / Depth (feet):	0 in to 1.5in	0 in to 3 in	0 in to 4 in	0 in to 5 in	0 in to 1 in	0 in to 3 in
Cobalt	3.4 B	2.7 B	0.60 B	2.5 B	7.0 B	9.3 B
Copper	12.2 JL	7.5 JL	1.7 BJL	8.2 JL	15.6 JL	29.9 JL
Iron	8940	11300	2040	8030	17300	19500
Lead	8.0 JL	4.7 JL	1.5 UJK	6.5 JL	7.8 JL	18.0 JH
Magnesium	4540	3740	569 B	2780	5960	4530
Manganese	220	172	64.4	134	296	599
Nickel	9.6 B	9.5 B	1.2 B	7.4 B	28.4	24.9
Potassium	1170 B	607 B	298 B	767 B	1020	1390
Selenium	0.84 U	1.1 B	0.95 U	0.92 B	0.69 U	0.76 U
Silver	0.20 U	0.21 B	0.22 U	0.34 BU	0.60 BU	0.64 B
Sodium	274 B	201 B	203 B	254 BU	216 BU	188 B
Thallium	0.96 U	1.0 U	1.1 U	1.0 U	0.79 U	0.87 U
Total Mercury	0.06 U	0.06 U	0.07 U	0.07 U	0.05 U	0.06 U
Vanadium	12.8	12.8 B	3.4 B	13.3	28.0	25.7
Zinc	55.5	34.4	7.0	32.2	55.6	540
Conventional Parameters						
Total Organic Carbon (mg/kg)	33200	1310				
Grain Size (%)						
Percent Gravel	0	0	0	10	15	5
Percent Sand	80	80	100	70	75	90
Percent Silt	20	20	0	10	10	5
Percent Clay	0	0	0	10	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS062	TS063	TS064	TS065	TS066	TS067
	Sample ID:	TR-124-SD	TR-126-SD	TR-037-SD	TR-038-SD	TR-039-SD	TR-114-SD
	Sample Date:	06/06/2001	06/08/2001	06/08/2001	06/08/2001	06/08/2001	06/05/2001
Constituent	Depth (feet):	0 in to 7 in	0 in to 4 in	0 in to 3.5in	0 in to 1 in	0 in to 1.5in	0 in to 2 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS062	TS063	TS064	TS065	TS066	TS067
	Sample ID:	TR-124-SD	TR-126-SD	TR-037-SD	TR-038-SD	TR-039-SD	TR-114-SD
	Sample Date:	06/06/2001	06/08/2001	06/08/2001	06/08/2001	06/08/2001	06/05/2001
Constituent	Depth (feet):	0 in to 7 in	0 in to 4 in	0 in to 3.5in	0 in to 1 in	0 in to 1.5in	0 in to 2 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS062	TS063	TS064	TS065	TS066	TS067
Sample ID:	TR-124-SD	TR-126-SD	TR-037-SD	TR-038-SD	TR-039-SD	TR-114-SD
Sample Date:	06/06/2001	06/08/2001	06/08/2001	06/08/2001	06/08/2001	06/05/2001
Constituent / Depth (feet):	0 in to 7 in	0 in to 4 in	0 in to 3.5in	0 in to 1 in	0 in to 1.5in	0 in to 2 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)		3.4 U	4.2 U	3.8 U		4.1 U
4,4'-DDE (p,p'-DDE)		3.4 U	4.2 U	3.8 U		4.1 U
4,4'-DDT (p,p'-DDT)		3.4 U	4.2 U	3.8 U		4.1 U
Aldrin		1.7 U	2.2 U	1.9 U		2.1 U
Alpha-BHC		1.7 U	2.2 U	1.9 U		2.1 U
Alpha-chlordane		1.7 U	2.2 U	1.9 U		2.1 U
Beta-BHC		1.7 U	2.2 U	1.9 U		2.1 U
Delta-BHC		1.7 U	2.2 U	1.9 U		2.1 U
Dieldrin		3.4 U	4.2 U	3.8 U		4.1 U
Endosulfan I (alpha)		1.7 U	2.2 U	1.9 U		2.1 U
Endosulfan II (beta)		3.4 U	4.2 U	3.8 U		4.1 U

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS062	TS063	TS064	TS065	TS066	TS067
Sample ID:	TR-124-SD	TR-126-SD	TR-037-SD	TR-038-SD	TR-039-SD	TR-114-SD
Sample Date:	06/06/2001	06/08/2001	06/08/2001	06/08/2001	06/08/2001	06/05/2001
Constituent / Depth (feet):	0 in to 7 in	0 in to 4 in	0 in to 3.5in	0 in to 1 in	0 in to 1.5in	0 in to 2 in
Endosulfan Sulfate		3.4 U	4.2 U	3.8 U		4.1 U
Endrin		3.4 U	4.2 U	3.8 U		4.1 U
Endrin Aldehyde		3.4 U	4.2 U	3.8 U		4.1 U
Endrin Ketone		3.4 U	4.2 U	3.8 U		4.1 U
Gamma-BHC (Lindane)		1.7 U	2.2 U	1.9 U		2.1 U
Gamma-chlordane		1.7 U	2.2 U	1.9 U		2.1 U
Heptachlor		1.7 U	2.2 U	1.9 U		2.1 U
Heptachlor Epoxide		1.7 U	2.2 U	1.9 U		2.1 U
Methoxychlor		17 U	22 U	19 U		21 U
PCB-1016 (Aroclor 1016)		34 U	42 U	38 U		41 U
PCB-1221 (Aroclor 1221)		68 U	86 U	76 U		83 U
PCB-1232 (Aroclor 1232)		34 U	42 U	38 U		41 U
PCB-1242 (Aroclor 1242)		34 U	42 U	38 U		41 U
PCB-1248 (Aroclor 1248)		34 U	42 U	38 U		41 U
PCB-1254 (Aroclor 1254)		34 U	42 U	38 U		41 U
PCB-1260 (Aroclor 1260)		34 U	42 U	38 U		41 U
Toxaphene		170 U	220 U	190 U		210 U
Inorganics (Total) (mg/kg)						
Aluminum	2600	6790	5210	10300	7350	1900
Antimony	0.78 UJK	0.61 BUJK	0.79 UJK	1.5 BUJK	2.5 BUJK	0.81 U
Arsenic	2.5 BJL	9.2	5.8 JL	10.7	2.1 U	1.3 B
Barium	40.2 B	73.4	156	124	167	11.5 B
Beryllium	0.12 B	0.23 B	0.18 B	0.45 B	0.34 B	0.12 B
Cadmium	0.08 U	0.06 U	0.39 B	0.88 B	0.50 B	0.08 U
Calcium	3960	33400	174000	12500	106000	1790
Chromium	6.5	17.6	11.2	20.1	21.4	3.2

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Constituent	Station ID:	TS062	TS063	TS064	TS065	TS066	TS067
	Sample ID:	TR-124-SD	TR-126-SD	TR-037-SD	TR-038-SD	TR-039-SD	TR-114-SD
	Sample Date:	06/06/2001	06/08/2001	06/08/2001	06/08/2001	06/08/2001	06/05/2001
	Depth (feet):	0 in to 7 in	0 in to 4 in	0 in to 3.5in	0 in to 1 in	0 in to 1.5in	0 in to 2 in
Cobalt		1.7 B	5.6 B	4.0 B	7.9 B	4.6 B	0.91 B
Copper		5.0 BJL	22.0 JL	14.3 JL	30.0 JL	19.4 JL	1.7 B
Iron		5240	16500	9450	18600	13200	3370 JK
Lead		5.1 JL	8.5 JL	28.7 JL	65.5 JL	20.6 JL	1.8 U
Magnesium		1680	7750	4080	5340	6700	1620
Manganese		129	250	293	421	167	56.7
Nickel		4.9 B	17.9	11.3	19.2	15.1 B	2.3 B
Potassium		532 B	1160	824 B	2860	1760 B	431 BJL
Selenium		0.88 U	0.68 U	0.89 U	0.80 U	3.8	0.92 U
Silver		0.24 B	0.73 BU	0.21 U	0.86 BU	0.56 BU	0.22 U
Sodium		210 B	282 B	275 B	265 BU	562 BU	222 B
Thallium		1.0 U	0.78 U	1.0 U	0.92 U	2.1 U	1.1 U
Total Mercury		0.07 U	0.05 U	0.07 U	0.05 U	0.13 U	0.07 U
Vanadium		9.0 B	30.7	11.4 B	28.3	20.1 B	5.3 B
Zinc		20.2	50.5	52.0	123	102	7.6
Conventional Parameters							
Total Organic Carbon (mg/kg)			6020	15800	45400		2040
Grain Size (%)							
Percent Gravel		0	2	5	1 <	0	10
Percent Sand		90	98	75	60	40	90
Percent Silt		0	0	20	40	55-60	0
Percent Clay		10	0	1 <	1 <	5 <	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS068	TS069	TS070	TS071	TS072	TS073
	Sample ID:	TR-115-SD	TR-119-SD	TR-116-SD	TR-117-SD	TR-118-SD	TR-120-SD
	Sample Date:	06/06/2001	06/05/2001	06/05/2001	06/05/2001	06/05/2001	06/05/2001
Constituent	Depth (feet):	0 in to 1 in	0 in to 3 in	0 in to 8 in	0 in to 2 in	0 in to 3 in	0 in to 3 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS068	TS069	TS070	TS071	TS072	TS073
	Sample ID:	TR-115-SD	TR-119-SD	TR-116-SD	TR-117-SD	TR-118-SD	TR-120-SD
	Sample Date:	06/06/2001	06/05/2001	06/05/2001	06/05/2001	06/05/2001	06/05/2001
Constituent	Depth (feet):	0 in to 1 in	0 in to 3 in	0 in to 8 in	0 in to 2 in	0 in to 3 in	0 in to 3 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS068	TS069	TS070	TS071	TS072	TS073
Sample ID:	TR-115-SD	TR-119-SD	TR-116-SD	TR-117-SD	TR-118-SD	TR-120-SD
Sample Date:	06/06/2001	06/05/2001	06/05/2001	06/05/2001	06/05/2001	06/05/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 3 in	0 in to 8 in	0 in to 2 in	0 in to 3 in	0 in to 3 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)					3.5 U	
4,4'-DDE (p,p'-DDE)					3.5 U	
4,4'-DDT (p,p'-DDT)					3.5 U	
Aldrin					1.8 U	
Alpha-BHC					1.8 U	
Alpha-chlordane					0.89 JQ	
Beta-BHC					1.8 U	
Delta-BHC					1.8 U	
Dieldrin					3.5 U	
Endosulfan I (alpha)					1.8 U	
Endosulfan II (beta)					3.5 U	

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS068	TS069	TS070	TS071	TS072	TS073
Sample ID:	TR-115-SD	TR-119-SD	TR-116-SD	TR-117-SD	TR-118-SD	TR-120-SD
Sample Date:	06/06/2001	06/05/2001	06/05/2001	06/05/2001	06/05/2001	06/05/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 3 in	0 in to 8 in	0 in to 2 in	0 in to 3 in	0 in to 3 in
Endosulfan Sulfate					3.5 U	
Endrin					3.5 U	
Endrin Aldehyde					0.64 JQ	
Endrin Ketone					3.5 U	
Gamma-BHC (Lindane)					1.8 U	
Gamma-chlordane					1.8 U	
Heptachlor					1.8 U	
Heptachlor Epoxide					1.8 U	
Methoxychlor					18 U	
PCB-1016 (Aroclor 1016)					35 U	
PCB-1221 (Aroclor 1221)					71 U	
PCB-1232 (Aroclor 1232)					35 U	
PCB-1242 (Aroclor 1242)					35 U	
PCB-1248 (Aroclor 1248)					35 U	
PCB-1254 (Aroclor 1254)					35 U	
PCB-1260 (Aroclor 1260)					35 U	
Toxaphene					180 U	
Inorganics (Total) (mg/kg)						
Aluminum	7960	6430	5530	7360	5870	4190
Antimony	1.0 BJL	0.89 U	1.5 B	1.6 B	1.7 B	0.82 U
Arsenic	14.9 JL	4.0	14.2	42.5	17.9	2.5 BU
Barium	116	49.4 B	73.4	153	106	31.8 B
Beryllium	0.42 B	0.38 B	0.36 B	0.41 B	0.37 B	0.25 B
Cadmium	0.06 U	0.09 U	0.66 B	0.07 U	0.12 B	0.08 U
Calcium	21000	2280	3720	25400	47900	12400
Chromium	21.1	13.6	13.3	21.5	12.6	8.4

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS068	TS069	TS070	TS071	TS072	TS073
Sample ID:	TR-115-SD	TR-119-SD	TR-116-SD	TR-117-SD	TR-118-SD	TR-120-SD
Sample Date:	06/06/2001	06/05/2001	06/05/2001	06/05/2001	06/05/2001	06/05/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 3 in	0 in to 8 in	0 in to 2 in	0 in to 3 in	0 in to 3 in
Cobalt	7.9 B	4.0 B	5.8 B	8.8 B	7.4 B	2.4 B
Copper	28.8 JL	8.8	20.6	49.0	59.0	5.6 B
Iron	25000	12900 JK	18900 JK	27400 JK	22200 JK	6660 JK
Lead	14.2 JL	7.1	62.2	14.7	11.2	3.4
Magnesium	5170	3640	2710	4570	5210	6860
Manganese	452	191	230	602	495	140
Nickel	24.1	13.3	14.8	31.9	21.9	6.3 B
Potassium	1210	910 BJL	1330 JL	1230 JL	812 BJL	741 BJL
Selenium	0.78 B	1.0 U	1.2	1.0 B	0.71 U	0.95 B
Silver	0.77 B	0.47 B	0.63 B	0.78 B	0.51 B	0.26 B
Sodium	164 B	219 B	200 B	182 B	178 B	261 B
Thallium	0.82 U	1.2 U	0.93 U	1.1 B	0.81 U	1.1 U
Total Mercury	0.05 U	0.08 U	0.08 B	0.05 U	0.05 U	0.07 U
Vanadium	33.0	24.7	25.5	35.1	24.8	10.2 B
Zinc	78.5	34.5	83.8	59.7	76.0	16.8
Conventional Parameters						
Total Organic Carbon (mg/kg)					10700	
Grain Size (%)						
Percent Gravel	10	5	0	0	10	0
Percent Sand	75	95	90	85	90	100
Percent Silt	15	0	10	15	0	0
Percent Clay	0	0	0	0	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS074	TS075	TS076	TS077	TS078	TS079
	Sample ID:	TR-121-SD	TR-122-SD	TR-001-SD	TR-002-SD	TR-005-SD	TR-004-SD
	Sample Date:	06/05/2001	06/05/2001	05/21/2001	05/22/2001	05/22/2001	05/22/2001
Constituent	Depth (feet):	0 in to 5 in	0 in to 2 in	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 1 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS074	TS075	TS076	TS077	TS078	TS079
	Sample ID:	TR-121-SD	TR-122-SD	TR-001-SD	TR-002-SD	TR-005-SD	TR-004-SD
	Sample Date:	06/05/2001	06/05/2001	05/21/2001	05/22/2001	05/22/2001	05/22/2001
Constituent	Depth (feet):	0 in to 5 in	0 in to 2 in	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 1 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS074	TS075	TS076	TS077	TS078	TS079
Sample ID:	TR-121-SD	TR-122-SD	TR-001-SD	TR-002-SD	TR-005-SD	TR-004-SD
Sample Date:	06/05/2001	06/05/2001	05/21/2001	05/22/2001	05/22/2001	05/22/2001
Constituent / Depth (feet):	0 in to 5 in	0 in to 2 in	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 1 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)		4.6 U				
4,4'-DDE (p,p'-DDE)		4.6 U				
4,4'-DDT (p,p'-DDT)		4.6 U				
Aldrin		2.4 U				
Alpha-BHC		2.4 U				
Alpha-chlordane		2.4 U				
Beta-BHC		2.4 U				
Delta-BHC		2.4 U				
Dieldrin		4.6 U				
Endosulfan I (alpha)		2.4 U				
Endosulfan II (beta)		4.6 U				

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS074	TS075	TS076	TS077	TS078	TS079
Sample ID:	TR-121-SD	TR-122-SD	TR-001-SD	TR-002-SD	TR-005-SD	TR-004-SD
Sample Date:	06/05/2001	06/05/2001	05/21/2001	05/22/2001	05/22/2001	05/22/2001
Constituent / Depth (feet):	0 in to 5 in	0 in to 2 in	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 1 in
Endosulfan Sulfate		4.6 U				
Endrin		4.6 U				
Endrin Aldehyde		4.6 U				
Endrin Ketone		4.6 U				
Gamma-BHC (Lindane)		2.4 U				
Gamma-chlordane		2.4 U				
Heptachlor		2.4 U				
Heptachlor Epoxide		2.4 U				
Methoxychlor		24 U				
PCB-1016 (Aroclor 1016)		46 U				
PCB-1221 (Aroclor 1221)		94 U				
PCB-1232 (Aroclor 1232)		46 U				
PCB-1242 (Aroclor 1242)		46 U				
PCB-1248 (Aroclor 1248)		46 U				
PCB-1254 (Aroclor 1254)		46 U				
PCB-1260 (Aroclor 1260)		46 U				
Toxaphene		240 U				
Inorganics (Total) (mg/kg)						
Aluminum	2840	4530	7070 JL	7770 JL	9190 JL	8750 JL
Antimony	0.79 U	0.87 UJK	1.0 BJL	9.4 BJL	3.3 BJL	3.4 BJL
Arsenic	1.6 BU	1.4 B	3.2 JH	25.4 JH	54.0 JH	23.5 JH
Barium	33.6 B	42.6 B	74.5 JK	406 JK	183 JK	128 JK
Beryllium	0.16 B	0.30 B	0.32 B	0.30 B	0.45 B	0.36 B
Cadmium	0.08 U	0.09 U	0.86 B	15.3	2.1	2.5
Calcium	43700	2870 JK	6540 JL	17500 JL	5390 JL	24100 JL
Chromium	6.2	13.1	14.4 JL	12.5 JL	12.4 JL	14.5 JL

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Constituent	Station ID:	TS074	TS075	TS076	TS077	TS078	TS079
	Sample ID:	TR-121-SD	TR-122-SD	TR-001-SD	TR-002-SD	TR-005-SD	TR-004-SD
	Sample Date:	06/05/2001	06/05/2001	05/21/2001	05/22/2001	05/22/2001	05/22/2001
	Depth (feet):	0 in to 5 in	0 in to 2 in	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 1 in
Cobalt		1.5 B	3.1 B	4.2 BJL	5.4 BJL	8.1 BJL	6.4 BJL
Copper		3.5 B	7.3 JL	11.2	33.5	31.4	30.3
Iron		4650 JK	9730	11600 JL	15300 JL	22700 JL	17500 JL
Lead		2.3	3.9 JH	47.4 JL	603 JL	85.5 JL	107 JL
Magnesium		4080	2860	3390 JL	4520 JL	3860 JL	6170 JL
Manganese		110	151	190 JL	997 JL	716 JL	659 JL
Nickel		4.4 B	8.7 B	11.6	14.2	17.6	17.8
Potassium		419 BJL	714 B	1710 JL	2020 JL	2820 JL	1870 JL
Selenium		0.89 U	0.99 U	0.69 U	1.6 B	1.5	3.0
Silver		0.21 U	0.25 B	0.30 B	0.66 B	0.62 B	0.55 B
Sodium		242 B	264 B	168 B	260 B	154 B	222 B
Thallium		1.0 U	1.1 U	0.79 U	1.3 U	0.83 U	1.0 UJK
Total Mercury		0.07 U	0.07 U	0.14	0.22	0.05 U	0.09 B
Vanadium		8.1 B	20.8	19.7 JL	23.1 JL	27.3 JL	21.9 JL
Zinc		12.4	24.5	78.1	585	146	202
Conventional Parameters							
Total Organic Carbon (mg/kg)			2850				
Grain Size (%)							
Percent Gravel		15	0	0	0	15	15
Percent Sand		75	100	20	33	50	50
Percent Silt		10	0	40	67	35	35
Percent Clay		0	0	20	0	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS080	TS081	TS082	TS083	TS084	TS085
	Sample ID:	TR-006-SD	TR-007-SD	TR-008-SD	TR-009-SD	TR-010-SD	TR-011-SD
	Sample Date:	05/22/2001	05/22/2001	05/22/2001	05/23/2001	05/23/2001	05/23/2001
Constituent	Depth (feet):	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 2 in	0 in to 2 in	0 in to 0.5in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS080	TS081	TS082	TS083	TS084	TS085
	Sample ID:	TR-006-SD	TR-007-SD	TR-008-SD	TR-009-SD	TR-010-SD	TR-011-SD
	Sample Date:	05/22/2001	05/22/2001	05/22/2001	05/23/2001	05/23/2001	05/23/2001
Constituent	Depth (feet):	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 2 in	0 in to 2 in	0 in to 0.5in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Constituent	Station ID:	TS080	TS081	TS082	TS083	TS084	TS085
	Sample ID:	TR-006-SD	TR-007-SD	TR-008-SD	TR-009-SD	TR-010-SD	TR-011-SD
	Sample Date:	05/22/2001	05/22/2001	05/22/2001	05/23/2001	05/23/2001	05/23/2001
	Depth (feet):	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 2 in	0 in to 2 in	0 in to 0.5in
Hexachlorobenzene (hcb)							
Hexachlorobutadiene							
Hexachlorocyclopentadiene (H							
Hexachloroethane							
Indeno (1,2,3-cd) Pyrene							
Isophorone							
N-nitrosodi-n-propylamine							
N-nitrosodiphenylamine							
Naphthalene							
Nitrobenzene							
Pentachlorophenol							
Phenanthrene							
Phenol							
Pyrene							
Pesticides/PCBs (ug/kg)							
4,4'-DDD (p,p'-DDD)							
4,4'-DDE (p,p'-DDE)							
4,4'-DDT (p,p'-DDT)							
Aldrin							
Alpha-BHC							
Alpha-chlordane							
Beta-BHC							
Delta-BHC							
Dieldrin							
Endosulfan I (alpha)							
Endosulfan II (beta)							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS080	TS081	TS082	TS083	TS084	TS085
Sample ID:	TR-006-SD	TR-007-SD	TR-008-SD	TR-009-SD	TR-010-SD	TR-011-SD
Sample Date:	05/22/2001	05/22/2001	05/22/2001	05/23/2001	05/23/2001	05/23/2001
Constituent Depth (feet):	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 2 in	0 in to 2 in	0 in to 0.5in
Endosulfan Sulfate						
Endrin						
Endrin Aldehyde						
Endrin Ketone						
Gamma-BHC (Lindane)						
Gamma-chlordane						
Heptachlor						
Heptachlor Epoxide						
Methoxychlor						
PCB-1016 (Aroclor 1016)						
PCB-1221 (Aroclor 1221)						
PCB-1232 (Aroclor 1232)						
PCB-1242 (Aroclor 1242)						
PCB-1248 (Aroclor 1248)						
PCB-1254 (Aroclor 1254)						
PCB-1260 (Aroclor 1260)						
Toxaphene						
Inorganics (Total) (mg/kg)						
Aluminum	6080 JL	5770 JL	5650 JL	6290 JL	3350 JL	3510 JL
Antimony	1.8 BJL	2.6 BJL	2.4 BJL	3.5 BJL	0.61 UJK	1.3 BJL
Arsenic	9.8 JH	3.1 U	6.3 JH	4.1 JH	1.8 BJH	6.2 JH
Barium	130 JK	114 BJK	152 JK	115 JK	37.7 BJK	72.9 JK
Beryllium	0.21 B	0.23 B	0.24 B	0.25 B	0.16 B	0.13 B
Cadmium	0.23 B	1.4 B	2.4	8.4	0.07 B	0.32 B
Calcium	102000 JL	59900 JL	82600 JL	34300 JL	1780 JL	19500 JL
Chromium	16.7 JL	13.8 JL	12.0 JL	14.1 JL	6.8 JL	10.2 JL

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS080	TS081	TS082	TS083	TS084	TS085
Sample ID:	TR-006-SD	TR-007-SD	TR-008-SD	TR-009-SD	TR-010-SD	TR-011-SD
Sample Date:	05/22/2001	05/22/2001	05/22/2001	05/23/2001	05/23/2001	05/23/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 1 in	0 in to 1 in	0 in to 2 in	0 in to 2 in	0 in to 0.5in
Cobalt	5.8 BJL	3.1 BJL	3.9 BJL	3.4 BJL	2.4 BJL	2.1 BJL
Copper	15.5	27.9	18.9	41.3	5.5	10.1
Iron	12700 JL	9180 JL	9040 JL	10700 JL	6340 JL	9260 JL
Lead	13.8 JL	54.3 JL	79.4 JL	128 JL	5.3 JL	15.7 JL
Magnesium	5740 JL	6130 JL	4970 JL	5130 JL	1610 JL	3890 JL
Manganese	340 JL	133 JL	289 JL	288 JL	114 JL	95.1 JL
Nickel	18.8	19.3 B	11.7	33.5	6.0 B	9.7 B
Potassium	1070 BJL	1540 BJL	1540 JL	1460 BJL	689 BJL	647 BJL
Selenium	2.2	5.0	1.1 B	3.8	0.69 U	1.8
Silver	0.31 U	0.61 U	0.25 B	0.43 B	0.16 U	0.24 U
Sodium	380 B	611 B	237 B	350 B	141 B	244 B
Thallium	1.5 UJK	3.0 UJK	0.98 UJK	1.2 UJK	0.79 UJK	1.2 UJK
Total Mercury	0.09 U	0.19 U	0.10 B	0.11 B	0.05 U	0.07 U
Vanadium	17.9 BJL	14.9 BJL	13.8 JL	28.9 JL	10.8 JL	12.2 BJL
Zinc	79.4	117	185	212	27.4	103
Conventional Parameters						
Total Organic Carbon (mg/kg)						
Grain Size (%)						
Percent Gravel	0	0	0	0	0	0
Percent Sand	60	30	30	40	95	25
Percent Silt	30	60	30	30	5	75
Percent Clay	10	10	40	30	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS086	TS087	TS088	TS089	TS090	TS091
	Sample ID:	TR-012-SD	TR-013-SD	TR-014-SD	TR-016-SD	TR-040-SD	TR-127-SD
	Sample Date:	05/23/2001	05/23/2001	05/23/2001	05/23/2001	06/08/2001	06/08/2001
Constituent	Depth (feet):	UNK to UNK	0 in to 1 in	0 in to 1 in	0 in to 2 in	0 in to 3 in	0 in to 6 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS086	TS087	TS088	TS089	TS090	TS091
	Sample ID:	TR-012-SD	TR-013-SD	TR-014-SD	TR-016-SD	TR-040-SD	TR-127-SD
	Sample Date:	05/23/2001	05/23/2001	05/23/2001	05/23/2001	06/08/2001	06/08/2001
Constituent	Depth (feet):	UNK to UNK	0 in to 1 in	0 in to 1 in	0 in to 2 in	0 in to 3 in	0 in to 6 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS086	TS087	TS088	TS089	TS090	TS091
Sample ID:	TR-012-SD	TR-013-SD	TR-014-SD	TR-016-SD	TR-040-SD	TR-127-SD
Sample Date:	05/23/2001	05/23/2001	05/23/2001	05/23/2001	06/08/2001	06/08/2001
Constituent / Depth (feet):	UNK to UNK	0 in to 1 in	0 in to 1 in	0 in to 2 in	0 in to 3 in	0 in to 6 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)					4.4 U	
4,4'-DDE (p,p'-DDE)					4.4 U	
4,4'-DDT (p,p'-DDT)					4.4 U	
Aldrin					2.3 U	
Alpha-BHC					2.3 U	
Alpha-chlordane					2.3 U	
Beta-BHC					2.3 U	
Delta-BHC					2.3 U	
Dieldrin					4.4 U	
Endosulfan I (alpha)					2.3 U	
Endosulfan II (beta)					4.4 U	

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS086	TS087	TS088	TS089	TS090	TS091
Sample ID:	TR-012-SD	TR-013-SD	TR-014-SD	TR-016-SD	TR-040-SD	TR-127-SD
Sample Date:	05/23/2001	05/23/2001	05/23/2001	05/23/2001	06/08/2001	06/08/2001
Constituent / Depth (feet):	UNK to UNK	0 in to 1 in	0 in to 1 in	0 in to 2 in	0 in to 3 in	0 in to 6 in
Endosulfan Sulfate					4.4 U	
Endrin					4.4 U	
Endrin Aldehyde					4.4 U	
Endrin Ketone					4.4 U	
Gamma-BHC (Lindane)					2.3 U	
Gamma-chlordane					2.3 U	
Heptachlor					2.3 U	
Heptachlor Epoxide					2.3 U	
Methoxychlor					23 U	
PCB-1016 (Aroclor 1016)					44 U	
PCB-1221 (Aroclor 1221)					90 U	
PCB-1232 (Aroclor 1232)					44 U	
PCB-1242 (Aroclor 1242)					44 U	
PCB-1248 (Aroclor 1248)					44 U	
PCB-1254 (Aroclor 1254)					44 U	
PCB-1260 (Aroclor 1260)					44 U	
Toxaphene					230 U	
Inorganics (Total) (mg/kg)						
Aluminum	1120 JL	924 JL	9000 JL	5300	5940	8710
Antimony	1.2 BJL	0.80 UJK	2.5 BJL	2.1 B	0.90 UJK	9.6 BJL
Arsenic	2.3 JH	2.6 BJH	7.0 JH	5.0	9.7	12.0
Barium	119 JK	145 JK	126 BJK	98.0	42.6 B	288
Beryllium	0.04 U	0.05 U	0.35 B	0.19 B	0.20 B	0.37 B
Cadmium	0.41 B	0.77 B	5.1	3.7	0.09 U	10.5
Calcium	306000 JL	336000 JL	42800 JL	11400	4590	5510
Chromium	1.5 BJL	1.7 BJL	19.7 JL	7.6	16.6	12.3

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS086	TS087	TS088	TS089	TS090	TS091
Sample ID:	TR-012-SD	TR-013-SD	TR-014-SD	TR-016-SD	TR-040-SD	TR-127-SD
Sample Date:	05/23/2001	05/23/2001	05/23/2001	05/23/2001	06/08/2001	06/08/2001
Constituent / Depth (feet):	UNK to UNK	0 in to 1 in	0 in to 1 in	0 in to 2 in	0 in to 3 in	0 in to 6 in
Cobalt	0.48 BJL	0.44 BJL	5.2 BJL	2.6 B	4.7 B	4.5 B
Copper	4.0 B	6.3 B	36.0	15.9 JL	10.6 JL	15.1 JL
Iron	1440 JL	1030 JL	11700 JL	8440	12500	11400
Lead	10.8 JL	18.9 JL	21.8 JL	105	7.2 JL	405 JL
Magnesium	2980 JL	3800 JL	4100 JL	2690 JL	4240	2770
Manganese	41.4 JL	46.6 JL	238 JL	326	192	1210
Nickel	3.3 B	2.9 B	35.0	7.4 B	25.9	10.8
Potassium	296 BJL	265 BJL	1320 BJL	1140 B	771 B	1490
Selenium	0.73 U	0.91 U	3.3	1.4 JL	1.0 U	0.88 U
Silver	0.17 U	0.21 U	0.70 B	0.41 B	0.75 BU	0.72 BU
Sodium	205 B	276 B	723 B	213 B	408 B	273 BU
Thallium	0.84 UJK	1.0 UJK	2.5 UJK	1.1 U	1.2 U	1.0 U
Total Mercury	0.05 U	0.06 U	0.16 U	0.07 U	0.07 U	0.08 B
Vanadium	3.6 BJL	2.7 BJL	24.6 BJL	13.3 B	29.3	17.7
Zinc	28.5	55.7	135	421	37.0	495
Conventional Parameters						
Total Organic Carbon (mg/kg)					9430	
Grain Size (%)						
Percent Gravel		10	0	1	5 <	0
Percent Sand		60	60	90	85	70
Percent Silt		30	35	10	10	30
Percent Clay		0	5	0	1 <	1 <

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Constituent	Station ID:	TS092	TS093	TS094	TS095	TS096	TS097
	Sample ID:	TR-041-SD	TR-017-SD	TR-018-SD	TR-019-SD	TR-042-SD	TR-020-SD
	Sample Date:	06/08/2001	05/24/2001	05/24/2001	05/24/2001	06/08/2001	05/24/2001
	Depth (feet):	0 in to 1 in	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 5 in	0 in to 3 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS092	TS093	TS094	TS095	TS096	TS097
	Sample ID:	TR-041-SD	TR-017-SD	TR-018-SD	TR-019-SD	TR-042-SD	TR-020-SD
	Sample Date:	06/08/2001	05/24/2001	05/24/2001	05/24/2001	06/08/2001	05/24/2001
Constituent	Depth (feet):	0 in to 1 in	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 5 in	0 in to 3 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS092	TS093	TS094	TS095	TS096	TS097
Sample ID:	TR-041-SD	TR-017-SD	TR-018-SD	TR-019-SD	TR-042-SD	TR-020-SD
Sample Date:	06/08/2001	05/24/2001	05/24/2001	05/24/2001	06/08/2001	05/24/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 5 in	0 in to 3 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)	5.1 U				4.4 U	
4,4'-DDE (p,p'-DDE)	5.1 U				4.4 U	
4,4'-DDT (p,p'-DDT)	5.1 U				4.4 U	
Aldrin	2.6 U				2.3 U	
Alpha-BHC	2.6 U				2.3 U	
Alpha-chlordane	2.6 U				2.3 U	
Beta-BHC	2.6 U				2.3 U	
Delta-BHC	2.6 U				2.3 U	
Dieldrin	5.1 U				4.4 U	
Endosulfan I (alpha)	2.6 U				2.3 U	
Endosulfan II (beta)	5.1 U				4.4 U	

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS092	TS093	TS094	TS095	TS096	TS097
Sample ID:	TR-041-SD	TR-017-SD	TR-018-SD	TR-019-SD	TR-042-SD	TR-020-SD
Sample Date:	06/08/2001	05/24/2001	05/24/2001	05/24/2001	06/08/2001	05/24/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 5 in	0 in to 3 in
Endosulfan Sulfate	5.1 U				4.4 U	
Endrin	5.1 U				4.4 U	
Endrin Aldehyde	5.1 U				4.4 U	
Endrin Ketone	5.1 U				4.4 U	
Gamma-BHC (Lindane)	2.6 U				2.3 U	
Gamma-chlordane	2.6 U				2.3 U	
Heptachlor	2.6 U				2.3 U	
Heptachlor Epoxide	2.6 U				2.3 U	
Methoxychlor	26 U				23 U	
PCB-1016 (Aroclor 1016)	51 U				44 U	
PCB-1221 (Aroclor 1221)	100 U				89 U	
PCB-1232 (Aroclor 1232)	51 U				44 U	
PCB-1242 (Aroclor 1242)	51 U				44 U	
PCB-1248 (Aroclor 1248)	51 U				44 U	
PCB-1254 (Aroclor 1254)	51 U				44 U	
PCB-1260 (Aroclor 1260)	51 U				44 U	
Toxaphene	260 U				230 U	
Inorganics (Total) (mg/kg)						
Aluminum	4900	7530 JL	8880	1200	4190	5740
Antimony	1.5 UJK	1.2 BJL	0.63 B	1.7 U	1.2 BUJK	1.2 U
Arsenic	5.2	7.7 JH	7.0	2.2 U	4.8	4.8 JL
Barium	105	84.6 JK	108	59.8 B	42.4 B	148
Beryllium	0.17 B	0.31 B	0.34 B	0.11 U	0.21 B	0.24 B
Cadmium	0.16 B	1.3	1.1	0.23 B	0.08 U	1.0 B
Calcium	49100	3030 JL	5440	91500	13700	121000
Chromium	14.9	16.8 JL	19.9	3.7 B	11.3	14.7

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Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS092	TS093	TS094	TS095	TS096	TS097
Sample ID:	TR-041-SD	TR-017-SD	TR-018-SD	TR-019-SD	TR-042-SD	TR-020-SD
Sample Date:	06/08/2001	05/24/2001	05/24/2001	05/24/2001	06/08/2001	05/24/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 2 in	0 in to 3 in	0 in to 2 in	0 in to 5 in	0 in to 3 in
Cobalt	3.6 B	5.5 BJL	4.7 B	0.61 U	3.9 B	4.3 B
Copper	11.5 BJL	15.5	13.7 JL	3.6 BJL	10.2 JL	16.1 JL
Iron	9410	13500 JL	16000	2600	10900	9520
Lead	11.3 JL	50.2 JL	44.0	5.5	9.3 JL	22.2
Magnesium	3210	3700 JL	4300 JL	1290 BJL	3480	3410 JL
Manganese	993	352 JL	450	73.0	183	564
Nickel	9.9 B	14.8	18.8	2.9 B	11.7	16.7
Potassium	705 B	1910 JL	1460	300 B	571 B	1140 B
Selenium	1.7 U	0.82 B	0.71 UJK	1.9 UJK	0.88 U	2.1 JL
Silver	0.49 BU	0.40 B	0.60 B	0.44 U	0.51 BU	0.39 B
Sodium	523 BU	217 B	133 B	317 B	237 BU	291 B
Thallium	1.9 U	0.85 UJK	0.81 U	2.2 U	1.0 U	1.6 U
Total Mercury	0.12 U	0.05 U	0.05 U	0.13 U	0.06 U	0.10 U
Vanadium	16.7 B	24.9 JL	23.7	4.2 B	20.0	16.1 B
Zinc	42.2	97.0	109	16.2	48.4	95.2
Conventional Parameters						
Total Organic Carbon (mg/kg)	30400				6900	
Grain Size (%)						
Percent Gravel	0	0	1	0	5	0
Percent Sand	60	50	40	60	85	40
Percent Silt	30	40	50	40	10	40
Percent Clay	10 <	10	10	0	0	20

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS098	TS099	TS100	TS101	TS102	TS103
	Sample ID:	TR-022-SD	TR-043-SD	TR-023-SD	TR-044-SD	TR-024-SD	TR-025-SD
	Sample Date:	05/24/2001	06/08/2001	05/24/2001	06/09/2001	05/24/2001	05/24/2001
Constituent	Depth (feet):	0 in to 3 in	0 in to 4 in	0 in to 1.5in	0 in to 4 in	0 in to 1 in	0 in to 3 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS098	TS099	TS100	TS101	TS102	TS103
	Sample ID:	TR-022-SD	TR-043-SD	TR-023-SD	TR-044-SD	TR-024-SD	TR-025-SD
	Sample Date:	05/24/2001	06/08/2001	05/24/2001	06/09/2001	05/24/2001	05/24/2001
Constituent	Depth (feet):	0 in to 3 in	0 in to 4 in	0 in to 1.5in	0 in to 4 in	0 in to 1 in	0 in to 3 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS098	TS099	TS100	TS101	TS102	TS103
Sample ID:	TR-022-SD	TR-043-SD	TR-023-SD	TR-044-SD	TR-024-SD	TR-025-SD
Sample Date:	05/24/2001	06/08/2001	05/24/2001	06/09/2001	05/24/2001	05/24/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 4 in	0 in to 1.5in	0 in to 4 in	0 in to 1 in	0 in to 3 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)		4.4 U		4.0 U		
4,4'-DDE (p,p'-DDE)		4.4 U		4.0 U		
4,4'-DDT (p,p'-DDT)		4.4 U		4.0 U		
Aldrin		2.3 U		2.1 U		
Alpha-BHC		2.3 U		2.1 U		
Alpha-chlordane		2.3 U		2.1 U		
Beta-BHC		2.3 U		2.1 U		
Delta-BHC		2.3 U		2.1 U		
Dieldrin		4.4 U		4.0 U		
Endosulfan I (alpha)		2.3 U		2.1 U		
Endosulfan II (beta)		4.4 U		4.0 U		

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS098	TS099	TS100	TS101	TS102	TS103
Sample ID:	TR-022-SD	TR-043-SD	TR-023-SD	TR-044-SD	TR-024-SD	TR-025-SD
Sample Date:	05/24/2001	06/08/2001	05/24/2001	06/09/2001	05/24/2001	05/24/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 4 in	0 in to 1.5in	0 in to 4 in	0 in to 1 in	0 in to 3 in
Endosulfan Sulfate		4.4 U		4.0 U		
Endrin		6.3		4.0 U		
Endrin Aldehyde		4.4 U		4.0 U		
Endrin Ketone		4.4 U		4.0 U		
Gamma-BHC (Lindane)		2.3 U		2.1 U		
Gamma-chlordane		2.3 U		2.1 U		
Heptachlor		2.3 U		2.1 U		
Heptachlor Epoxide		2.3 U		2.1 U		
Methoxychlor		23 U		21 U		
PCB-1016 (Aroclor 1016)		44 U		40 U		
PCB-1221 (Aroclor 1221)		90 U		82 U		
PCB-1232 (Aroclor 1232)		44 U		40 U		
PCB-1242 (Aroclor 1242)		44 U		40 U		
PCB-1248 (Aroclor 1248)		44 U		40 U		
PCB-1254 (Aroclor 1254)		44 U		40 U		
PCB-1260 (Aroclor 1260)		44 U		40 U		
Toxaphene		230 U		210 U		
Inorganics (Total) (mg/kg)						
Aluminum	7140	3090	11500	6750	11300	2300
Antimony	3.3 B	0.83 UJK	4.8 B	0.91 BUJK	1.8 B	1.4 U
Arsenic	8.6	1.6 B	15.9	3.8	7.7	1.9 U
Barium	273	41.5 B	210	60.2	219	198
Beryllium	0.32 B	0.17 B	0.60 B	0.26 B	0.60 B	0.09 U
Cadmium	21.5	0.17 B	11.4	0.11 B	3.4	0.86 B
Calcium	155000	6380	16900	36200	8070	185000
Chromium	21.3	4.6	23.1	15.7	23.6	4.8

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS098	TS099	TS100	TS101	TS102	TS103
Sample ID:	TR-022-SD	TR-043-SD	TR-023-SD	TR-044-SD	TR-024-SD	TR-025-SD
Sample Date:	05/24/2001	06/08/2001	05/24/2001	06/09/2001	05/24/2001	05/24/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 4 in	0 in to 1.5in	0 in to 4 in	0 in to 1 in	0 in to 3 in
Cobalt	5.5 B	1.6 B	8.0 B	4.6 B	6.6 B	1.0 B
Copper	42.5 JL	3.9 BJL	42.2 JL	12.7 JL	51.8 JL	4.9 BJL
Iron	11700	6230	19300	13900	20200	3160
Lead	84.8	13.2 JL	478	8.1 JL	208	10.8
Magnesium	4990 JL	2790	5630 JL	4910	6580 JL	2910 JL
Manganese	277	113	594	208	193	301
Nickel	36.8	4.3 B	20.7	16.0	19.5	4.1 B
Potassium	1340 B	701 B	2540	1380	1290	571 B
Selenium	28.4 JL	0.95 U	0.92 UJK	0.92 U	1.4 JL	1.6 UJK
Silver	0.71 B	0.40 BU	1.1 B	0.59 BU	1.0 B	0.37 U
Sodium	236 B	241 BU	174 B	297 BU	173 B	327 B
Thallium	1.2 U	1.1 U	1.1 U	1.1 U	0.81 U	1.8 U
Total Mercury	0.07 U	0.06 U	0.14 B	0.06 U	0.14	0.11 U
Vanadium	21.1	11.9 B	31.7	26.6	33.8	5.2 B
Zinc	403	98.4	581	138	379	31.4
Conventional Parameters						
Total Organic Carbon (mg/kg)		7670		9280		
Grain Size (%)						
Percent Gravel		0	0	3	0	0
Percent Sand		97	75	87	20	85
Percent Silt		3	25	10	80	15
Percent Clay		0	0	0	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS104	TS105	TS106	TS107	TS108	TS109
	Sample ID:	TR-045-SD	TR-047-SD	TR-026-SD	TR-027-SD	TR-028-SD	TR-029-SD
	Sample Date:	06/09/2001	06/08/2001	05/31/2001	05/31/2001	05/31/2001	06/01/2001
Constituent	Depth (feet):	0 in to 2 in	0 in to 4 in	0 in to 2 in	0 in to 4 in	0 in to 4.5in	0 in to 3 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS104	TS105	TS106	TS107	TS108	TS109
Sample ID:	TR-045-SD	TR-047-SD	TR-026-SD	TR-027-SD	TR-028-SD	TR-029-SD
Sample Date:	06/09/2001	06/08/2001	05/31/2001	05/31/2001	05/31/2001	06/01/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 4 in	0 in to 2 in	0 in to 4 in	0 in to 4.5in	0 in to 3 in
Acenaphthylene						
Acetophenone						
Anthracene						
Atrazine						
Benzaldehyde						
Benzo(a)anthracene						
Benzo(b)fluoranthene						
Benzo(ghi)perylene						
Benzo(k)fluoranthene						
Benzo-a-pyrene						
Benzyl Butyl Phthalate						
Bis(2-chloroethoxy)methane						
Bis(2-chloroethyl) Ether						
Bis(2-chloroisopropyl) Ether						
Bis(2-ethylhexyl) Phthalate						
Caprolactam						
Carbazole						
Chrysene						
Di-n-butylphthalate						
Di-n-octylphthalate						
Dibenzo(a,h)anthracene						
Dibenzofuran						
Diethyl Phthalate						
Dimethyl Phthalate						
Fluoranthene						
Fluorene						

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS104	TS105	TS106	TS107	TS108	TS109
Sample ID:	TR-045-SD	TR-047-SD	TR-026-SD	TR-027-SD	TR-028-SD	TR-029-SD
Sample Date:	06/09/2001	06/08/2001	05/31/2001	05/31/2001	05/31/2001	06/01/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 4 in	0 in to 2 in	0 in to 4 in	0 in to 4.5in	0 in to 3 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)	4.6 U	4.0 U	3.4 U		6.0 U	5.0 U
4,4'-DDE (p,p'-DDE)	4.6 U	4.0 U	3.4 U		6.0 U	5.0 U
4,4'-DDT (p,p'-DDT)	4.6 U	4.0 U	3.4 U		5.2 J	5.0 U
Aldrin	2.4 U	2.1 U	1.8 U		3.1 U	2.6 U
Alpha-BHC	2.4 U	2.1 U	1.8 U		3.1 U	2.6 U
Alpha-chlordane	2.4 U	2.1 U	1.8 U		3.1 U	2.6 U
Beta-BHC	2.4 U	2.1 U	1.8 U		3.1 U	2.6 U
Delta-BHC	2.4 U	2.1 U	1.8 U		3.1 U	2.6 U
Dieldrin	4.6 U	4.0 U	3.4 U		6.0 U	5.0 U
Endosulfan I (alpha)	2.4 U	2.1 U	1.8 U		3.1 U	2.6 U
Endosulfan II (beta)	4.6 U	4.0 U	3.4 U		6.0 U	5.0 U

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS104	TS105	TS106	TS107	TS108	TS109
Sample ID:	TR-045-SD	TR-047-SD	TR-026-SD	TR-027-SD	TR-028-SD	TR-029-SD
Sample Date:	06/09/2001	06/08/2001	05/31/2001	05/31/2001	05/31/2001	06/01/2001
Constituent / Depth (feet):	0 in to 2 in	0 in to 4 in	0 in to 2 in	0 in to 4 in	0 in to 4.5in	0 in to 3 in
Endosulfan Sulfate	4.6 U	4.0 U	3.4 U		6.0 U	5.0 U
Endrin	4.6 U	4.0 U	3.4 U		6.0 U	5.0 U
Endrin Aldehyde	4.6 U	4.0 U	3.4 U		6.0 U	5.0 U
Endrin Ketone	4.6 U	4.0 U	3.4 U		6.0 U	5.0 U
Gamma-BHC (Lindane)	2.4 U	2.1 U	1.8 U		3.1 U	2.6 U
Gamma-chlordane	2.4 U	2.1 U	1.8 U		3.1 U	2.6 U
Heptachlor	2.4 U	2.1 U	1.8 U		3.1 U	2.6 U
Heptachlor Epoxide	2.4 U	2.1 U	1.8 U		3.1 U	2.6 U
Methoxychlor	24 U	21 U	18 U		34	36
PCB-1016 (Aroclor 1016)	46 U	40 U	34 U		60 U	50 U
PCB-1221 (Aroclor 1221)	94 U	82 U	69 U		120 U	100 U
PCB-1232 (Aroclor 1232)	46 U	40 U	34 U		60 U	50 U
PCB-1242 (Aroclor 1242)	46 U	40 U	34 U		60 U	50 U
PCB-1248 (Aroclor 1248)	46 U	40 U	34 U		60 U	50 U
PCB-1254 (Aroclor 1254)	46 U	40 U	34 U		60 U	50 U
PCB-1260 (Aroclor 1260)	46 U	40 U	34 U		60 U	50 U
Toxaphene	240 U	210 U	180 U		310 U	260 U
Inorganics (Total) (mg/kg)						
Aluminum	6480	3480	9470	8840	5890	8130
Antimony	1.1 BJL	0.74 UJK	0.62 UJK	0.81 B	2.4 B	0.89 U
Arsenic	3.7	2.6	7.7	7.0	4.5	4.9
Barium	121	28.4 B	104	155	102	127
Beryllium	0.31 B	0.13 B	0.69 B	0.48 B	0.30 B	0.19 B
Cadmium	1.8	0.07 U	0.06 U	0.54 B	4.8	0.79 B
Calcium	110000	3330	6120	10500	5630	15600
Chromium	20.6	7.4	31.8	26.1	14.4	13.8

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Constituent	Station ID:	TS104	TS105	TS106	TS107	TS108	TS109
	Sample ID:	TR-045-SD	TR-047-SD	TR-026-SD	TR-027-SD	TR-028-SD	TR-029-SD
	Sample Date:	06/09/2001	06/08/2001	05/31/2001	05/31/2001	05/31/2001	06/01/2001
	Depth (feet):	0 in to 2 in	0 in to 4 in	0 in to 2 in	0 in to 4 in	0 in to 4.5in	0 in to 3 in
Cobalt		4.5 B	2.1 B	7.0 B	6.7 B	5.3 B	8.5 B
Copper		18.3 JL	6.7 JL	21.4 JL	26.8 JL	22.3 JL	26.7 JL
Iron		10800	6850	18800	18700	14300	19100
Lead		29.3 JL	3.3 JL	23.7	73.8	151	16.5
Magnesium		4210	2470	6030	7400 JL	3120 JL	4290 JL
Manganese		223	123	348	291	139	358
Nickel		17.4	8.3 B	24.6	20.2	12.1 B	29.8
Potassium		1450	596 B	1290	1270	1540 B	694 B
Selenium		1.7	0.84 U	0.70 U	1.8 JL	2.4 JL	1.6 JL
Silver		0.47 B	0.37 BU	0.69 B	0.74 B	0.67 B	0.79 B
Sodium		294 BU	255 BU	345 B	260 B	148 B	139 B
Thallium		1.1 U	0.96 U	0.80 U	0.90 U	1.4 UJK	1.2 UJK
Total Mercury		0.07 U	0.06 U	0.08 B	0.18	0.09 U	0.07 U
Vanadium		22.5	12.4	39.5	32.3	24.9	18.2
Zinc		148	21.2	78.8	238	220	134
Conventional Parameters							
Total Organic Carbon (mg/kg)		42700	1000 U	4980		57700	13200
Grain Size (%)							
Percent Gravel		1	5	10	10	0	5
Percent Sand		70	95	50	50	50	55
Percent Silt		25	0	40	30	40	30
Percent Clay		5	0	0	10 <	10	10

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS110	US001	US002	US003	US004	US005
	Sample ID:	TR-030-SD	BK-150-SD	BK-152-SD	BK-153-SD	BK-155-SD	BK-130-SD
	Sample Date:	06/01/2001	06/27/2001	06/28/2001	06/28/2001	06/28/2001	06/25/2001
Constituent	Depth (feet):	0 in to 8 in	0 in to 3 in	0 in to 2 in	0 in to 4 in	0 in to 2 in	0 in to 3 in
Semi-Volatile Organic Compounds (ug/kg)							
1,1-Biphenyl							
2,4,5-trichlorophenol							
2,4,6-trichlorophenol							
2,4-dichlorophenol							
2,4-dimethylphenol							
2,4-dinitrophenol							
2,4-dinitrotoluene							
2,6-dinitrotoluene							
2-chloronaphthalene							
2-chlorophenol							
2-methyl-4,6-dinitrophenol							
2-methylnaphthalene							
2-methylphenol							
2-nitroaniline							
2-nitrophenol							
3,3'-dichlorobenzidine							
3-nitroaniline							
4-bromophenyl Phenyl Ether							
4-chloro-3-methylphenol							
4-chloroaniline							
4-chlorophenyl Phenyl Ether							
4-Methylphenol							
4-nitroaniline							
4-nitrophenol							
Acenaphthene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	TS110	US001	US002	US003	US004	US005
	Sample ID:	TR-030-SD	BK-150-SD	BK-152-SD	BK-153-SD	BK-155-SD	BK-130-SD
	Sample Date:	06/01/2001	06/27/2001	06/28/2001	06/28/2001	06/28/2001	06/25/2001
Constituent	Depth (feet):	0 in to 8 in	0 in to 3 in	0 in to 2 in	0 in to 4 in	0 in to 2 in	0 in to 3 in
Acenaphthylene							
Acetophenone							
Anthracene							
Atrazine							
Benzaldehyde							
Benzo(a)anthracene							
Benzo(b)fluoranthene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Benzo-a-pyrene							
Benzyl Butyl Phthalate							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl) Ether							
Bis(2-chloroisopropyl) Ether							
Bis(2-ethylhexyl) Phthalate							
Caprolactam							
Carbazole							
Chrysene							
Di-n-butylphthalate							
Di-n-octylphthalate							
Dibenzo(a,h)anthracene							
Dibenzofuran							
Diethyl Phthalate							
Dimethyl Phthalate							
Fluoranthene							
Fluorene							

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS110	US001	US002	US003	US004	US005
Sample ID:	TR-030-SD	BK-150-SD	BK-152-SD	BK-153-SD	BK-155-SD	BK-130-SD
Sample Date:	06/01/2001	06/27/2001	06/28/2001	06/28/2001	06/28/2001	06/25/2001
Constituent / Depth (feet):	0 in to 8 in	0 in to 3 in	0 in to 2 in	0 in to 4 in	0 in to 2 in	0 in to 3 in
Hexachlorobenzene (hcb)						
Hexachlorobutadiene						
Hexachlorocyclopentadiene (H						
Hexachloroethane						
Indeno (1,2,3-cd) Pyrene						
Isophorone						
N-nitrosodi-n-propylamine						
N-nitrosodiphenylamine						
Naphthalene						
Nitrobenzene						
Pentachlorophenol						
Phenanthrene						
Phenol						
Pyrene						
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)	4.3 U	5.1 U	4.2 U	3.8 U	3.9 U	5.3 U
4,4'-DDE (p,p'-DDE)	4.3 U	5.1 U	4.2 U	3.8 U	3.9 U	5.3 U
4,4'-DDT (p,p'-DDT)	5.9 JQ	5.1 U	4.2 U	3.8 U	3.9 U	5.3 U
Aldrin	2.2 U	2.6 U	2.2 U	2.0 U	2.0 U	2.7 U
Alpha-BHC	2.2 U	2.6 U	2.2 U	2.0 U	2.0 U	2.7 U
Alpha-chlordane	2.2 U	2.6 U	2.2 U	2.0 U	2.0 U	2.7 U
Beta-BHC	2.2 U	2.6 U	2.2 U	2.0 U	2.0 U	2.7 U
Delta-BHC	2.2 U	2.6 U	2.2 U	2.0 U	2.0 U	2.7 U
Dieldrin	4.3 U	5.1 U	4.2 U	3.8 U	3.9 U	5.3 U
Endosulfan I (alpha)	2.2 U	2.6 U	2.2 U	2.0 U	2.0 U	2.7 U
Endosulfan II (beta)	4.3 U	5.1 U	4.2 U	3.8 U	3.9 U	5.3 U

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS110	US001	US002	US003	US004	US005
Sample ID:	TR-030-SD	BK-150-SD	BK-152-SD	BK-153-SD	BK-155-SD	BK-130-SD
Sample Date:	06/01/2001	06/27/2001	06/28/2001	06/28/2001	06/28/2001	06/25/2001
Constituent / Depth (feet):	0 in to 8 in	0 in to 3 in	0 in to 2 in	0 in to 4 in	0 in to 2 in	0 in to 3 in
Endosulfan Sulfate	4.3 U	5.1 U	4.2 U	3.8 U	3.9 U	5.3 U
Endrin	4.3 U	5.1 U	4.2 U	3.8 U	3.9 U	5.3 U
Endrin Aldehyde	4.3 U	5.1 U	4.2 U	3.8 U	3.9 U	5.3 U
Endrin Ketone	4.3 U	5.1 U	4.2 U	3.8 U	3.9 U	5.3 U
Gamma-BHC (Lindane)	2.2 U	2.6 U	2.2 U	2.0 U	2.0 U	2.7 U
Gamma-chlordane	2.2 U	2.6 U	2.2 U	2.0 U	2.0 U	2.7 U
Heptachlor	2.2 U	2.6 U	2.2 U	2.0 U	2.0 U	2.7 U
Heptachlor Epoxide	2.2 U	2.6 U	2.2 U	2.0 U	2.0 U	2.7 U
Methoxychlor	22 U	26 U	22 U	20 U	20 U	27 U
PCB-1016 (Aroclor 1016)	43 U	51 U	42 U	38 U	39 U	53 U
PCB-1221 (Aroclor 1221)	87 U	100 U	85 U	78 U	79 U	110 U
PCB-1232 (Aroclor 1232)	43 U	51 U	42 U	38 U	39 U	53 U
PCB-1242 (Aroclor 1242)	43 U	51 U	42 U	38 U	39 U	53 U
PCB-1248 (Aroclor 1248)	43 U	51 U	42 U	38 U	39 U	53 U
PCB-1254 (Aroclor 1254)	43 U	51 U	42 U	38 U	39 U	53 U
PCB-1260 (Aroclor 1260)	43 U	51 U	42 U	38 U	39 U	53 U
Toxaphene	220 U	260 U	220 U	200 U	200 U	270 U
Inorganics (Total) (mg/kg)						
Aluminum	6850	3750	5120	9960	7950	3410
Antimony	14.3 JL	9.2 U	7.2 U	6.8 U	6.5 U	8.6 U
Arsenic	21.4	6.7	1.5 B	0.47 U	2.6	1.9 B
Barium	51.4	166	34.2 B	19.2 B	68.4	50.8 B
Beryllium	0.26 B	0.20 U	0.17 U	0.17 U	0.36 U	0.20 U
Cadmium	2.8	46.2 JK	0.35 BJK	0.05 UJK	0.38 BJK	0.06 BJK
Calcium	2480	214000 JK	1160 BJK	915 BJK	1520 JK	1760 JK
Chromium	12.6	7.0	7.9	16.4	14.1	2.2 B

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	TS110	US001	US002	US003	US004	US005
Sample ID:	TR-030-SD	BK-150-SD	BK-152-SD	BK-153-SD	BK-155-SD	BK-130-SD
Sample Date:	06/01/2001	06/27/2001	06/28/2001	06/28/2001	06/28/2001	06/25/2001
Constituent / Depth (feet):	0 in to 8 in	0 in to 3 in	0 in to 2 in	0 in to 4 in	0 in to 2 in	0 in to 3 in
Cobalt	2.2 B	2.2 B	4.8 B	10.5 B	9.3 B	1.6 U
Copper	22.7 JL	28.5 JK	6.1 BJK	8.7 JK	12.7 JK	3.7 BJK
Iron	10900	7050	14300	24500	13600	4520
Lead	589	20.3	6.4	5.0	14.8	2.7
Magnesium	3480	2660	2230	4490	3290	799 B
Manganese	176	177	178	235	699	387
Nickel	8.0 B	66.7	19.9	20.0	20.3	2.5 U
Potassium	1660	353 B	335 B	233 B	556 B	508 B
Selenium	0.81 BJH	0.60 U	0.76 B	0.44 U	0.42 U	0.56 U
Silver	1.1 B	0.85 UJL	0.67 UJL	0.63 UJL	0.60 UJL	0.80 UJL
Sodium	326 B	83.6 B	27.4 U	29.9 U	36.4 U	123 B
Thallium	0.88 U	0.91 U	0.72 U	0.68 U	0.65 U	0.86 U
Total Mercury	0.19	0.08 U	0.06 U	0.06 U	0.06 U	0.07 U
Vanadium	17.8	12.3 B	14.0	6.2 B	10.9 B	9.2 B
Zinc	279	1880	60.0	49.0	54.7	18.3
Conventional Parameters						
Total Organic Carbon (mg/kg)	96600	17100	1000 U	1310	19000	7380
Grain Size (%)						
Percent Gravel	1	10	5	5	3	3
Percent Sand	85	85	85	90	92	87
Percent Silt	13	5	10	5	5	10
Percent Clay	1	0	0	0	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	US006	US007	US008	US009	US010	US011
Sample ID:	BK-131-SD	BK-134-SD	BK-135-SD	BK-133-SD	BK-139-SD	BK-142-SD
Sample Date:	06/25/2001	06/25/2001	06/25/2001	06/25/2001	06/25/2001	06/26/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 4 in	0 in to 6 in	0 in to 8 in	0 in to 4 in	2 in to 10 in
Semi-Volatile Organic Compounds (ug/kg)						
1,1-Biphenyl		430 U	450 U	400 U		
2,4,5-trichlorophenol		1100 U	1100 U	1000 U		
2,4,6-trichlorophenol		430 U	450 U	400 U		
2,4-dichlorophenol		430 U	450 U	400 U		
2,4-dimethylphenol		430 U	450 U	400 U		
2,4-dinitrophenol		1100 U	1100 U	1000 U		
2,4-dinitrotoluene		430 U	450 U	400 U		
2,6-dinitrotoluene		430 U	450 U	400 U		
2-chloronaphthalene		430 U	450 U	400 U		
2-chlorophenol		430 U	450 U	400 U		
2-methyl-4,6-dinitrophenol		1100 U	1100 U	1000 U		
2-methylnaphthalene		430 U	450 U	400 U		
2-methylphenol		430 U	450 U	400 U		
2-nitroaniline		1100 U	1100 U	1000 U		
2-nitrophenol		430 U	450 U	400 U		
3,3'-dichlorobenzidine		430 U	450 U	400 U		
3-nitroaniline		1100 U	1100 U	1000 U		
4-bromophenyl Phenyl Ether		430 U	450 U	400 U		
4-chloro-3-methylphenol		430 U	450 U	400 U		
4-chloroaniline		430 U	450 U	400 U		
4-chlorophenyl Phenyl Ether		430 U	450 U	400 U		
4-Methylphenol		430 U	450 U	400 U		
4-nitroaniline		1100 U	1100 U	1000 U		
4-nitrophenol		1100 U	1100 U	1000 U		
Acenaphthene		430 U	450 U	400 U		

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	US006	US007	US008	US009	US010	US011
Sample ID:	BK-131-SD	BK-134-SD	BK-135-SD	BK-133-SD	BK-139-SD	BK-142-SD
Sample Date:	06/25/2001	06/25/2001	06/25/2001	06/25/2001	06/25/2001	06/26/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 4 in	0 in to 6 in	0 in to 8 in	0 in to 4 in	2 in to 10 in
Acenaphthylene		430 U	450 U	400 U		
Acetophenone		430 U	450 U	400 U		
Anthracene		430 U	450 U	400 U		
Atrazine		430 U	450 U	400 U		
Benzaldehyde		430 U	450 U	400 U		
Benzo(a)anthracene		430 U	450 U	400 U		
Benzo(b)fluoranthene		430 U	450 U	400 U		
Benzo(ghi)perylene		430 U	450 U	400 U		
Benzo(k)fluoranthene		430 U	450 U	400 U		
Benzo-a-pyrene		430 U	450 U	400 U		
Benzyl Butyl Phthalate		130 JQ	450 U	220 JQ		
Bis(2-chloroethoxy)methane		430 U	450 U	400 U		
Bis(2-chloroethyl) Ether		430 U	450 U	400 U		
Bis(2-chloroisopropyl) Ether		430 U	450 U	400 U		
Bis(2-ethylhexyl) Phthalate		56 JQ	450 U	400 U		
Caprolactam		430 U	450 U	400 U		
Carbazole		430 U	450 U	400 U		
Chrysene		430 U	450 U	400 U		
Di-n-butylphthalate		430 U	450 U	400 U		
Di-n-octylphthalate		430 U	450 U	400 U		
Dibenzo(a,h)anthracene		430 U	450 U	400 U		
Dibenzofuran		430 U	450 U	400 U		
Diethyl Phthalate		430 U	450 U	400 U		
Dimethyl Phthalate		430 U	450 U	400 U		
Fluoranthene		430 U	450 U	400 U		
Fluorene		430 U	450 U	400 U		

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	US006	US007	US008	US009	US010	US011
Sample ID:	BK-131-SD	BK-134-SD	BK-135-SD	BK-133-SD	BK-139-SD	BK-142-SD
Sample Date:	06/25/2001	06/25/2001	06/25/2001	06/25/2001	06/25/2001	06/26/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 4 in	0 in to 6 in	0 in to 8 in	0 in to 4 in	2 in to 10 in
Hexachlorobenzene (hcb)		430 U	450 U	400 U		
Hexachlorobutadiene		430 U	450 U	400 U		
Hexachlorocyclopentadiene (H		430 UJK	450 UJK	400 UJK		
Hexachloroethane		430 U	450 U	400 U		
Indeno (1,2,3-cd) Pyrene		430 U	450 U	400 U		
Isophorone		430 U	450 U	400 U		
N-nitrosodi-n-propylamine		430 U	450 U	400 U		
N-nitrosodiphenylamine		430 U	450 U	400 U		
Naphthalene		430 U	450 U	400 U		
Nitrobenzene		430 U	450 U	400 U		
Pentachlorophenol		1100 U	1100 U	1000 U		
Phenanthrene		430 U	450 U	400 U		
Phenol		430 U	450 U	400 U		
Pyrene		430 U	450 U	400 U		
Pesticides/PCBs (ug/kg)						
4,4'-DDD (p,p'-DDD)	4.0 U	4.4 U	4.6 U	4.1 U	4.2 U	33 U
4,4'-DDE (p,p'-DDE)	4.0 U	4.4 U	4.6 U	4.1 U	4.2 U	33 U
4,4'-DDT (p,p'-DDT)	4.0 U	4.4 U	4.6 U	4.1 U	4.2 U	33 U
Aldrin	2.0 U	2.3 U	2.3 U	2.1 U	2.2 U	17 U
Alpha-BHC	2.0 U	2.3 U	2.3 U	2.1 U	2.2 U	17 U
Alpha-chlordane	2.0 U	2.3 U	2.3 U	2.1 U	2.2 U	17 U
Beta-BHC	2.0 U	2.3 U	2.3 U	2.1 U	2.2 U	17 U
Delta-BHC	2.0 U	2.3 U	2.3 U	2.1 U	2.2 U	17 U
Dieldrin	4.0 U	4.4 U	4.6 U	4.1 U	4.2 U	33 U
Endosulfan I (alpha)	2.0 U	2.3 U	2.3 U	2.1 U	2.2 U	17 U
Endosulfan II (beta)	4.0 U	4.4 U	4.6 U	4.1 U	4.2 U	33 U

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	US006	US007	US008	US009	US010	US011
Sample ID:	BK-131-SD	BK-134-SD	BK-135-SD	BK-133-SD	BK-139-SD	BK-142-SD
Sample Date:	06/25/2001	06/25/2001	06/25/2001	06/25/2001	06/25/2001	06/26/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 4 in	0 in to 6 in	0 in to 8 in	0 in to 4 in	2 in to 10 in
Endosulfan Sulfate	4.0 U	4.4 U	4.6 U	4.1 U	4.2 U	33 U
Endrin	4.0 U	4.4 U	4.6 U	4.1 U	4.2 U	33 U
Endrin Aldehyde	4.0 U	4.4 U	4.6 U	4.1 U	4.2 U	33 U
Endrin Ketone	4.0 U	4.4 U	4.6 U	4.1 U	4.2 U	33 U
Gamma-BHC (Lindane)	2.0 U	2.3 U	2.3 U	2.1 U	2.2 U	17 U
Gamma-chlordane	2.0 U	2.3 U	2.3 U	2.1 U	2.2 U	17 U
Heptachlor	2.0 U	2.3 U	2.3 U	2.1 U	2.2 U	17 U
Heptachlor Epoxide	2.0 U	2.3 U	2.3 U	2.1 U	2.2 U	17 U
Methoxychlor	20 U	23 U	23 U	21 U	22 U	170 U
PCB-1016 (Aroclor 1016)	40 U	44 U	46 U	41 U	42 U	330 U
PCB-1221 (Aroclor 1221)	81 U	90 U	92 U	82 U	85 U	670 U
PCB-1232 (Aroclor 1232)	40 U	44 U	46 U	41 U	42 U	330 U
PCB-1242 (Aroclor 1242)	40 U	44 U	46 U	41 U	42 U	330 U
PCB-1248 (Aroclor 1248)	40 U	44 U	46 U	41 U	42 U	330 U
PCB-1254 (Aroclor 1254)	40 U	44 U	46 U	41 U	42 U	330 U
PCB-1260 (Aroclor 1260)	40 U	44 U	46 U	41 U	42 U	330 U
Toxaphene	200 U	230 U	230 U	210 U	220 U	1700 U
Inorganics (Total) (mg/kg)						
Aluminum	4860	29300	27000	16000	8660	2260 JK
Antimony	7.2 U	8.2 U	8.2 U	7.0 U	7.4 U	34.9 UJK
Arsenic	1.3 B	4.5	7.0	1.5 B	0.51 U	2.4 UJK
Barium	31.1 B	166	214	197	52.3	66.5 BJK
Beryllium	0.27 U	0.79 U	0.80 U	0.59 U	0.74 U	0.24 UJK
Cadmium	0.05 UJK	0.28 BJK	3.3 JK	0.05 UJK	0.05 UJK	1.7 BJK
Calcium	3740 JK	6860 JK	1510 JK	2100 JK	1720 JK	68500 JK
Chromium	6.1	21.5	9.8	10.3	12.3	3.0 UJK

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	US006	US007	US008	US009	US010	US011
Sample ID:	BK-131-SD	BK-134-SD	BK-135-SD	BK-133-SD	BK-139-SD	BK-142-SD
Sample Date:	06/25/2001	06/25/2001	06/25/2001	06/25/2001	06/25/2001	06/26/2001
Constituent / Depth (feet):	0 in to 3 in	0 in to 4 in	0 in to 6 in	0 in to 8 in	0 in to 4 in	2 in to 10 in
Cobalt	2.7 B	7.5 B	8.1 B	6.2 B	3.9 B	6.5 UJK
Copper	5.1 BJK	13.9 JK	9.8 JK	6.4 JK	4.6 BJK	13.0 BJK
Iron	7020	19200	17800	13200	13200	2310 JK
Lead	8.0	19.2	139	8.4	5.4	16.1 JK
Magnesium	1860	5190	1640	2300	2750	2260 BJK
Manganese	148	501	2340	501	194	12.2 BJK
Nickel	8.2 B	15.9	10.2 B	10.8	9.9 B	14.1 BJK
Potassium	509 B	1210 B	764 B	885 B	1210 B	398 UJK
Selenium	0.47 U	0.89 B	0.69 B	0.96 B	0.73 B	12.1 JK
Silver	0.66 UJL	0.75 UJL	0.76 UJL	0.64 UJL	0.69 UJL	3.2 UJK
Sodium	131 B	419 B	193 B	140 B	90.9 B	213 BJK
Thallium	0.71 U	0.81 U	0.81 U	0.69 U	0.74 U	3.5 UJK
Total Mercury	0.06 U	0.07 U	0.07 U	0.06 U	0.06 U	0.30 R
Vanadium	10.1 B	27.2	25.4	15.6	14.5	51.9 BJK
Zinc	20.0	135	901	80.6	32.3	42.0 JK
Conventional Parameters						
Total Organic Carbon (mg/kg)	5470				4710	309000
Grain Size (%)						
Percent Gravel	10	0	0	0	15	0
Percent Sand	85	50	75	80	85	0
Percent Silt	5	40	20	20	0	95
Percent Clay	0	10	5	0	0	5

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Constituent	Station ID:	US012	US013	US014	US015	US016
	Sample ID:	BK-140-SD	BK-138-SD	TR-147-SD	TR-145-SD	TR-136-SD
	Sample Date:	06/26/2001	06/26/2001	06/27/2001	06/27/2001	06/27/2001
	Depth (feet):	0 in to 1 in	0 in to 4 in	0 in to 3 in	0 in to 2 in	0 in to 5 in
Semi-Volatile Organic Compounds (ug/kg)						
1,1-Biphenyl						
2,4,5-trichlorophenol						
2,4,6-trichlorophenol						
2,4-dichlorophenol						
2,4-dimethylphenol						
2,4-dinitrophenol						
2,4-dinitrotoluene						
2,6-dinitrotoluene						
2-chloronaphthalene						
2-chlorophenol						
2-methyl-4,6-dinitrophenol						
2-methylnaphthalene						
2-methylphenol						
2-nitroaniline						
2-nitrophenol						
3,3'-dichlorobenzidine						
3-nitroaniline						
4-bromophenyl Phenyl Ether						
4-chloro-3-methylphenol						
4-chloroaniline						
4-chlorophenyl Phenyl Ether						
4-Methylphenol						
4-nitroaniline						
4-nitrophenol						
Acenaphthene						

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

	Station ID:	US012	US013	US014	US015	US016
	Sample ID:	BK-140-SD	BK-138-SD	TR-147-SD	TR-145-SD	TR-136-SD
	Sample Date:	06/26/2001	06/26/2001	06/27/2001	06/27/2001	06/27/2001
Constituent	Depth (feet):	0 in to 1 in	0 in to 4 in	0 in to 3 in	0 in to 2 in	0 in to 5 in
Acenaphthylene						
Acetophenone						
Anthracene						
Atrazine						
Benzaldehyde						
Benzo(a)anthracene						
Benzo(b)fluoranthene						
Benzo(ghi)perylene						
Benzo(k)fluoranthene						
Benzo-a-pyrene						
Benzyl Butyl Phthalate						
Bis(2-chloroethoxy)methane						
Bis(2-chloroethyl) Ether						
Bis(2-chloroisopropyl) Ether						
Bis(2-ethylhexyl) Phthalate						
Caprolactam						
Carbazole						
Chrysene						
Di-n-butylphthalate						
Di-n-octylphthalate						
Dibenzo(a,h)anthracene						
Dibenzofuran						
Diethyl Phthalate						
Dimethyl Phthalate						
Fluoranthene						
Fluorene						

A blank cell indicates analysis was not performed or the result was rejected during analysis.

Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	US012	US013	US014	US015	US016
Sample ID:	BK-140-SD	BK-138-SD	TR-147-SD	TR-145-SD	TR-136-SD
Sample Date:	06/26/2001	06/26/2001	06/27/2001	06/27/2001	06/27/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 4 in	0 in to 3 in	0 in to 2 in	0 in to 5 in
Hexachlorobenzene (hcb)					
Hexachlorobutadiene					
Hexachlorocyclopentadiene (H					
Hexachloroethane					
Indeno (1,2,3-cd) Pyrene					
Isophorone					
N-nitrosodi-n-propylamine					
N-nitrosodiphenylamine					
Naphthalene					
Nitrobenzene					
Pentachlorophenol					
Phenanthrene					
Phenol					
Pyrene					
Pesticides/PCBs (ug/kg)					
4,4'-DDD (p,p'-DDD)	4.1 U	3.8 U	4.3 U	4.1 U	3.9 U
4,4'-DDE (p,p'-DDE)	4.1 U	3.8 U	4.3 U	4.1 U	3.9 U
4,4'-DDT (p,p'-DDT)	4.1 U	3.8 U	4.3 U	4.1 U	3.9 U
Aldrin	2.1 U	2.0 U	2.2 U	2.1 U	2.0 U
Alpha-BHC	2.1 U	2.0 U	2.2 U	2.1 U	2.0 U
Alpha-chlordane	2.1 U	2.0 U	2.2 U	2.1 U	2.0 U
Beta-BHC	2.1 U	2.0 U	2.2 U	2.1 U	2.0 U
Delta-BHC	2.1 U	2.0 U	2.2 U	2.1 U	2.0 U
Dieldrin	4.1 U	3.8 U	4.3 U	4.1 U	3.9 U
Endosulfan I (alpha)	2.1 U	2.0 U	2.2 U	2.1 U	2.0 U
Endosulfan II (beta)	4.1 U	3.8 U	4.3 U	4.1 U	3.9 U

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Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	US012	US013	US014	US015	US016
Sample ID:	BK-140-SD	BK-138-SD	TR-147-SD	TR-145-SD	TR-136-SD
Sample Date:	06/26/2001	06/26/2001	06/27/2001	06/27/2001	06/27/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 4 in	0 in to 3 in	0 in to 2 in	0 in to 5 in
Endosulfan Sulfate	4.1 U	3.8 U	4.3 U	4.1 U	3.9 U
Endrin	4.1 U	3.8 U	4.3 U	4.1 U	3.9 U
Endrin Aldehyde	4.1 U	3.8 U	4.3 U	4.1 U	3.9 U
Endrin Ketone	4.1 U	3.8 U	4.3 U	4.1 U	3.9 U
Gamma-BHC (Lindane)	2.1 U	2.0 U	2.2 U	2.1 U	2.0 U
Gamma-chlordane	2.1 U	2.0 U	2.2 U	2.1 U	2.0 U
Heptachlor	2.1 U	2.0 U	2.2 U	2.1 U	2.0 U
Heptachlor Epoxide	2.1 U	2.0 U	2.2 U	2.1 U	2.0 U
Methoxychlor	21 U	20 U	22 U	21 U	20 U
PCB-1016 (Aroclor 1016)	41 U	38 U	43 U	41 U	39 U
PCB-1221 (Aroclor 1221)	82 U	78 U	86 U	84 U	78 U
PCB-1232 (Aroclor 1232)	41 U	38 U	43 U	41 U	39 U
PCB-1242 (Aroclor 1242)	41 U	38 U	43 U	41 U	39 U
PCB-1248 (Aroclor 1248)	41 U	38 U	43 U	41 U	39 U
PCB-1254 (Aroclor 1254)	41 U	38 U	43 U	41 U	39 U
PCB-1260 (Aroclor 1260)	41 U	38 U	43 U	41 U	39 U
Toxaphene	210 U	200 U	220 U	210 U	200 U
Inorganics (Total) (mg/kg)					
Aluminum	4440	10000	10500	8960	10300
Antimony	7.3 U	7.2 U	28.0	2450	637
Arsenic	1.2 B	0.89 B	862	6180	2850
Barium	26.4 B	18.5 B	52.4 B	55.6	59.5
Beryllium	0.16 U	0.19 U	0.38 U	0.67 U	0.63 U
Cadmium	0.05 UJK	0.05 UJK	9.8 JK	210 JK	152 JK
Calcium	2510 JK	2620 JK	4890 JK	14400 JK	9120 JK
Chromium	7.3	13.2	28.8	16.9	20.9

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Upper Columbia River/Lake Roosevelt ESI - Full Data Listings for sediment (with grain size)

Station ID:	US012	US013	US014	US015	US016
Sample ID:	BK-140-SD	BK-138-SD	TR-147-SD	TR-145-SD	TR-136-SD
Sample Date:	06/26/2001	06/26/2001	06/27/2001	06/27/2001	06/27/2001
Constituent / Depth (feet):	0 in to 1 in	0 in to 4 in	0 in to 3 in	0 in to 2 in	0 in to 5 in
Cobalt	2.5 B	5.9 B	12.8 B	23.0	20.1
Copper	5.9 BJK	4.2 BJK	25.8 JL	279 JK	106 JK
Iron	10200	22800	29400	62800	63500
Lead	3.3	6.4	494	18300	14100
Magnesium	2160	4260	9140	19200	12800
Manganese	206	292	985	3520	2300
Nickel	8.9 B	17.0	21.6	23.6	23.9
Potassium	696 B	181 B	822 B	1010 B	847 B
Selenium	0.48 B	0.57 B	0.51 U	0.48 U	0.45 U
Silver	0.67 UJL	0.66 UJL	0.80 BJL	37.4 JL	24.4 JL
Sodium	65.3 B	73.9 B	47.6 B	40.0 U	55.4 B
Thallium	0.72 U	0.71 U	0.77 U	0.73 U	1.4 U
Total Mercury	0.06 U	0.06 U	0.07 U	0.35	0.06 U
Vanadium	9.4 B	12.0 B	31.5	35.4	38.7
Zinc	18.3	41.2	1330	23600	12300
Conventional Parameters					
Total Organic Carbon (mg/kg)	1000 U	4230	8750	2770	9060
Grain Size (%)					
Percent Gravel	0	10	5	10	10
Percent Sand	95	85	90	85	85
Percent Silt	5	5	5	5	5
Percent Clay	0	0	0	0	0

A blank cell indicates analysis was not performed or the result was rejected during analysis.

UPPER COLUMBIA RIVER/LAKE ROOSEVELT EST
PHOTO LOG

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Section	Film Roll
1	SMF1
2	SMF2
3	SMF3
4	SMF4
5	SMF5
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11	KB1
12	KB2
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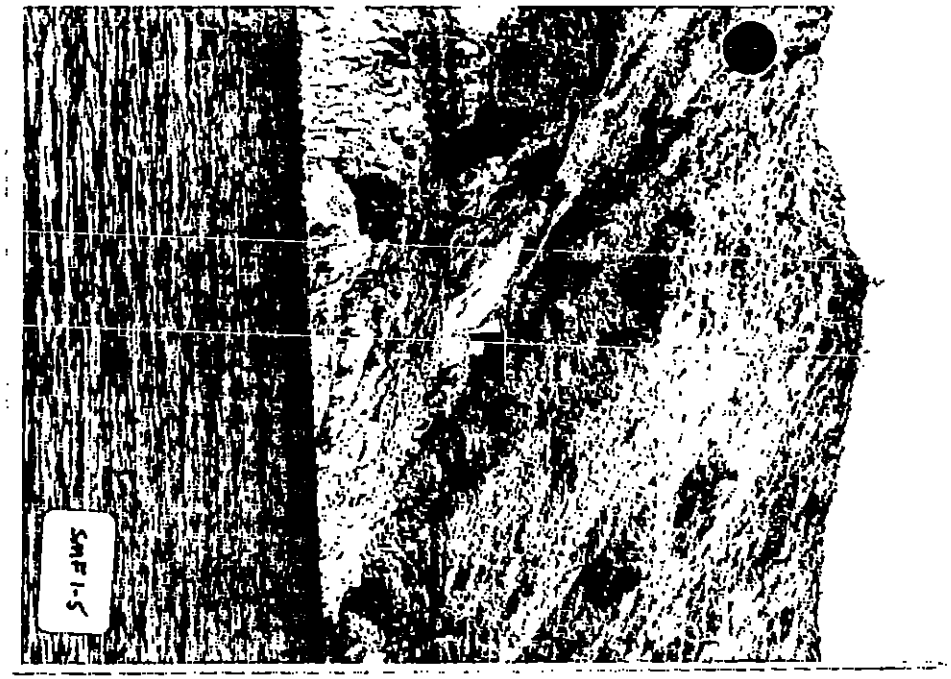
PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

Photo No.	Date	Time	By	Dir.	Description
SMF1-1	5/14/01	1750	SMF	NA	Crescent Bay Boat Ramp, auger rinsate sample collection (sample not submitted).
SMF1-2	5/14/01	1800	SMF	NA	Crescent Bay Boat Ramp, sample material in sampling bowl (RT# 01204106).
SMF1-3	5/14/01	1900	SMF	NA	North Dam Boat Ramp, sample material being placed in jars (RT# 01204104).
SMF1-4	5/15/01	1130	SMF	NA	Upstream of Grand Coulee Municipal Water Intake, surface water sample (RT# 01204102).
SMF1-5	5/15/01	1120	SMF	S	Upstream of Grand Coulee Municipal Water Intake, likely Grand Coulee pumphouse location.
SMF1-6	5/15/01	1120	SMF	NA	Upstream of Grand Coulee Municipal Water Intake, Kemmerer bottle rinsate sample (RT# 01204103). Incorrect tracking number on white board.
SMF1-7	5/15/01	1130	SMF	NE	Upstream of Grand Coulee Municipal Water Intake, Kemmerer bottle sampling method.
SMF1-8	5/15/01	1130	SMF	N	Upstream of Grand Coulee Municipal Water Intake, Kemmerer bottle sampling method.
SMF1-9	5/15/01	1245	SMF	NA	Plum Point, auger rinsate sample collection (sample not submitted).
SMF1-10	5/15/01	1300	SMF	S	Plum Point, auger attempt.
SMF1-11	5/15/01	1300	SMF	SW	Plum Point, surface sediment material in bowl (RT# 01204107). Incorrect tracking number on white board.
SMF1-12	5/15/01	1300	SMF	S	Plum Point, sample material in jars (RT# 01204107).
SMF1-13	5/17/01	1000	SMF	NA	Inchelium, sample material in dredge (RT# 01204110).
SMF1-14	5/17/01	1000	SMF	NA	Inchelium, sample material being placed in jars (RT# 01204110).
SMF1-15	5/17/01	1000	SMF	NA	Inchelium, sample material in jars (RT# 01204110).
SMF1-16	5/17/01	1045	SMF	NA	South of Hall Creek, sample material in jars (RT# 01204111).
SMF1-17	5/17/01	1130	SMF	NA	Mission Point, sample material in jars (RT# 01204112).
SMF1-18	5/17/01	1200	SMF	N	Lake Roosevelt between Mission Point and Daisy Station, visible dust in the air.
SMF1-19	5/17/01	1245	SMF	NA	North of Daisy Station, sample material in jars (RT# 01204113).
SMF1-20	5/17/01	1400	SMF	S	Between Little Jim and Barnaby Creeks, view of Lake Roosevelt exposed west bank showing potential landslide material at proposed sampling point.
SMF1-21	5/17/01	1415	SMF	NA	Between Little Jim and Barnaby Creeks, sample material in jars (RT# 01204114).
SMF1-22	5/17/01	1445	SMF	N	South of Chalk Grande Point, sample area being screened with XRF.
SMF1-23	5/17/01	1445	SMF	W	South of Chalk Grande Point, sample material in jars (RT# 01204115).
SMF1-24	5/17/01	1600	SMF	NA	Barnaby Island, sample material in jars (RT# 01204116).

SMF 1-7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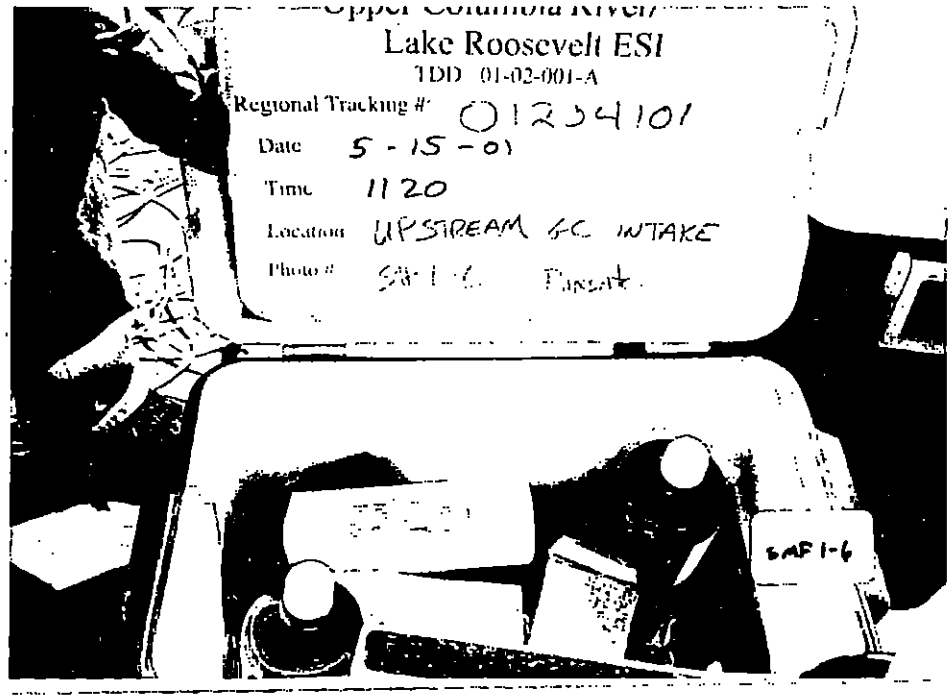
SMF 1-8


Upper Columbia River
Lake Roosevelt ESI
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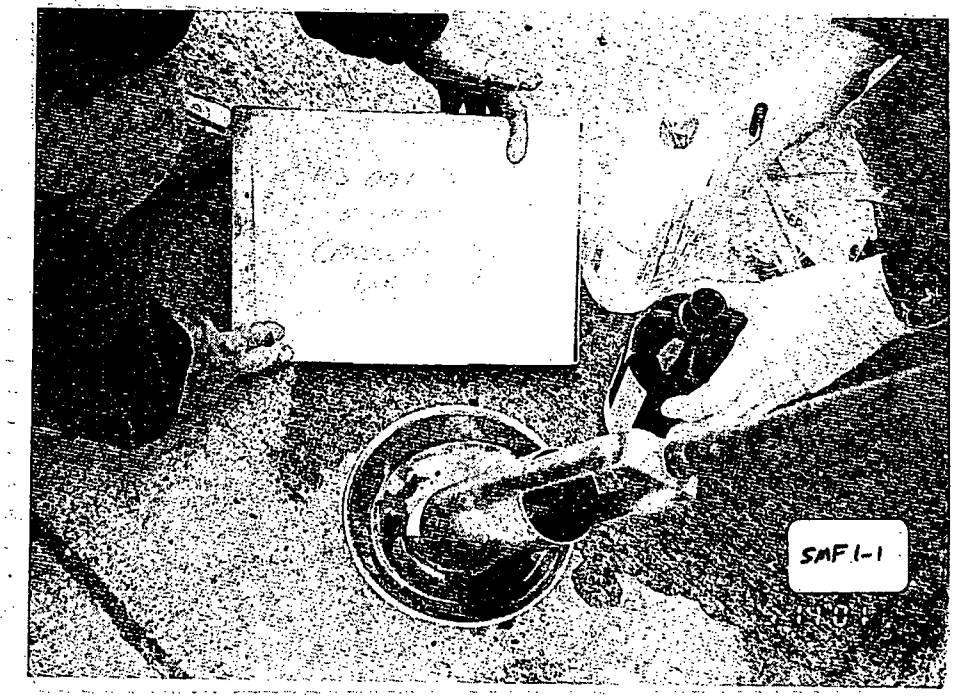
Date 5-15-01
Time 1120
Location UPSTREAM GC INTAKE
Photo # SMF 1-6 Pursat
SMF 1-6

SMF1-3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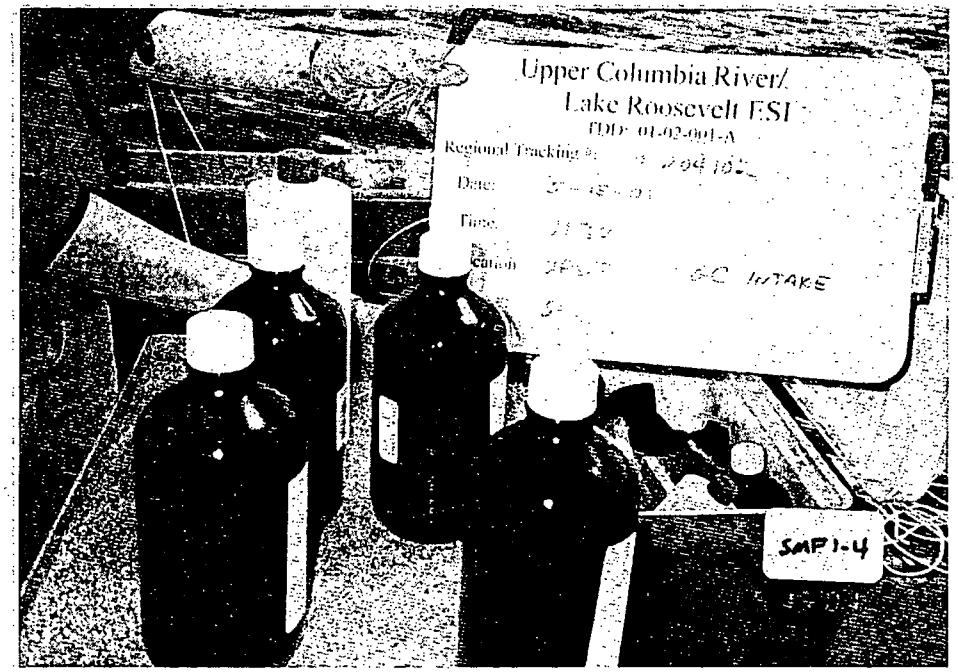
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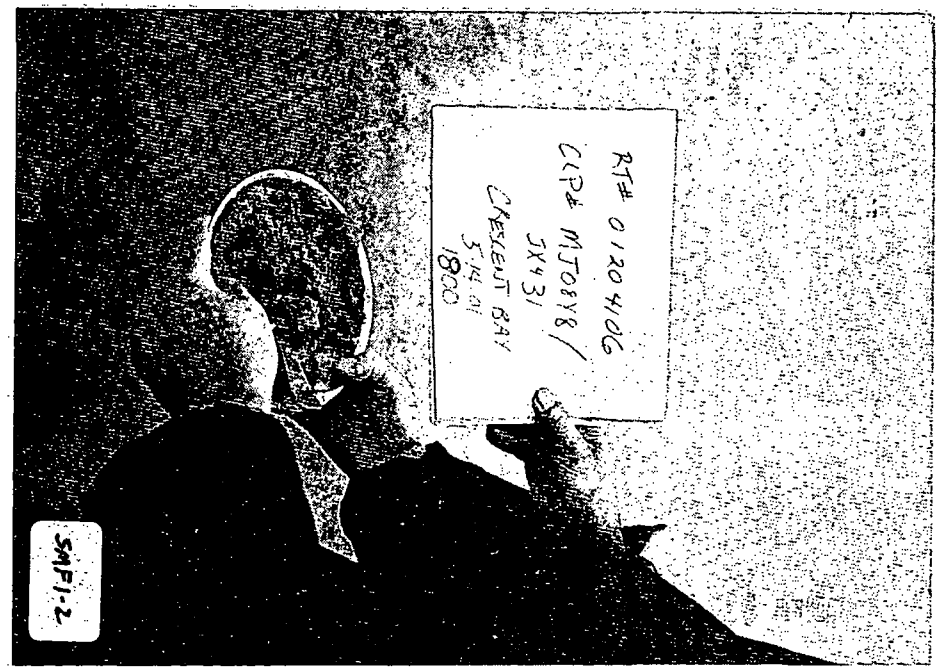
Lake Roosevelt ESI
FDD: 01-02-001-A
Regional Tracking
Date:
Time:
Location:
GC INTAKE
SMF1-4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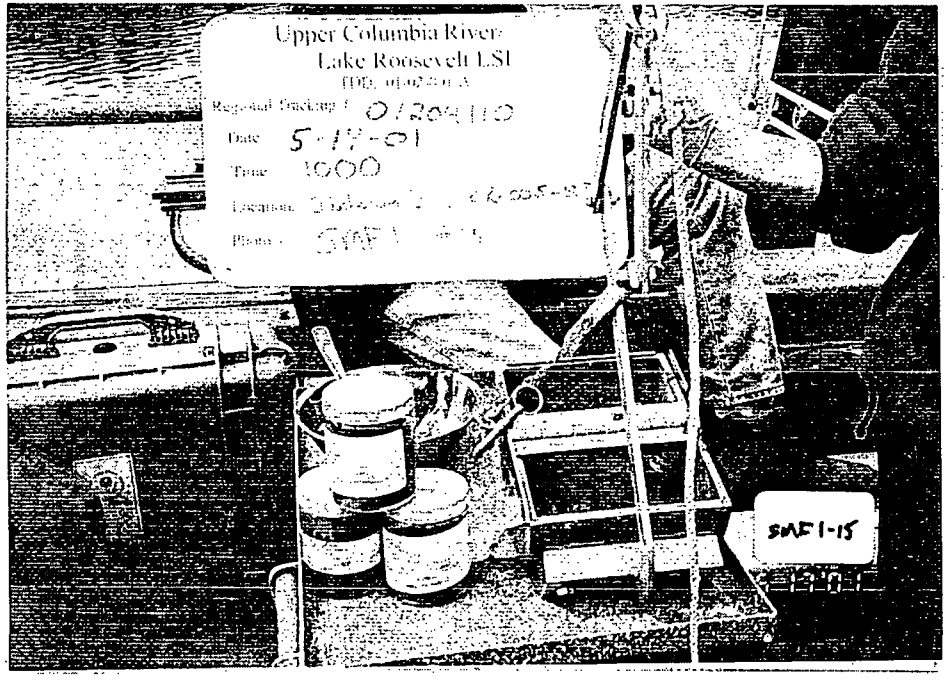
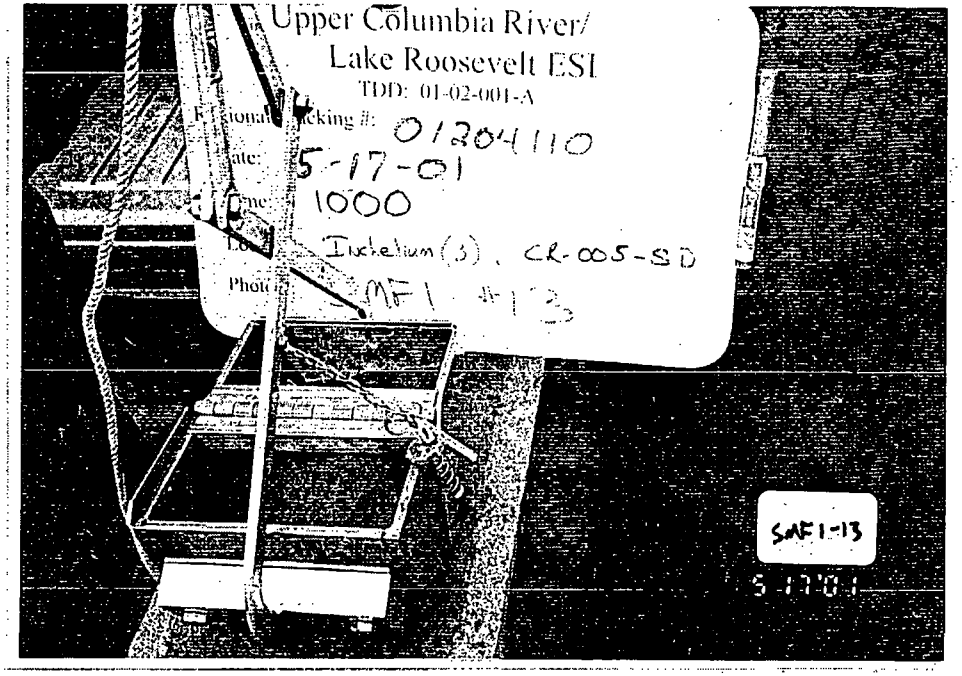
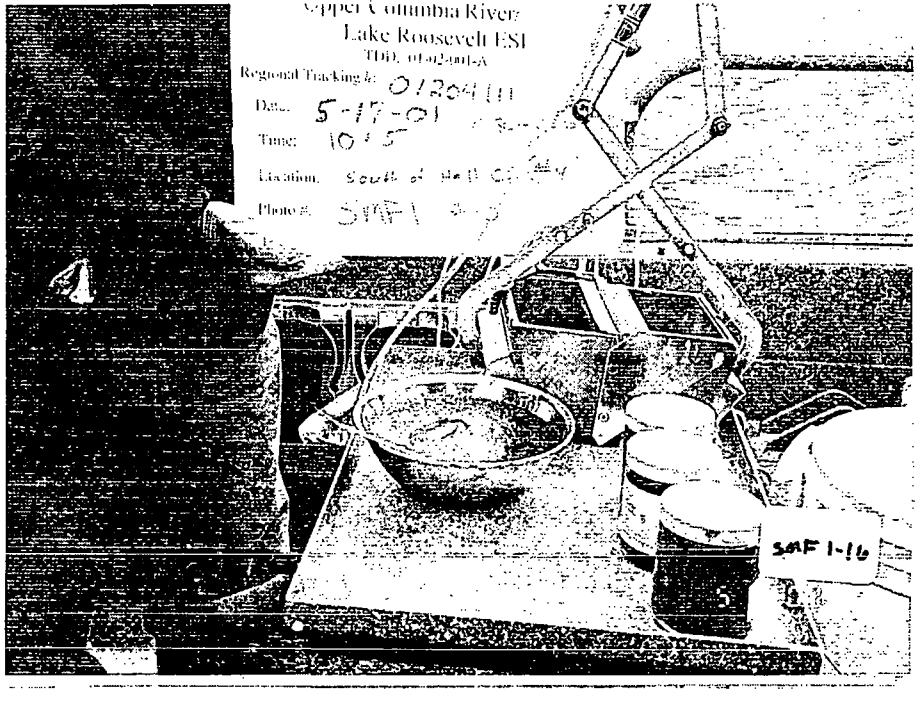
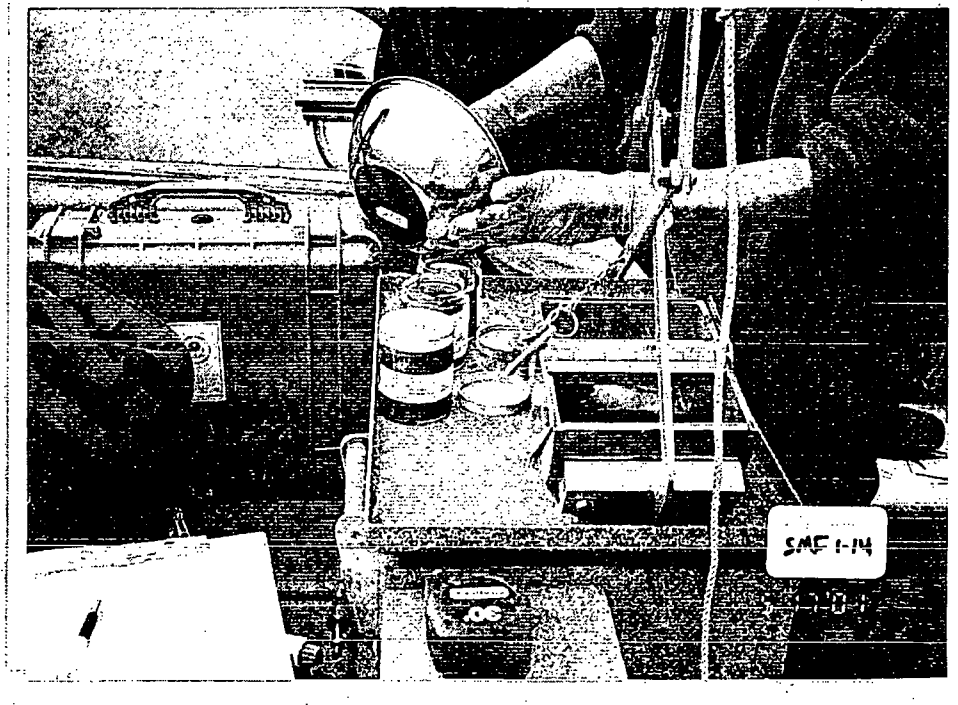
CLP# MJ08Y8/
JX431
CRESCENT BAY
5-14-01
1800
SMF1-2

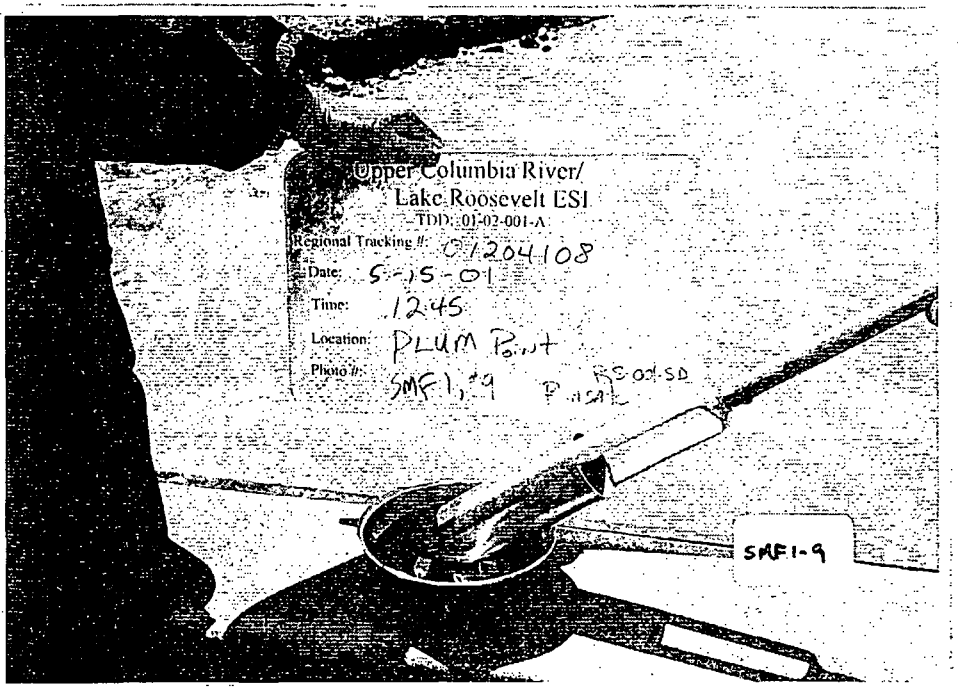

Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #: 01204110
Date: 5-17-01
Time: 1000
SMF 1-15

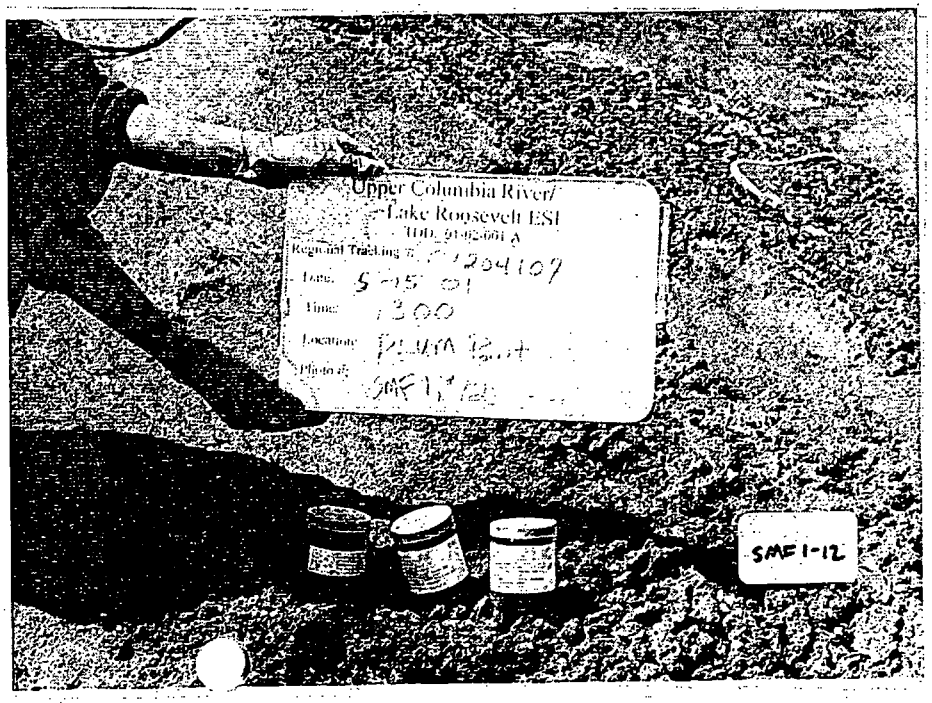

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
01204110
5-17-01
1000
Tucketum (3), CR-005-SD
SMF 1-13


Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #: 01204111
Date: 5-17-01
Time: 1015
SMF 1-16

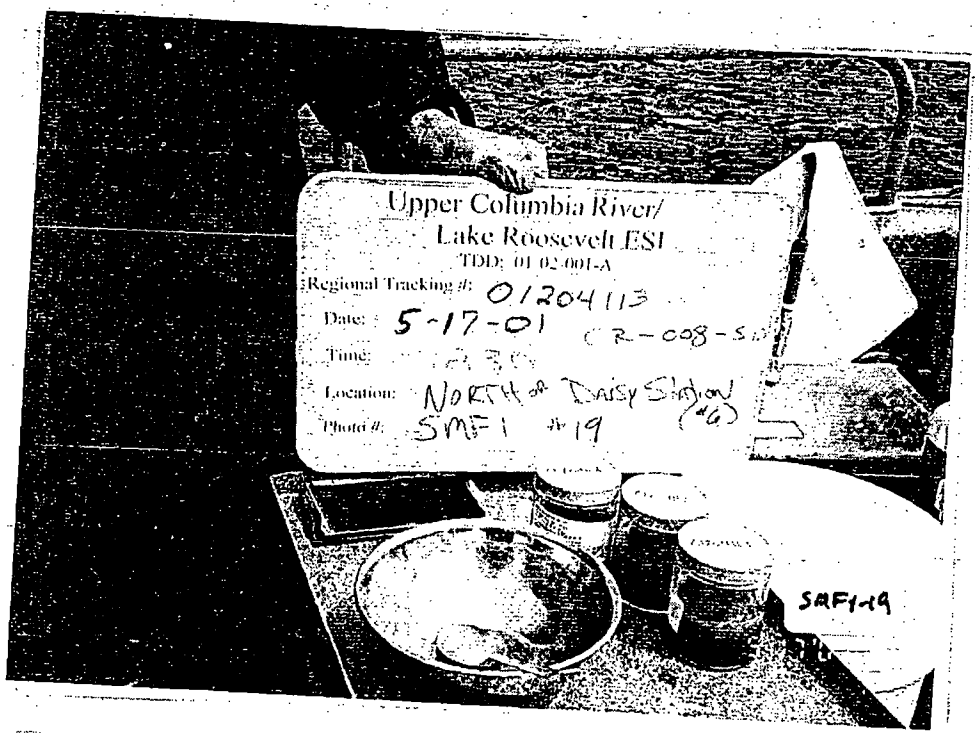

SMF 1-14

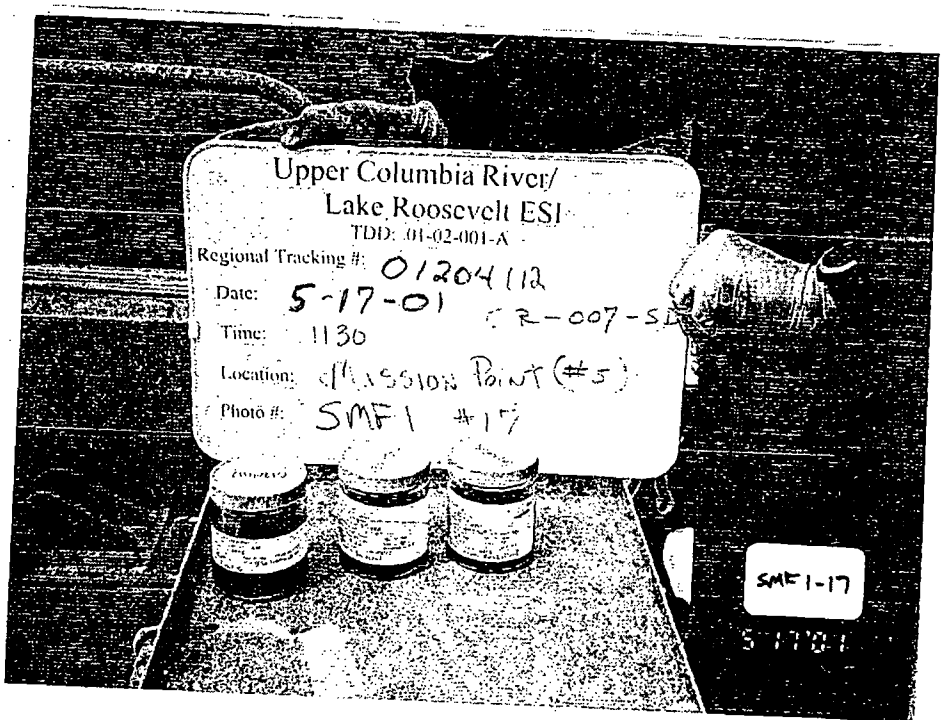
SMF1-11

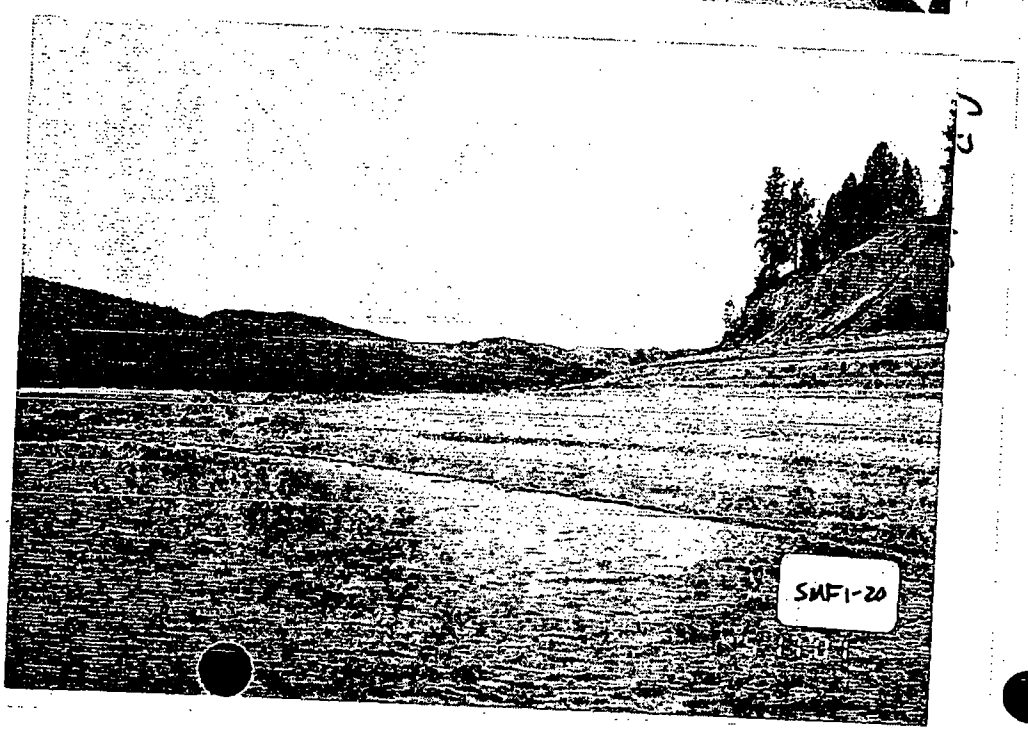

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01204108
Date: 5-15-01
Time: 1245
Location: PLUM Point
Photo #: SMF1,#9
SMF1-9


Upper Columbia River/
Lake Roosevelt ESI
Date: 5-15-01
Time: 1300
Location: PLUM Point
SMF1-12

SMF1-10


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01204113
Date: 5-17-01
Time:
Location: NORTH of Daisy Station
Photo #: SMF1 #19
SMF1-19


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01204112
Date: 5-17-01
Time: 1130
Location: MISSION POINT (#5)
Photo #: SMF1 #17
SMF1-17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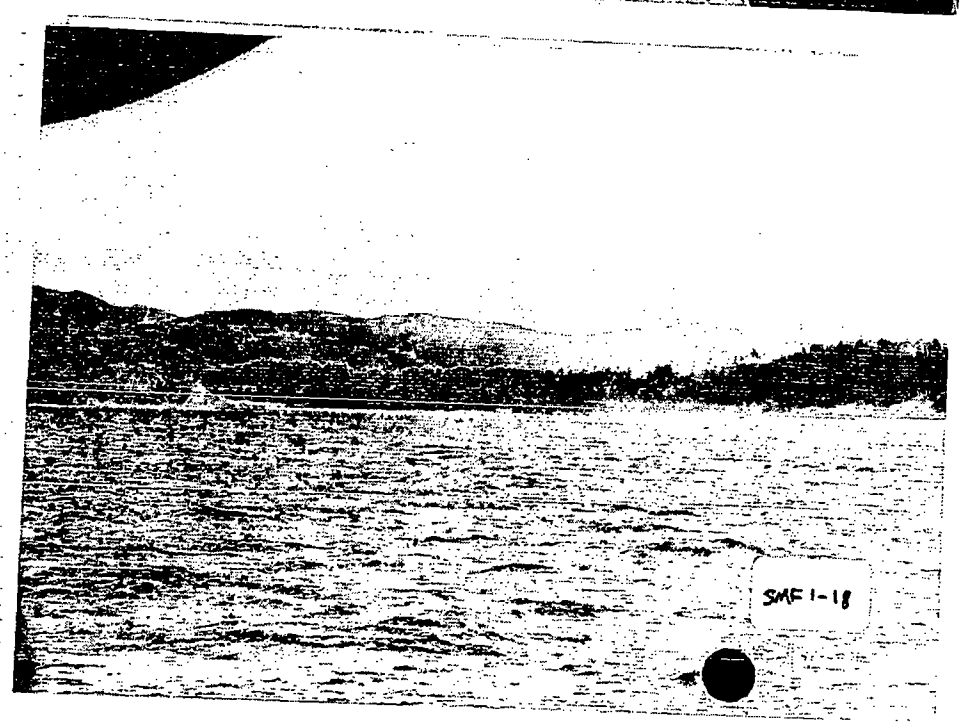
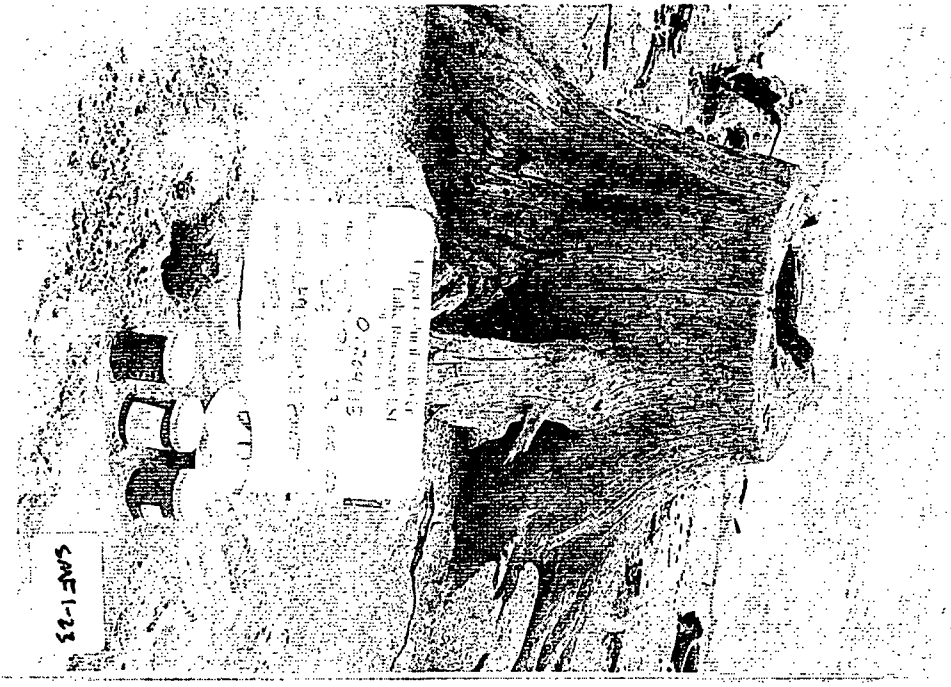
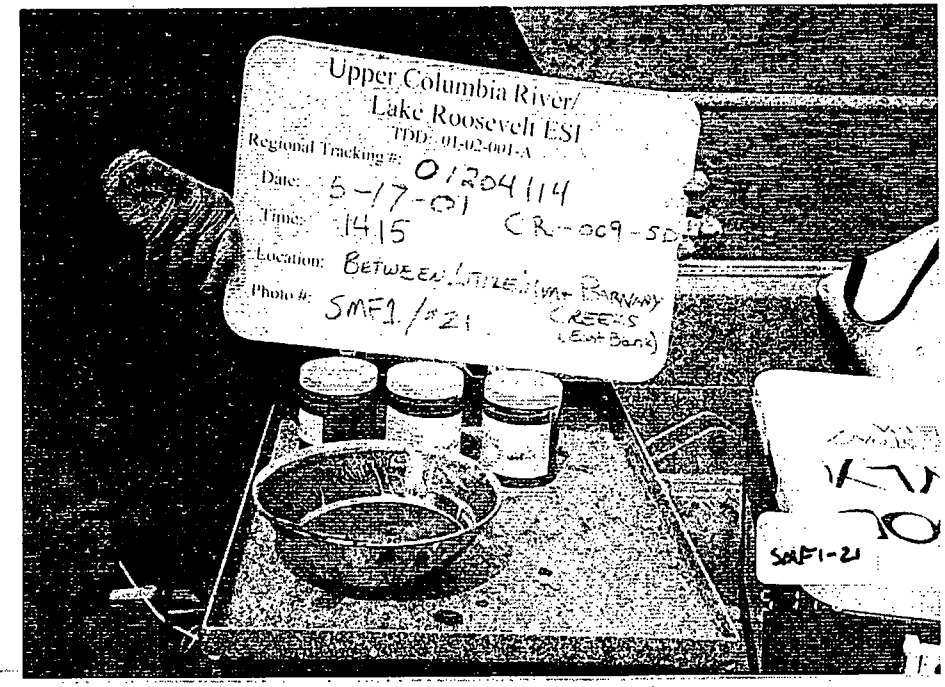
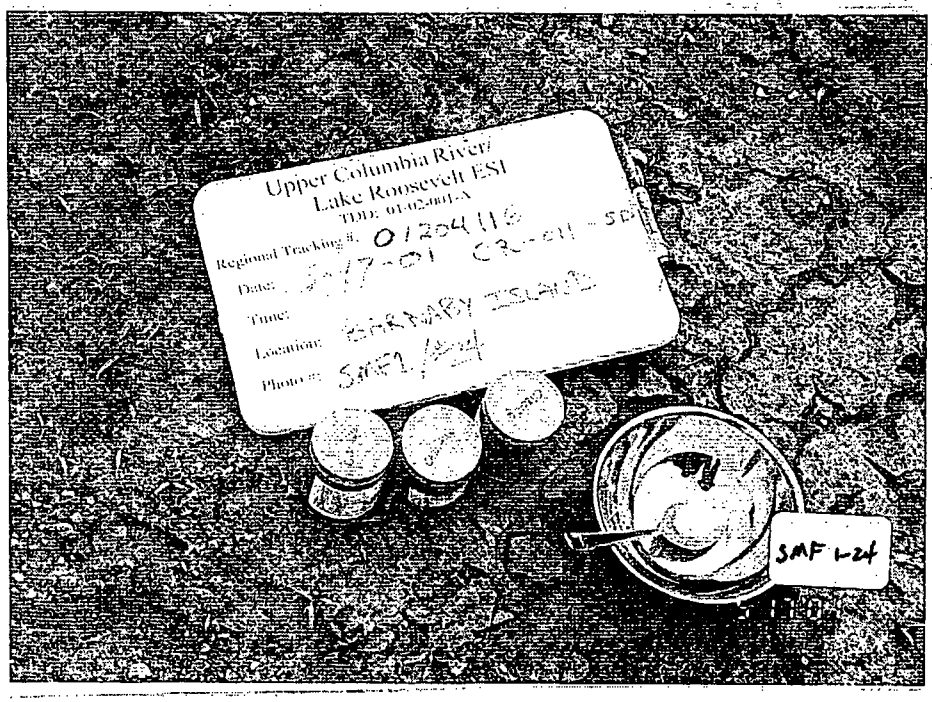
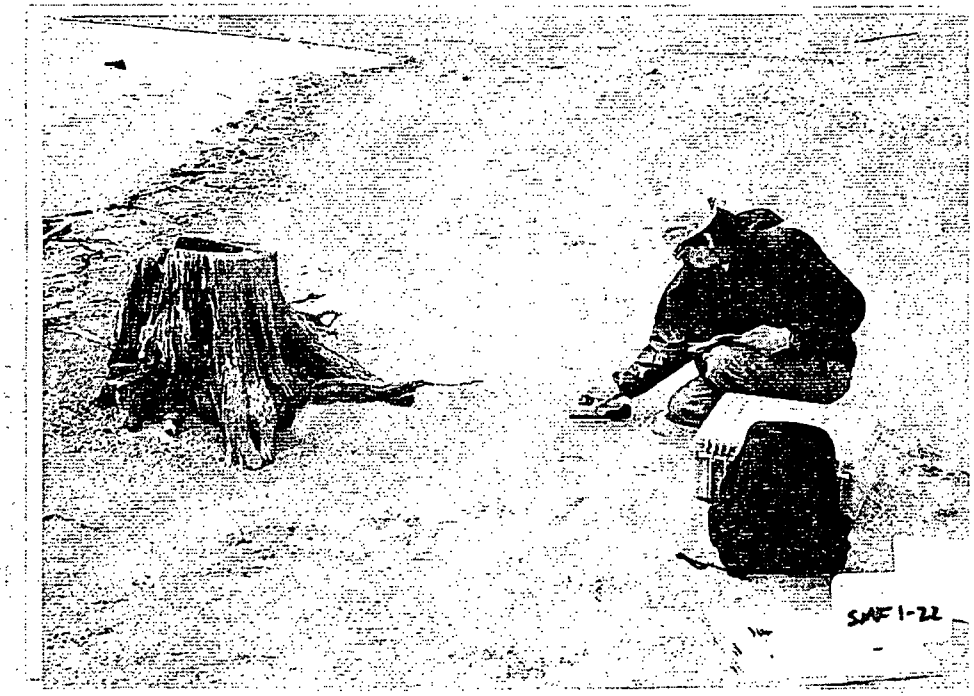

SMF1-18


SMF1-23


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01204114
Date: 5-17-01
Time: 1415
CR-009-SD
Location: BETWEEN LITTLE & MT BARNARD CREEKS (East Bank)
Photo #: SMF1/#21
SMF1-21


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01204116
Date: 5-17-01
Time:
Location: BARNARD ISLAND
Photo #: SMF1/#24
SMF 1-24


SMF 1-22

PHOTOGRAPH IDENTIFICATION SHEET

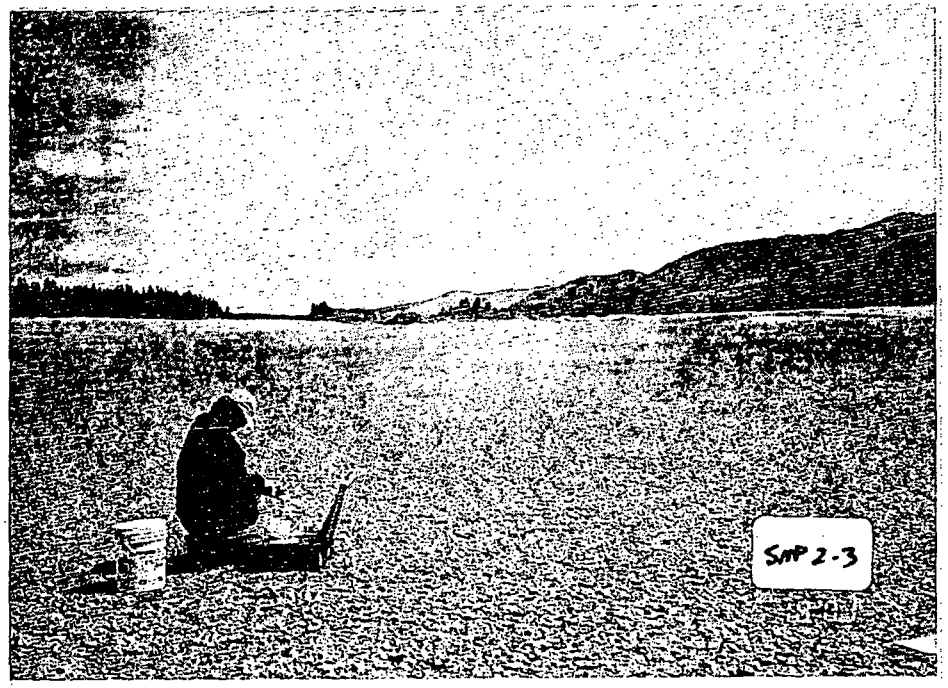
Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

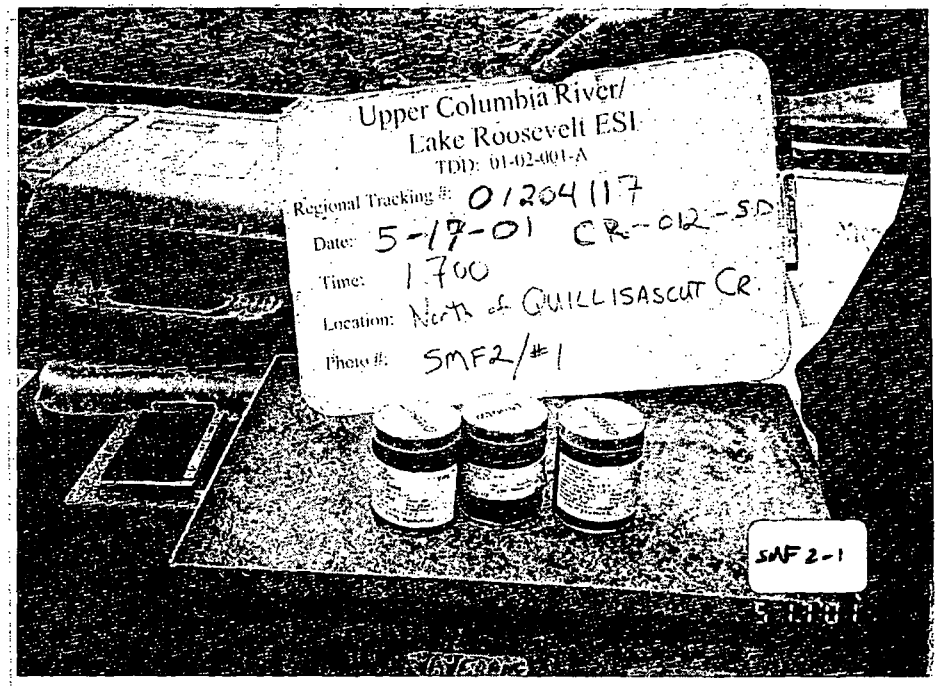
Photo No.	Date	Time	By	Dir.	Description
SMF2-1	5/17/01	1700	SMF	NA	North of Quillisascut Creek, sample material in jars (RT# 01204117).
SMF2-2	5/18/01	1030	SMF	NA	North of Quillisascut Creek, 2nd location, sample material in jars (RT# 01204118).
SMF2-3	5/18/01	1100	SMF	N	Between La Fleur Creek and French Rocks, setting up XRF on vegetated mudflat (RT# 01204119).
SMF2-4	5/18/01	1100	SMF	NA	Between La Fleur Creek and French Rocks, sample material in jars (RT# 01204119) and sample location.
SMF2-5	5/18/01	1215	SMF	NA	French Rocks Mid-Channel Bar, sample material in dredge. Note "plate-like" appearance of fine-grained material.
SMF2-6	5/18/01	1230	SMF	NA	French Rocks Mid-Channel Bar, sample material in jars (RT# 01204120). Incorrect sample time on white board.
SMF2-7	5/18/01	1330	SMF	S	North of French Rocks, sample location, screening sediment with XRF. Note French Rocks in background.
SMF2-8	5/18/01	1330	SMF	NA	North of French Rocks, sample material in jars (RT# 01204121), and sample location.
SMF2-9	5/18/01	1430	SMF	NA	North of Bradbury Beach, sample location, screening sediment with XRF.
SMF2-10	5/18/01	1430	SMF	NA	North of Bradbury Beach, sampling surface sediment, showing depth of material collected.
SMF2-11	5/18/01	1430	SMF	SW	North of Bradbury Beach, sample material in jars (RT# 01204122), and sample location.
SMF2-12	5/18/01	1530	SMF	SE	Haag Cove, sample material in jars (RT# 01204123), and sample location.
SMF2-13	5/18/01	1545	SMF	SE	Haag Cove, sample material in jars (RT# 01204124), and sample location.
SMF2-14	5/19/01	0900	SMF	NA	Flats south of Colville River, sample material in jars (RT#01204125).
SMF2-15	5/19/01	1045	SMF	NA	North of Colville River, sample material in jars (RT#01204126). Whiteboard notes sample location incorrectly as "flats". Sample location was a bay fronting the mouth of the Colville River.
SMF2-16	5/19/01	1130	SMF	NA	South of Boise Cascade Log Boom, sample material in jars (RT#01204127).
SMF2-17	5/19/01	1200	SMF	E	North of Boise Cascade Log Boom, suspected outfall, showing manhole at top of bank and gravel fill extending down the bank face.
SMF2-18	5/19/01	1245	SMF	W	North of Boise Cascade Log Boom, manhole of suspected outfall observed from land, marked "sewer".
SMF2-19	5/21/01	0930	SMF	NE	Marcus Flats, showing water level.
SMF2-20	5/21/01	0930	SMF	E	Marcus Flats, showing water level.
SMF2-21	5/21/01	1030	SMF	NA	Marcus Flats Northeast of Rt 20/395 Bridge, sample material in jars (RT# 01214102).
SMF2-22	5/21/01	1040	SMF	NA	Marcus Flats, Southwest of Pingston Creek, dredge rinsate sample (RT# 01214100).

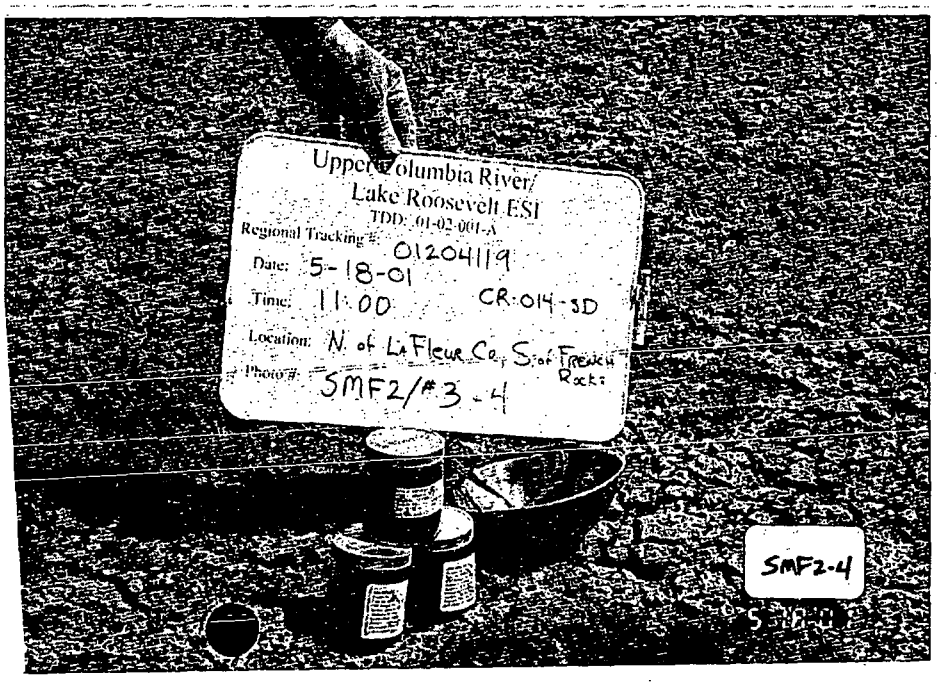
PHOTOGRAPH IDENTIFICATION SHEET

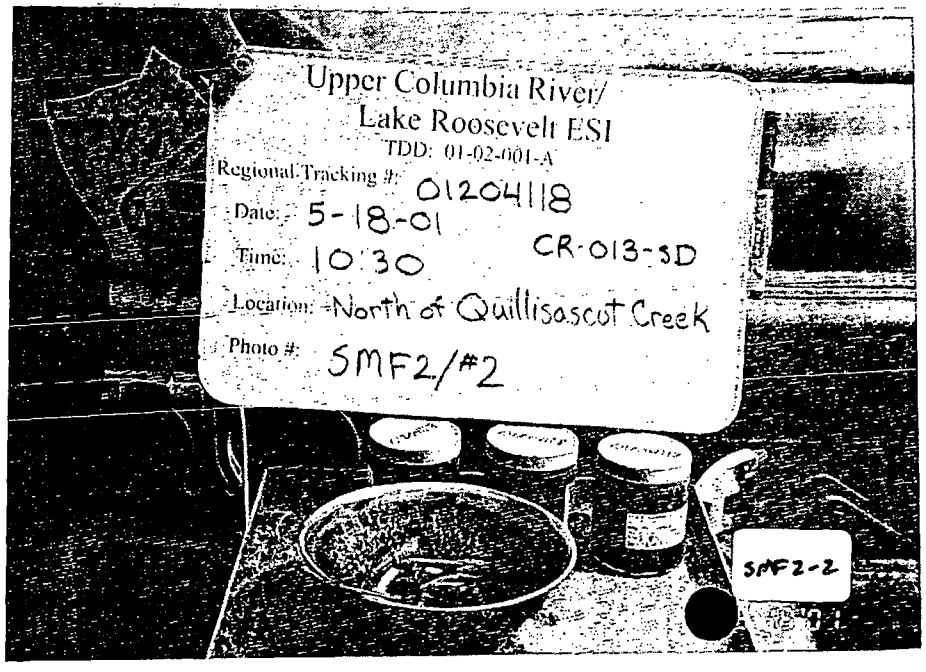
Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

Photo No.	Date	Time	By	Dir.	Description
SMF2-1	5/17/01	1700	SMF	NA	North of Quillisascut Creek, sample material in jars (RT# 01204117).
SMF2-2	5/18/01	1030	SMF	NA	North of Quillisascut Creek, 2nd location, sample material in jars (RT# 01204118).
SMF2-3	5/18/01	1100	SMF	N	Between La Fleur Creek and French Rocks, setting up XRF on vegetated mudflat (RT# 01204119).
SMF2-4	5/18/01	1100	SMF	NA	Between La Fleur Creek and French Rocks, sample material in jars (RT# 01204119) and sample location.
SMF2-5	5/18/01	1215	SMF	NA	French Rocks Mid-Channel Bar, sample material in dredge. Note "plate-like" appearance of fine-grained material.
SMF2-6	5/18/01	1230	SMF	NA	French Rocks Mid-Channel Bar, sample material in jars (RT# 01204120). Incorrect sample time on white board.
SMF2-7	5/18/01	1330	SMF	S	North of French Rocks, sample location, screening sediment with XRF. Note French Rocks in background.
SMF2-8	5/18/01	1330	SMF	NA	North of French Rocks, sample material in jars (RT# 01204121), and sample location.
SMF2-9	5/18/01	1430	SMF	NA	North of Bradbury Beach, sample location, screening sediment with XRF.
SMF2-10	5/18/01	1430	SMF	NA	North of Bradbury Beach, sampling surface sediment, showing depth of material collected.
SMF2-11	5/18/01	1430	SMF	SW	North of Bradbury Beach, sample material in jars (RT# 01204122), and sample location.
SMF2-12	5/18/01	1530	SMF	SE	Haag Cove, sample material in jars (RT# 01204123), and sample location.
SMF2-13	5/18/01	1545	SMF	SE	Haag Cove, sample material in jars (RT# 01204124), and sample location.
SMF2-14	5/19/01	0900	SMF	NA	Flats south of Colville River, sample material in jars (RT#01204125).
SMF2-15	5/19/01	1045	SMF	NA	North of Colville River, sample material in jars (RT#01204126). Whiteboard notes sample location incorrectly as "flats". Sample location was a bay fronting the mouth of the Colville River.
SMF2-16	5/19/01	1130	SMF	NA	South of Boise Cascade Log Boom, sample material in jars (RT#01204127).
SMF2-17	5/19/01	1200	SMF	E	North of Boise Cascade Log Boom, suspected outfall, showing manhole at top of bank and gravel fill extending down the bank face.
SMF2-18	5/19/01	1245	SMF	W	North of Boise Cascade Log Boom, manhole of suspected outfall observed from land, marked "sewer".
SMF2-19	5/21/01	0930	SMF	NE	Marcus Flats, showing water level.
SMF2-20	5/21/01	0930	SMF	E	Marcus Flats, showing water level.
SMF2-21	5/21/01	1030	SMF	NA	Marcus Flats Northeast of Rt 20/395 Bridge, sample material in jars (RT# 01214102).
SMF2-22	5/21/01	1040	SMF	NA	Marcus Flats, Southwest of Pingston Creek, dredge rinsate sample (RT# 01214100).


SMP 2-3


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01204117
Date: 5-17-01 CR-012-SD
Time: 1700
Location: North of QUILLISASCUT CR.
Photo #: SMF2/#1
SMF 2-1


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01204119
Date: 5-18-01
Time: 11:00 CR-014-SD
Location: N. of LaFleur Cr, S. of French Rock
Photo #: SMF2/#3-4
SMF2-4

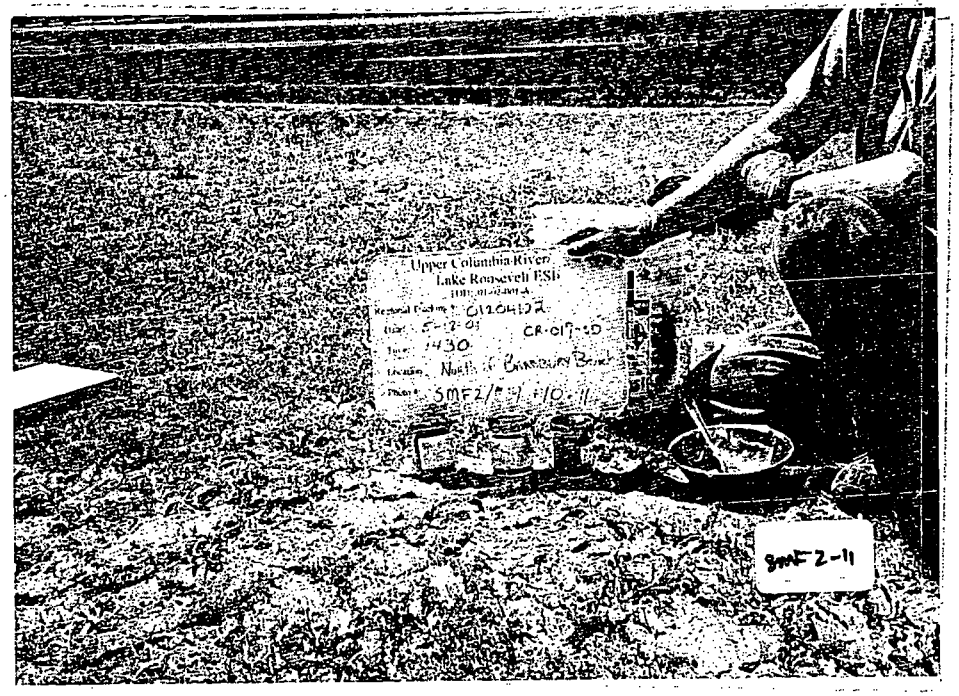

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01204118
Date: 5-18-01
Time: 10:30 CR-013-SD
Location: North of Quillisascut Creek
Photo #: SMF2/#2
SMF2-2

SMF2-5

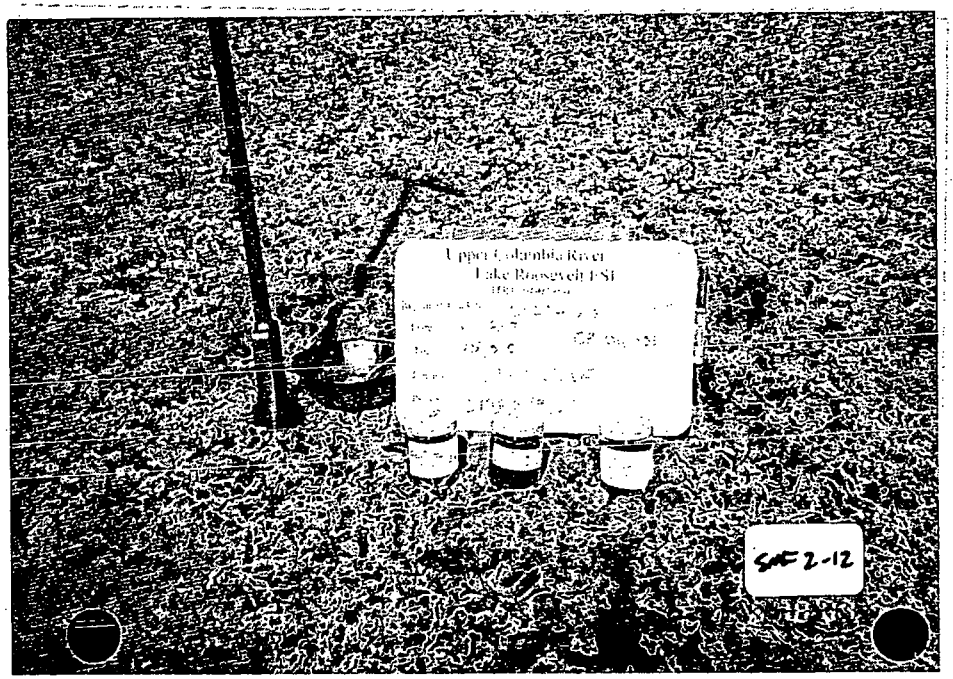
Upper Columbia River
Lake Roosevelt ESI
SMF2-6

SMF2-7

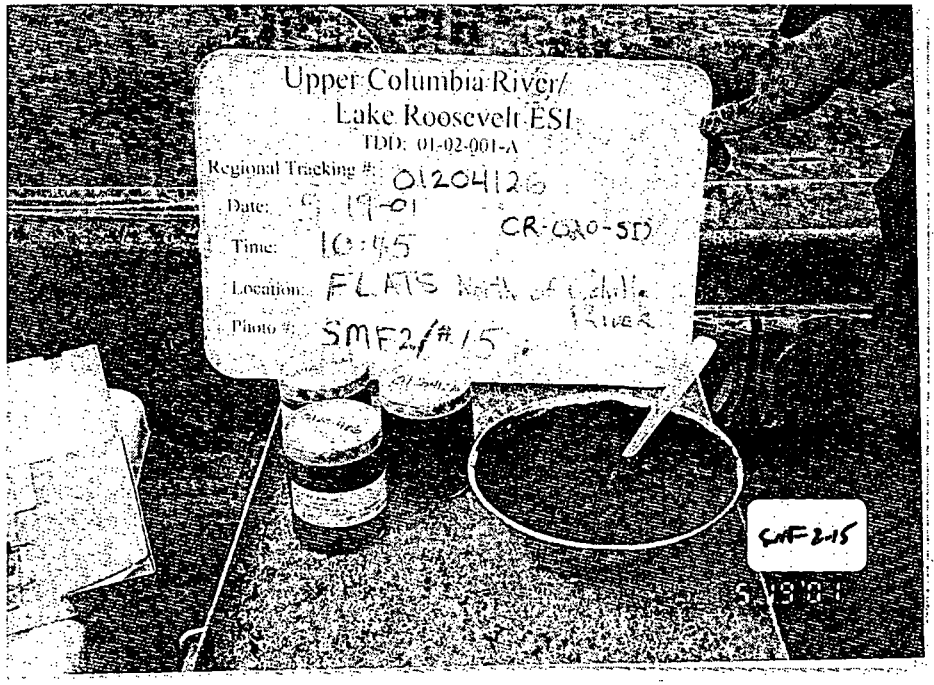
Upper Columbia River
Lake Roosevelt ESI
SMF2-8

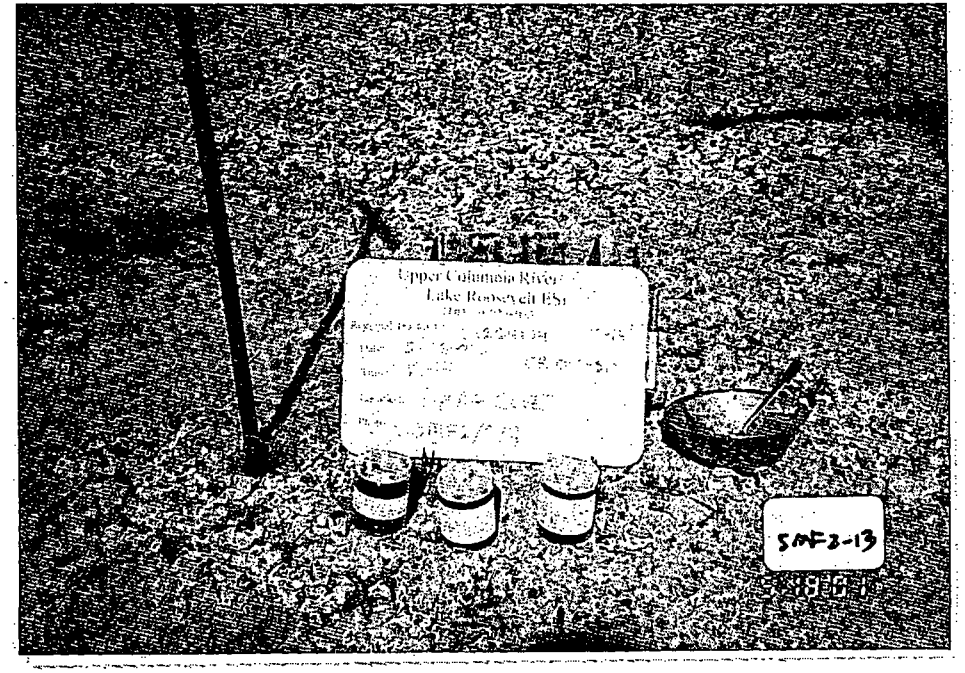

Upper Columbia River
Lake Roosevelt FSI
SMF2-11

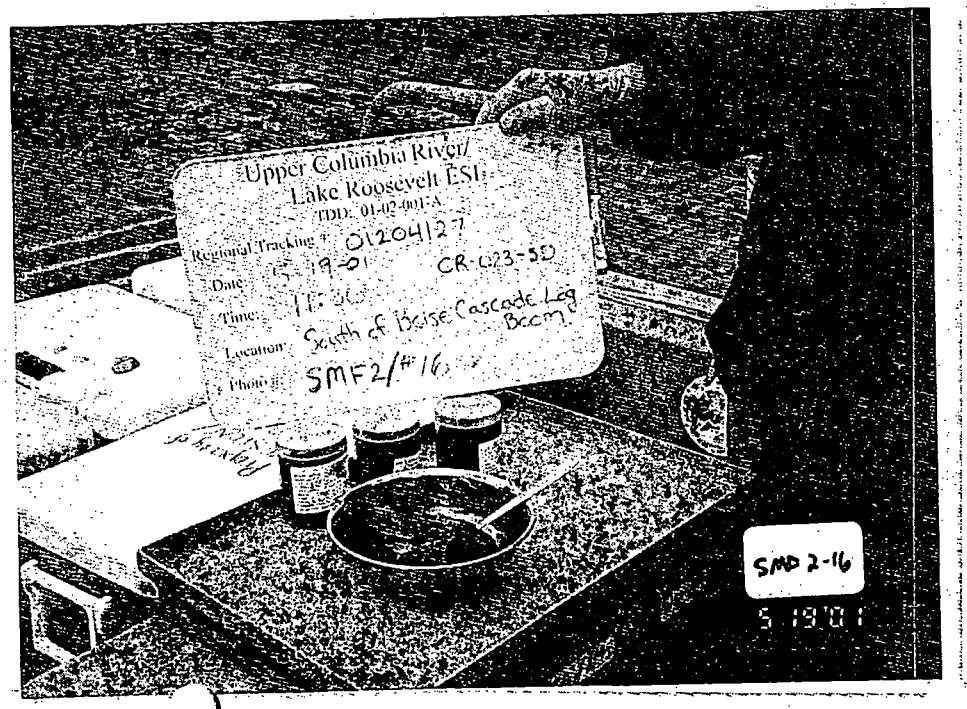
SMF2-9


Upper Columbia River
Lake Roosevelt FSI
SMF2-12

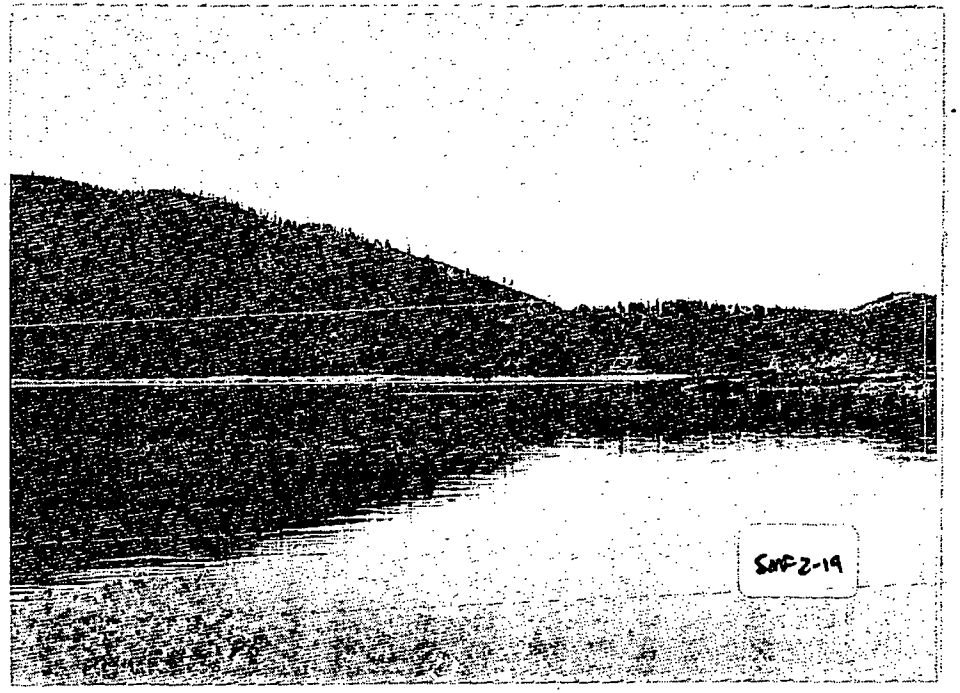
SMF2-10


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01204126
Date: 5-19-01
CR-020-SD
Time: 10:45
Location: FLATS
Photo #: SMF2/#15
SMF 2-15


Upper Columbia River/
Lake Roosevelt ESI
SMF 2-13


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01204127
Date: 5-19-01
CR-023-SD
Time: 11:30
Location: South of Boise Cascade Log Boom
Photo #: SMF2/#16
SMD 2-16

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01204125
Date: 5-19-01
CR-019-SD
Time: 09:00
Location: FLATS South of Cohille River
Photo #: SMF2/#14
SMF 2-14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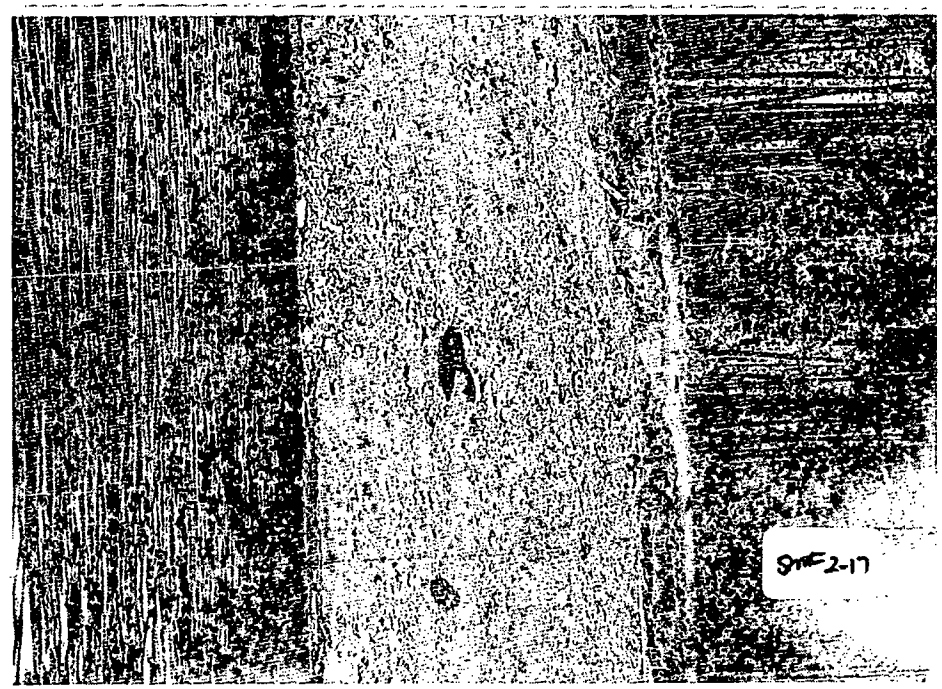
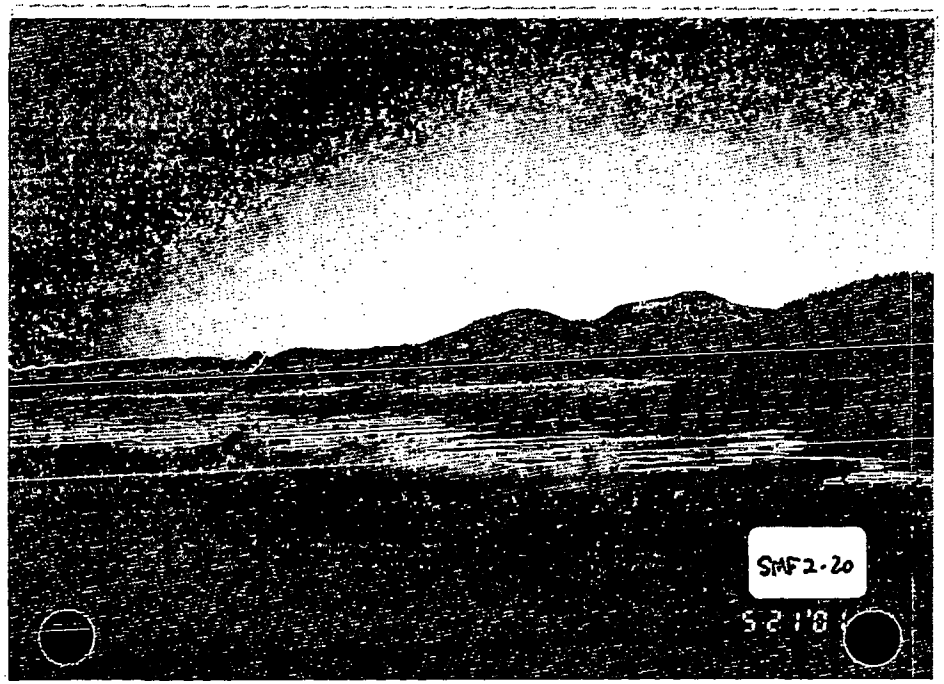
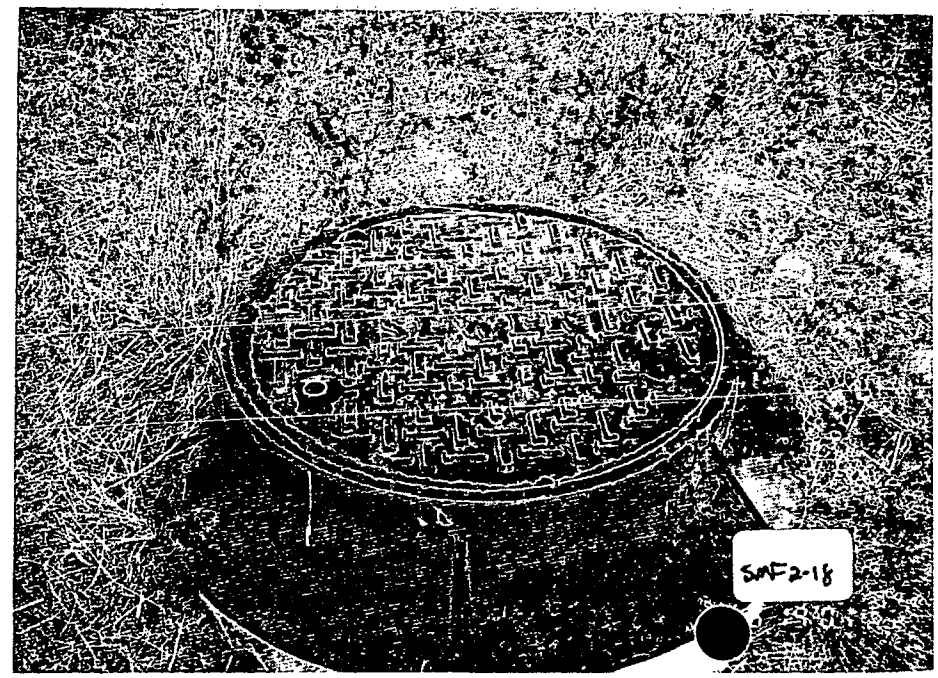
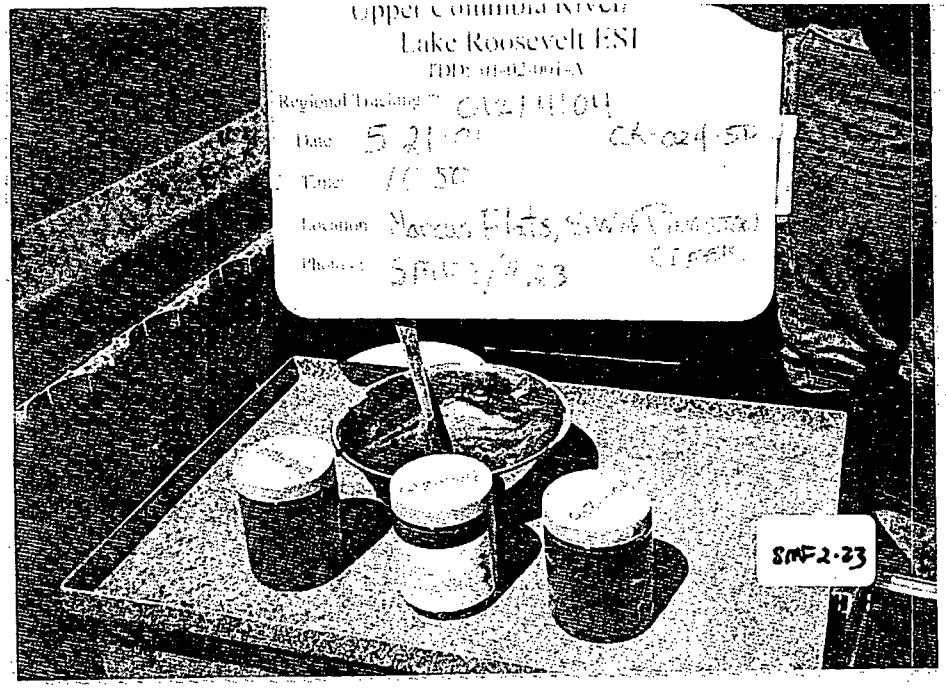
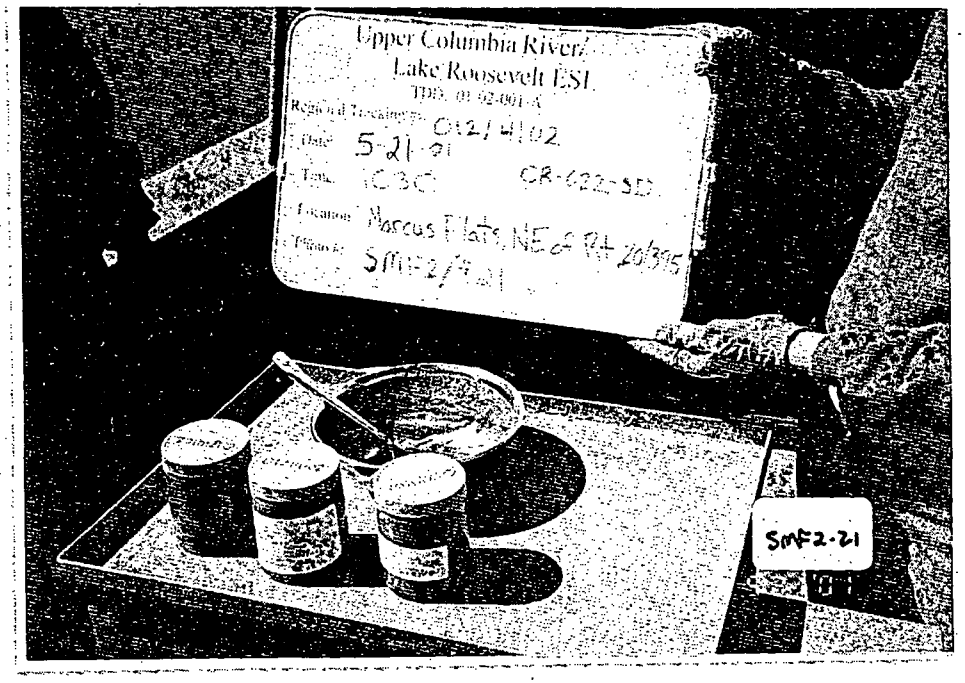
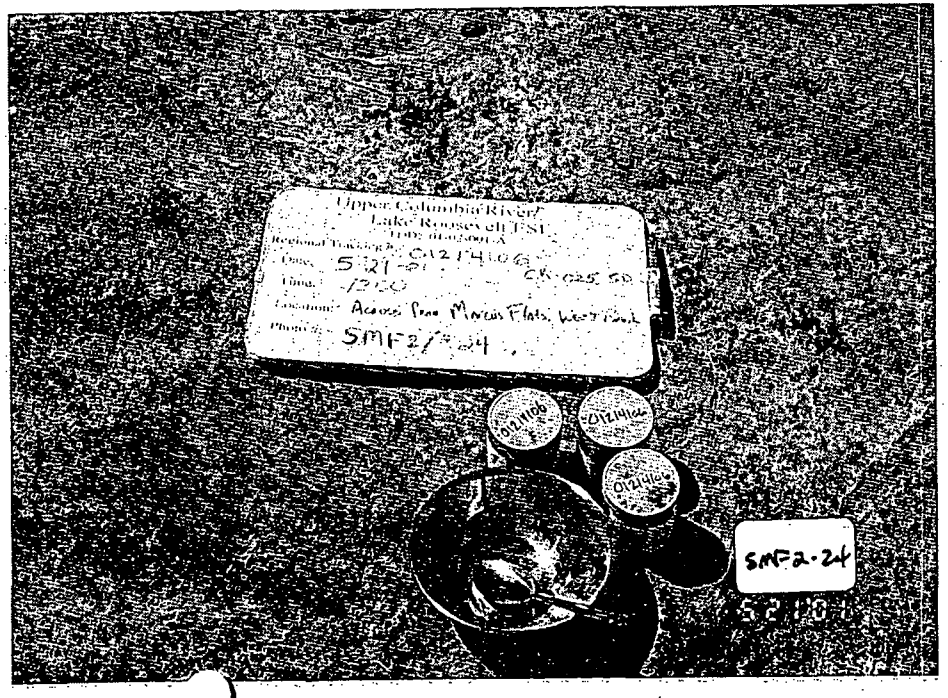

SMF2-17

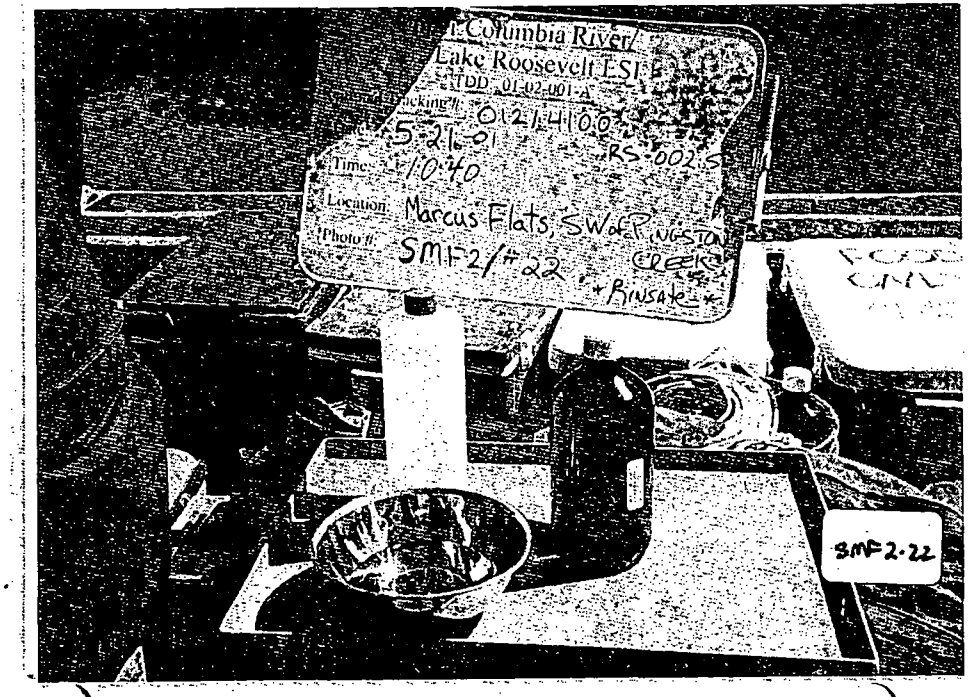

SMF2-20


SMF2-18


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 012141104
Date: 5-21-01
Time: 1130
Location: Marcus Flats, SW of Rinsate Creek
Photo #: SMF2/#23
SMF2-23


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 012141102
Date: 5-21-01
Time: 1030
Location: Marcus Flats, NE of Rt 20/395
Photo #: SMF2/#21
SMF2-21


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 012141106
Date: 5-21-01
Time: 1200
Location: Across from Marcus Flats, West Bank
Photo #: SMF2/#24
012141106
012141106
012141106
SMF2-24


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Tracking #: 012141100
Date: 5-21-01
Time: 1040
Location: Marcus Flats, SW of Rinsate Creek
Photo #: SMF2/#22
SMF2-22

SAF 3.25

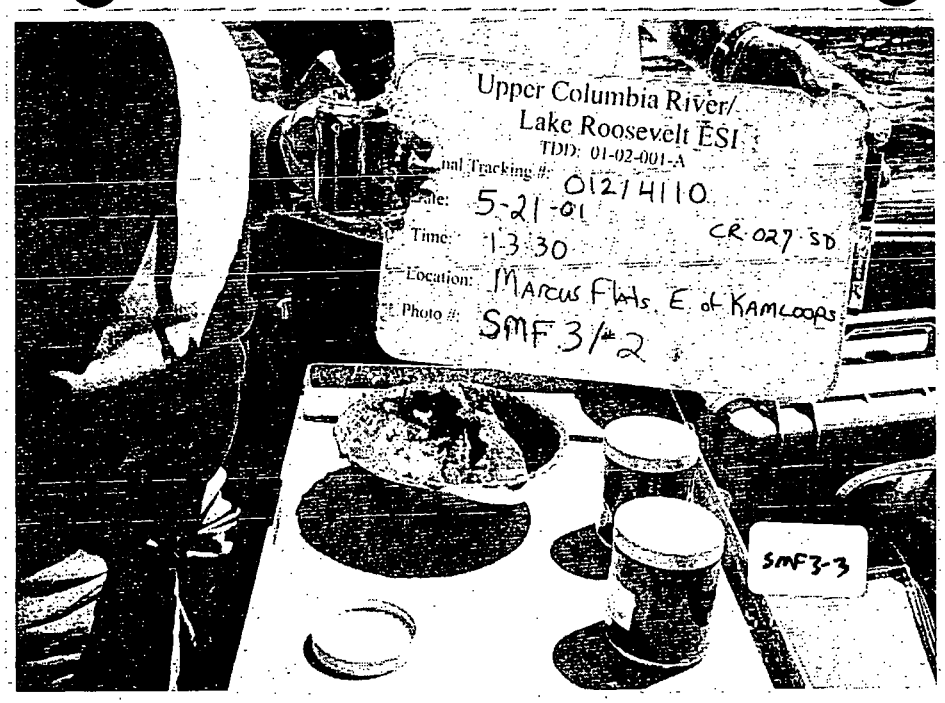
CR.025.SD

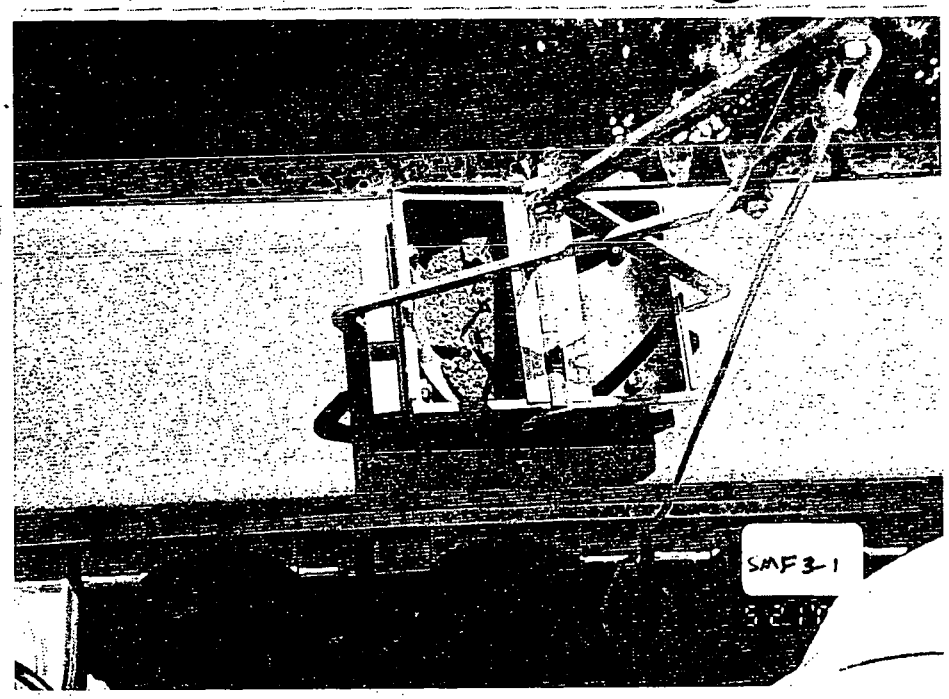
SMF#2|25

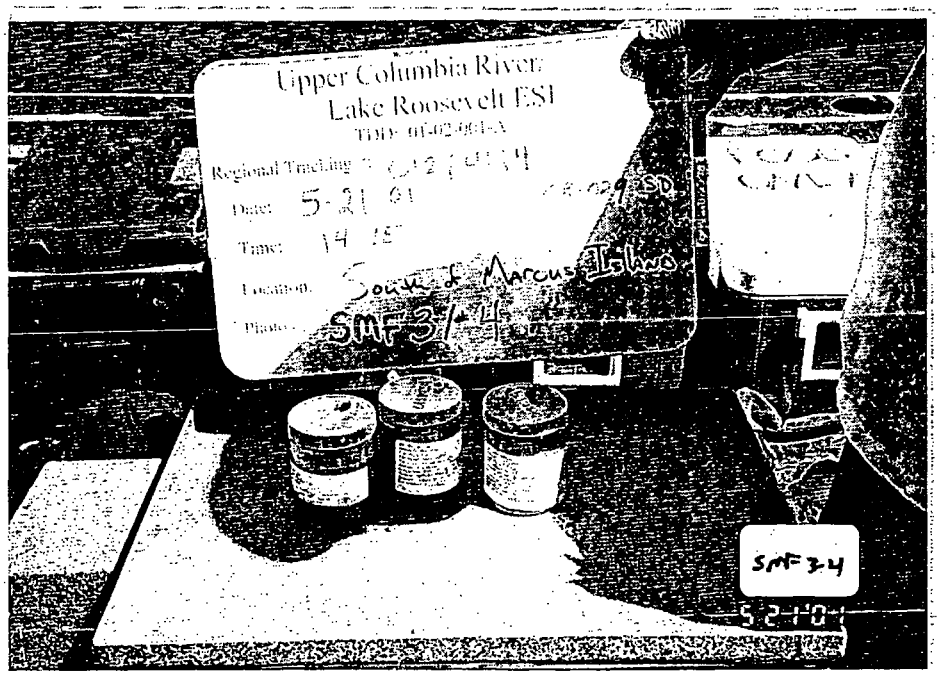
PHOTOGRAPH IDENTIFICATION SHEET

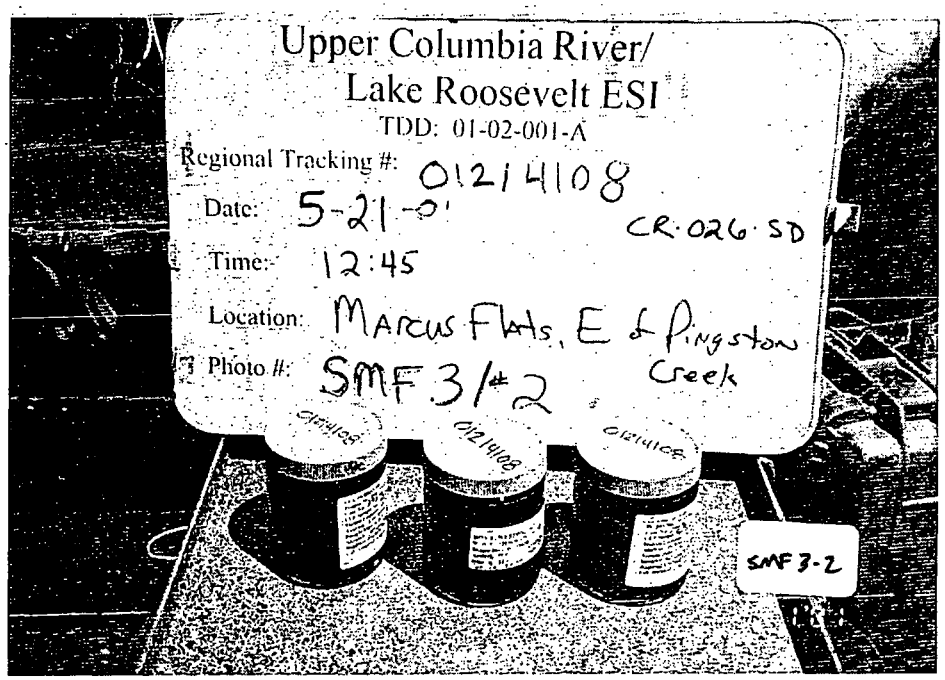
Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

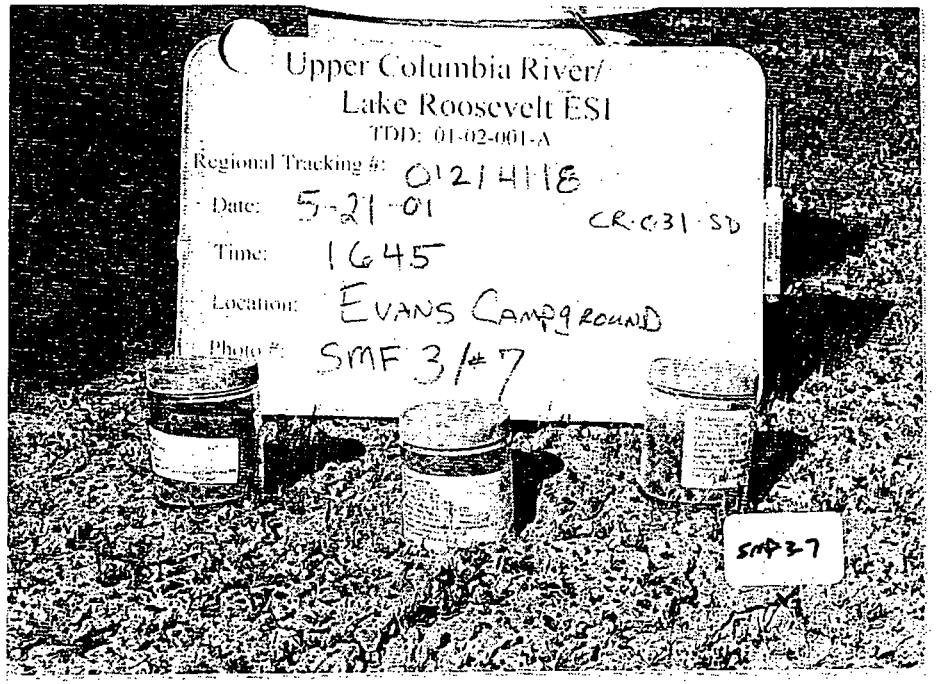
Photo No.	Date	Time	By	Dir.	Description
SMF3-1	5/21/01	1245	SMF	NA	Marcus Flats, West of Pingston Creek, sample material in dredge (RT# 01214108).
SMF3-2	5/21/01	1245	SMF	NA	Marcus Flats, West of Pingston Creek, sample material in jars (RT# 01214108). White board incorrectly describes location.
SMF3-3	5/21/01	1330	SMF	NA	Marcus Flats, East of Kamloops, sample material in jars (RT# 01214110).
SMF3-4	5/21/01	1415	SMF	NA	South of Marcus Island, sample material in jars (RT# 01214114).
SMF3-5	5/21/01	1445	SMF	NA	Marcus Flats, NE, sample material in jars (RT# 01214112).
SMF3-6	5/21/01	1545	SMF	NA	North of Summer Island, sample material in jars (RT# 01214116).
SMF3-7	5/21/01	1645	SMF	NA	Evans Campground, sample material in jars (RT# 01214118).
SMF3-8	5/21/01	1715	SMF	E	China Creek, tributary mouth.
SMF3-9	5/21/01	1715	SMF	S	China Creek, screening streambed with XRF.
SMF3-10	5/21/01	1715	SMF	NA	China Creek, sample material in jars (RT# 01214101). Incomplete information on white board.
SMF3-11	5/21/01	1715	SMF	NA	China Creek, sample material in jars (RT# 01214101).
SMF3-12	5/21/01	1800	SMF	N	East of Snag Cove, sample material in jars (RT# 01214120).
SMF3-13	5/22/01	1000	SMF	N	South of Bossburg, sample location.
SMF3-14	5/22/01	1000	SMF	NA	South of Bossburg, sample material in jars (RT# 01214122). Incorrect exposure number (13) noted on white board, and sample time (1000) not noted on white board.
SMF3-15	5/22/01	1100	SMF	S	North of Bossburg, screening sediment with XRF.
SMF3-16	5/22/01	1100	SMF	NA	North of Bossburg, sample material in jars (RT# 01214124).
SMF3-17	5/22/01	1200	SMF	N	South of North Gorge, west bank, sample collection (RT# 01214126).
SMF3-18	5/22/01	1200	SMF	W	South of North Gorge, west bank, sample material in jars (RT# 01214126)
SMF3-19	5/22/01	1400	SMF	W	South of North Gorge, east bank, sample area.
SMF3-20	5/22/01	1400	SMF	NA	South of North Gorge, east bank, sample material in jars (RT# 01214128)
SMF3-21	5/22/01	1500	SMF	W	East of Flat Creek, screening sediment on bank to the east of Flat Creek with XRF.
SMF3-22	5/22/01	1500	SMF	S	East of Flat Creek, area of mouth of Flat Creek, looking downstream along Lake Roosevelt.
SMF3-23	5/22/01	1500	SMF	W	East of Flat Creek, moving RV *Monitor*
SMF3-24	5/22/01	1500	SMF	NA	East of Flat Creek, sample material in jars (RT# 01214130), sample location, and exposed layer of suspected slag material. White board incorrectly notes location as west of Flat Creek.

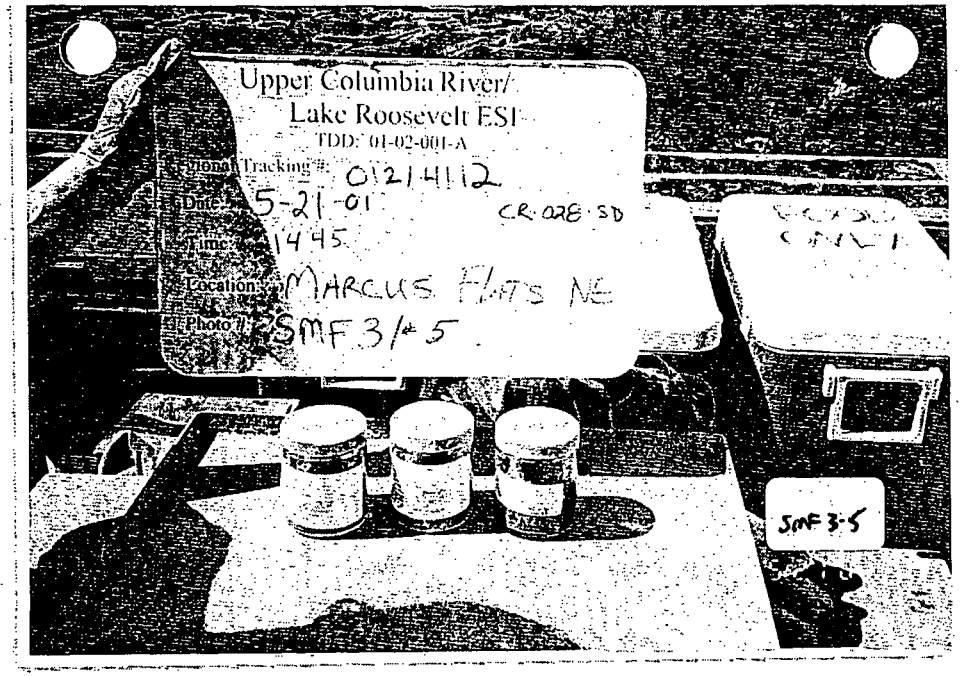

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01214110
Date: 5-21-01
Time: 13:30
CR-027-SD
Location: Marcus Flats, E of Kamloops
Photo #: SMF 3/#2
SMF 3-3

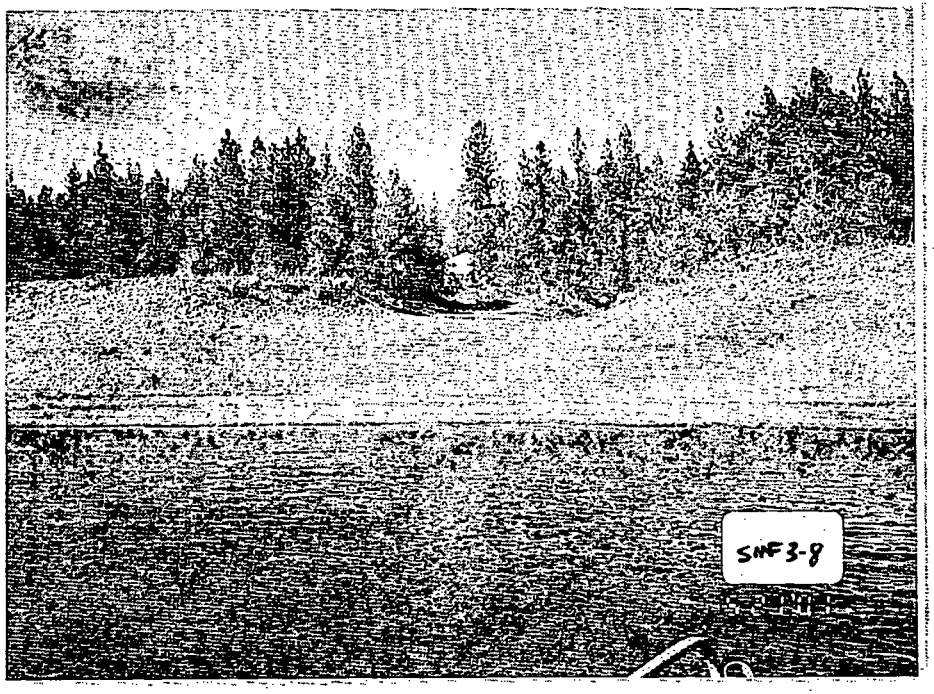

SMF 3-1


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #:
Date: 5-21-01
Time:
Location: South of Marcus Island
Photo #: SMF 3/#4
SMF 3-4

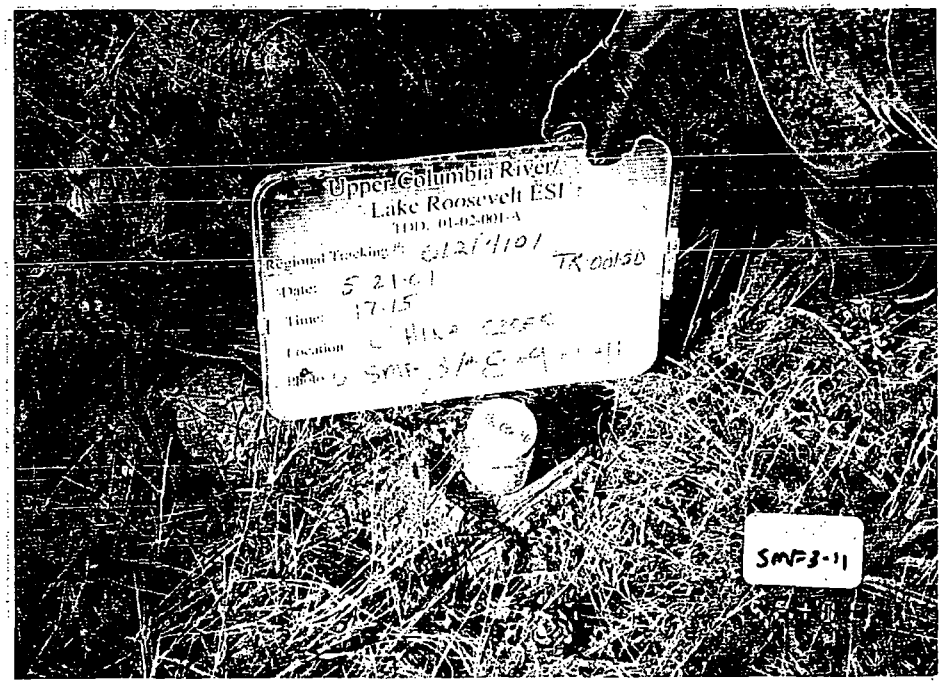

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01214108
Date: 5-21-01
CR-026-SD
Time: 12:45
Location: Marcus Flats, E of Pingston Creek
Photo #: SMF 3/#2
SMF 3-2


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 0121418
Date: 5-21-01
CR-031-SD
Time: 1645
Location: EVANS CAMPGROUND
Photo #: SMF 3/#7
SMF 3-7

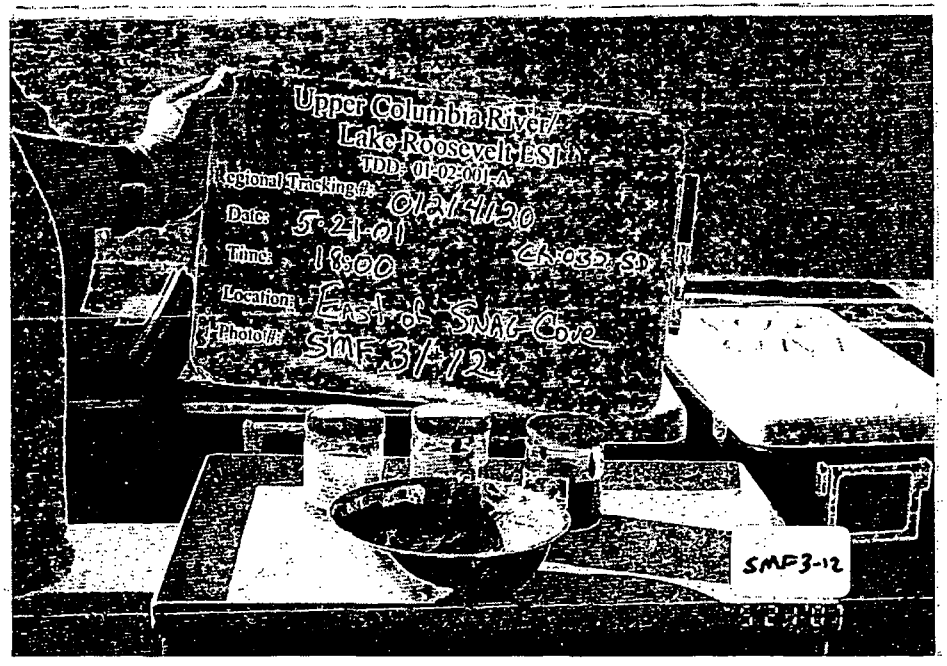

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 0121412
Date: 5-21-01
CR-028-SD
Time: 1445
Location: MARCUS FLATS NE
Photo #: SMF 3/#5
SMF 3-5


SMF 3-8

SMF 3-6


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01214101
TR 00150
Date: 5-21-01
Time: 17:15
Location: CHINA CREEK
Photo #: SMF 3/E-9
SMF3-11

SMF3-9


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01214120
Date: 5-21-01
Time: 19:00
Location: East of SNAG Cove
Photo #: SMF 3/12
SMF3-12

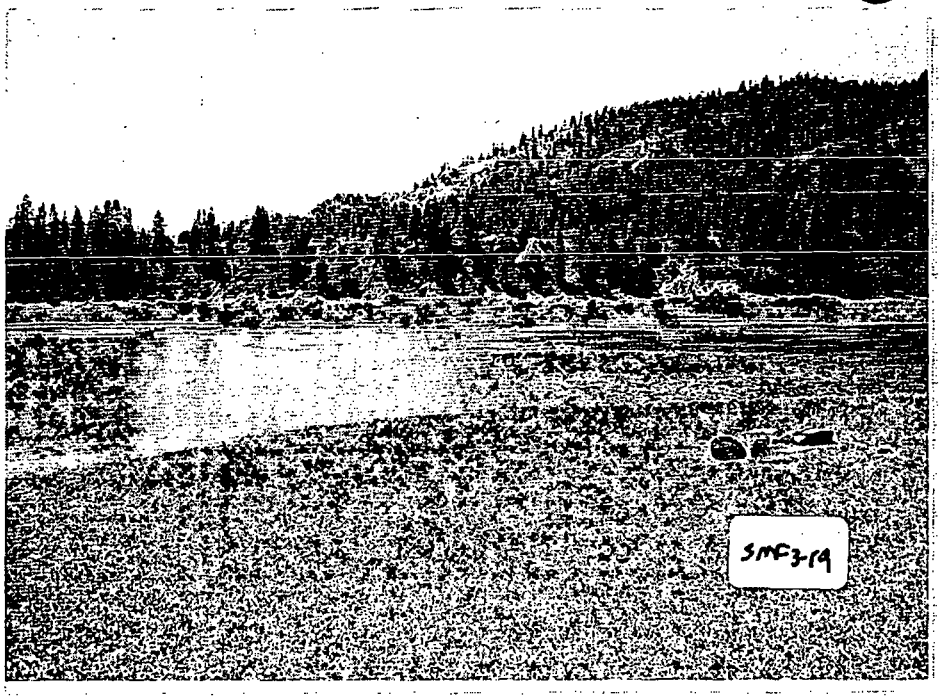
Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01214101
TR 00150
Date: 5-21-01
Time: 17:15
Location: CHINA CREEK
Photo #: SMF 3/E-9
SMF3-10

SMP 3-15

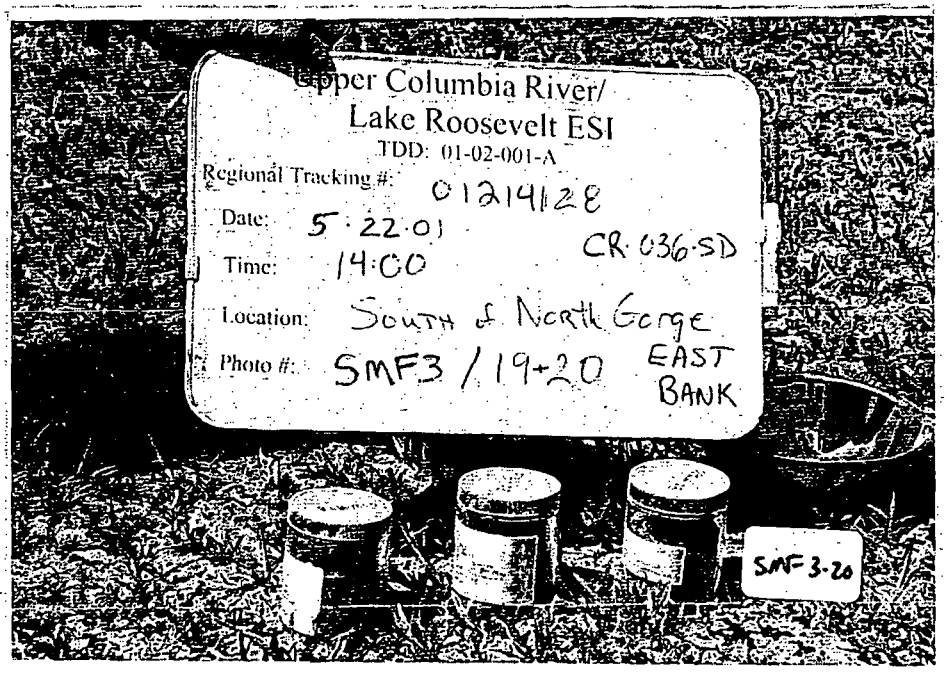
SMP 3-13

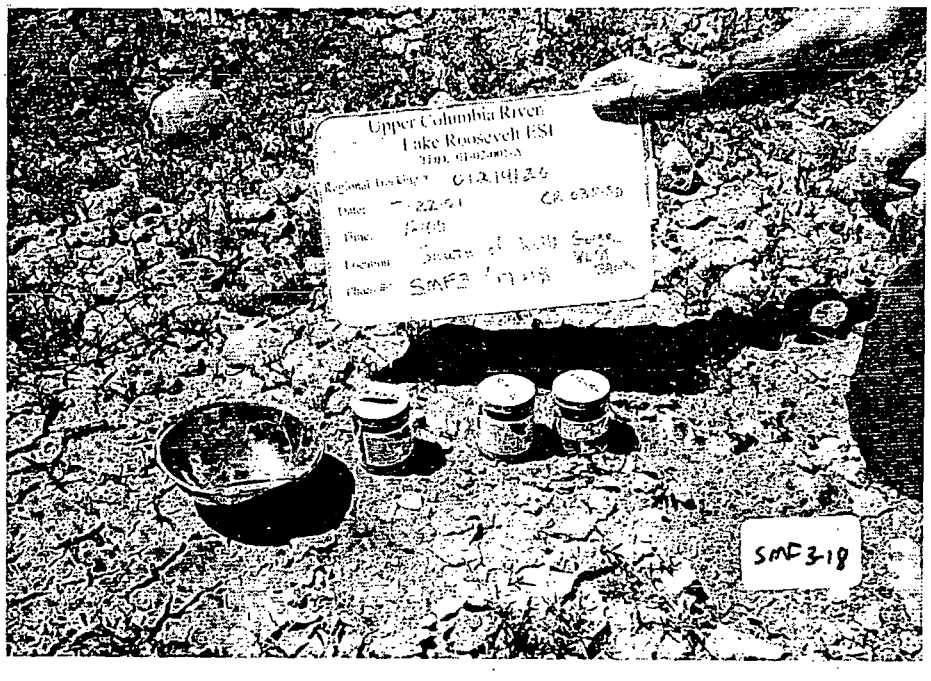
Upper Columbia River
Lake Roosevelt ESI
SMP 3-16

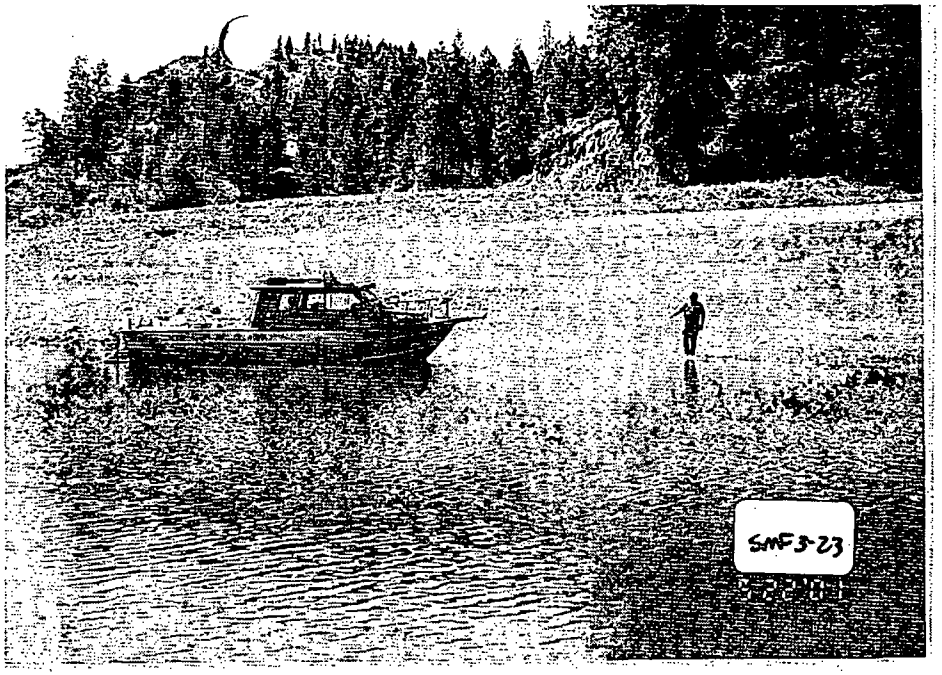
Upper Columbia River
Lake Roosevelt ESI
SMP 3-14

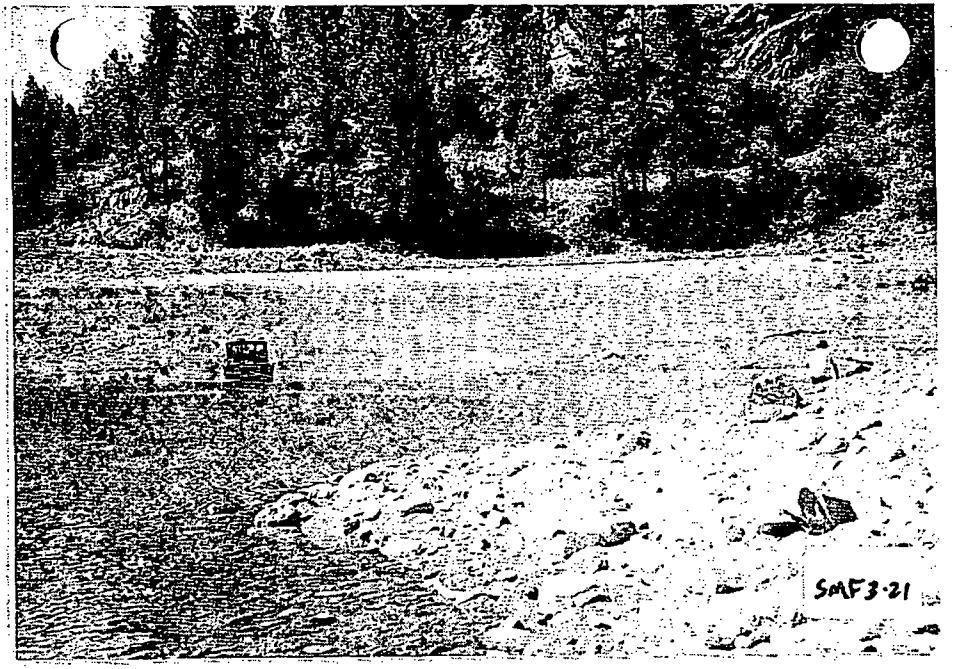

SMF3-19

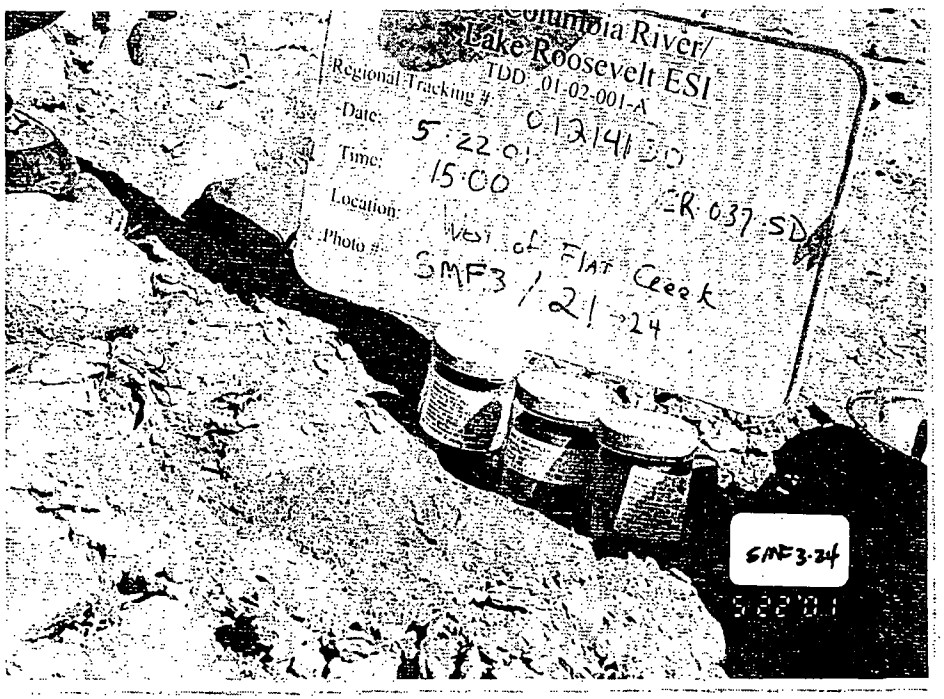
SMF3-17

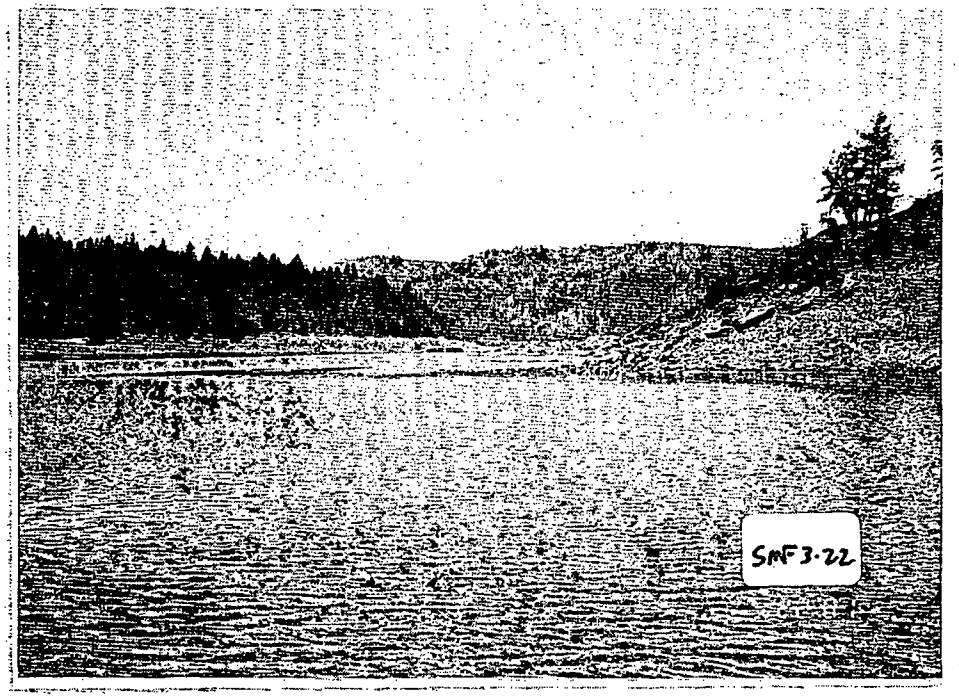

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01214128
Date: 5·22·01
Time: 14:00
CR·036·SD
Location: South of North Gorge
Photo #: SMF3 / 19+20
EAST BANK
SMF 3-20


Upper Columbia River
Lake Roosevelt ESI
SMF3-18


SMF3-23


SMF3-21

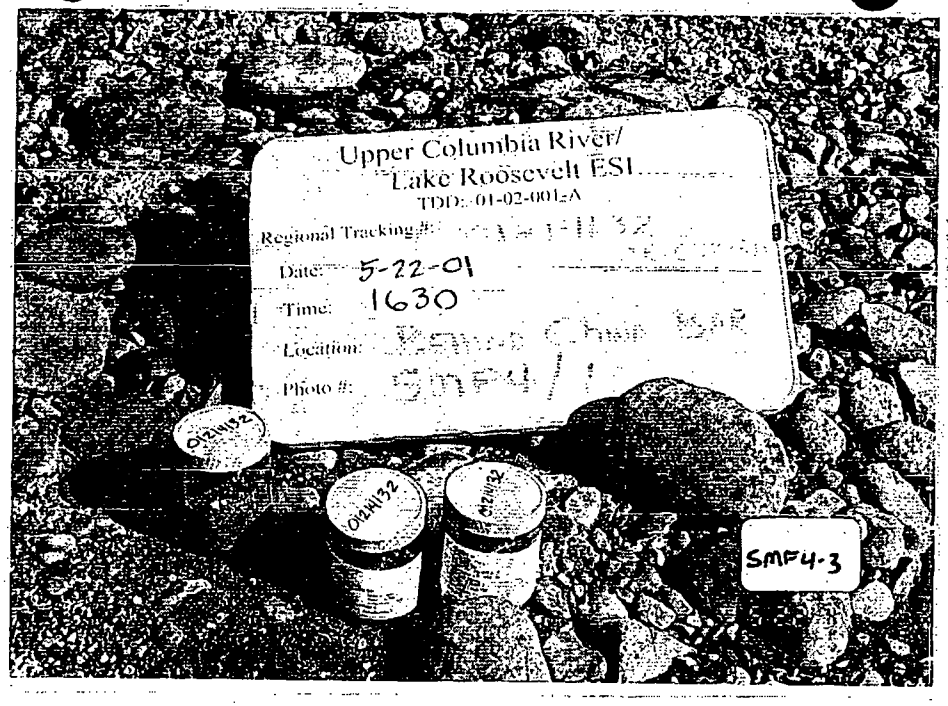

Columbia River/
Lake Roosevelt ESI
Regional Tracking #: TDD: 01-02-001-A
Date: 5 22 01
Time: 15:00
Location: West of Flat Creek
Photo #: SMF3 / 21-24
SMF3-24


SMF3-22

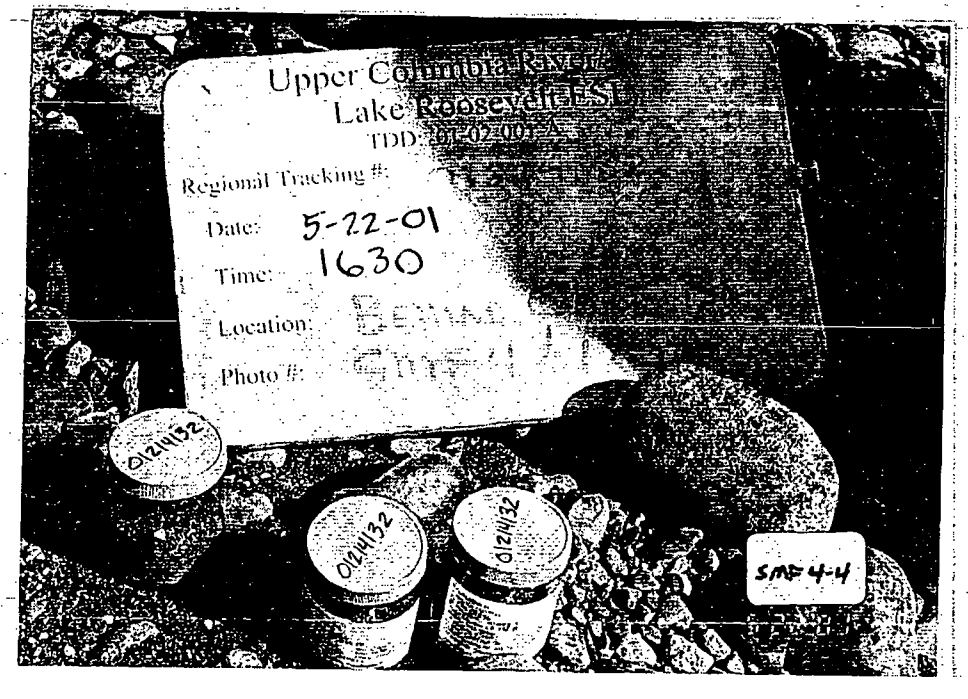
PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

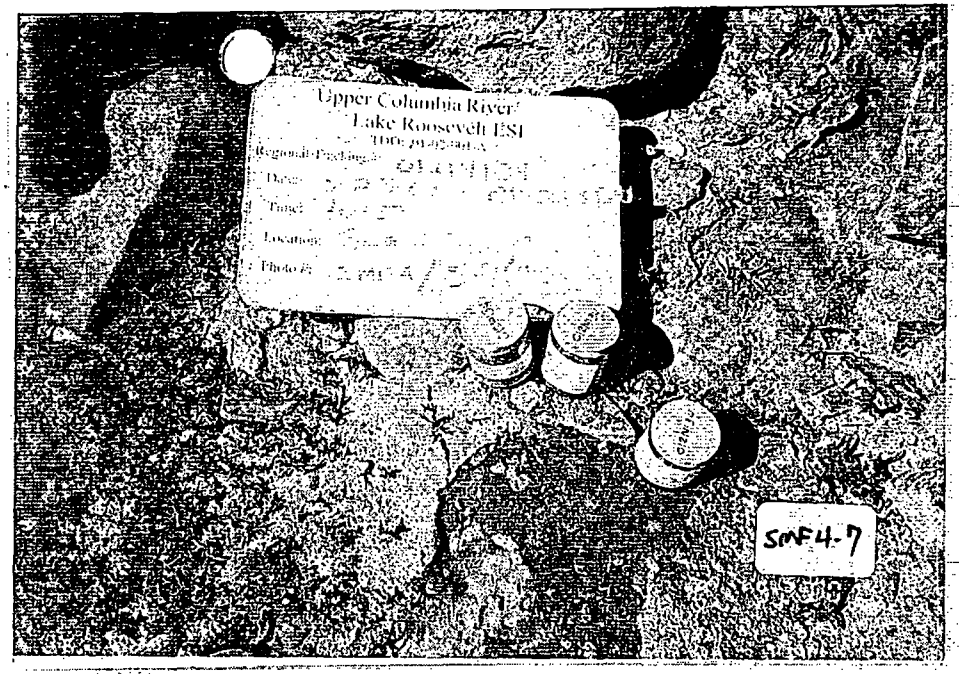
Photo No.	Date	Time	By	Dir.	Description
SMF4-1	5/22/01	1630	SMF	S	Suspected slag material at China Bar in surface deposit.
SMF4-2	5/22/01	1630	SMF	E	Suspected slag material at China Bar in surface deposit.
SMF4-3	5/22/01	1630	SMF	NA	China Bar sample material in jars (RT#01214132), white board incomplete in description of photo exposures.
SMF4-4	5/22/01	1630	SMF	NA	China Bar sample material in jars (RT#01214132).
SMF4-5	5/23/01	1015	SMF	S	South of Crown Creek (Bute Cove), grassy area roughly 100' south of navigation light, where exploratory hand auger was advanced.
SMF4-6	5/23/01	1015	SMF	NA	South of Crown Creek (Bute Cove), sample material in jars (RT#01214134), white board incomplete in description of photo exposures.
SMF4-7	5/23/01	1015	SMF	NA	South of Crown Creek (Bute Cove), sample material in jars (RT#01214134).
SMF4-8	5/23/01	1130	SMF	NA	North of Rattlesnake Creek, east bank, suspected slag material in thin layer roughly 2" below the surface.
SMF4-9	5/23/01	1130	SMF	W	North of Rattlesnake Creek, east bank, area of suspected slag in surface deposits.
SMF4-10	5/23/01	1130	SMF	N	North of Rattlesnake Creek, east bank, area of relatively more abundant suspected slag material, not sampled due to proximity to archaeological site.
SMF4-11	5/23/01	1130	SMF	NA	North of Rattlesnake Creek, east bank, sample material in jars (RT#01214136), and sampling location.
SMF4-12	5/23/01	1245	SMF	S	North of Onion Creek, West of Kanes Siding, sampling area.
SMF4-13	5/23/01	1245	SMF	SW	North of Onion Creek, West of Kanes Siding, people fishing in vicinity of sampling location.
SMF4-14	5/23/01	1245	SMF	NA	North of Onion Creek, West of Kanes Siding, sample material in jars (RT# 01214138), and sampling location.
SMF4-15	5/23/01	1315	SMF	E	Onion Creek sampling location as seen from across the River
SMF4-16	5/23/01	1315	SMF	NA	Southern Tip of Island Northwest of Onion Creek, sample material in jars (RT# 01214140), and sampling location.
SMF4-17	5/23/01	1315	SMF	W	Southern Tip of Island Northwest of Onion Creek, sampling location viewed from the River. Sampling point roughly 10 feet above water level.
SMF4-18	5/23/01	1400	SMF	N	Southern tip of island south of Squaw Creek, sampling point near white bucket (to left, in distance), roughly 10 feet above water level.
SMF4-19	5/23/01	1400	SMF	NA	Southern tip of island south of Squaw Creek, sample material in jars (RT#01214142), and sampling location. Whiteboard incorrectly states exposure number as 18.
SMF4-20	5/23/01	1515	SMF	N	Southern tip of island north of Fivemile Creek, sample area.
SMF4-21	5/23/01	1515	SMF	NA	Southern tip of island north of Fivemile Creek, sample material in jars (RT#01214144), and sampling location.
SMF4-22	5/23/01	1530	SMF	E	People at boat ramp.
SMF4-23	5/23/01	1645	SMF	W	Unnamed ephemeral tributary @ T38N, R38E, Section 10, sample material in jar (RT#01214129), and sampling location upstream of culvert.
SMF4-24	5/23/01	1730	SMF	SE	People fishing at Marcus Flats.

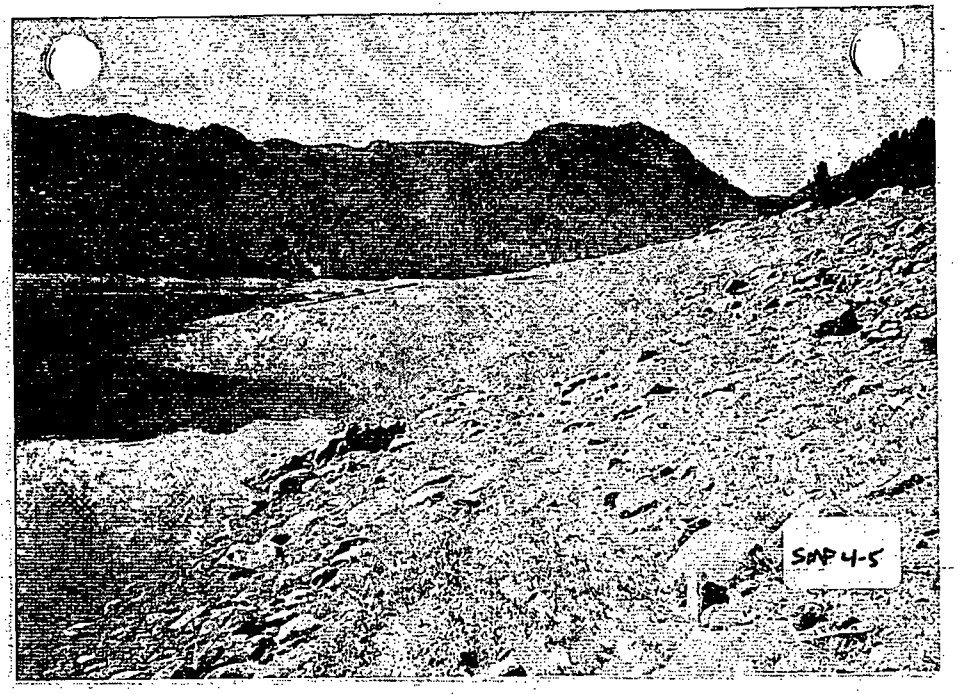

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #:
Date: 5-22-01
Time: 1630
Location:
Photo #:
0124132
0124132
0124132
SMF4-3

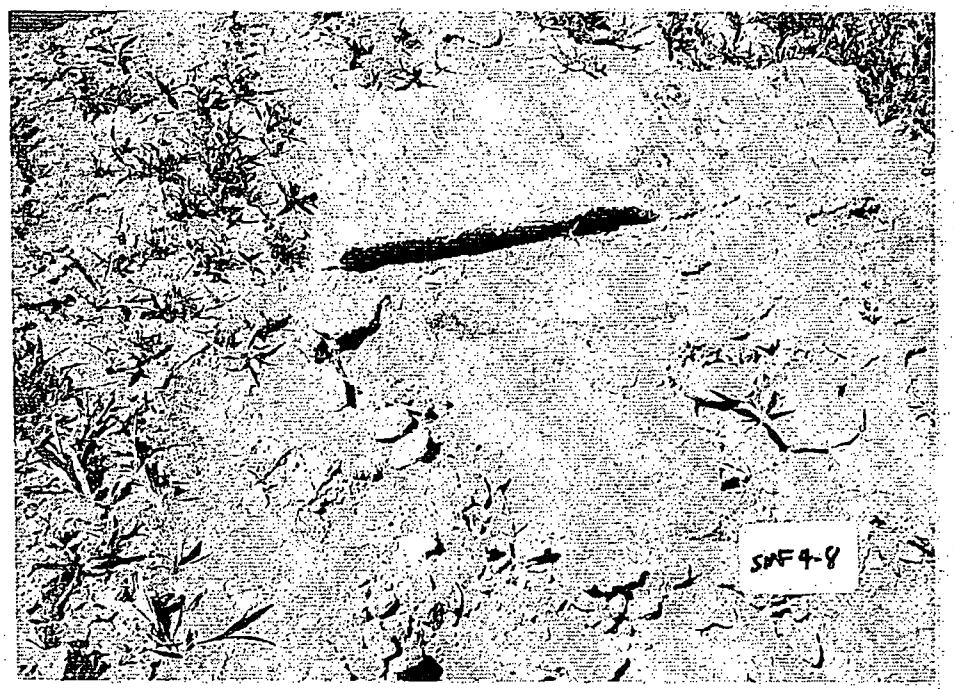
SMF 4-1

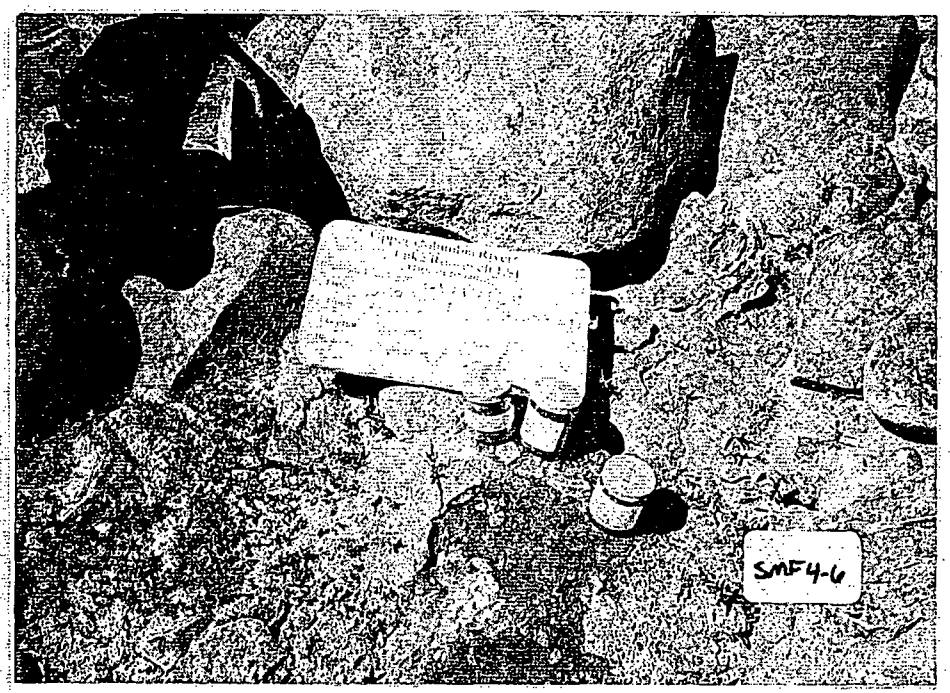

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #:
Date: 5-22-01
Time: 1630
Location:
Photo #:
0124132
0124132
0124132
SMF 4-4

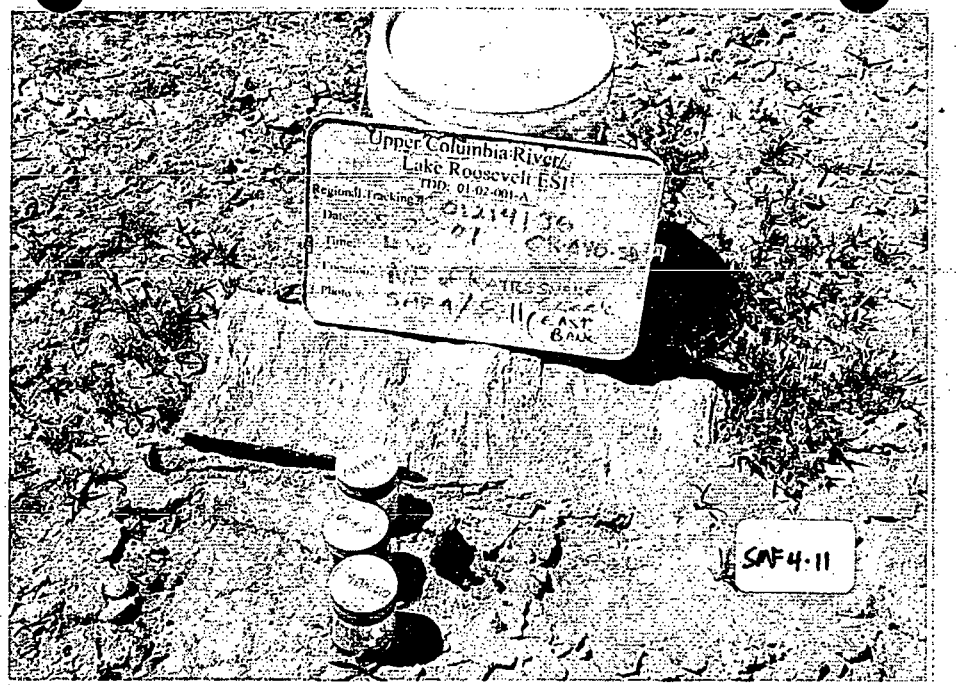
SMF 4-2

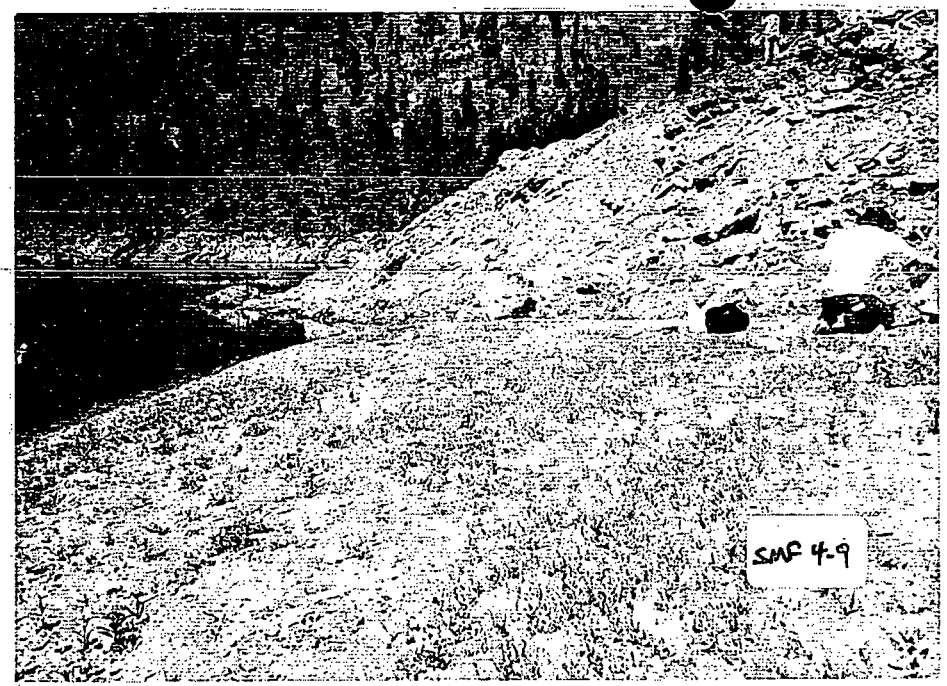

Upper Columbia River
Lake Roosevelt ESI
SMF4-7


SMF4-5


SMF4-8

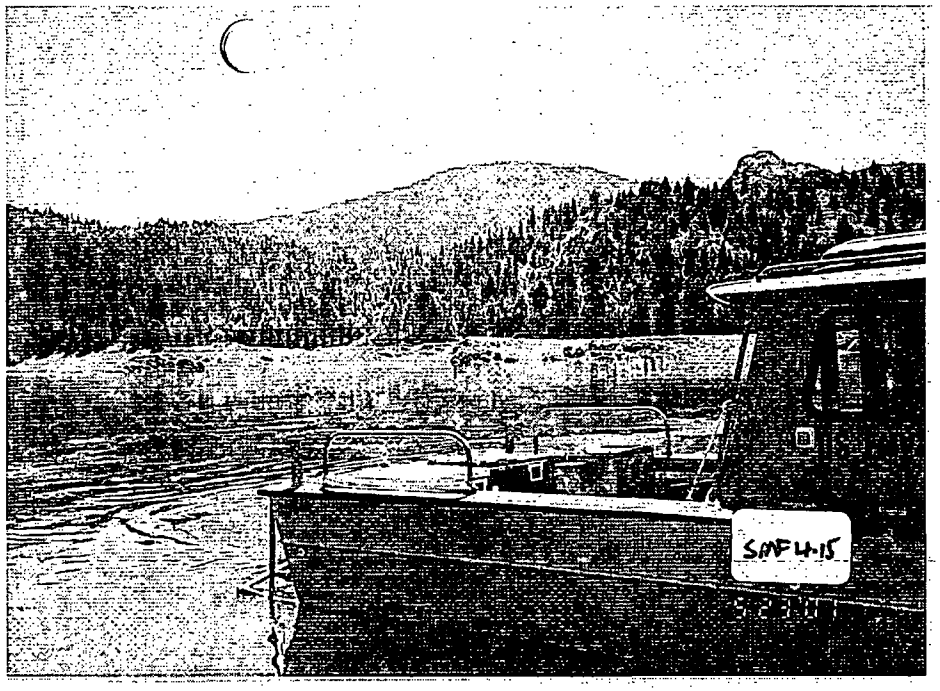

SMF4-6

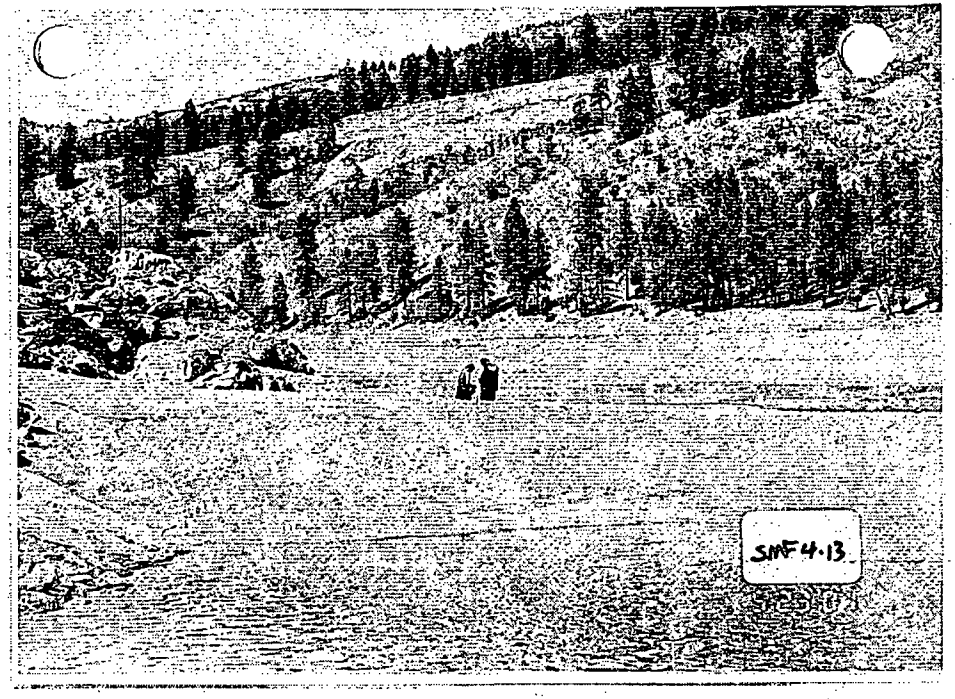

Upper Columbia River/
Lake Roosevelt ESI
TID: 01-02-001-A
SMF 4/C11 (EAST BANK)
SMF 4-11

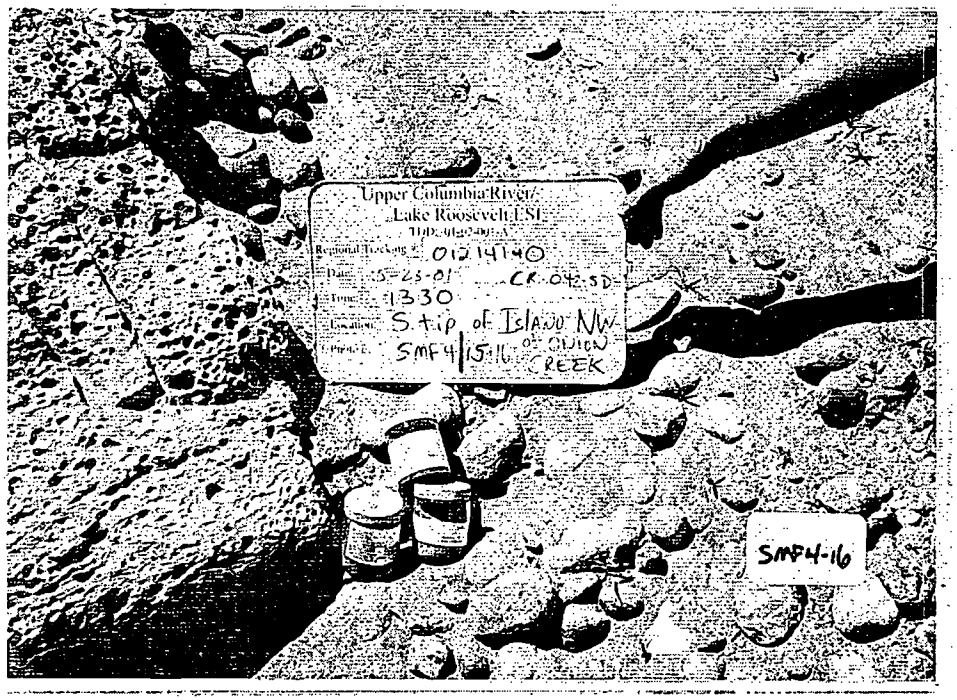

SMF 4-9

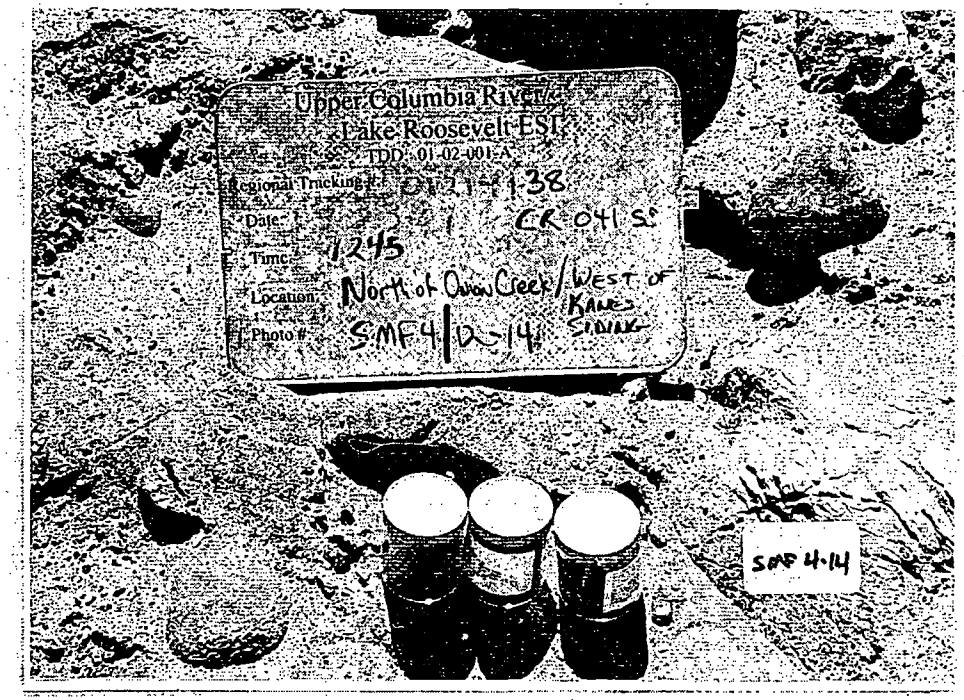
SMF 4.12

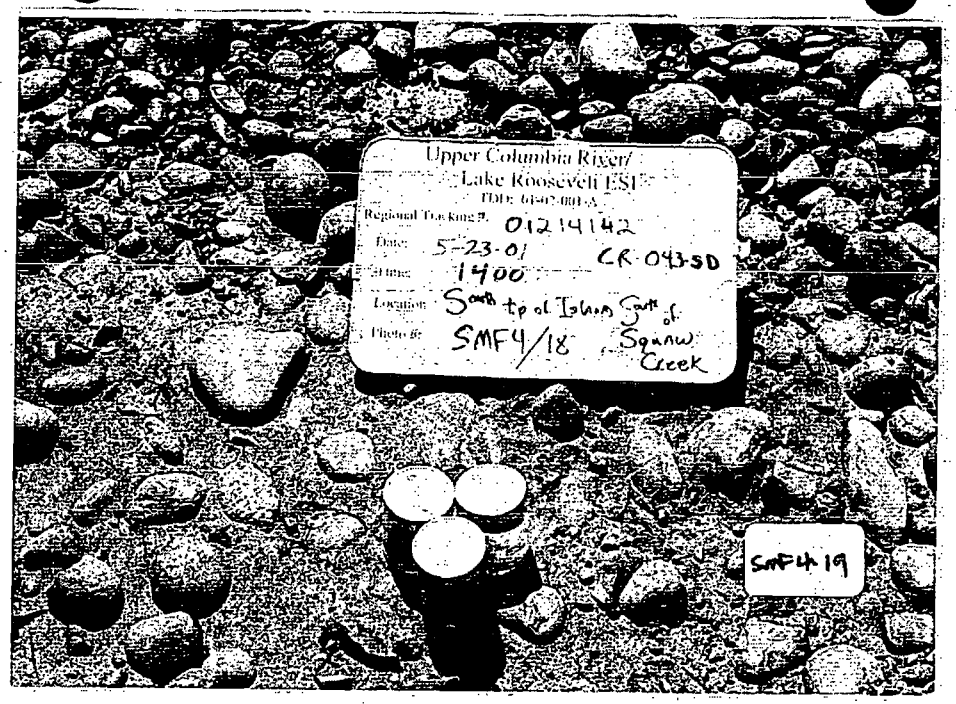
SMF 4-10

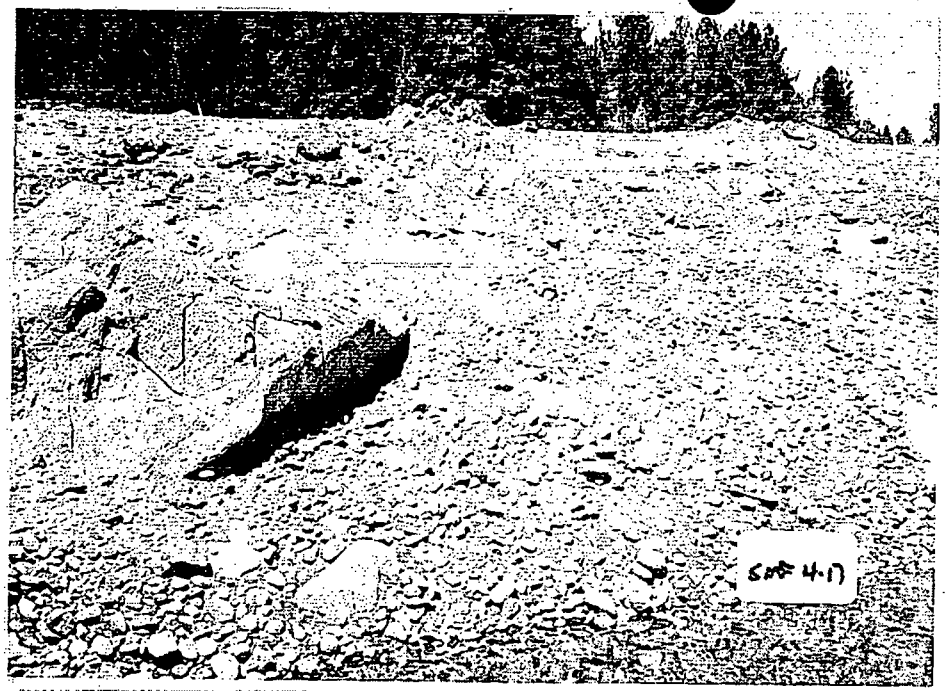

SMF 4-15


SMF 4-13

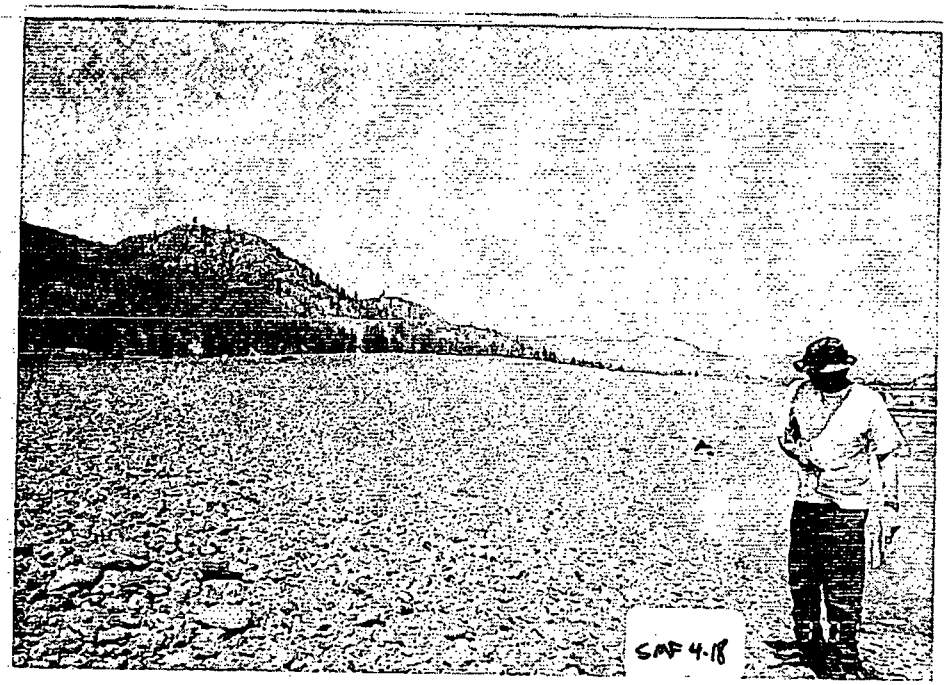

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 0121 4140
Date: 5-23-01 CR 042 SD
Time: 1330
Location: S. tip of Island NW of Quien Creek
Photo #: SMF 4/15-16
SMF 4-16

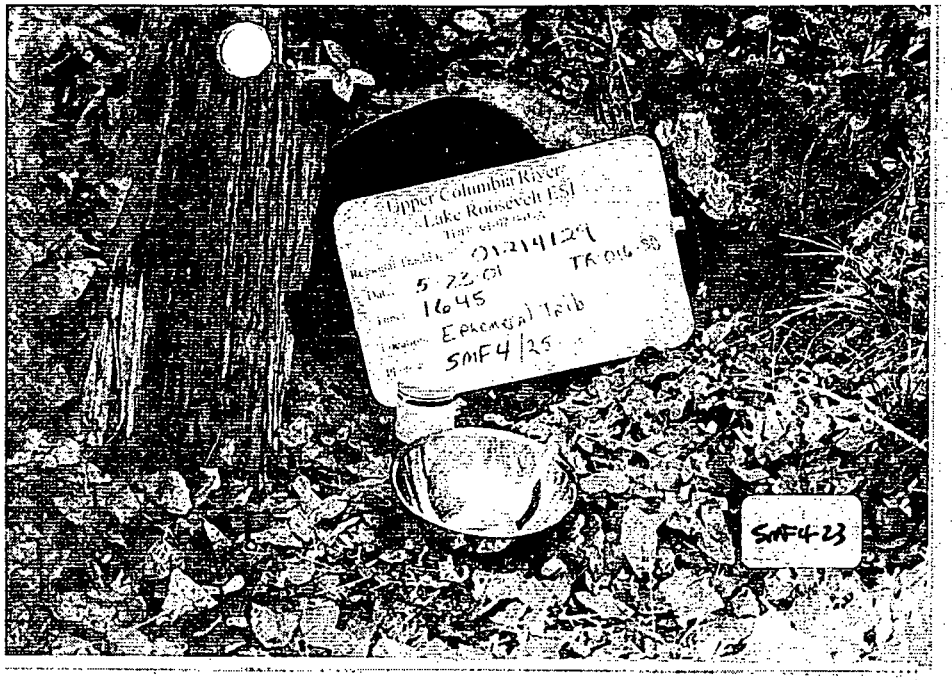

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01 21 41 38
Date: CR 041 SD
Time: 1245
Location: North of Quien Creek/West of Kanes Sidink
Photo #: SMF 4/12-14
SMF 4-14

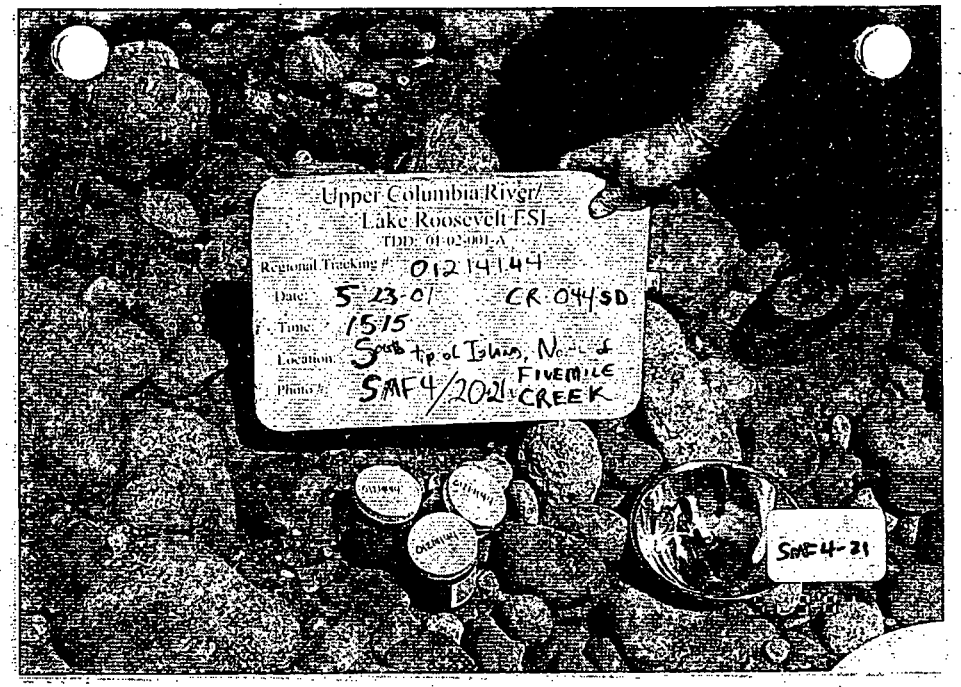

Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #: 01214142
Date: 5-23-01
CR-043-SD
Time: 1400
Location: South tip of Island South of Squaw Creek
Photo #: SMF4/18
SMF4-19


SMF 4-17

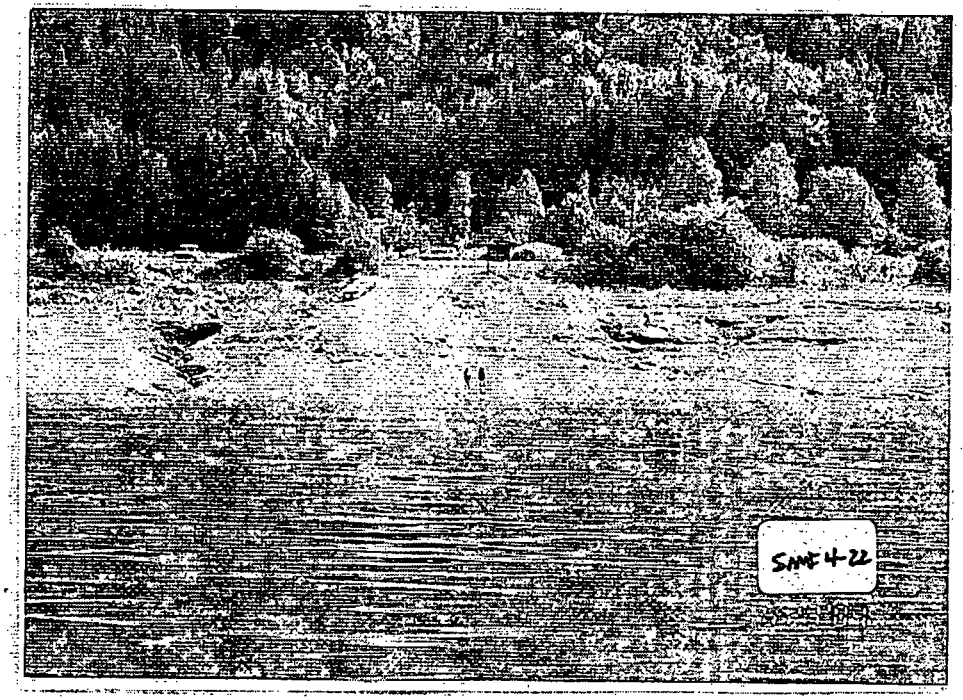
SMF 4-20


SMF 4-18


Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #: 01214129
Date: 5-23-01
TR-06-SD
Time: 1645
Location: Ephemeral Trib
Photo #: SMF4/25
SMF4-23


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01214144
Date: 5-23-01
CR-044SD
Time: 1515
Location: South tip of Island, North of FIVEMILE CREEK
Photo #: SMF4/2021
SMF4-21

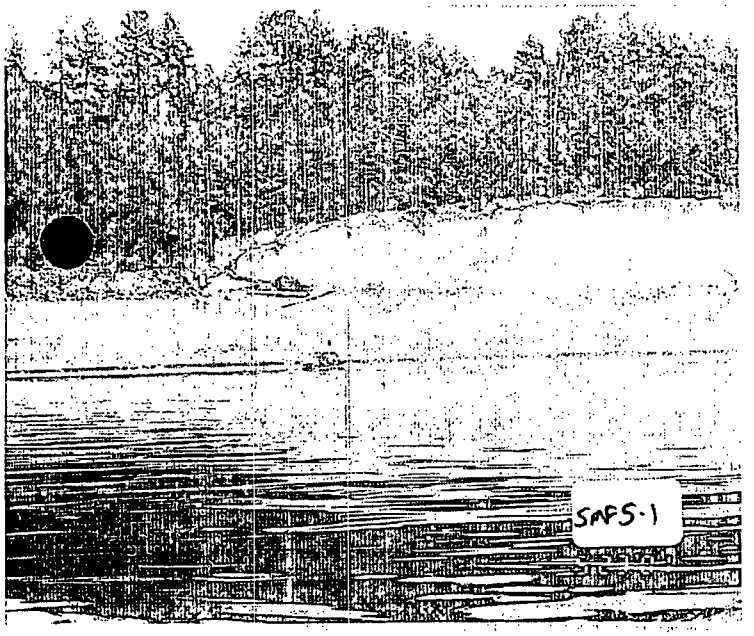
SMF4-24

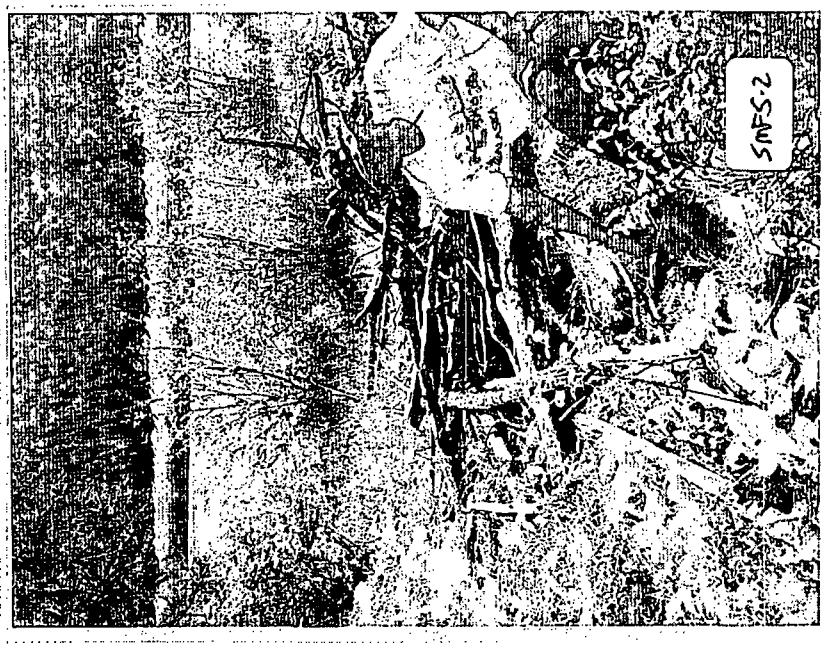

SMF4-22

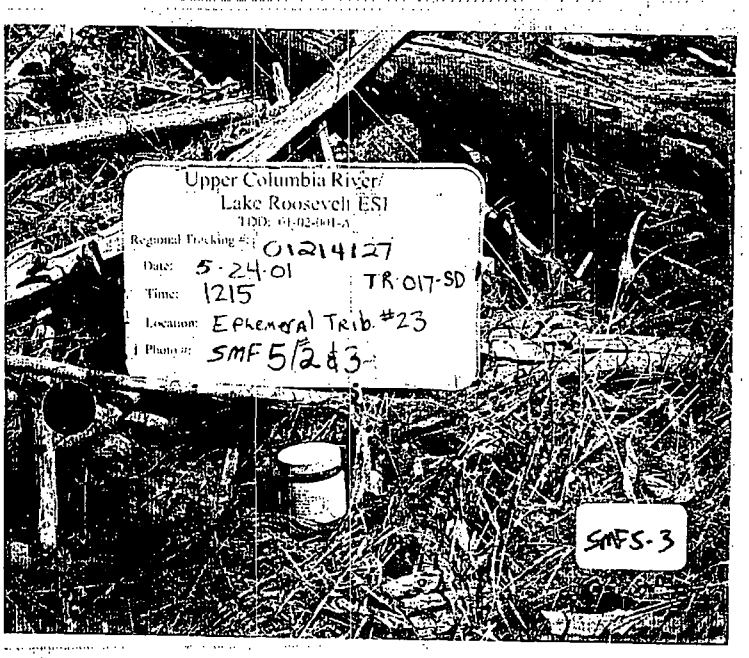
PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

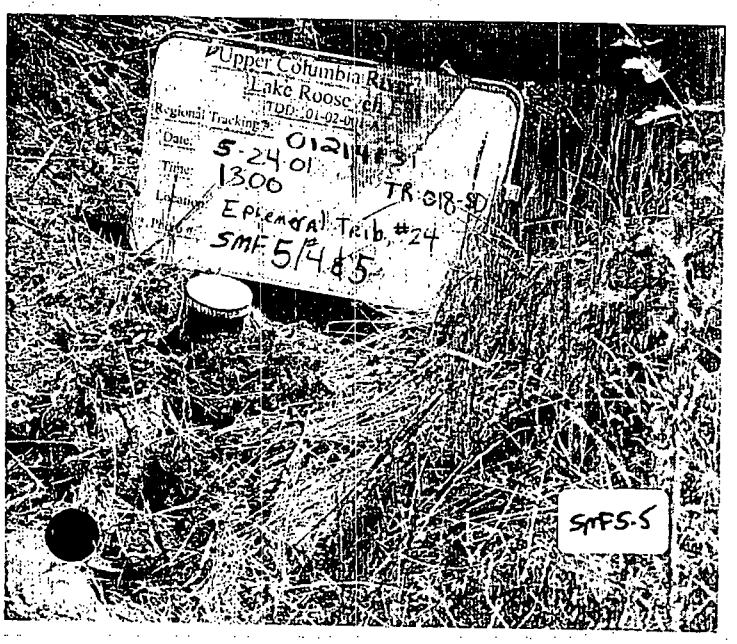
Photo No.	Date	Time	By	Dir.	Description
SMF5-1	5/23/01	1730	SMF	E	Lake Roosevelt, people fishing.
SMF5-2	5/24/01	1215	SMF	E	Ephemeral Tributary #23, screening streambed with XRF. Note Lake Roosevelt in background.
SMF5-3	5/24/01	1215	SMF	NA	Ephemeral Tributary #23, sample material in jar (RT# 01214127), and sampling location.
SMF5-4	5/24/01	1300	SMF	E	Ephemeral Tributary #24, stream channel with Lake Roosevelt in background.
SMF5-5	5/24/01	1300	SMF	NA	Ephemeral Tributary #24, sample material in jar (RT# 01214131), and sampling location.
SMF5-6	5/24/01	1345	SMF	NA	Crown Creek, sample collection (RT# 01214133).
SMF5-7	5/24/01	1345	SMF	NA	Crown Creek, sample material in jar (RT# 01214133), and sample location.
SMF5-8	5/24/01	1500	SMF	W	Unnamed tributary #27, Creek mouth from River (inaccessible due to steep rocky cliff).
SMF5-9	5/24/01	1615	SMF	W	Unnamed tributary #27 "No Trespassing" signs near upland access point.
SMF5-10	5/24/01	1615	SMF	NE	Unnamed tributary #27, sampling location upstream of culvert.
SMF5-11	5/24/01	1615	SMF	NA	Unnamed tributary #27, sample material in jar (RT# 01214135), and sampling location.
SMF5-12	5/24/01	2100	SMF	NA	Colville, Washington, packing samples for shipping.
SMF5-13	NA	NA	NA	NA	NA
SMF5-14	NA	NA	NA	NA	NA
SMF5-15	6/3/01	0935	KB	W	Little Jim Creek, sample material in jar (RT# 01234050), and sampling location.
SMF5-16	6/3/01	1045	KB	W	Unnamed tributary west of Mission Point, T33N, R37E, section 18, sample material in jar (RT# 01234051), and sampling location.
SMF5-17	6/3/01	1315	KB	SW	Hall Creek, sample material in jar (RT# 01234052), and sampling location.
SMF5-18	6/3/01	1500	KB	W	Unnamed tributary @ T32N, R37E, Section 8, sample material in jar (RT# 01234053), and sampling location.
SMF5-19	6/4/01	0930	KB	SE	Mislocated sample (RT# 01234067).
SMF5-20	6/4/01	0930	KB	NW	Mislocated sample, sampling area.
SMF5-21	6/4/01	1030	KB	NE	Unnamed tributary south of Bradbury Campground, sample material in jar (RT# 01234068).
SMF5-22	6/4/01	1030	KB	SW	Unnamed tributary south of Bradbury Campground, sampling area.
SMF5-23	6/4/01	1200	KB	SE	Rotter Bay Creek, sample material in jar (RT# 01234064).
SMF5-24	6/4/01	1200	KB	W	Rotter Bay Creek, sampling area.


SMFS-1

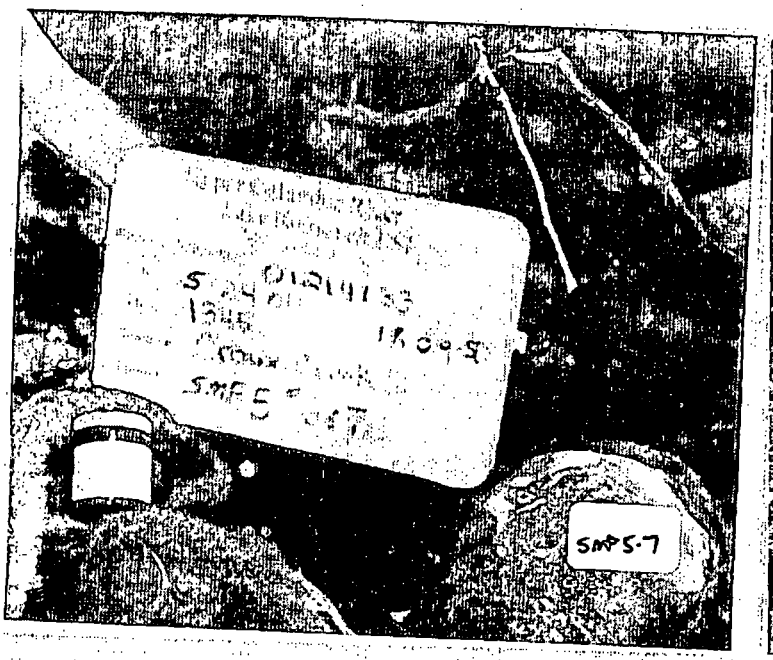

SMFS-2

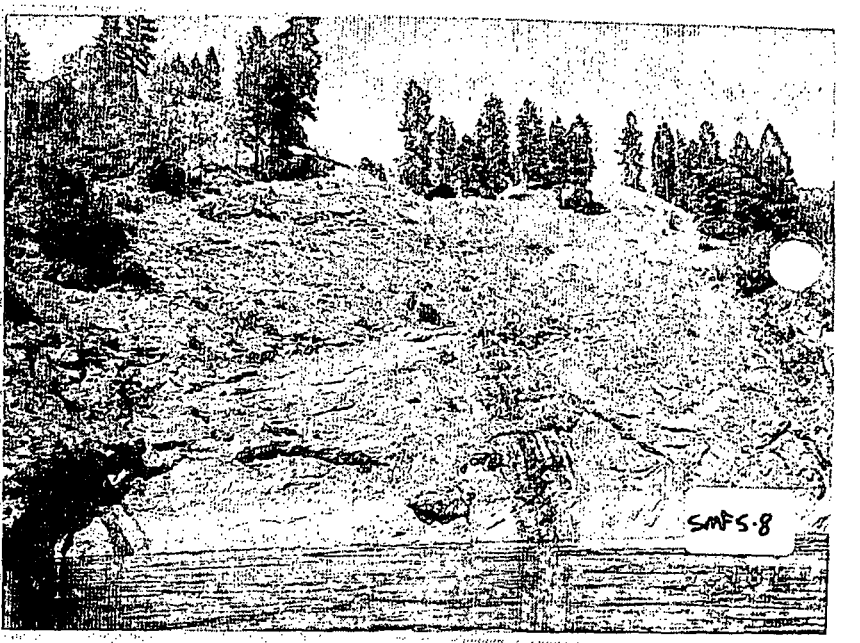

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01214127
Date: 5-24-01
Time: 1215
TR-017-SD
Location: Ephemeral Trib. #23
Photo #: SMF 5/2 & 3
SMFS-3

SMFS-4

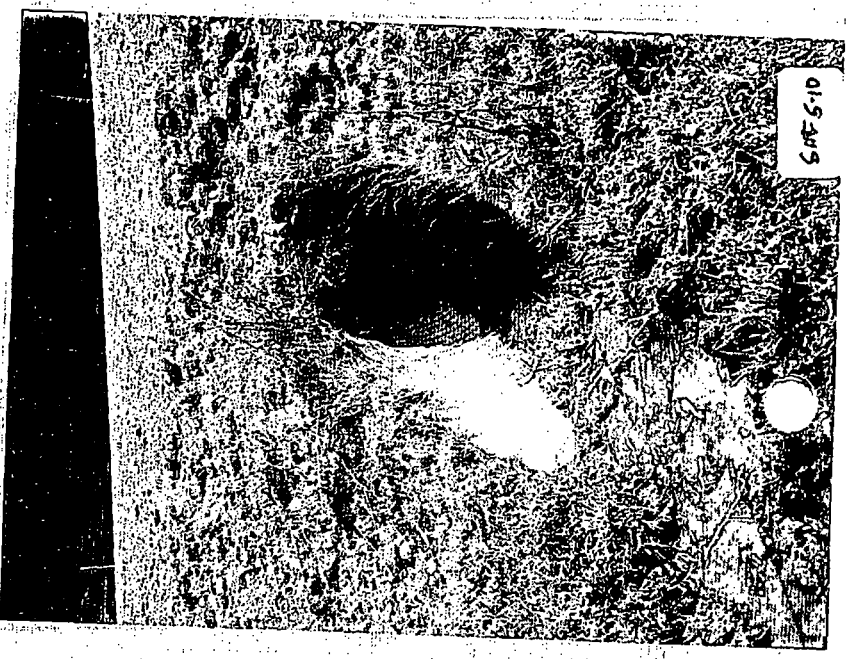

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01214131
Date: 5-24-01
Time: 1300
TR-018-SD
Location: Ephemeral Trib. #24
Photo #: SMF 5/4 & 5
SMFS-5

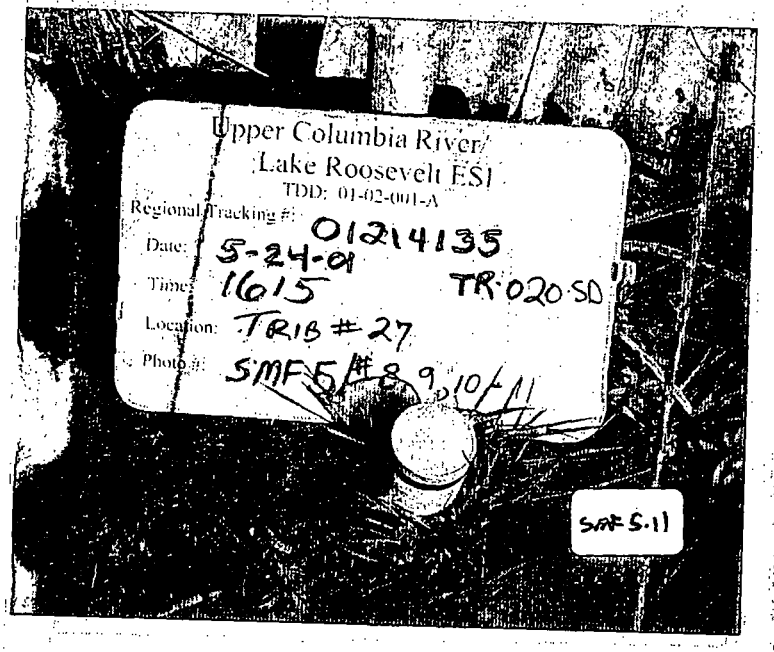
SMFS-6


SMF 5-7

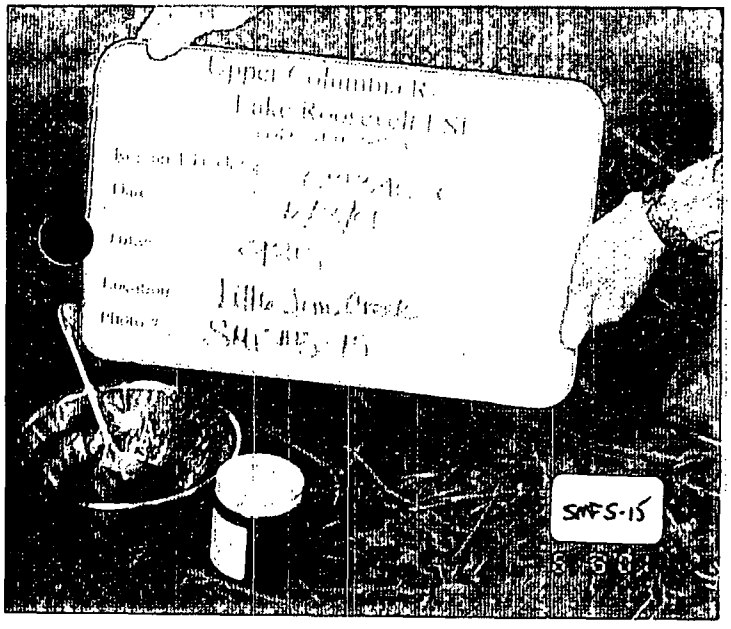

SMF 5-8

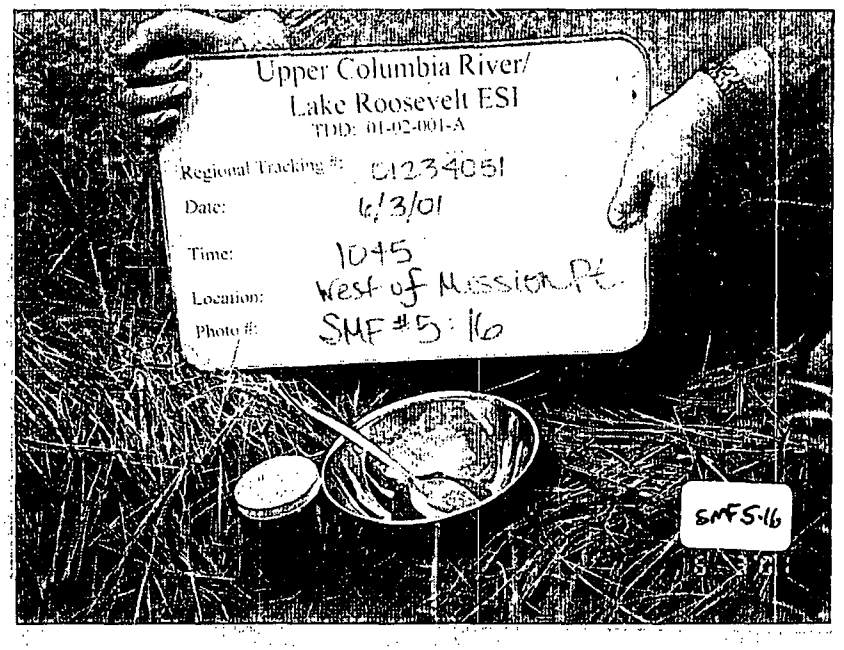
WHAT PART OF
NO TRESPASSING
DON'T YOU UNDERSTAND
PRIVATE PROPERTY
NO TRESPASSING
SMF 5-9

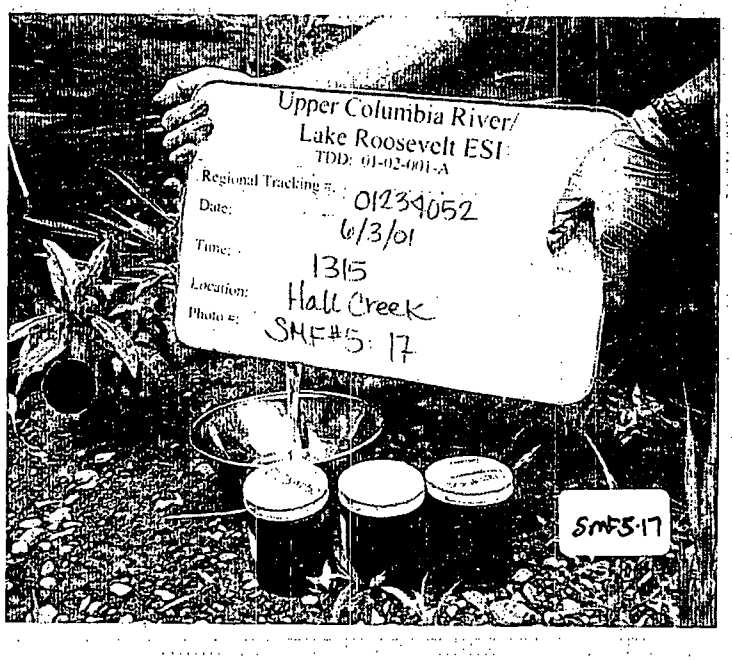

SMF 5-10

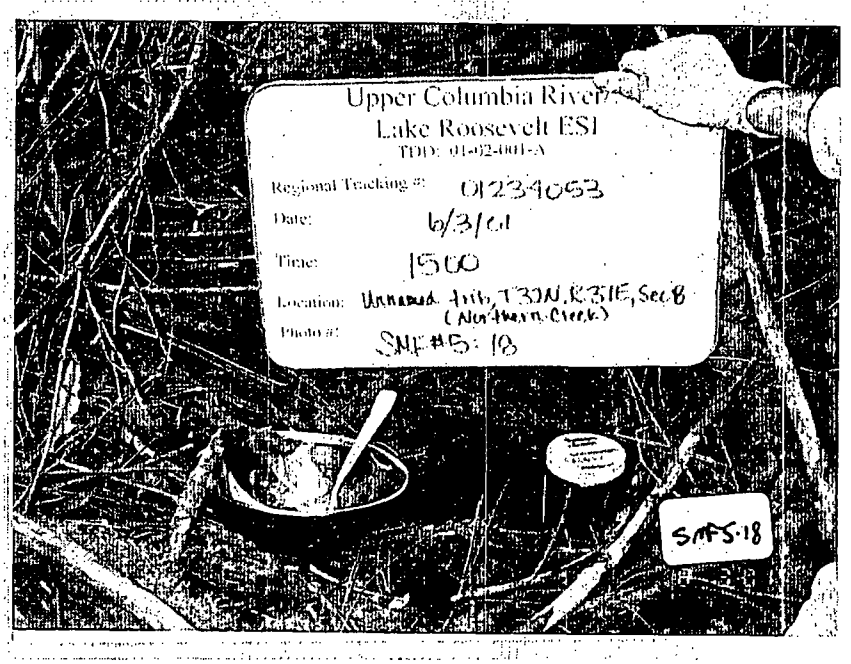

Upper Columbia River
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01214135
Date: 5-24-01
Time: 1615
TR-020-SD
Location: TRIB #27
Photo #: SMF 5 #8, 9, 10 & 11
SMF 5-11

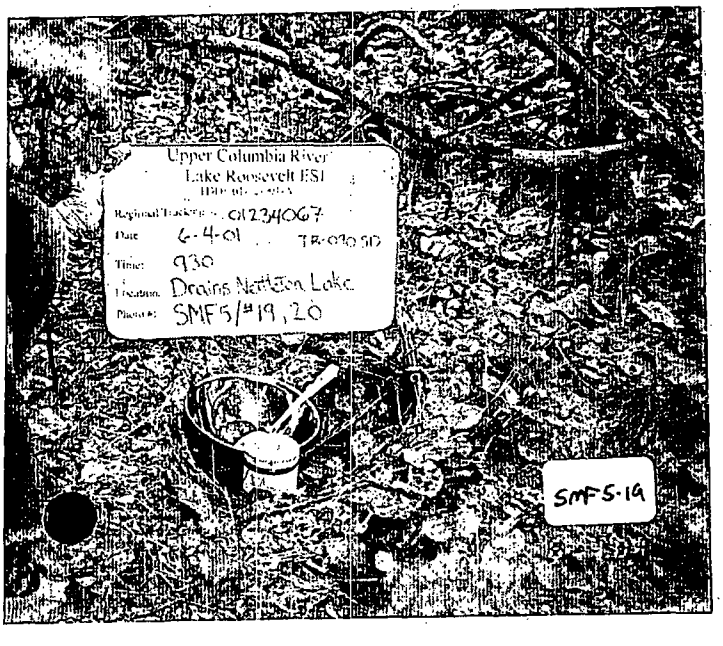
SMF 5-1


Upper Columbia R
Lake Roosevelt ESI
Date
Time
Location
Little Jim Creek
Photo #
SMF #5: 15
SMFS-15

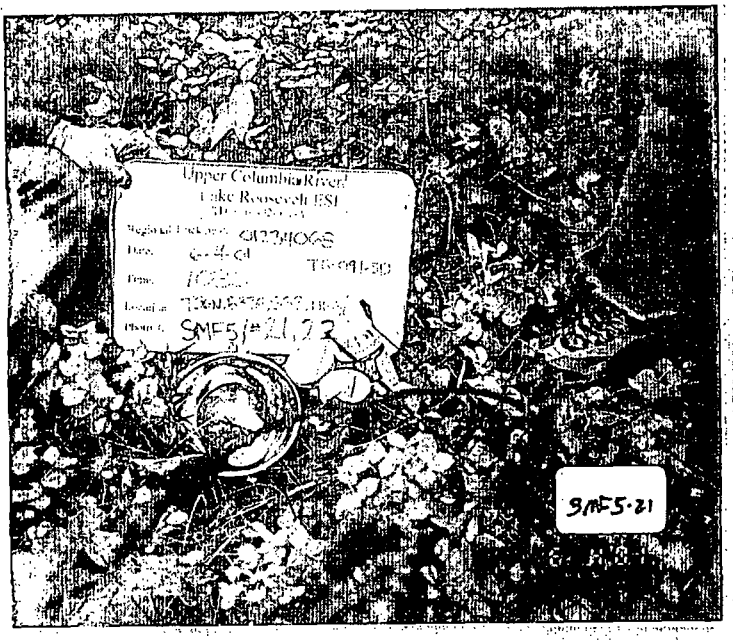

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234051
Date: 6/3/01
Time: 1045
Location: West of Mission Pt.
Photo #: SMF #5: 16
SMFS-16

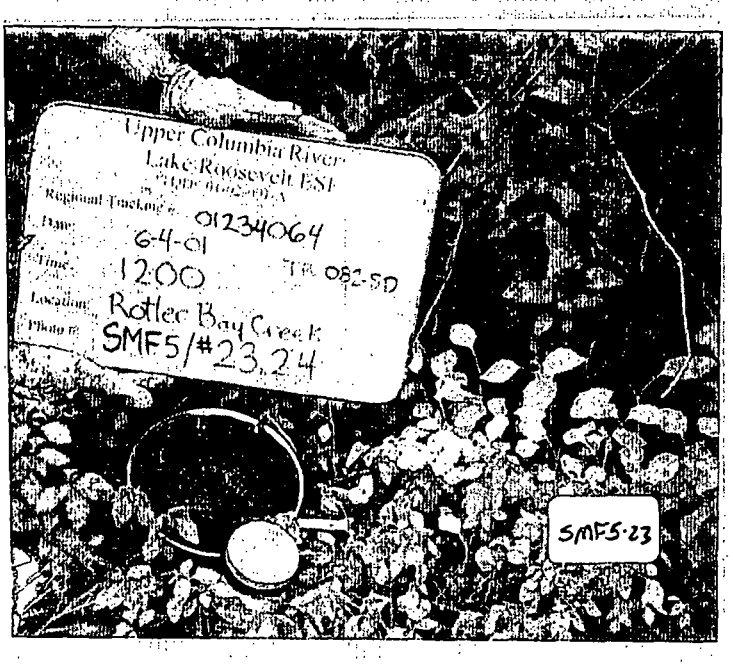

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234052
Date: 6/3/01
Time: 1315
Location: Hall Creek
Photo #: SMF#5: 17
SMFS-17

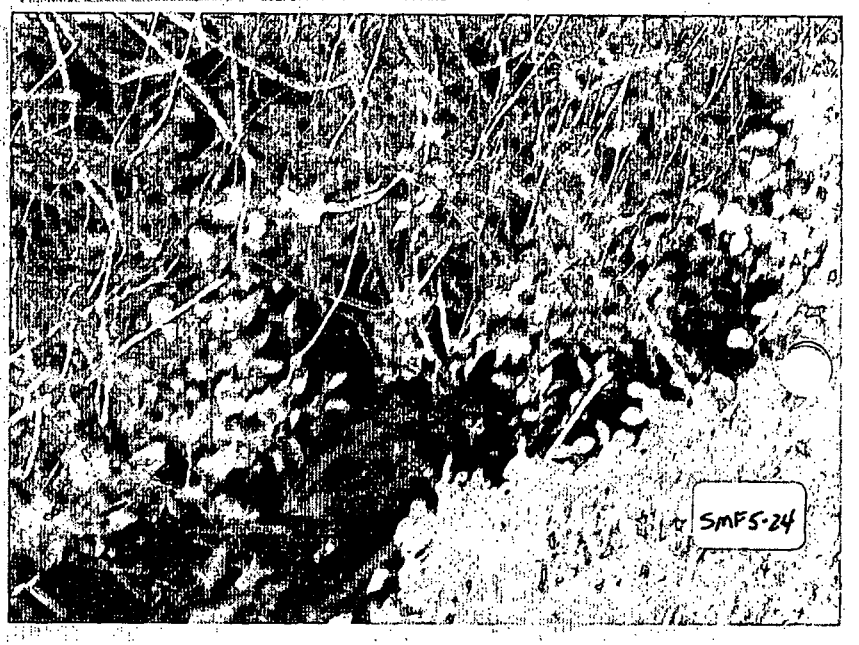

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234053
Date: 6/3/01
Time: 1500
Location: Unnamed Trib, T30N, R31E, Sec 8
(Northern Creek)
Photo #: SMF #5: 18
SMFS-18


Upper Columbia River
Lake Roosevelt ESI
Regional Tracking #: 01234067
Date: 6-4-01
Time: 930
Location: Drains Nettleton Lake
Photo #: SMFS/#19, 20
SMFS-19

SMFS-20







0·SD SMF#5 ~~18~~ 20

n location, not a defined
; location

TR 090·SD SMF#5·19

Mistaken location, not a defined
tributary location

01234067

PHOTOGRAPH IDENTIFICATION SHEET

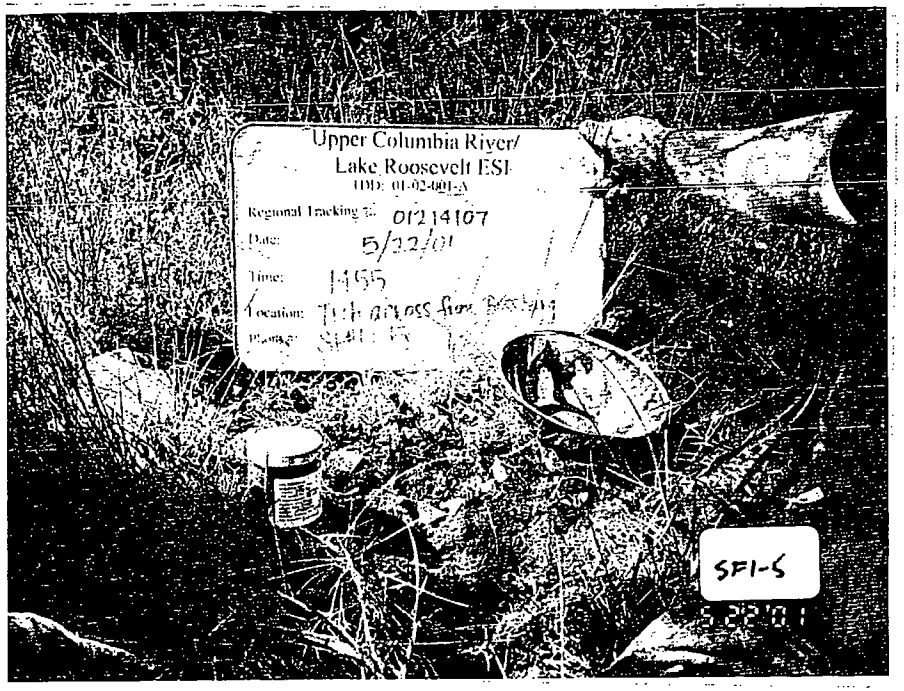
Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoo Site Name: Upper Columbia River/Lake Roosevelt ESI

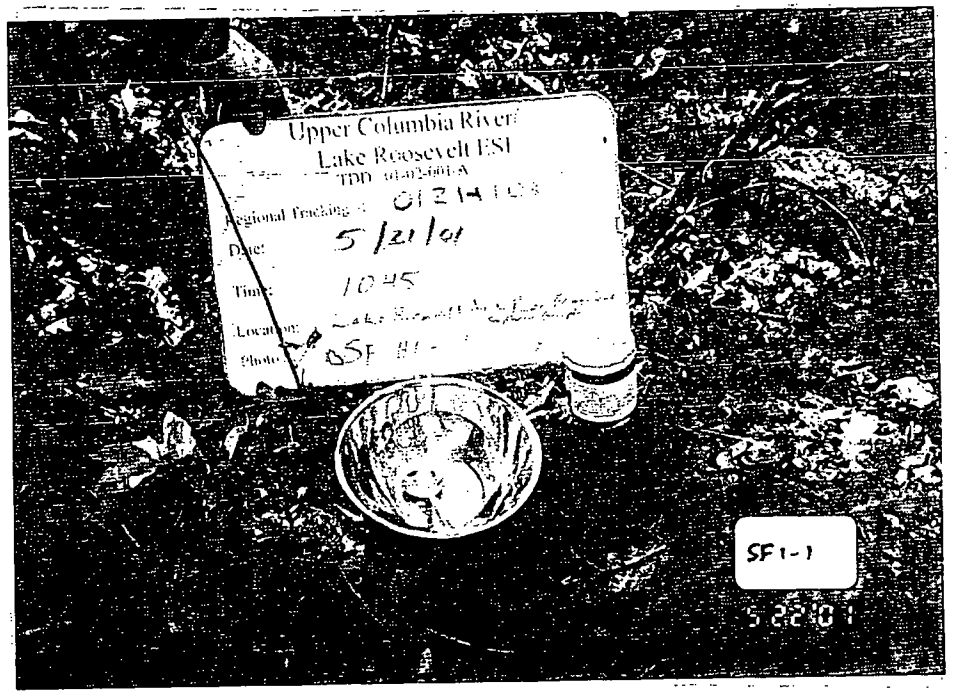
Photo No.	Date	Time	By	Dir.	Description
SF1-1	5/22/01	1045	SF	NA	Tributary near Snag Cove (T37N, 37E, section 1 SE ¼), sample material in jar (RT# 01214103). Incorrect date noted on white board.
SF1-2	5/22/01	1210	SF	NA	Tributary on flats, north of Snag Cove. Incorrect sampling location. Sample not submitted for analysis. No photo in photo log.
SF1-3	5/22/01	1210	SF	NA	Tributary on flats, north of Snag Cove. Incorrect sampling location. No photo in photo log.
SF1-4	5/22/01	1345	SF	NA	Tributary north of Snag Cove (T38N, R37E, section 36, SW ¼), sample material in jar (RT# 01214105). Incorrect RT# noted on white board.
SF1-5	5/22/01	1455	SF	NA	Tributary SW of Bossburg, WA (T38N, R37E, section 35, NE ¼), sample material in jar (RT# 01214107).
SF1-6	5/22/01	1550	SF	NA	Tributary across from Bossburg, WA, sample material in jar (RT# 01214111). Incorrect sampling time noted on white board.
SF1-7	5/22/01	1705	SF	NA	Unnamed ephemeral tributary draining Dilly Lake (Glasgo Lakes southern tributary), sample material in jar (RT# 01214111), and sampling area. Incorrect RT# noted on white board.
SF1-8	5/22/01	1735	SF	NA	Unnamed ephemeral stream approximately 1,000 ft upstrea of Dilly Lake ephemeral tributary (Glasgo Lakes northern tributary), sample material in jar (RT# 01214113), and sampling area. Incorrect RT# noted on white board.
SF1-9	5/23/01	0945	SF	NA	East of Marble Mine, southern sample. Incorrect sampling location. Sample not submitted for analysis. No photo in photo log.
SF1-10	5/23/01	1100	SF	NA	Unnamed ephemeral stream at T38N, R38E, section 21 (East of Marble Mine), sample material in jar (RT# 01214115), and sampling location.
SF1-11	5/23/01	1220	SF	NA	Unnamed ephemeral stream at T38N, R38E, section 22 (South of North Gorge), sample material in jar (RT# 01214117), and sampling location.
SF1-12	5/23/01	1410	SF	NA	Unnamed ephemeral stream at North Gorge Campground, sample material in jar (RT# 01214119).
SF1-13	5/23/01	1445	SF	NA	Unnamed ephemeral downstream of Lodgepole Creek, sample material in jar (RT# 01214121), and sampling location.
SF1-14	5/23/01	1555	SF	NA	Unnamed ephemeral downstream of Lodgepole Creek, sample material in jar (RT# 01214123), and sampling location.
SF1-15	5/23/01	1640	SF	NA	Lodgepole Creek, sample material in jar (RT# 0124125) and sampling location.
SF1-16	5/24/01	1145	SF	NA	Fivemile Creek, sample material in jar (RT# 01214143) and sampling location.

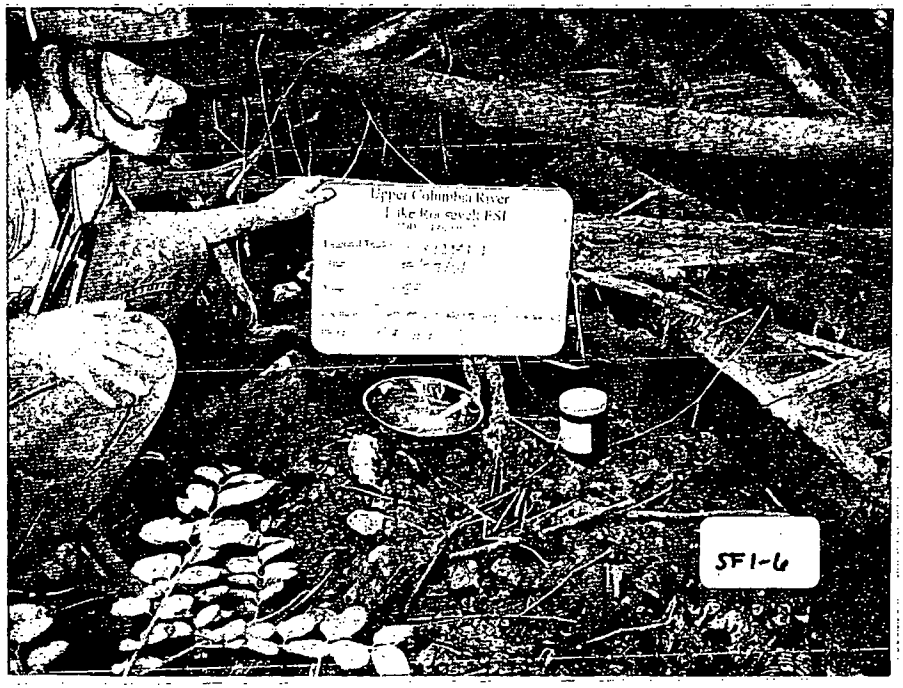
PHOTOGRAPH IDENTIFICATION SHEET

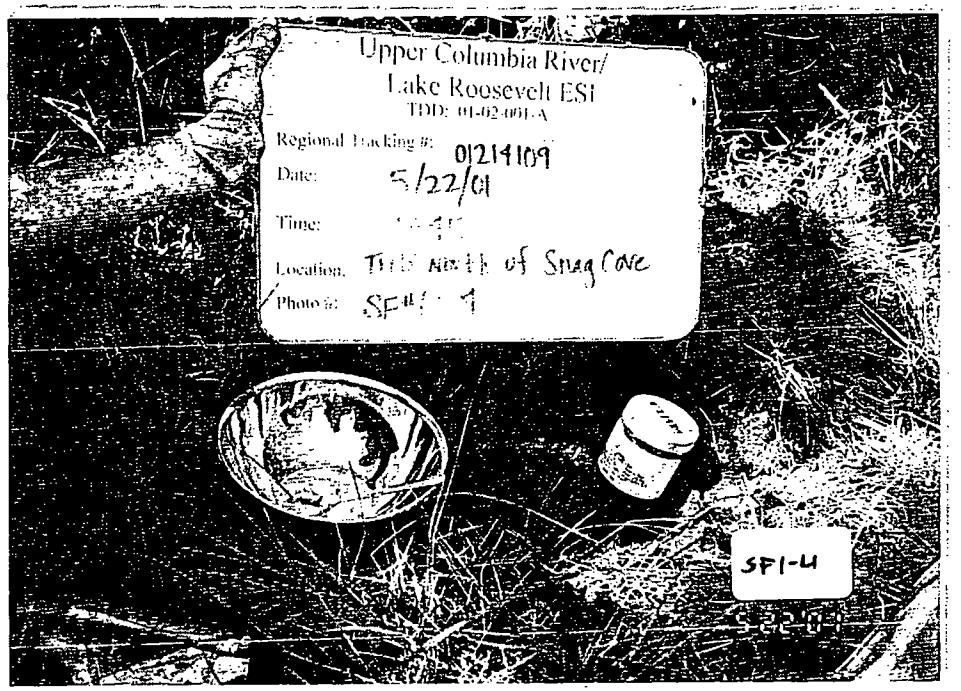
Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoo Site Name: Upper Columbia River/Lake Roosevelt ESI

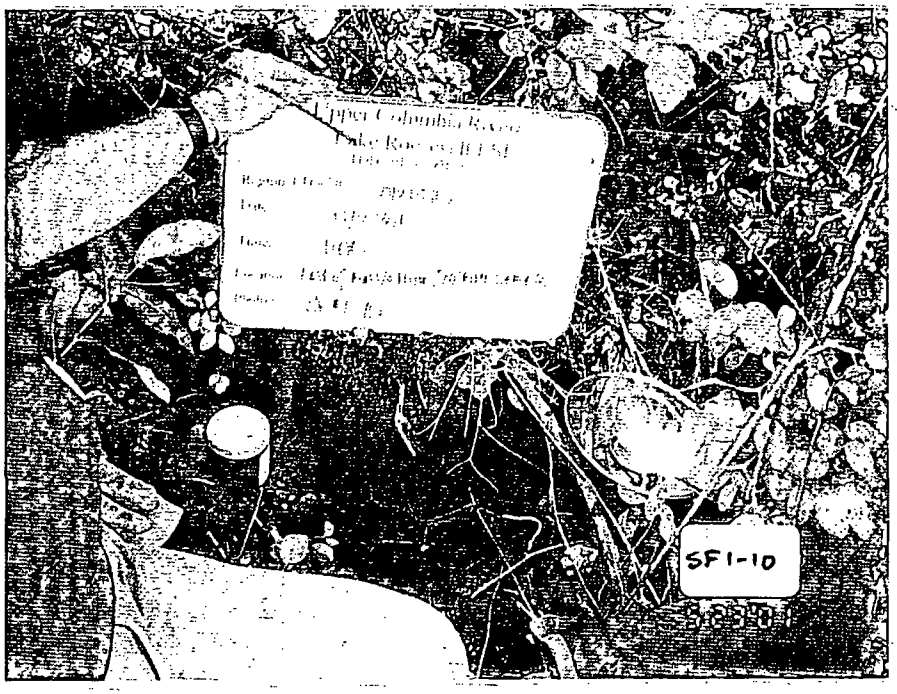
Photo No.	Date	Time	By	Dir.	Description
SF1-17	5/24/01	1325	SF	NA	Unnamed drainage from nearshore ponds (north of Squaw Creek), sample material in jar (RT# 01214141), and sampling location.
SF1-18	5/24/01	1325	SF	NA	Unnamed drainage from nearshore ponds (north of Squaw Creek), sampling area.
SF1-19	5/24/01	1325	SF	NA	Unnamed drainage from nearshore ponds (north of Squaw Creek), sampling area.
SF1-20	5/24/01	1435	SF	NA	Unnamed ephemeral creek @ T39N, R39E, section 10 (south of Squaw Creek), sample material in jar (RT# 01214139), and sampling location.
SF1-21	5/24/01	1350	SF	NA	Moses Spring Creek, sample material in jar (RT# 01214137), and sampling area. Incorrect RT# noted on white board. Photo notes location as "Across from Onion Creek and Kanes Siding."
SF1-22	5/31/01	1045	SMF	S	Beach at Northport, SW of Smelter Rock, screening sediment with XRF.
SF1-23	5/31/01	1045	SMF	S	Beach at Northport, SW of Smelter Rock, sample material in jars (RT# 01224150), and sampling location.
SF1-24	5/31/01	1215	SMF	NE	Flats North of Big Sheep Creek, sampling area.
SF1-25	5/31/01	1220	SMF	W	Mouth of Big Sheep Creek, looking upstream from River.

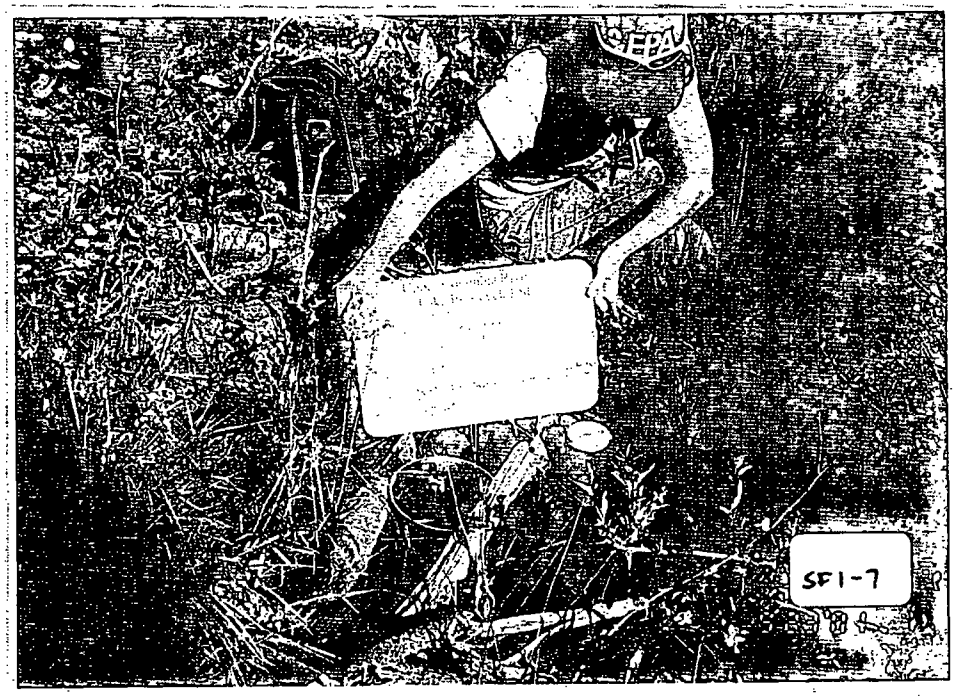

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01214107
Date: 5/22/01
Time: 1455
Location:
Photo #:
SF1-5

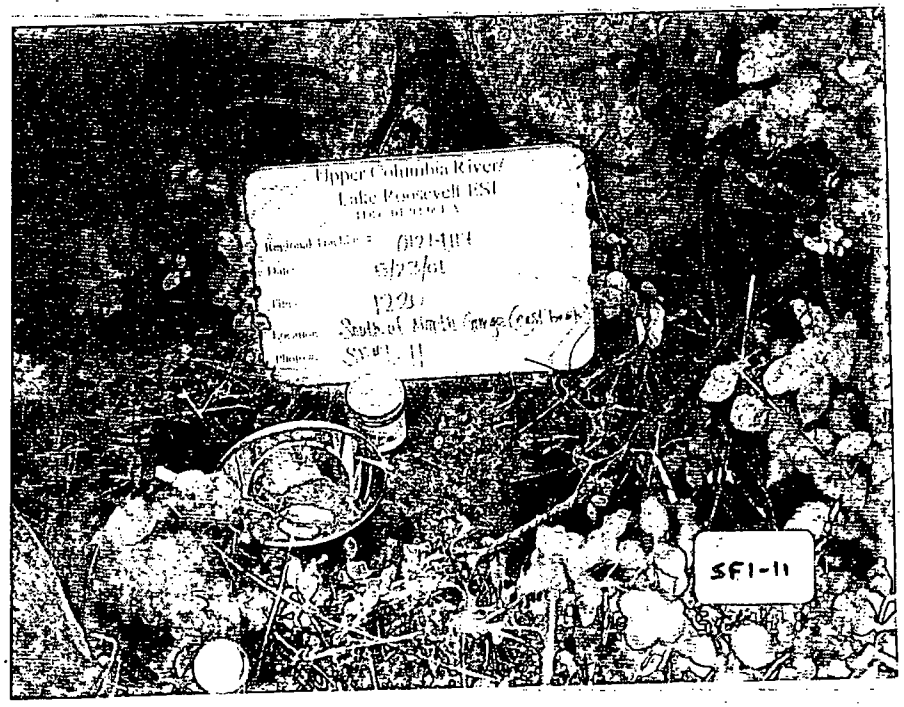

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #:
Date: 5/21/01
Time: 1045
Location:
Photo #:
SF1-1

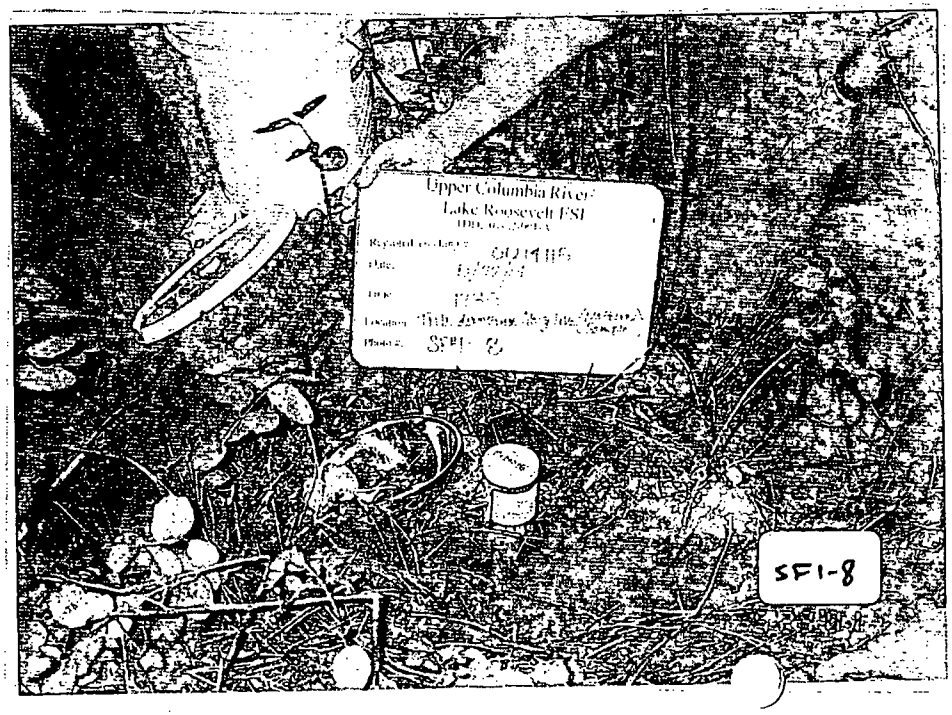

Upper Columbia River
Lake Roosevelt ESI
SF1-6


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01214109
Date: 5/22/01
Time:
Location: North of Snag Cove
Photo #:
SF1-4

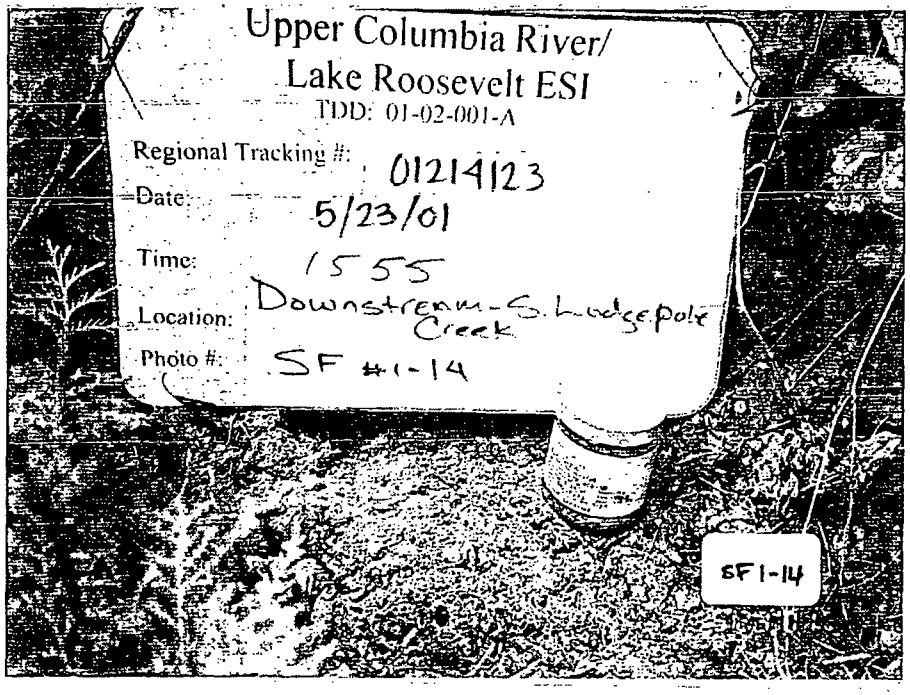

Upper Columbia River
Lake Roosevelt FSI
SF1-10

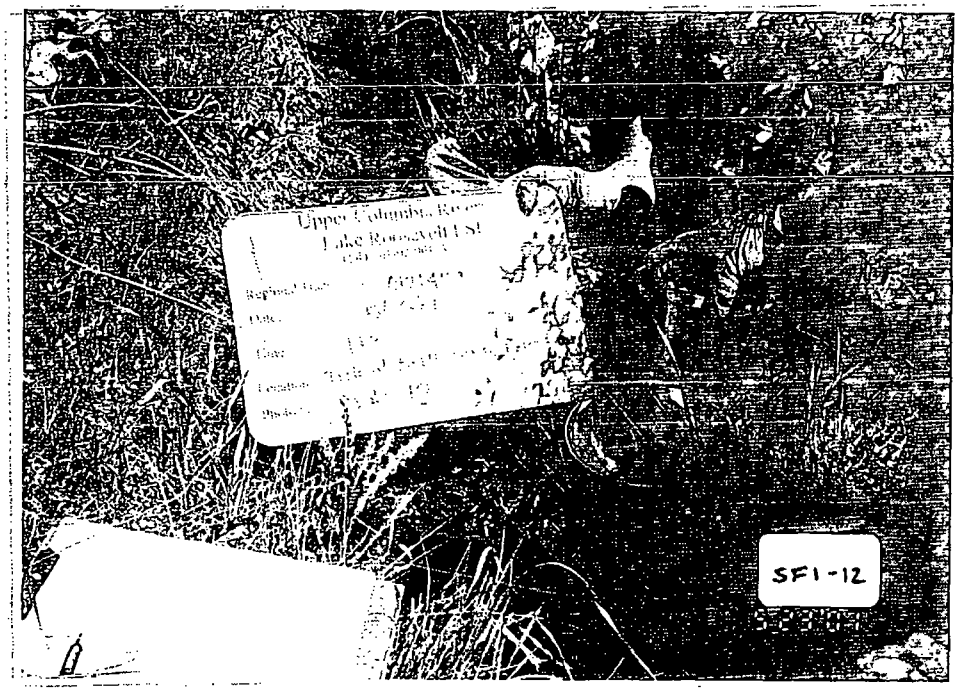

EPA
SF1-7

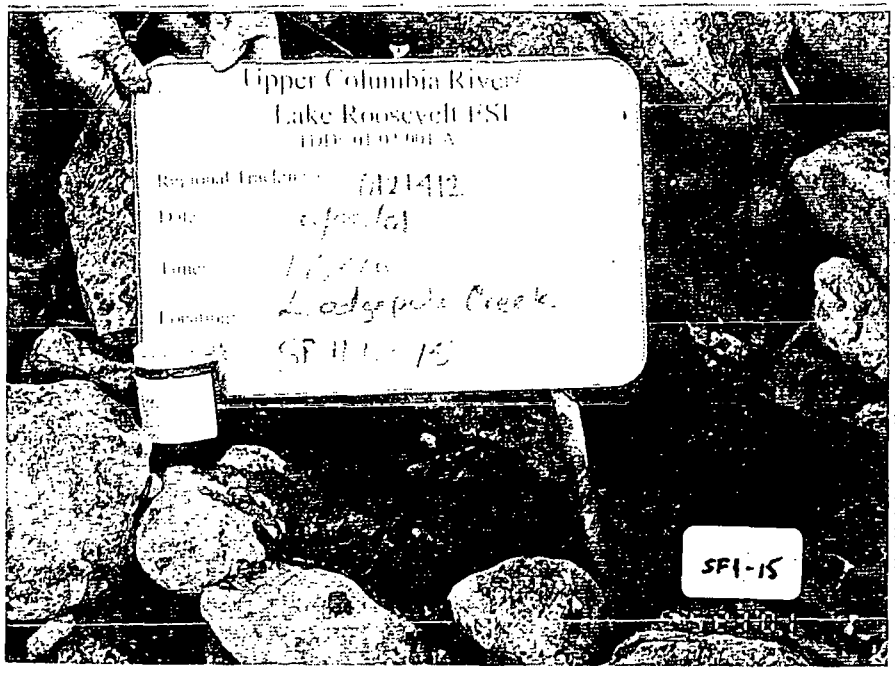

Upper Columbia River
Lake Roosevelt FSI
SF1-11

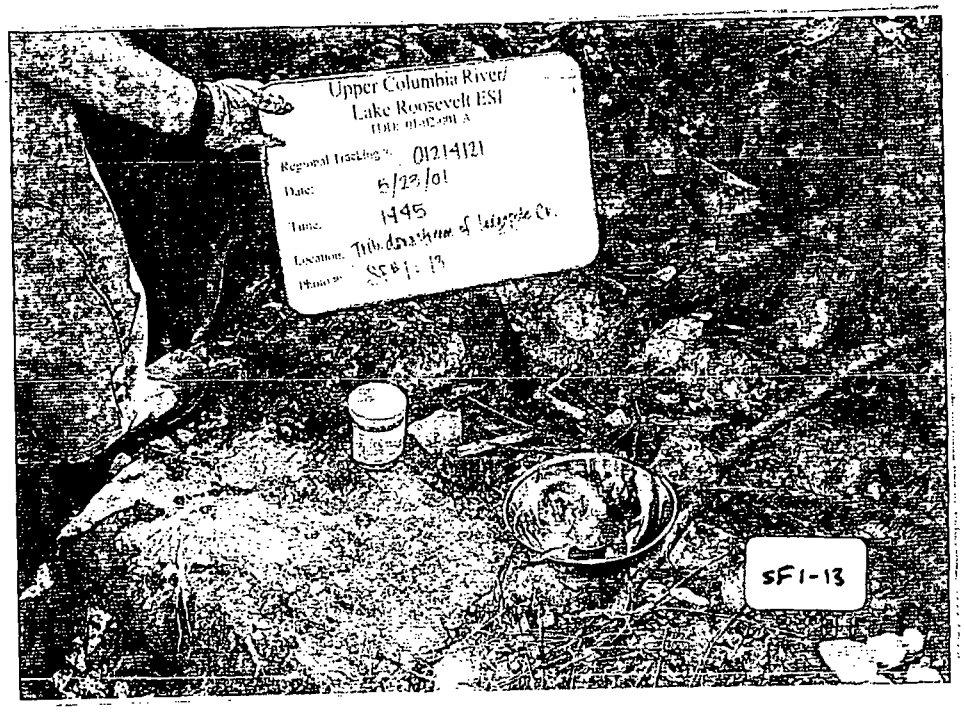

Upper Columbia River
Lake Roosevelt FSI
SF1-8

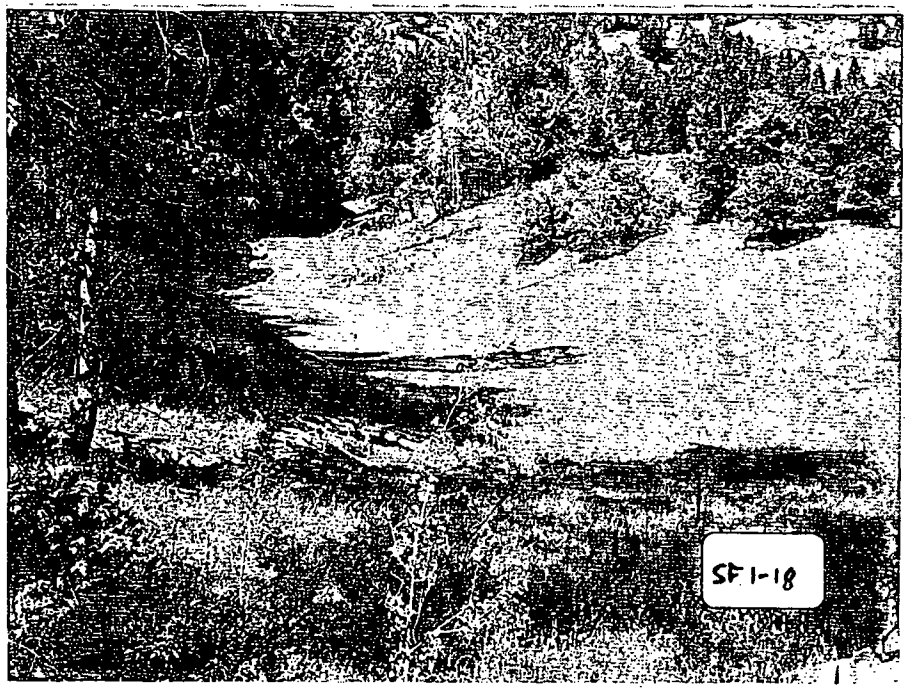
C-LINE #52584
35MM PRINTS

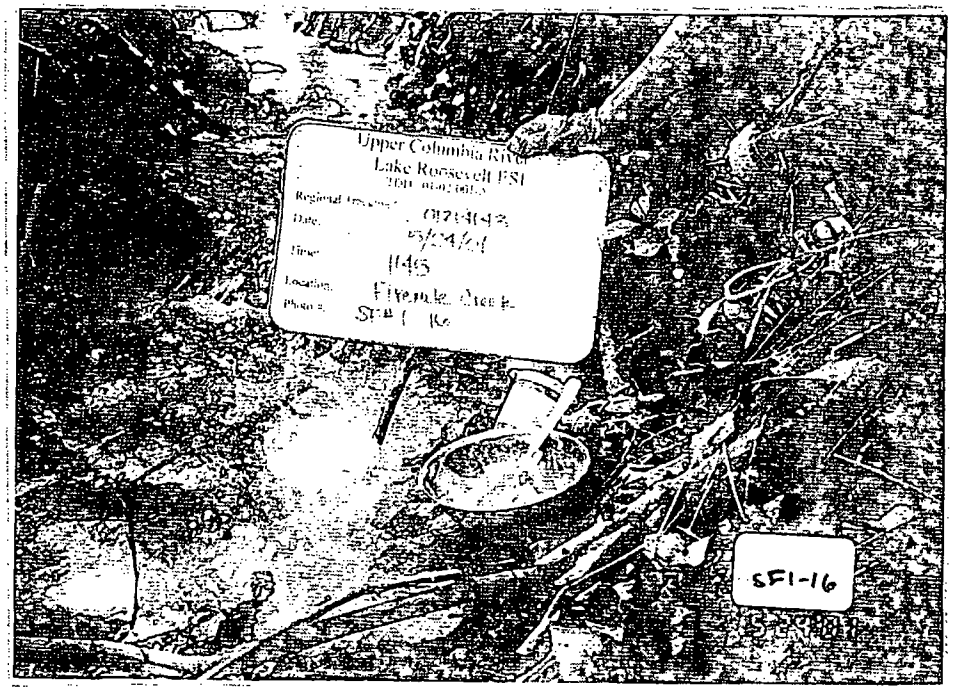




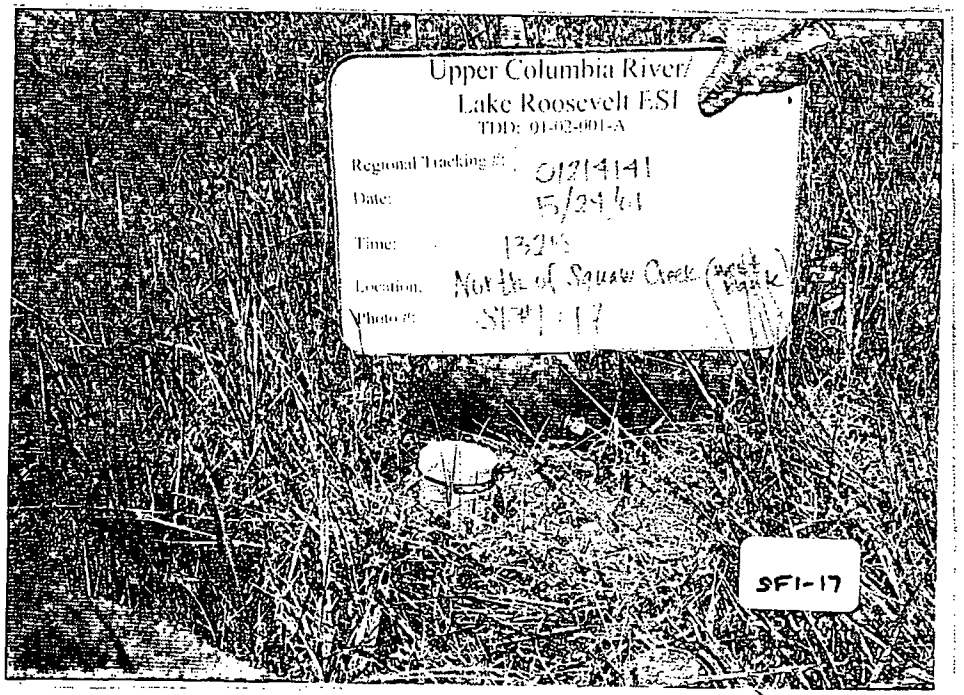




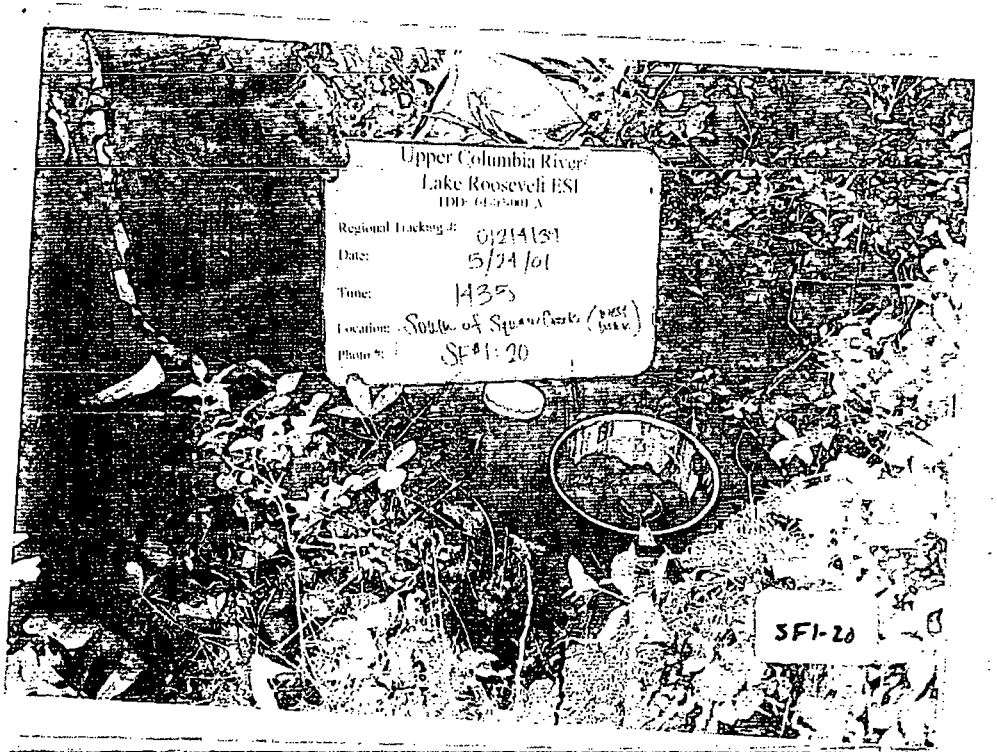

SF1-18

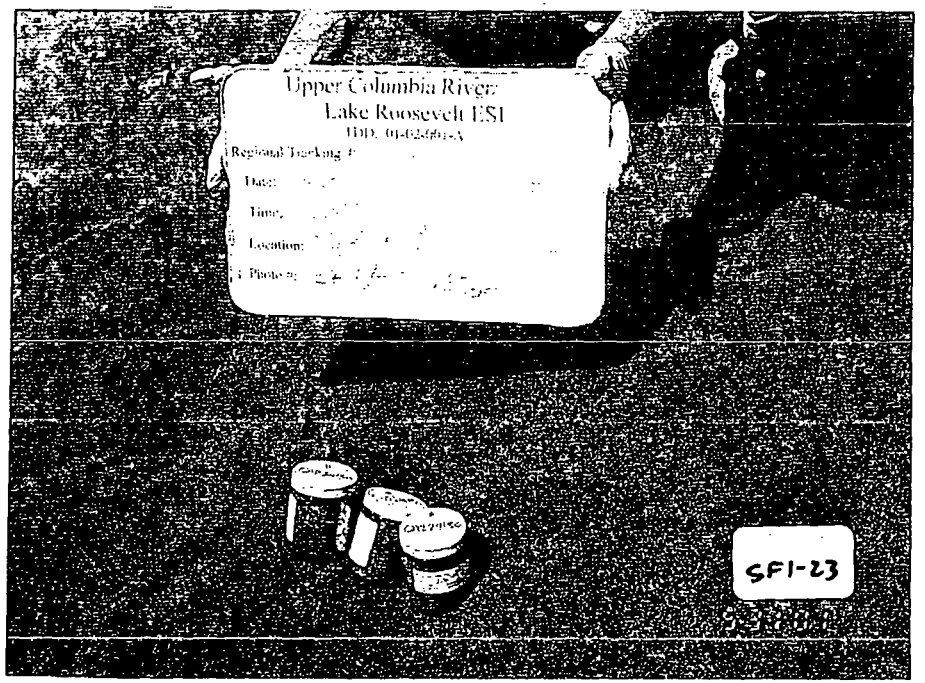

Upper Columbia River
Lake Roosevelt ESI
Date:
Time:
1145
Location:
Photo #:
SF1-16

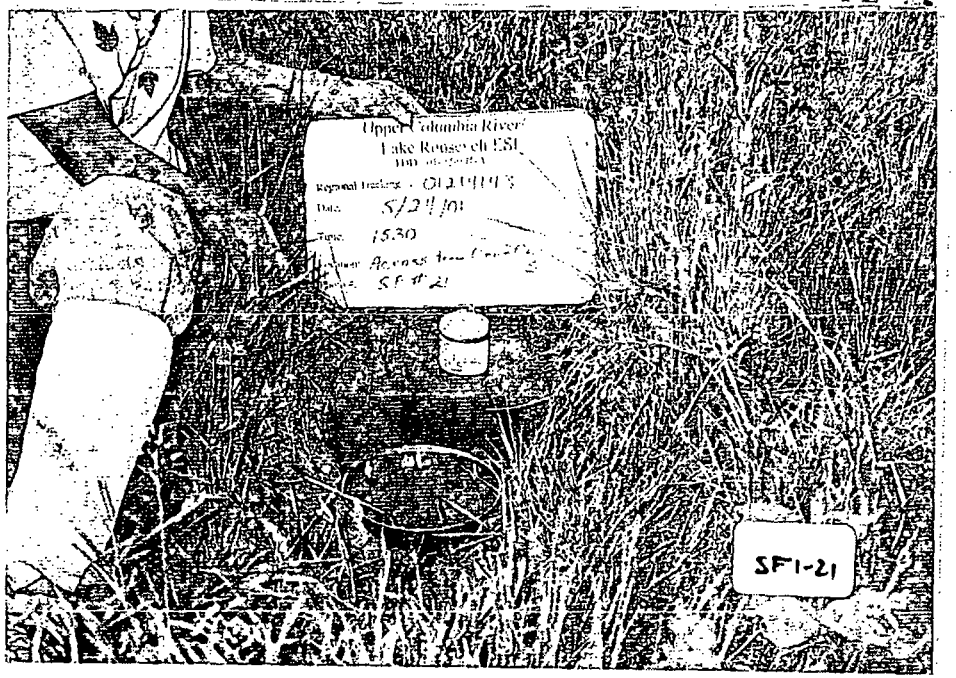
SF1-19

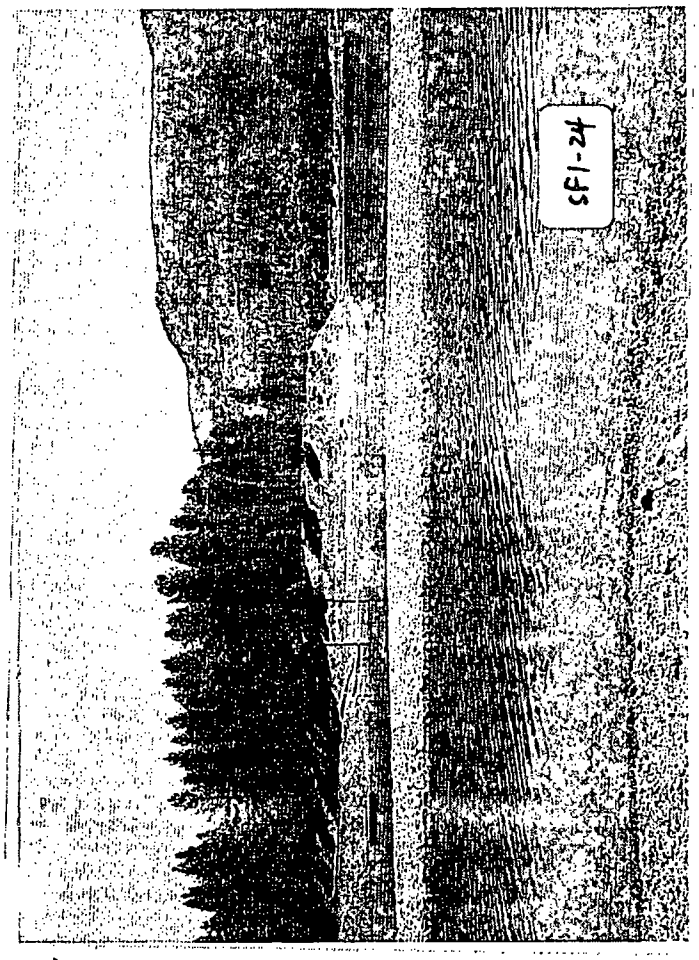

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01214141
Date: 5/29/01
Time:
Location:
Photo #:
SF1-17

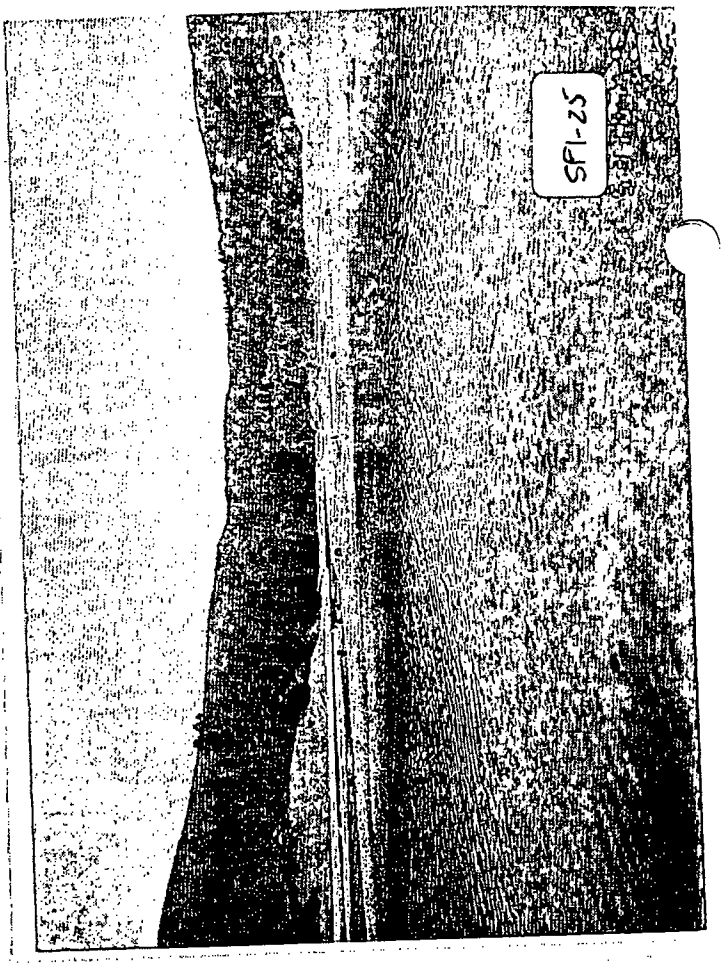
C-LINE #52584
35MM PRINTS











CR.045.SD

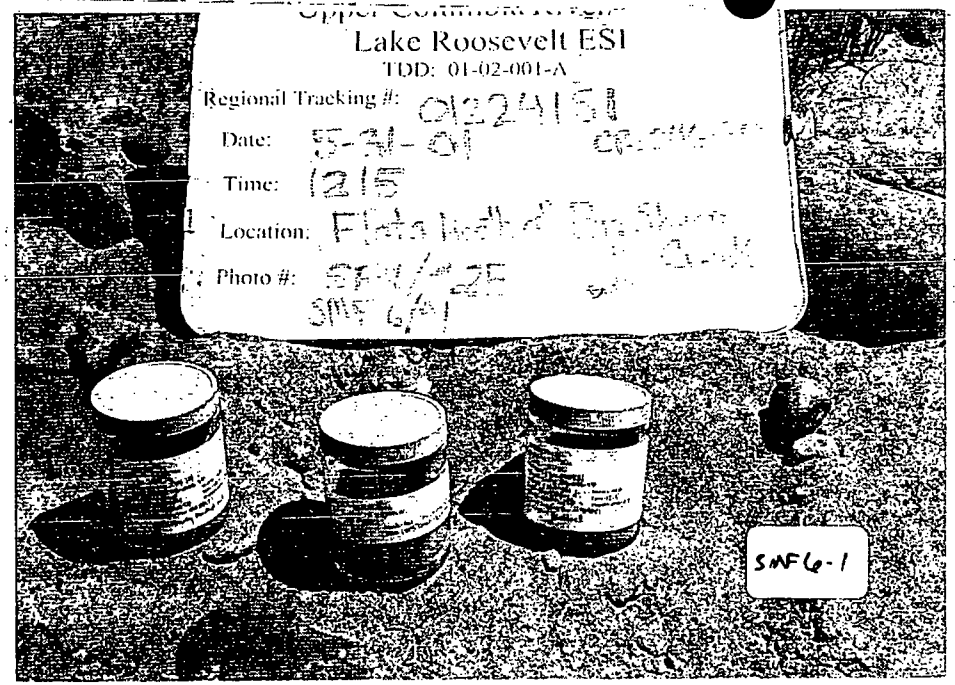
CR.045.SD
Scott Dubble Screening
Sediment w/ XRF

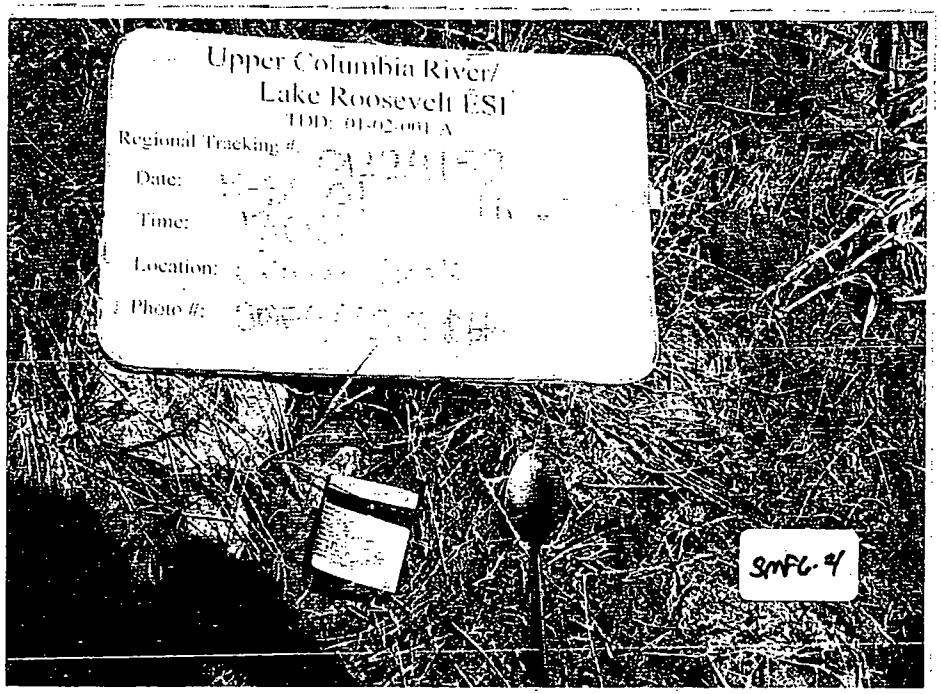
PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

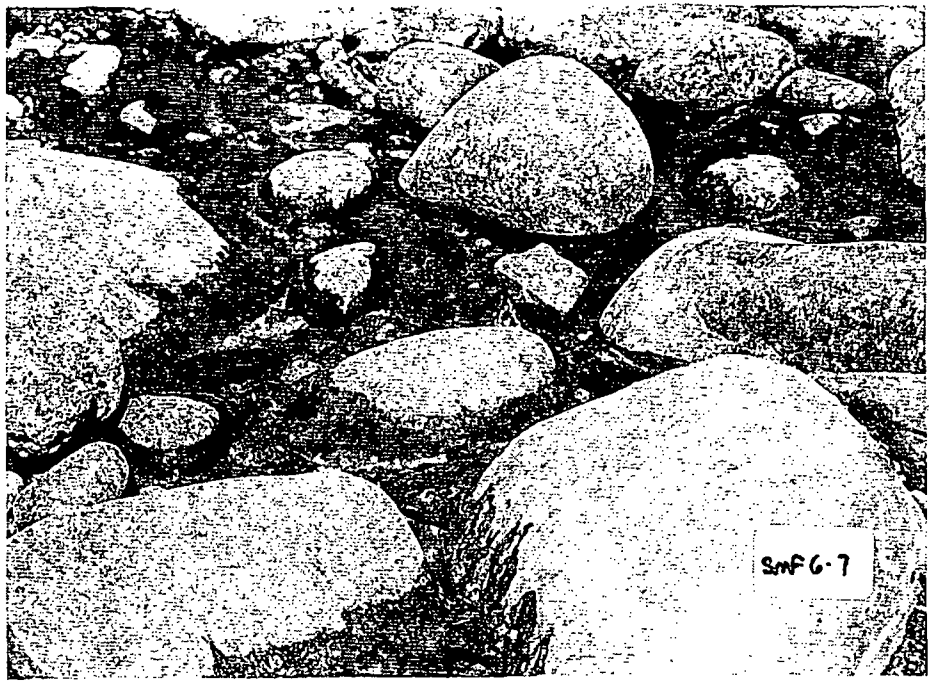
Photo No.	Date	Time	By	Dir.	Description
SMF6-1	5/31/01	1215	SMF	S	Flats north of Big Sheep Creek, sample material in jars (RT# 01224151).
SMF6-2	5/31/01	1300	SMF	NW	Queen Creek setting.
SMF6-3	5/31/01	1300	SMF	NA	Queen Creek, sample location.
SMF6-4	5/31/01	1300	SMF	NA	Queen Creek, sample material in jar (RT# 01224152), and sample location. Incorrect internal sample designation; should read TR-027-SD.
SMF6-5	5/31/01	1345	SMF	W	Big Sheep Creek, sampling location.
SMF6-6	5/31/01	1345	SMF	W	Big Sheep Creek, sample material in jars (RT# 01224153).
SMF6-7	5/31/01	1430	SMF	NA	Steamboat Rock, floating suspected slag material.
SMF6-8	5/31/01	1430	SMF	NW	Steamboat Rock, sampling area.
SMF6-9	5/31/01	1430	SMF	W	Steamboat Rock, sample material in jars (RT# 01224154) and sampling location.
SMF6-10	5/31/01	1515	SMF	NA	Flats northeast of Steamboat Rock, floating suspected slag material.
SMF6-11	5/31/01	1515	SMF	NE	Flats northeast of Steamboat Rock, sampling area.
SMF6-12	5/31/01	1515	SMF	S	Flats northeast of Steamboat Rock, sample material in jars (RT# 01224155) and sampling location.
SMF6-13	5/31/01	1545	SMF	E	Goodeve Creek, view of Columbia River from sampling location.
SMF6-14	5/31/01	1545	SMF	NA	Goodeve Creek, sample material in bowl, and sample location.
SMF6-15	5/31/01	1545	SMF	NA	Goodeve Creek, sample material in jars (RT# 01224156), and sample location.
SMF6-16	5/31/01	1630	SMF	NW	North of Goodeve Creek, sampling location.
SMF6-17	5/31/01	1630	SMF	NA	North of Goodeve Creek, sample material in jars (RT#01224157), and sample location.
SMF6-18	6/1/01	0930	SMF	NE	Southwest of Scriver Creek, west bank, sampling area.
SMF6-19	6/1/01	0930	SMF	E	Southwest of Scriver Creek, west bank, sampling area.
SMF6-20	6/1/01	0930	SMF	NW	Southwest of Scriver Creek, west bank, sample material in jars (RT# 012224160), and sampling area.
SMF6-21	6/1/01	1050	SMF	NE	Scriver Creek
SMF6-22	6/1/01	1050	SMF	W	Scriver Creek, sampling area.
SMF6-23	6/1/01	1100	SMF	N	Scriver Creek, sample material in jars (RT# 01224161), and sampling area.
SMF6-24	6/1/01	1145	SMF	S	South of Tom Bush Creek, sampling location area.
SMF6-25	6/1/01	1145	SMF	S	South of Tom Bush Creek, sample material in jars (RT#01224162). Print is incomplete.

SMF 6-3

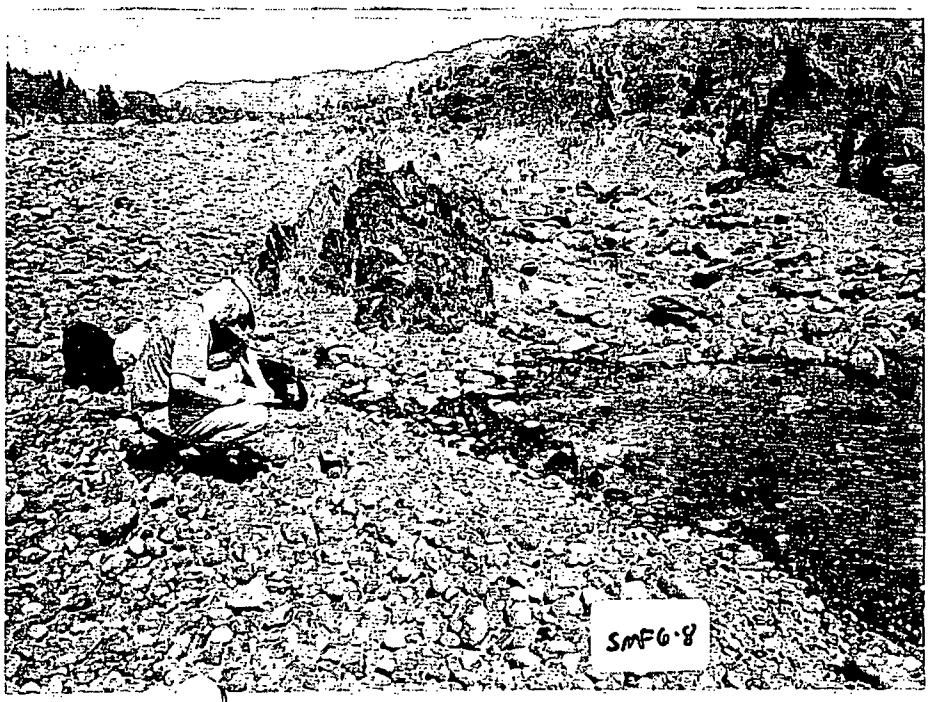

Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #:
Date:
Time:
Location:
Photo #:
SMF 6-1

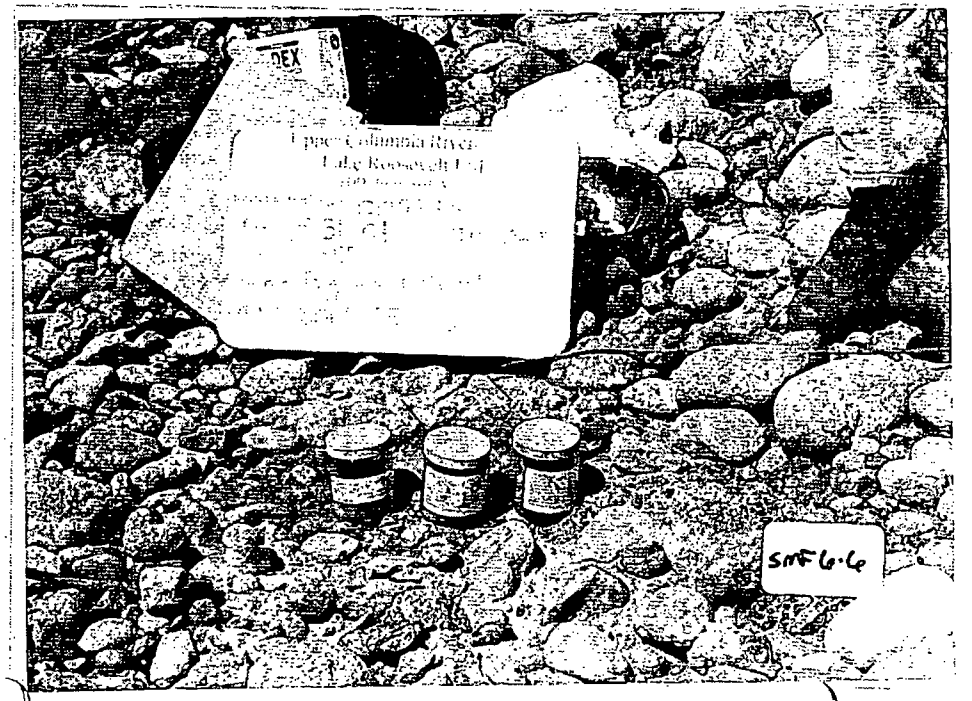

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #:
Date:
Time:
Location:
Photo #:
SMF 6-4

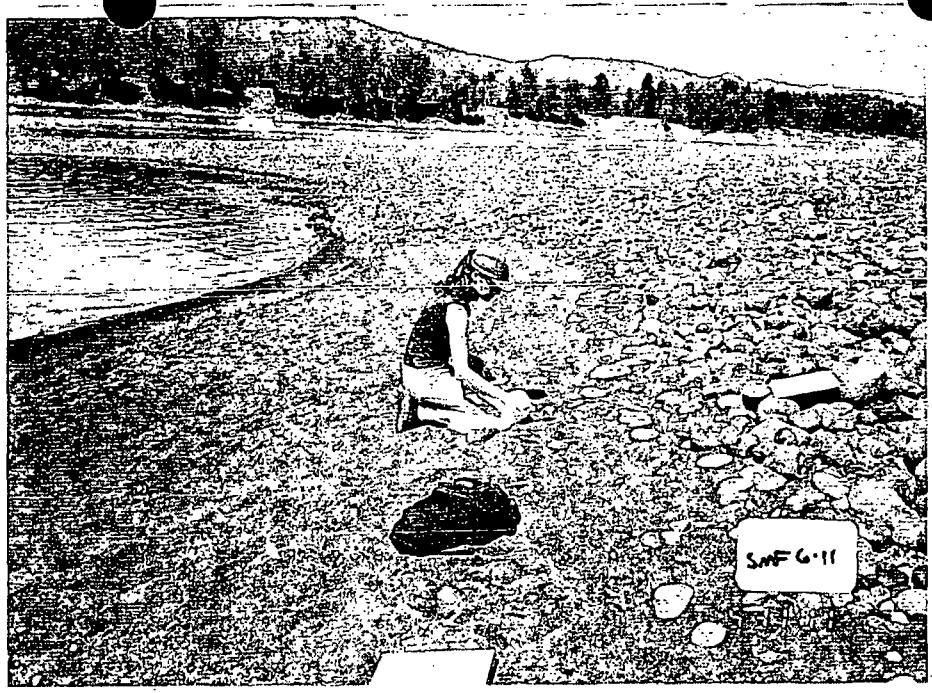
SMF 6-2

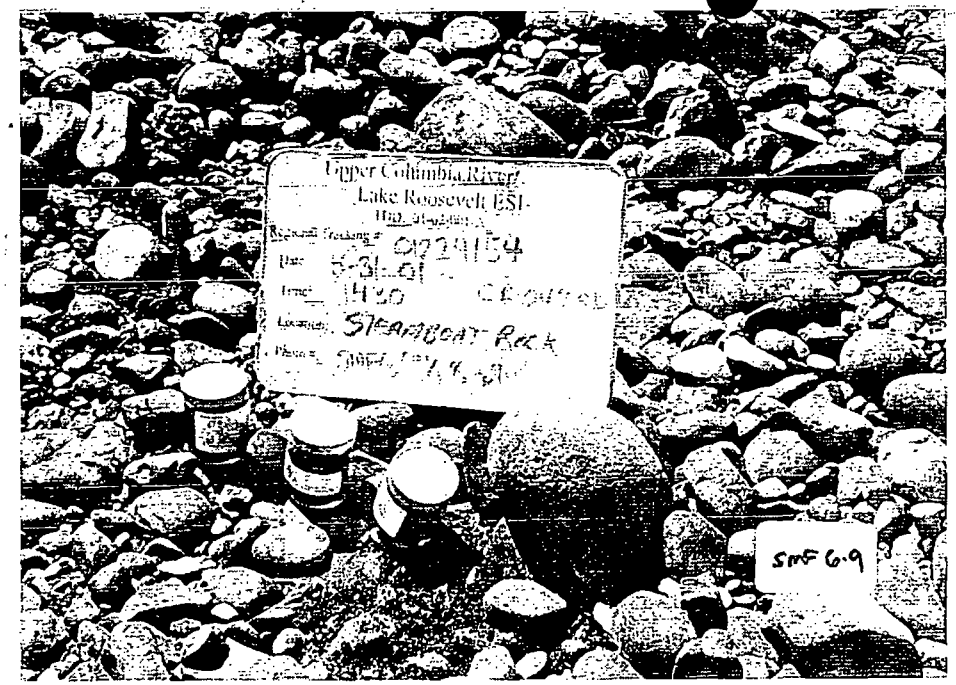

SmF 6·7

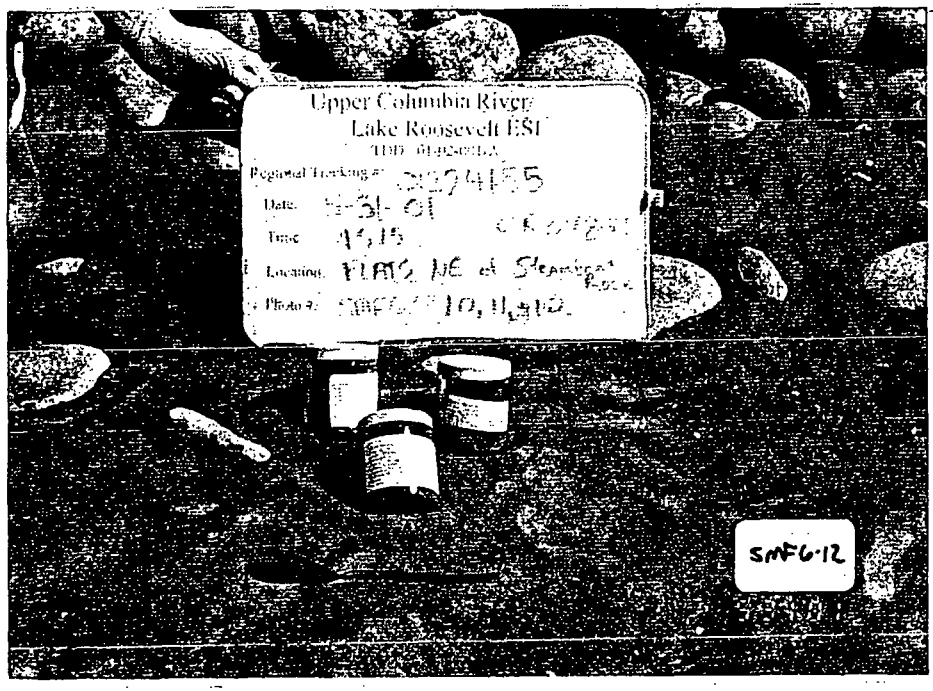
SmF6·5

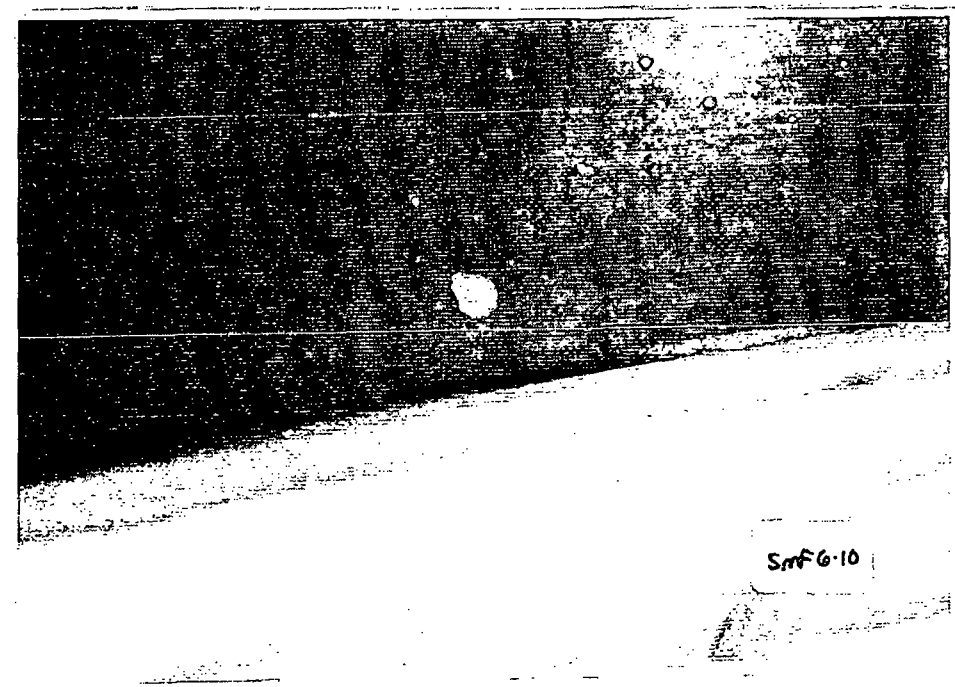

SmF6·8

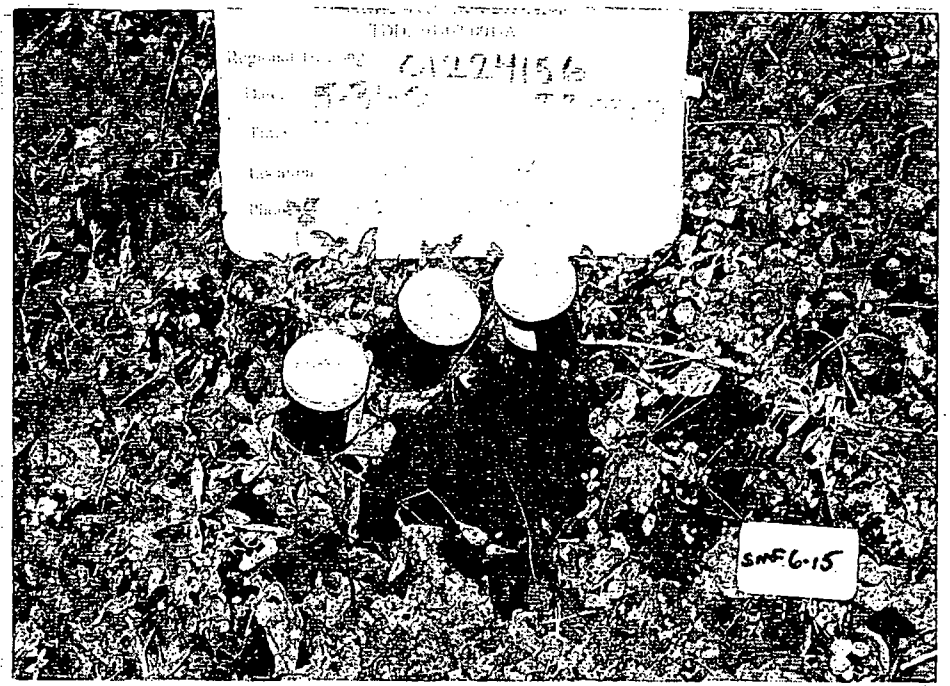

SmF6·6

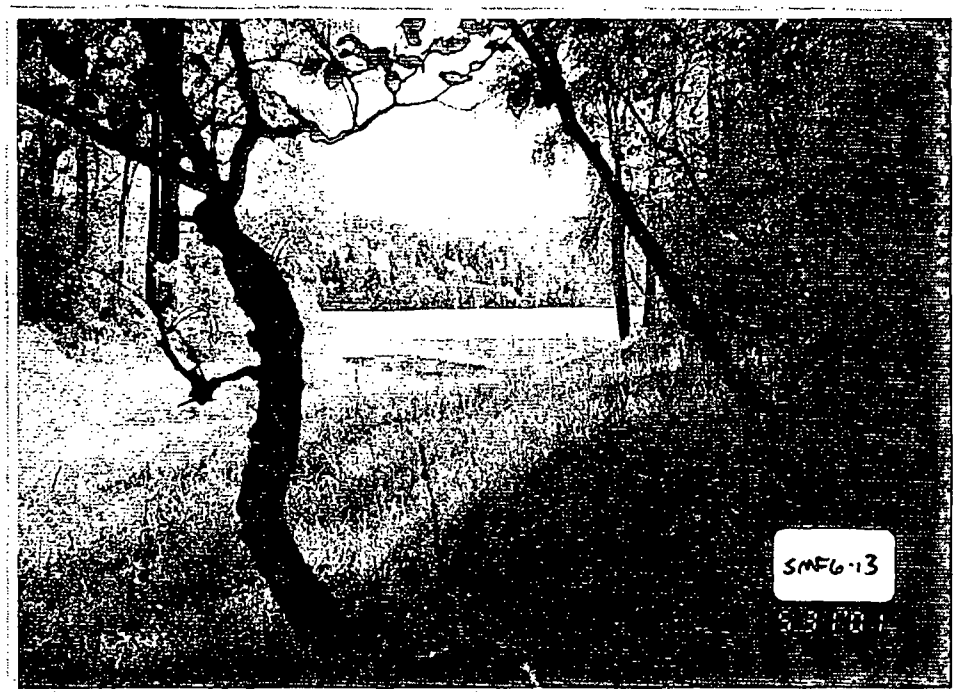

SMF 6-11

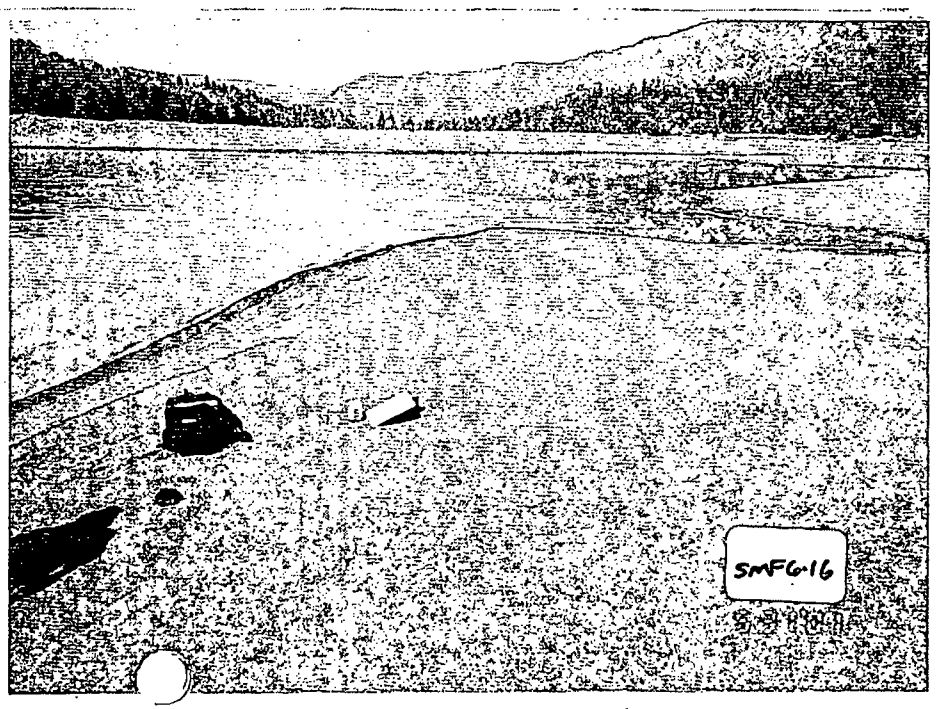

Upper Columbia River
Lake Roosevelt ESI
Date 5-31-01
Time 1430
Location STEAMBOAT ROCK
SMF 6-9

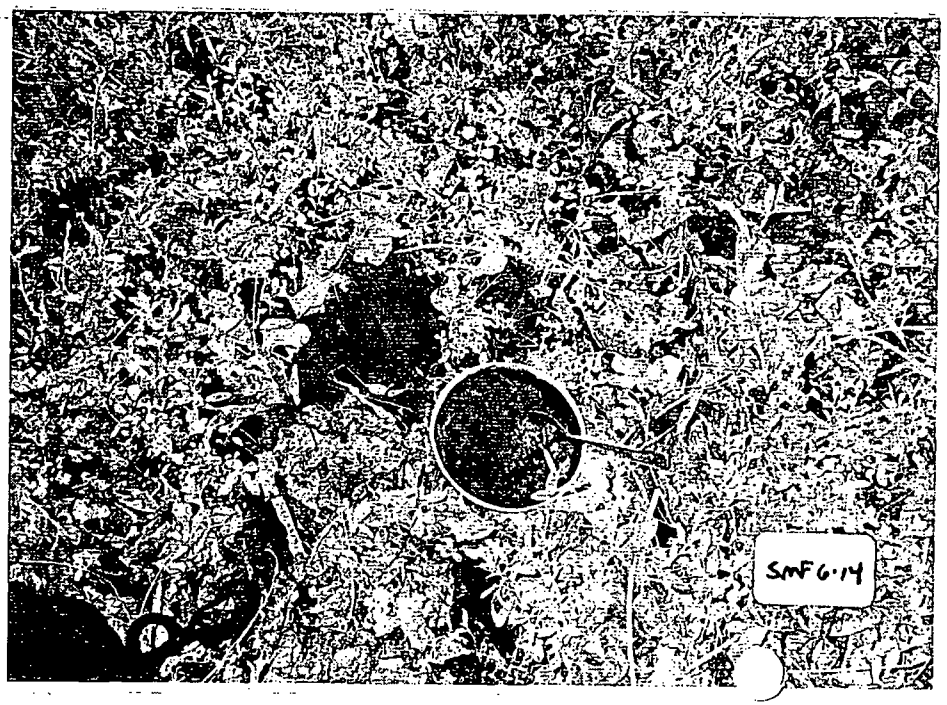

Upper Columbia River
Lake Roosevelt ESI
Date 5-31-01
Time 1415
SMF6-12

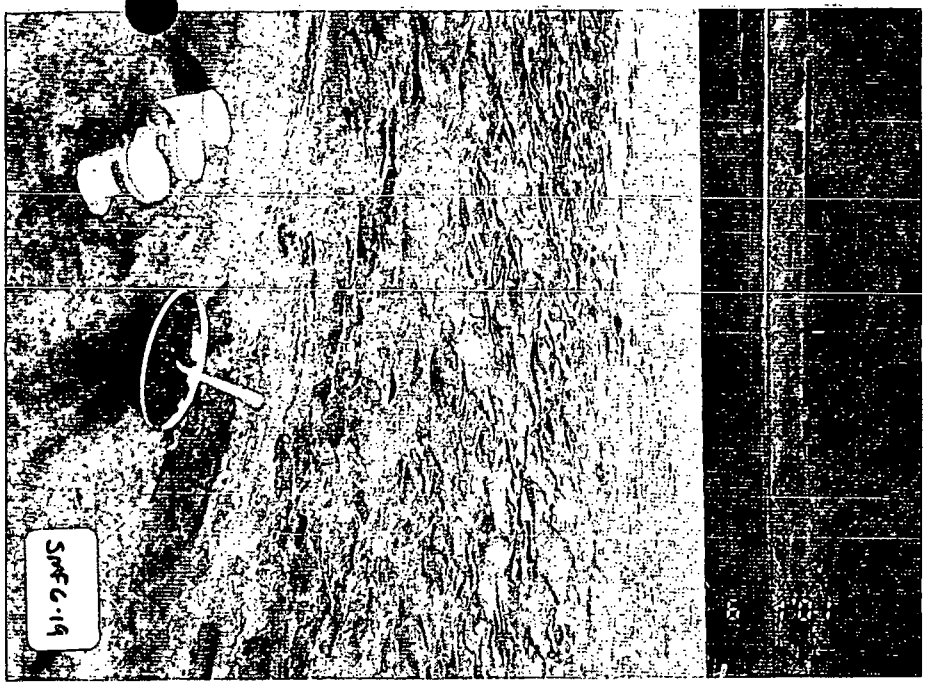

SMF 6-10

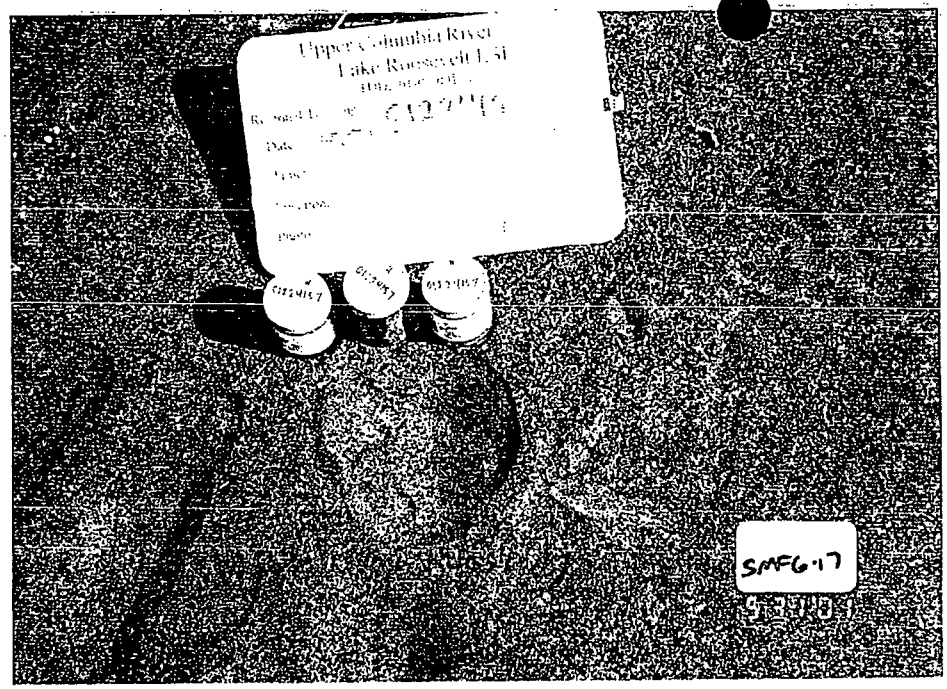

SMF6-15

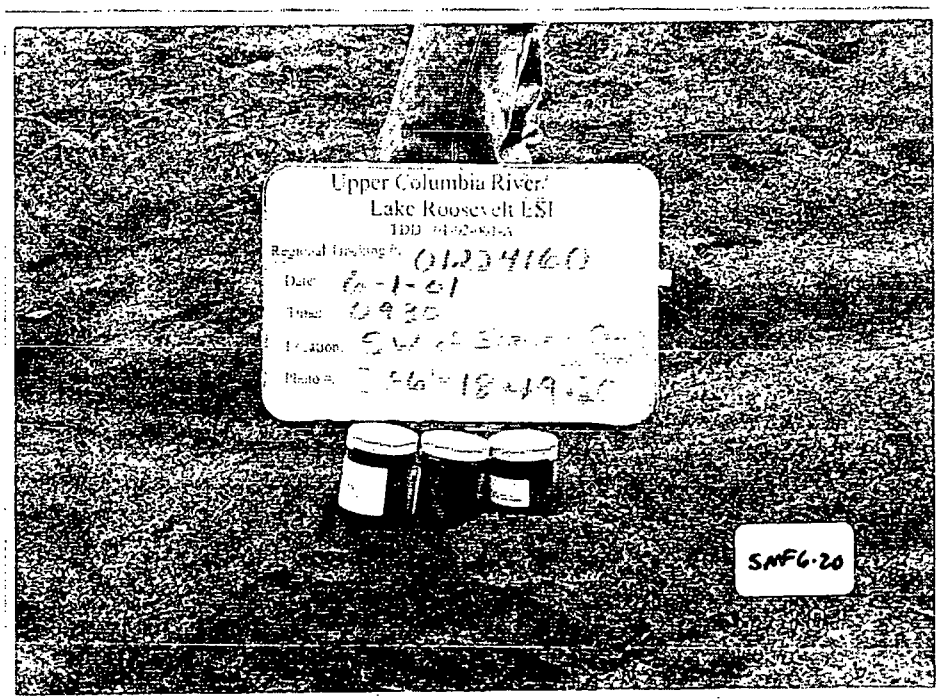

SMF6-13


SMF6-16

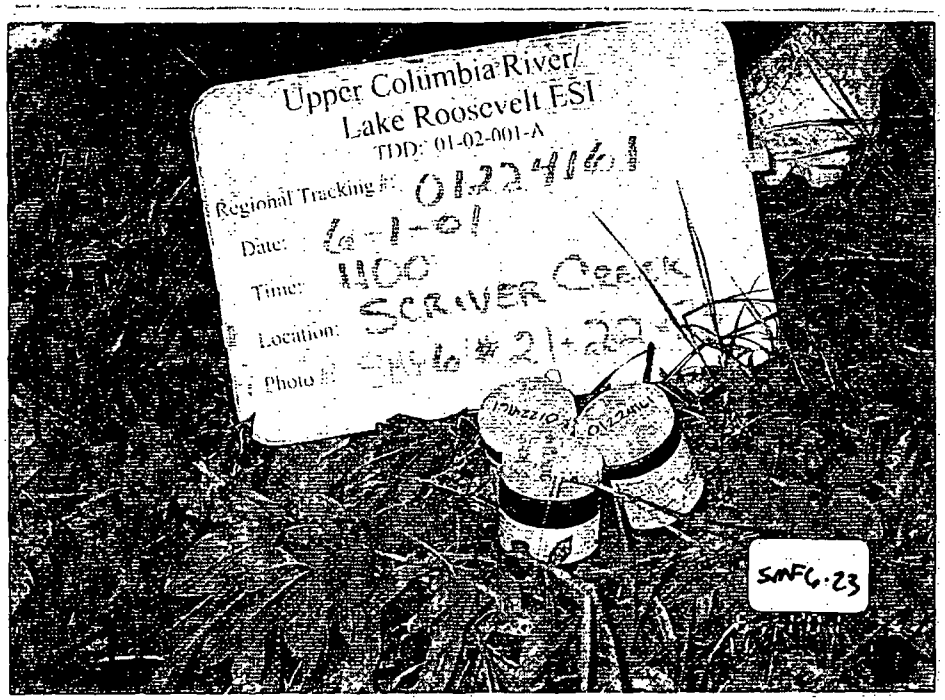

SMF6-14

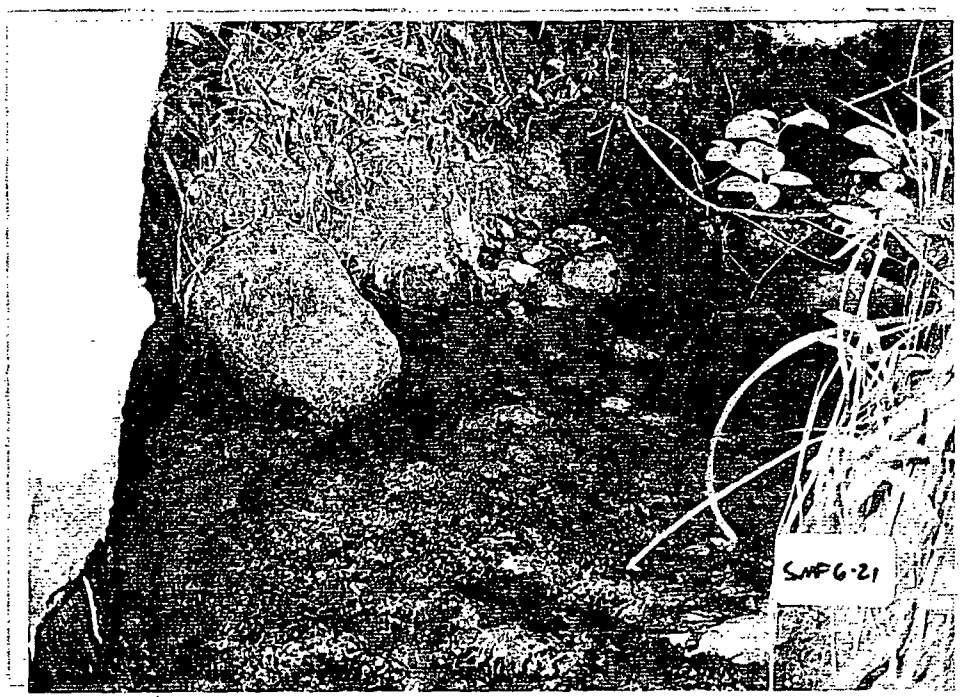

SMF6-19

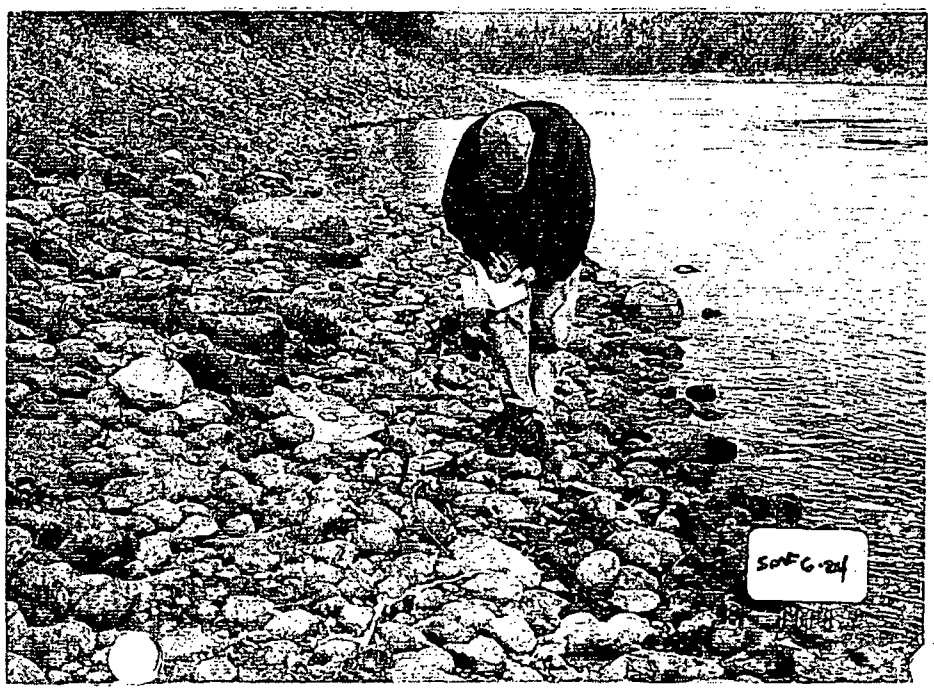

Upper Columbia River
Lake Roosevelt LSI
SMF6-17


Upper Columbia River
Lake Roosevelt LSI
Date
Time
SMF6-20

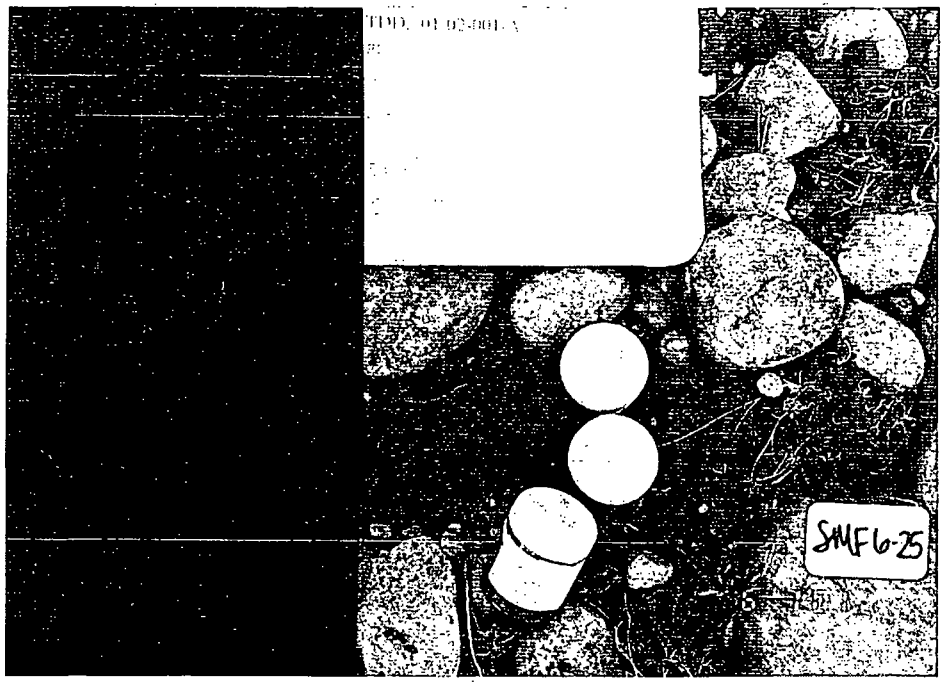
SMF6-18


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01224161
Date: 6-1-01
Time: 1100
Location: SCRIVER CREEK
Photo #: SMF6 #21+22
SMF6-23


SMF6-21


SMF6-24

SMF6-22


SMF 6-25

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

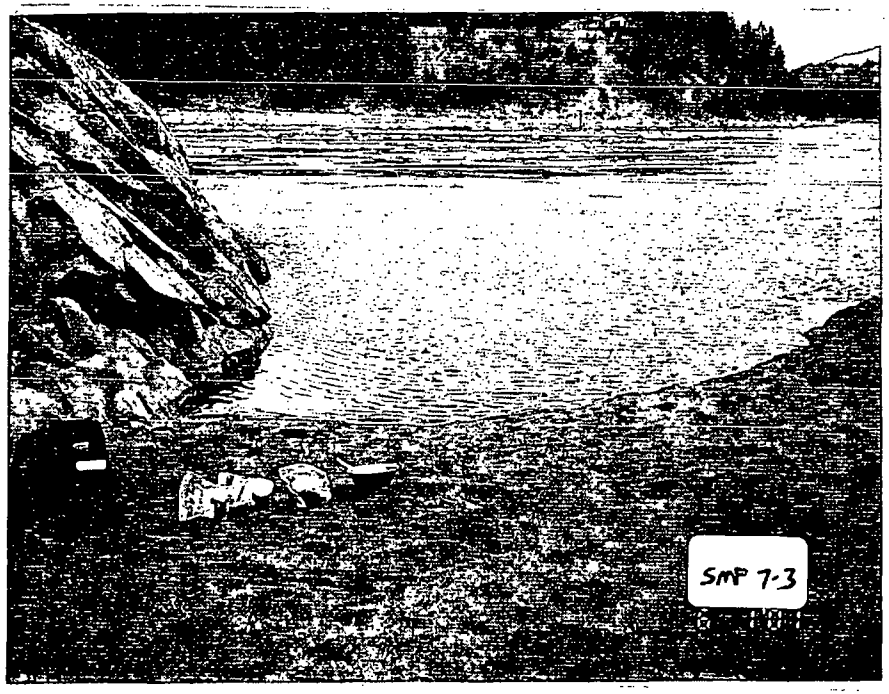
Photo No.	Date	Time	By	Dir.	Description
SMF7-1	6/1/01	1145	SMF	NA	South of Tom Bush Creek, sample material in jars (RT# 01224162), and sample location.
SMF7-2	6/1/01	1230	SMF	NE	Black Sand Beach, sample material in jars (RT# 01224163), and sample location.
SMF7-3	6/1/01	1230	SMF	NW	Black Sand Beach, sample location and water level.
SMF7-4	6/1/01	1330	SMF	E	Unnamed tributary northeast of Gauging Station, tributary mouth as seen from River.
SMF7-5	6/1/01	1330	SMF	E	Unnamed tributary northeast of Gauging Station, sample material in bowl, and sample location.
SMF7-6	6/1/01	1330	SMF	E	Unnamed tributary northeast of Gauging Station, sample material in jars (RT# 01224165) and sample location.
SMF7-7	6/1/01	1415	SMF	NW	Boulder bar near border, sample area from River.
SMF7-8	6/1/01	1415	SMF	N	Boulder bar near border, sample location.
SMF7-9	6/1/01	1415	SMF	N	Boulder bar near border, sample material in jars (RT# 01224164).
SMF7-10	6/3/01	1030	SMF	S	Unnamed tributary @ T34N, R36E, Section 36, sample location.
SMF7-11	6/3/01	1030	SMF	S	Unnamed tributary @ T34N, R36E, Section 36, sample material in jars (RT# 01234059), and sample location. Whiteboard incorrectly states photographs for this site as SMF6/11 and 12.
SMF7-12	6/3/01	1100	SMF	W	Unnamed tributary @ T34N, R36E, Section 25, sample material in jar (RT# 01234060), and sample location. White board incorrectly identifies film roll number as SMF6.
SMF7-13	6/3/01	1300	SMF	W	Barnaby Creek, sampling area.
SMF7-14	6/3/01	1300	SMF	S	Barnaby Creek, sample material in jar (RT# 01234061), and sampling location. White board incorrectly identifies film roll number as SMF6.
SMF7-15	6/3/01	1345	SMF	W	Unnamed tributary @ T34N, R36E, Section 11, sample area and drainage trace.
SMF7-16	6/3/01	1345	SMF	NA	Unnamed tributary @ T34N, R36E, Section 11, sample material in jar (RT#01234062), and sampling location. White board incorrectly identifies film roll number as SMF6.
SMF7-17	6/3/01	1450	SMF	E	La Fleur Creek, sample material in jar (RT# 01234063). White board incorrectly identifies film roll number as SMF6.
SMF7-18	6/3/01	1450	SMF	W	La Fleur Creek, sampling area. White board incorrectly identifies film roll number as SMF6.
SMF7-19	6/4/01	1015	SMF	W	Cougar Canyon Creek,drainage trace and sampling location.
SMF7-20	6/4/01	1015	SMF	W	Cougar Canyon Creek, sample material in jar (RT# 01234072), and sampling location.
SMF7-21	6/4/01	1105	SMF	W	Sherman Creek, sampling area.
SMF7-22	6/4/01	1105	SMF	S	Sherman Creek, sample collection.

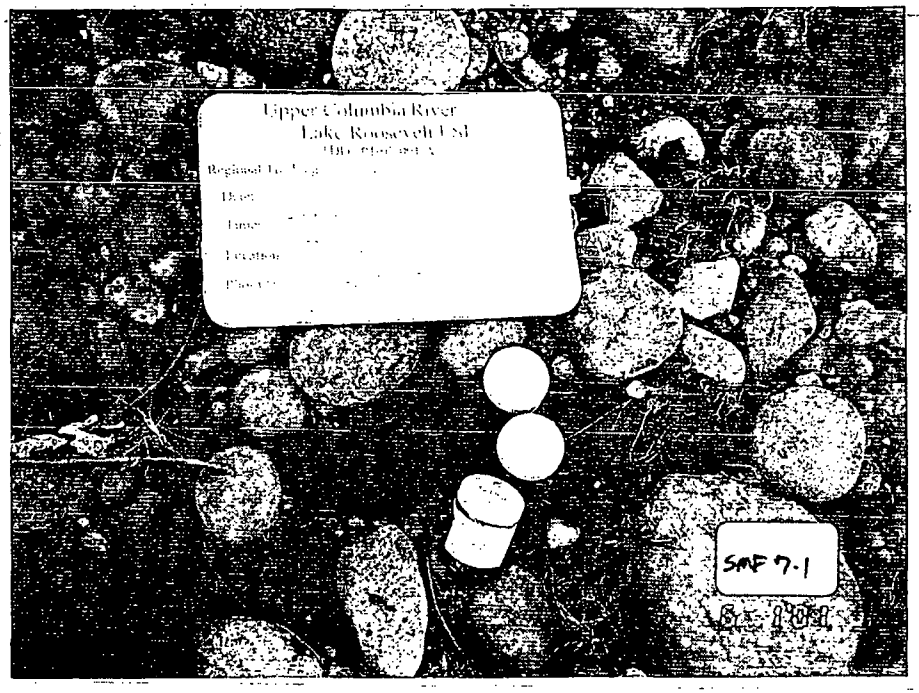
PHOTOGRAPH IDENTIFICATION SHEET

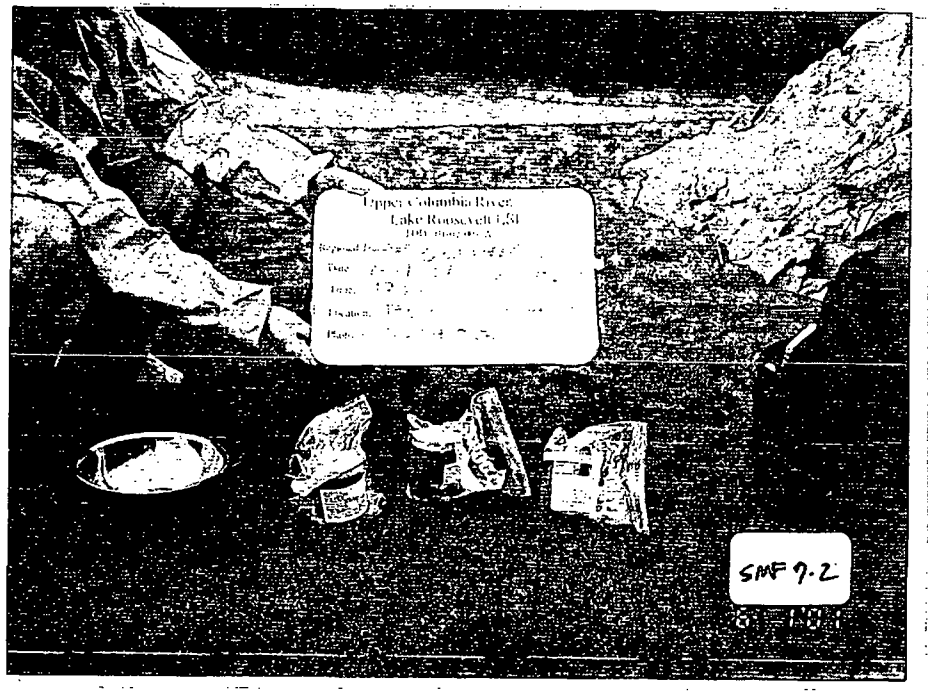
Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

Photo No.	Date	Time	By	Dir.	Description
SMF7-23	6/4/01	1105	SMF	SE	Sherman Creek, sample material in jars (RT# 01234073). White board incorrectly identifies film roll number as SMF6.
SMF7-24	6/4/01	1300	SMF	NA	Unnamed ephemeral tributary @ T36N, R38E, Section 18, SW ¼, sample material in jar (RT# 012345078). White board incorrectly identifies film roll number as SMF6.

C-LINE #52584
35MM PRINTS





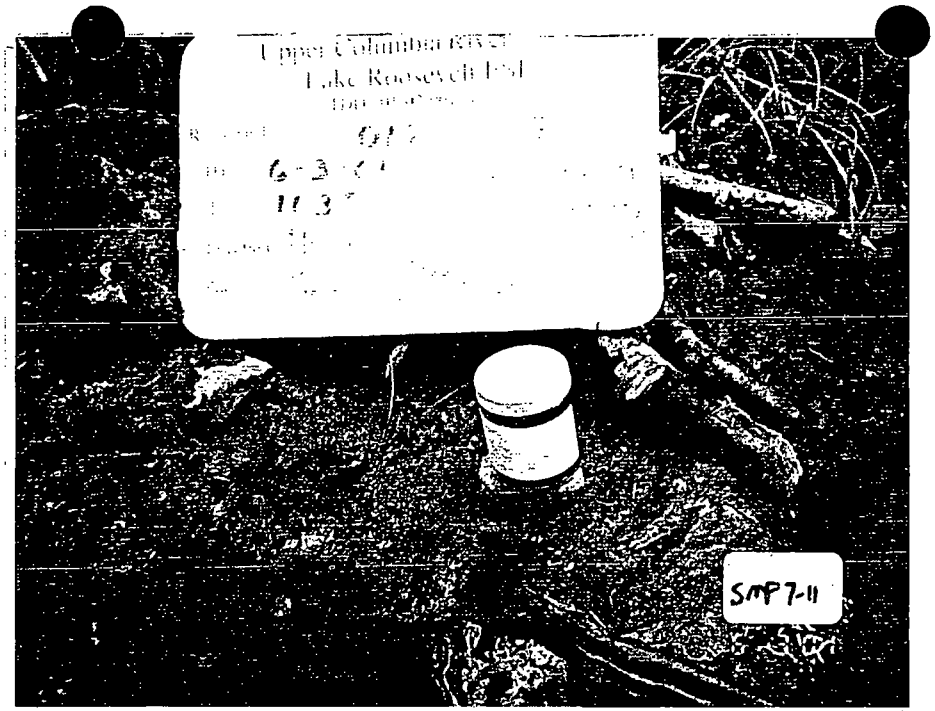


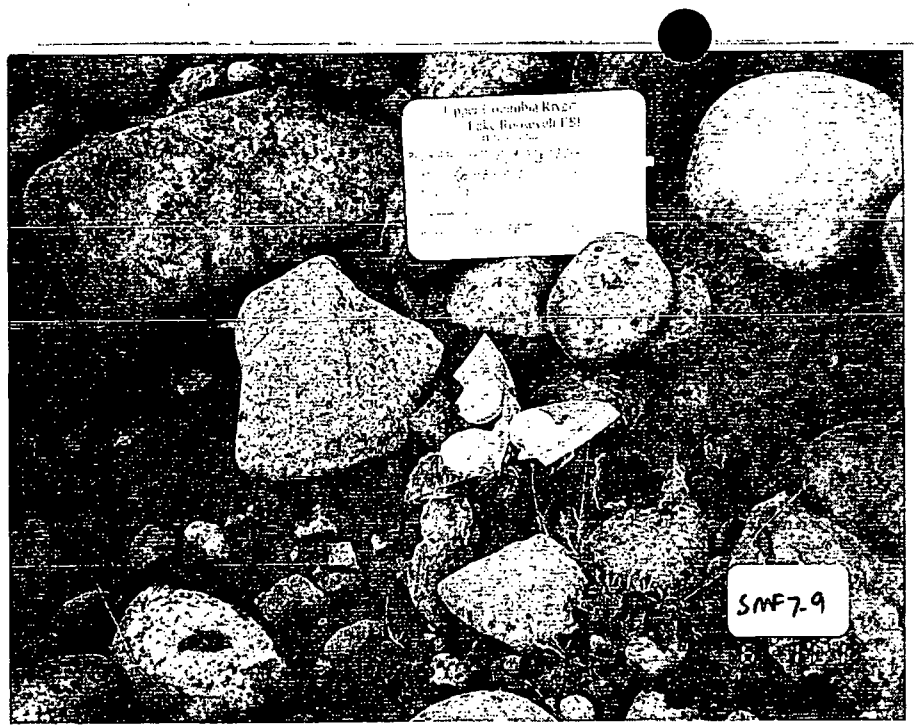
SMF 7-7

SMF 7-8

SMF 7-5

SMF 7-6

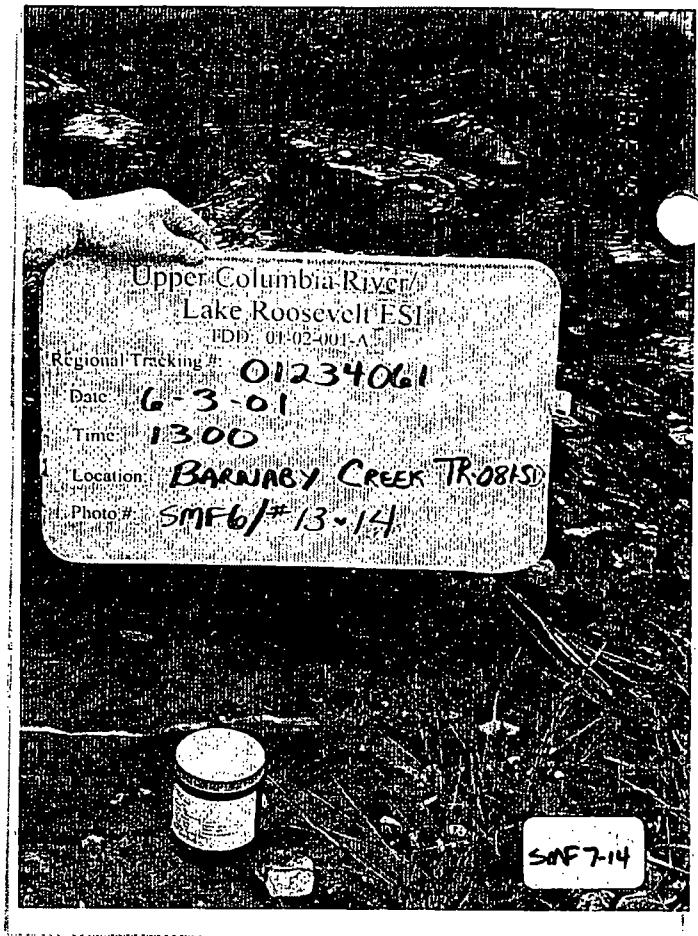

Lake Roosevelt ESI
SMF 7-11


SMF 7-9

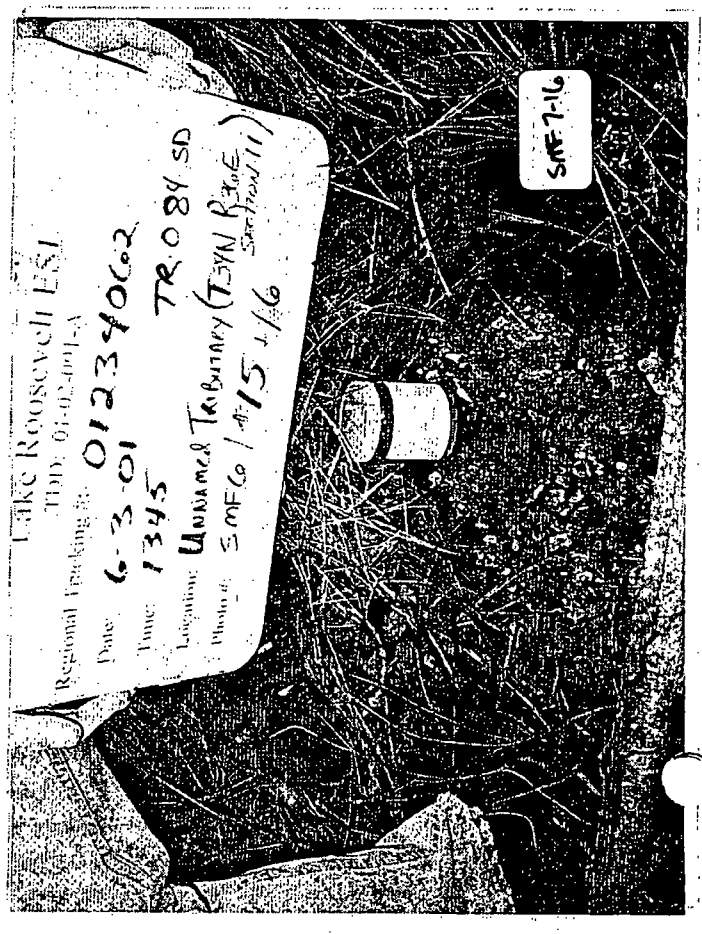
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234060
Date: 6-3-01
Time: 1100
TR-076-SD
Location: UNNAMED TRIBUTARY (T34N R36E SECTION 25)
Photo #: SMF 6/12
SMF 7-12

SMF 7-10

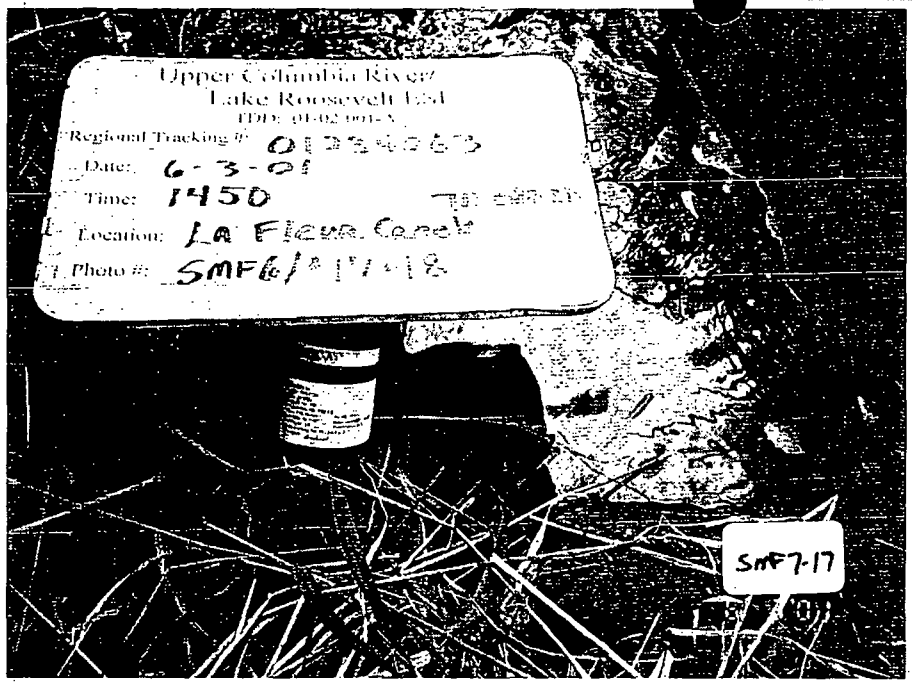
SMF 7-13

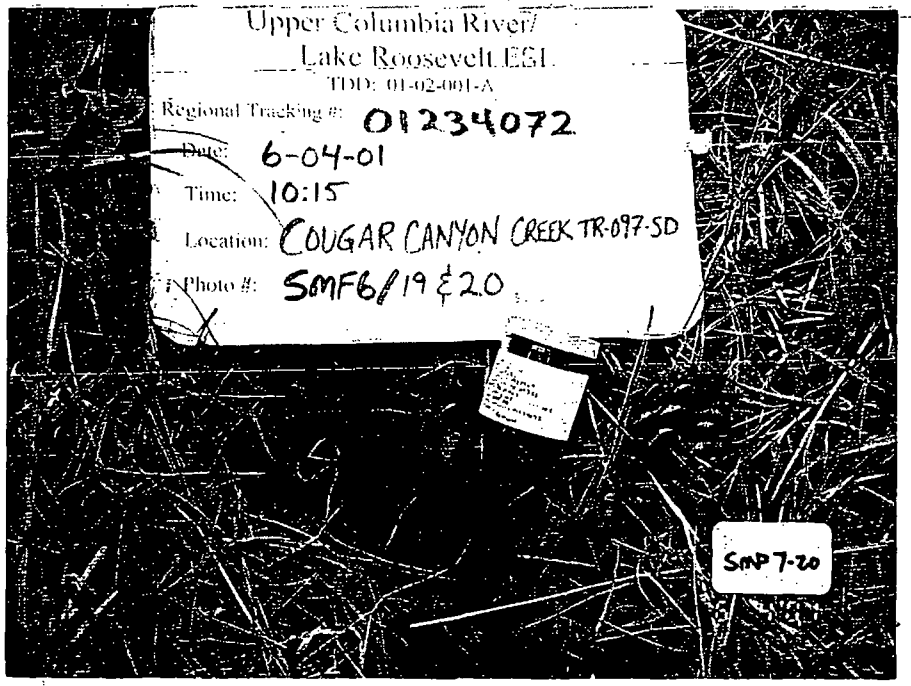

Upper Columbia River/
Lake Roosevelt ESI
FDD: 01-02-001-A
Regional Tracking #: 01234061
Date: 6-3-01
Time: 1300
Location: BARNABY CREEK TR-081SD
Photo #: SMF6/#13-14
SMF 7-14

SMF 7-15


Lake Roosevelt ESI
FDD: 01-02-001-A
Regional Tracking #: 01234062
Date: 6-3-01
Time: 1345
Location: Unnamed Tributary (T39N R36E Section 11)
Photo #: SMF6/#15-16
SMF 7-16

SMF7-19


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234063
Date: 6-3-01
Time: 1450
Location: La Fleur Creek
Photo #: SMF6/18 17 & 18
SMF7-17


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234072
Date: 6-04-01
Time: 10:15
Location: COUGAR CANYON CREEK TR-097-SD
Photo #: SMF6/19 & 20
SMF7-20

SMF7-18

SMF 7-21

SMF 7-22

SMF 7-23

SMF 7-24

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

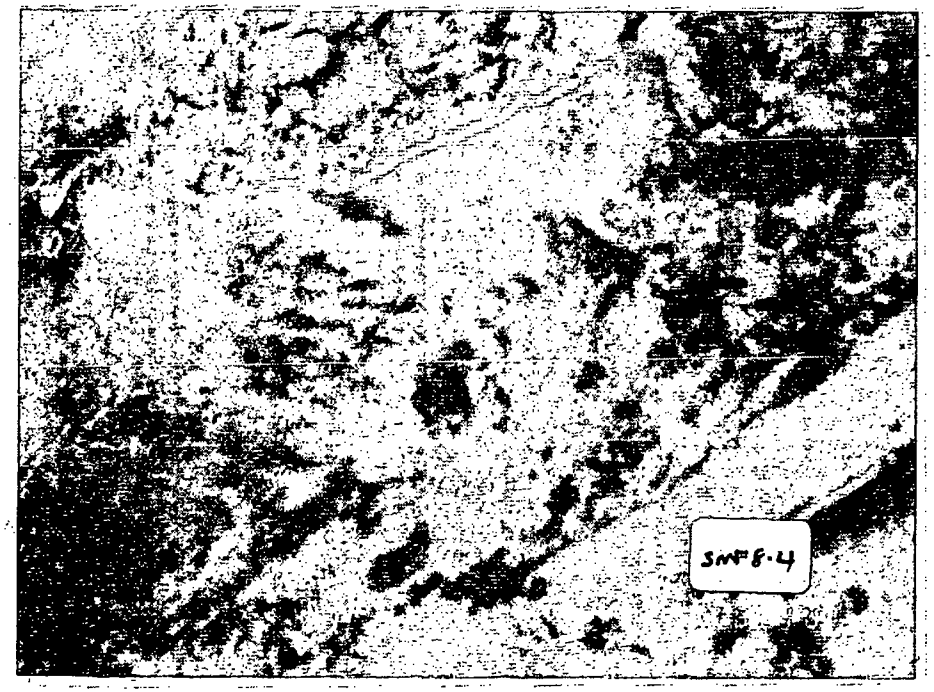
Photo No.	Date	Time	By	Dir.	Description
SMF8-1	6/4/01	1300	SMF	N	Unnamed ephemeral tributary @ T36N, R38E, Section 18, SW ¼, sampling area.
SMF8-2	6/4/01	1300	SMF	NE	Unnamed ephemeral tributary @ T36N, R38E, Section 18, SW ¼, abandoned shack along edge of tributary floodplain.
SMF8-3	6/4/01	1300	SMF	S	Unnamed ephemeral tributary @ T36N, R38E, Section 18, SW ¼, interior of abandoned shack, with old pump equipment.
SMF8-4	6/4/01	1300	SMF	NA	Unnamed ephemeral tributary @ T36N, R38E, Section 18, SW ¼, possible "placer" deposit of heavy minerals in streambed in lake.
SMF8-5	6/4/01	1300	SMF	E	Unnamed ephemeral tributary @ T36N, R38E, Section 18, SW ¼, exposed piping in Lake possibly associated with pump equipment in shack.
SMF8-6	6/4/01	1715	SMF	N	Colville River, sampling area.
SMF8-7	6/4/01	1715	SMF	NA	Colville River, sample material in bowl.
SMF8-8	6/4/01	1715	SMF	NA	Colville River, sample material being placed in jars (RT# 01234077). White board incorrectly identifies film roll as SMF7.
SMF8-9	6/4/01	1745	SMF	S	Mingo Creek, sampling area.
SMF8-10	6/4/01	1745	SMF	NA	Mingo Creek, sample material in jars (RT# 01234076). White board incorrectly identifies film roll as SMF7.
SMF8-11	6/4/01	1830	SMF	E	Unnamed tributary to Colville River west of Mingo Creek, drainage trace.
SMF8-12	6/4/01	1830	SMF	NA	Unnamed tributary to Colville River west of Mingo Creek, sample material in jars (RT# 01234075). White board incorrectly identifies film roll as SMF7.
SMF8-13	6/5/01	1000	SMF	W	Unnamed tributary @ T32N, R37E, Section 8, sample material in jar (RT# 01234079), and sampling location. White board incorrectly identifies film roll as SMF7.
SMF8-14	6/5/01	1045	SMF	W	Unnamed tributary at Cloverleaf Campground, sampling area.
SMF8-15	6/5/01	1045	SMF	E	Unnamed tributary at Cloverleaf Campground, sample material in jar (RT# 01234080), and sampling location. White board incorrectly identifies film roll as SMF7.
SMF8-16	6/5/01	1145	SMF	W	Stranger Creek (west), mouth of tributary viewed from Lake.
SMF8-17	6/5/01	1145	SMF	S	Stranger Creek (west), sample location in foreground following sample collection.
SMF8-18	6/5/01	1145	SMF	E	Stranger Creek (west), sample material in jars (RT# 01234081), with sampling location in foreground. White board incorrectly identifies film roll as SMF7.
SMF8-19	6/5/01	1245	SMF	W	Cobbs Creek, sampling location prior to sample collection.
SMF8-20	6/5/01	1245	SMF	W	Cobbs Creek, sample material in jar (RT# 01234082). White board incorrectly identifies film roll as SMF7.
SMF8-21	6/5/01	1400	SMF	E	Unnamed tributary @ T33N, R37E, section 30, sampling location at least 4 feet above MHW Lake level.
SMF8-22	6/5/01	1400	SMF	S	Unnamed tributary @ T33N, R37E, section 30, sample

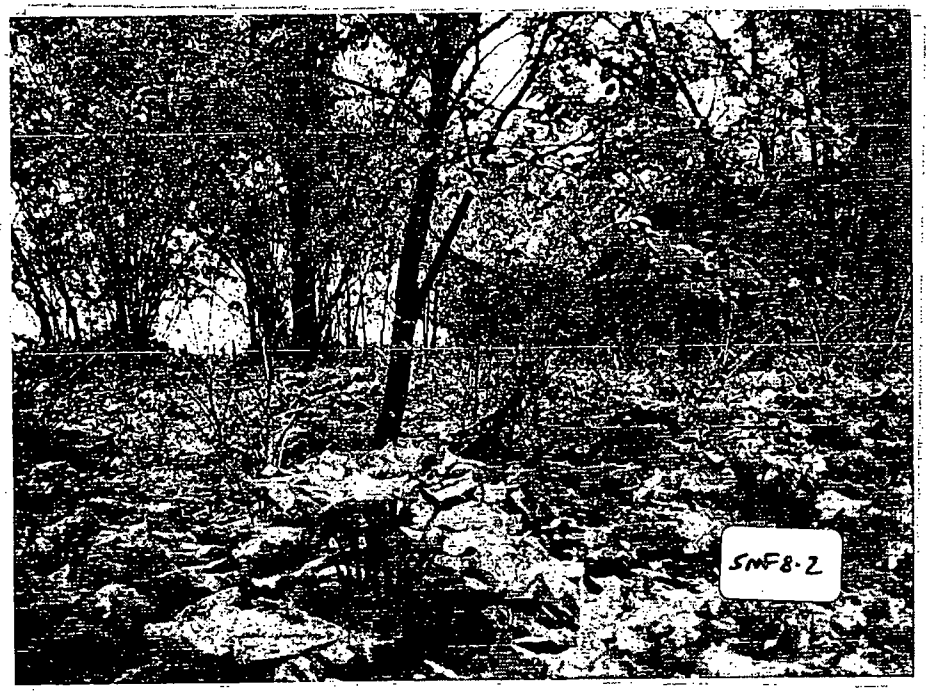
PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

Photo No.	Date	Time	By	Dir.	Description
					White board incorrectly identifies film roll as SMF7.
SMF8-23	6/5/01	1445	SMF	E	Unnamed tributary @ T33N, R37E, section 19, sampling area looking toward Lake Roosevelt.
SMF8-24	6/5/01	1445	SMF	S	Unnamed tributary @ T33N, R37E, section 19, sample material in jar (RT# 01234084). White board incorrectly identifies film roll as SMF7.
SMF8-25	6/5/01	1545	SMF	W	Unnamed tributary @ T33N, R36E, section 1, tributary mouth.
SMF8-26	6/5/01	1545	SMF	SE	Unnamed tributary @ T33N, R36E, section 1, Lake Roosevelt viewed from sampling point.
SMF8-27	6/5/01	1545	SMF	S	Unnamed tributary @ T33N, R36E, section 1, sample material in jar (RT# 01234096) and sampling location. White board incorrectly identifies film roll as SMF7.
SMF8-28	6/6/01	1630	SMF	E	Unnamed tributary @ T33N, R36E, section 4, sampling area.
SMF8-29	6/6/01	1630	SMF	S	Unnamed tributary @ T33N, R36E, section 4, sample material in jar (RT# 01234097), and sampling location. White board incorrectly identifies film roll as SMF7 and section number 1.
SMF8-30	6/6/01	0945	SMF	E	Unnamed tributary @ T33N, R37E, section 5, sampling area.
SMF8-31	6/6/01	0945	SMF	E	Unnamed tributary @ T33N, R37E, section 5, sample material in jar (RT# 01234098), and sampling location. White board incorrectly identifies film roll as SMF7.
SMF8-32	6/6/01	1030	SMF	E	Unnamed tributary @ T34N, R37E, section 32, sampling area.
SMF8-33	6/6/01	1030	SMF	S	Unnamed tributary @ T34N, R37E, section 32, sample material in jar, and sampling location. White board incorrectly identifies film roll as SMF7.
SMF8-34	6/6/01	1045	SMF	SE	Fishermen on the Lake.
SMF8-35	6/6/01	1045	SMF	SE	Fishermen on the Lake.
SMF8-36	6/6/01	1100	SMF	E	Cheweka Creek, sampling location.
SMF8-37	6/6/01	1100	SMF	E	Cheweka Creek, sample material in jars (RT# 01234099) and sampling location. White board incorrectly identifies film roll as SMF7.

C-LINE #52584
35MM PRINTS



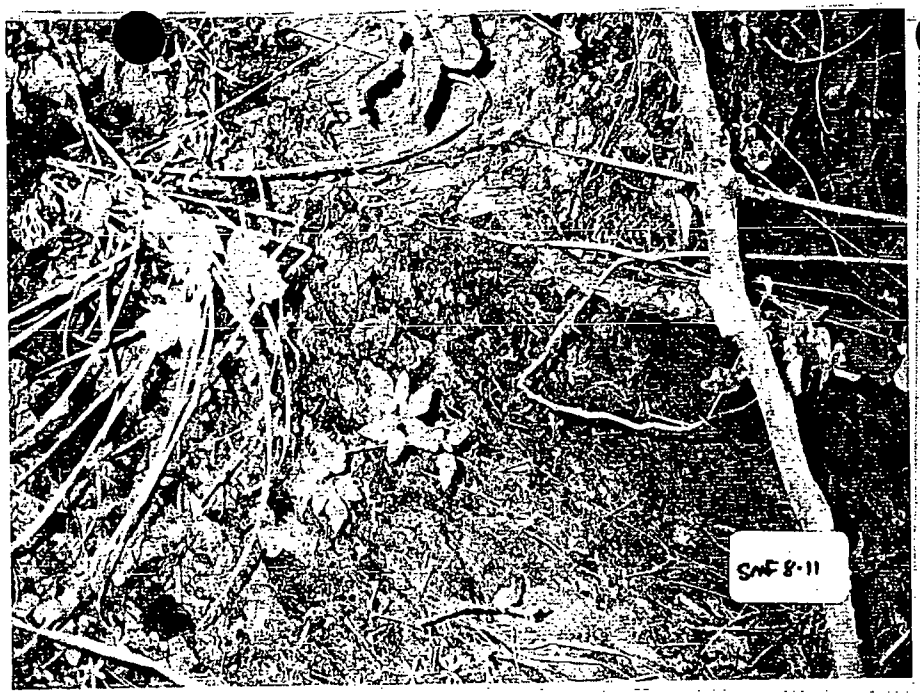


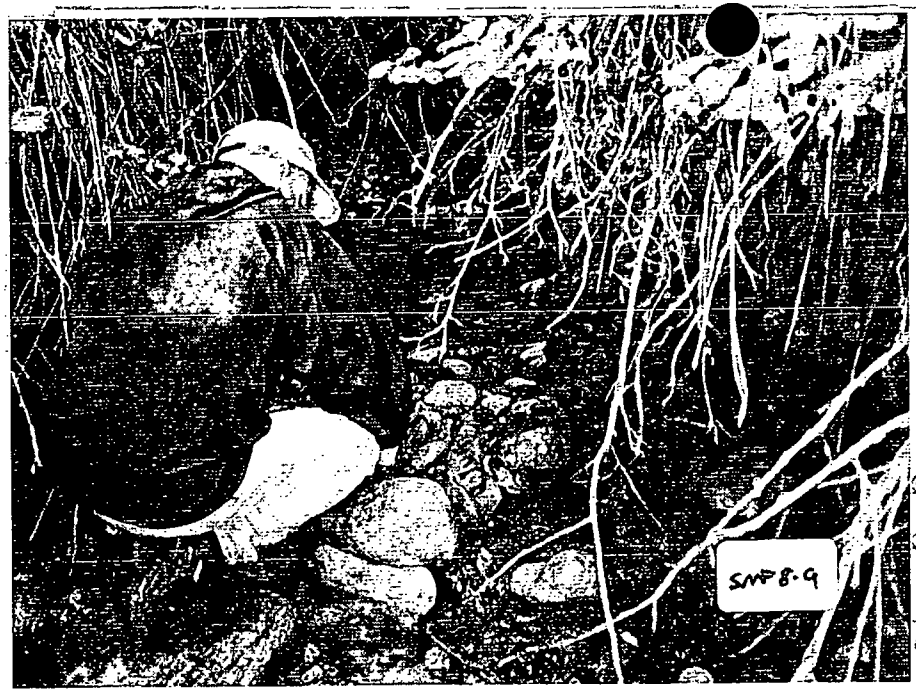
8.8 SMS
Coldwater River
SMF 7/26 P.S.
Oct 2 1977
6 4-01
1/15

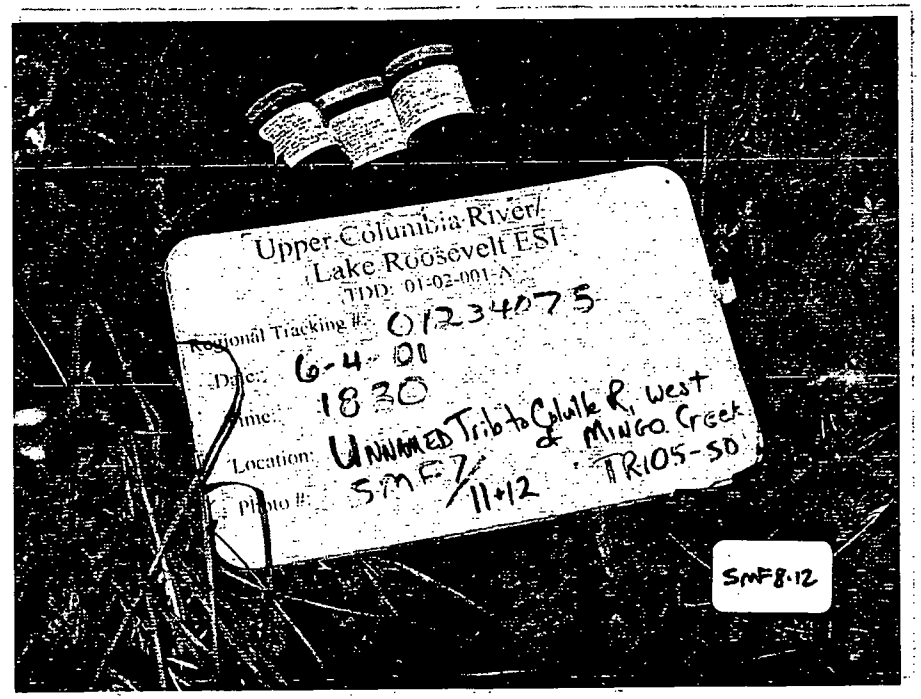
7.8 SMS

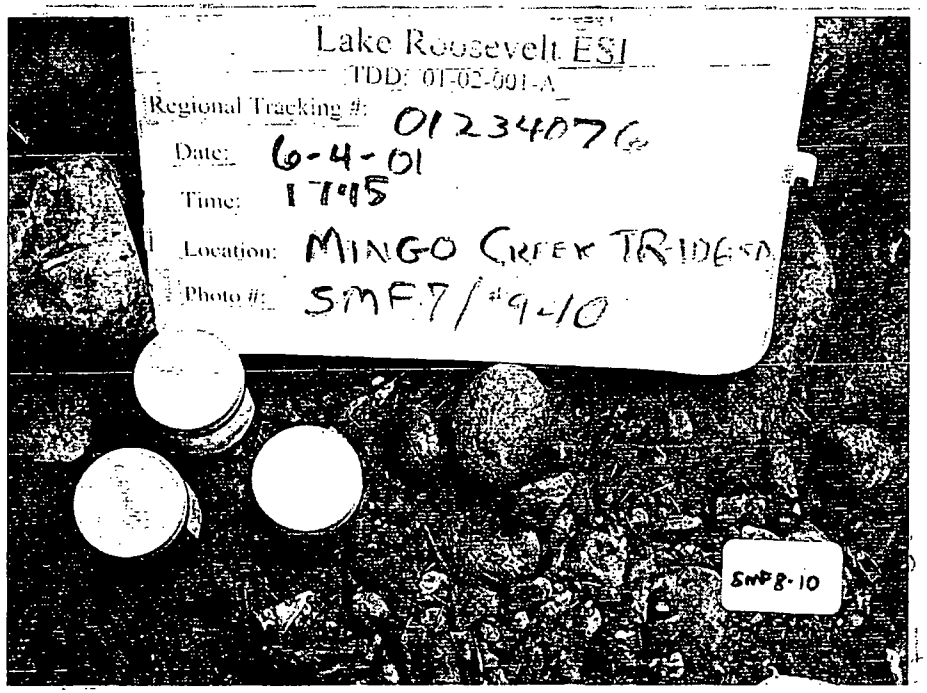
6.8 SMS

5.8 SMS

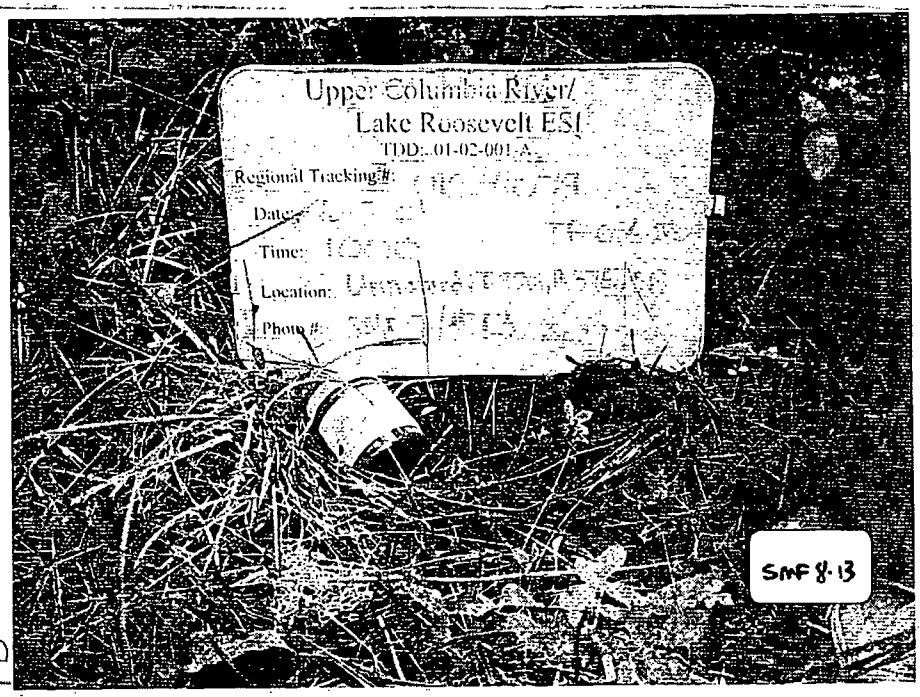

SMF 8-11

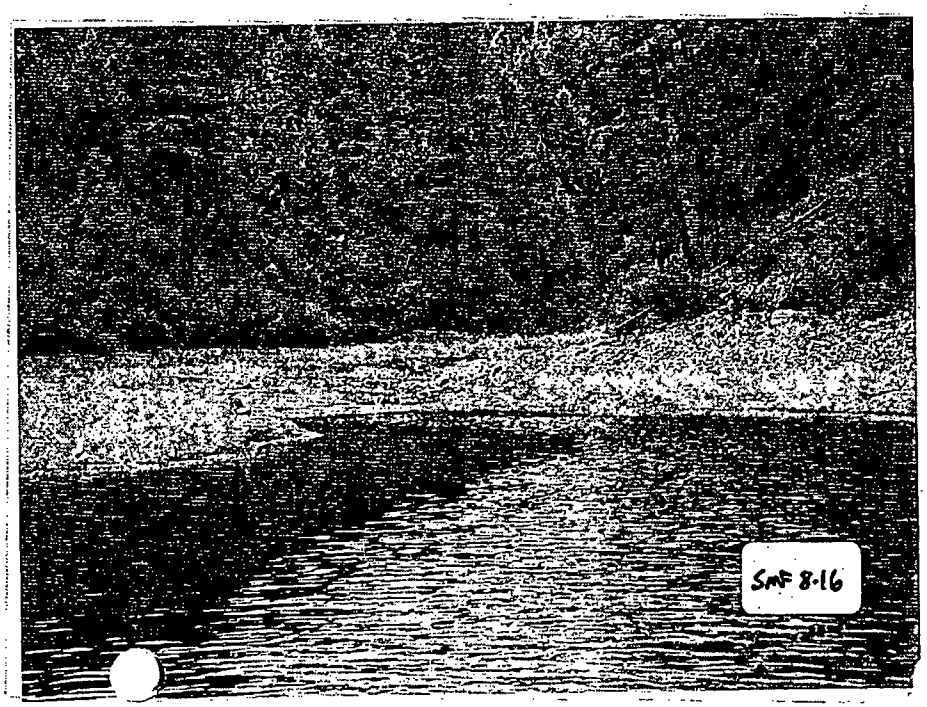

SMF 8-9


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234075
Date: 6-4-01
Time: 1830
Location: Unnamed Trib to Colville R, west of Mingo Creek
Photo #: SMF7/11+12
TR105-SD
SMF 8-12

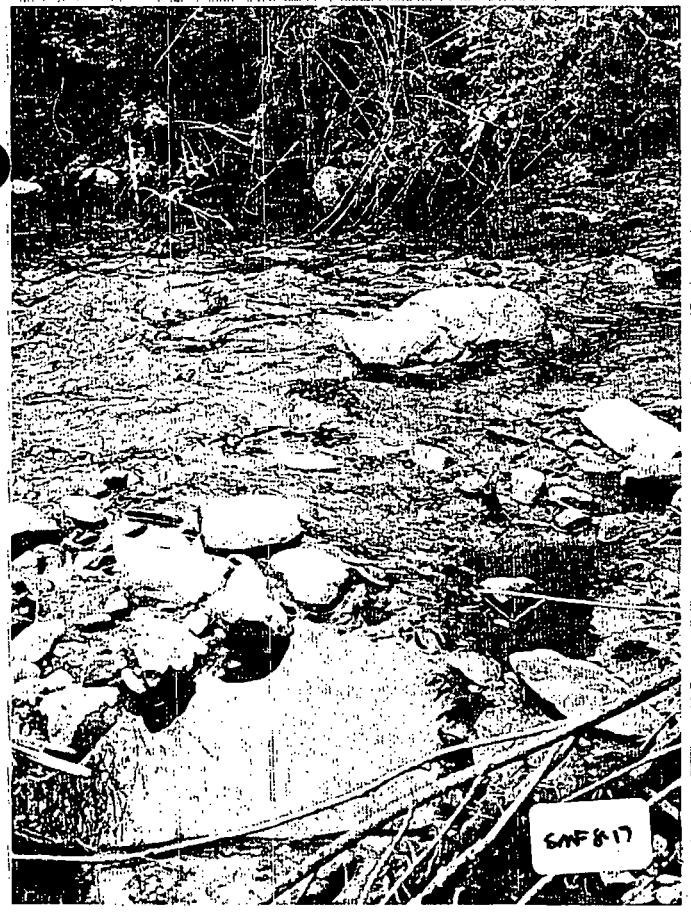

Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234076
Date: 6-4-01
Time: 1715
Location: MINGO CREEK TR-IDE-SD
Photo #: SMF7/#9+10
SMF 8-10

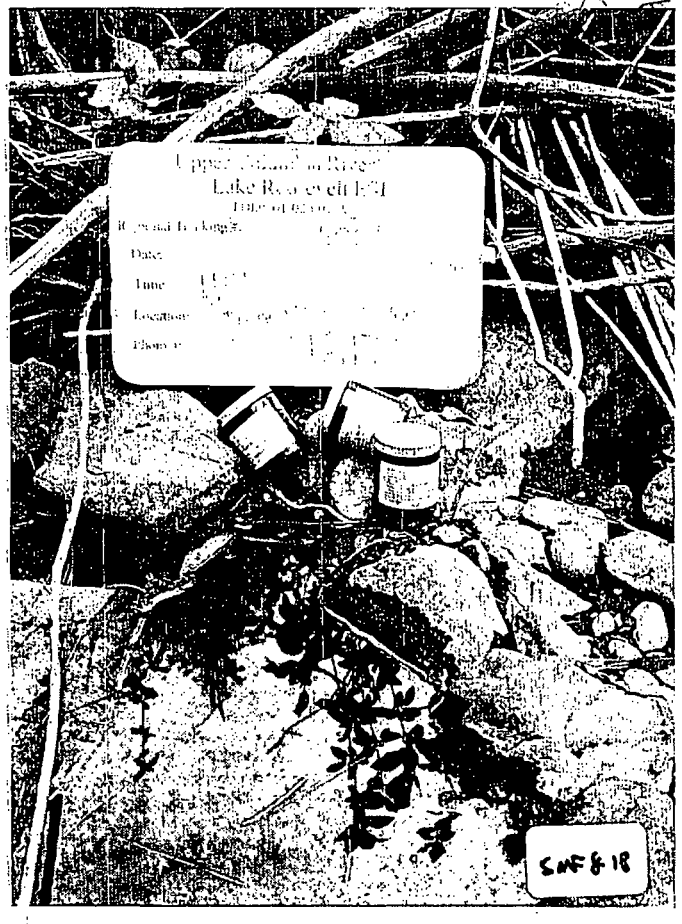
Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #:
Date:
Time:
Location:
Phone #:
SMF 8-15


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #:
Date:
Time:
Location:
Phone #:
SMF 8-13

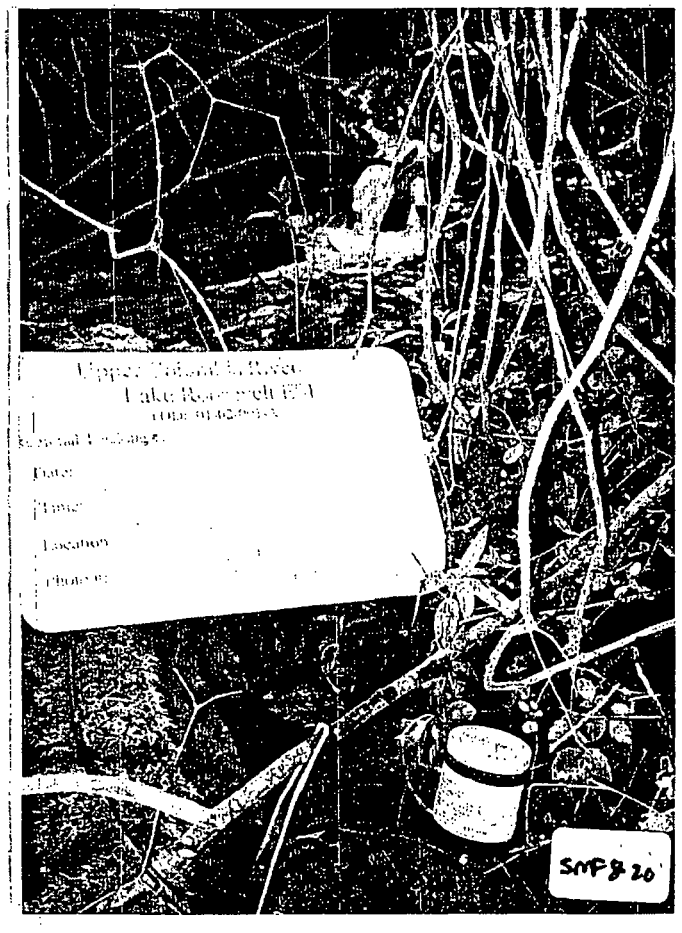

SMF 8-16

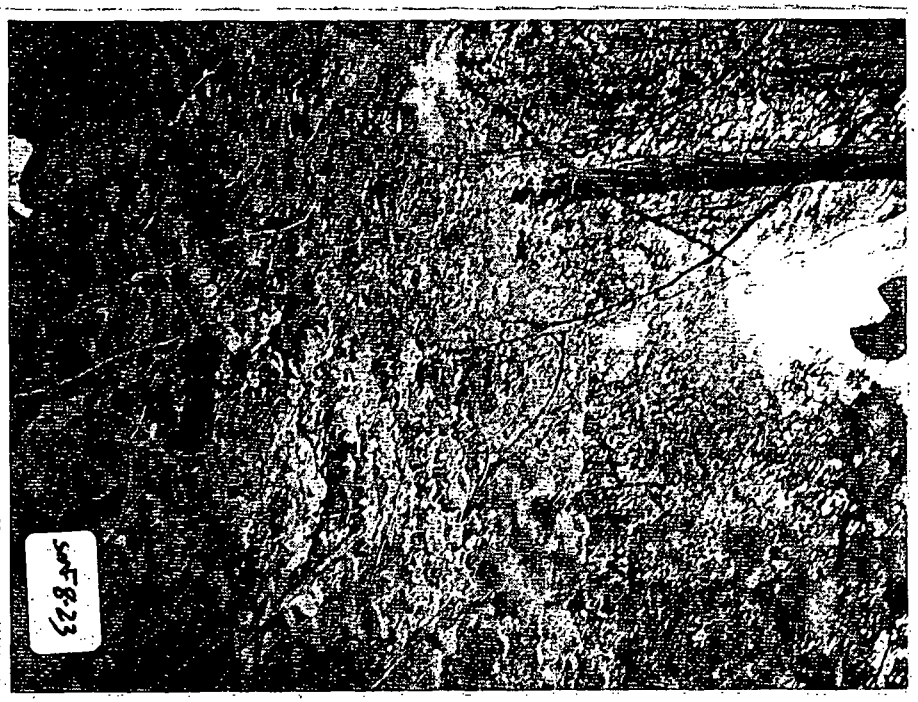
SMF 8-14

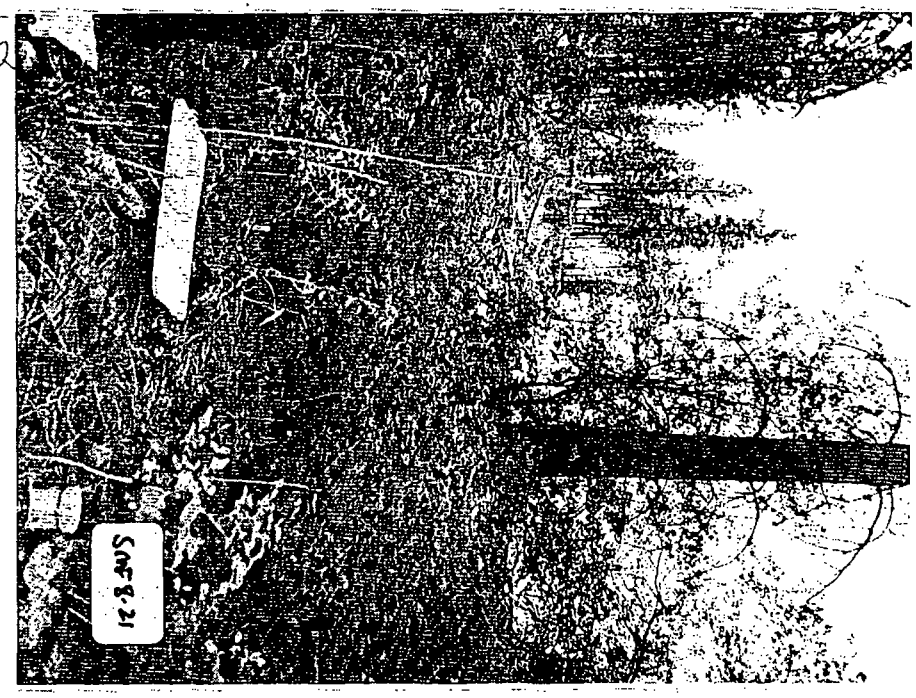

SMF 8-17


Lake Roosevelt
Date
Time
Location
SMF 8-18

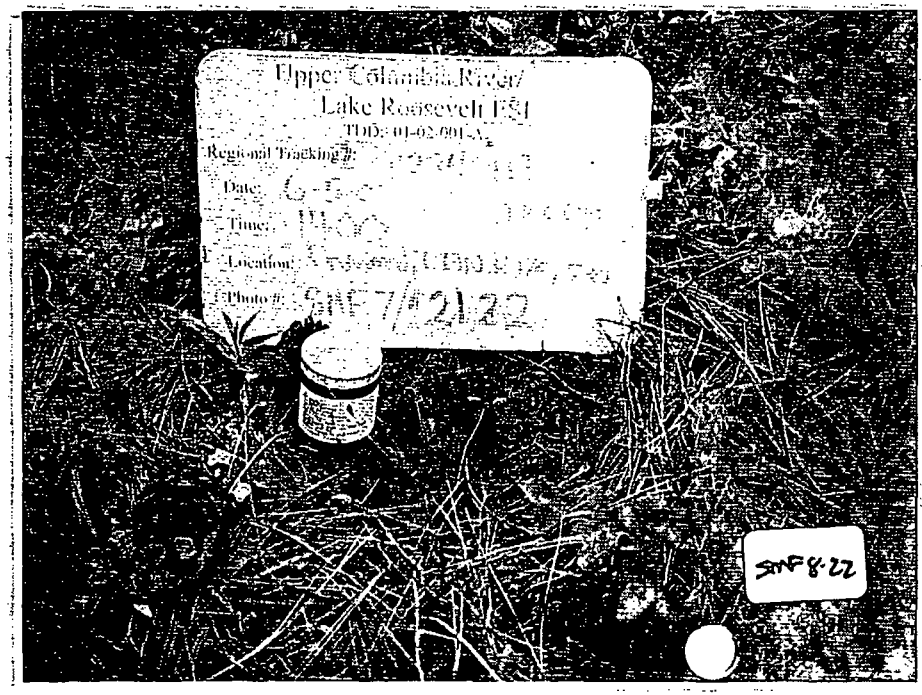
SMF 8-19


Lake Roosevelt
Date
Time
Location
SMF 8-20


SNF 8-23

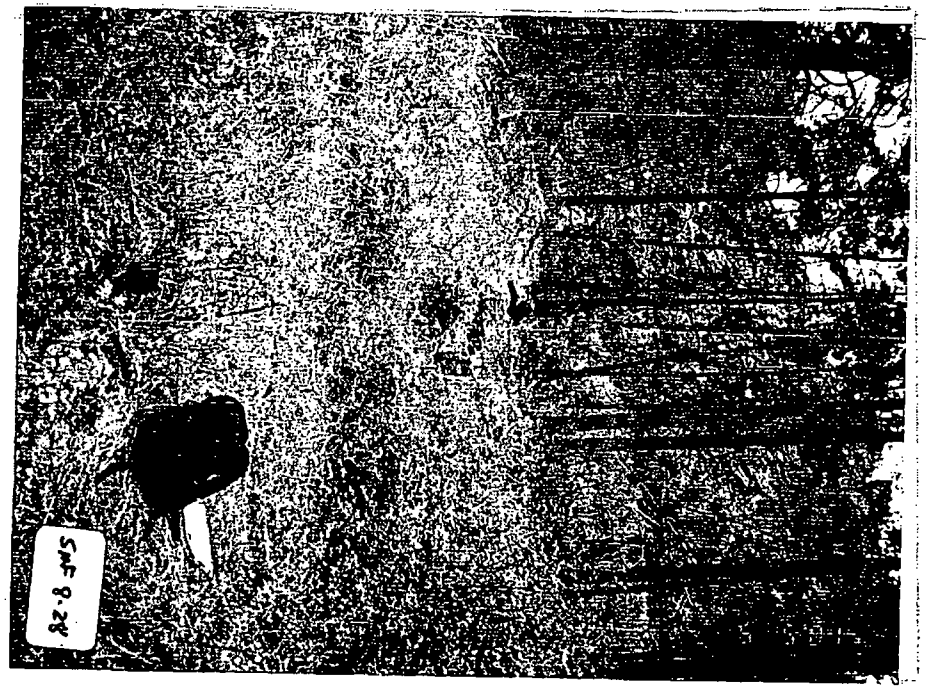

SNF 8-21

SNF 8-24

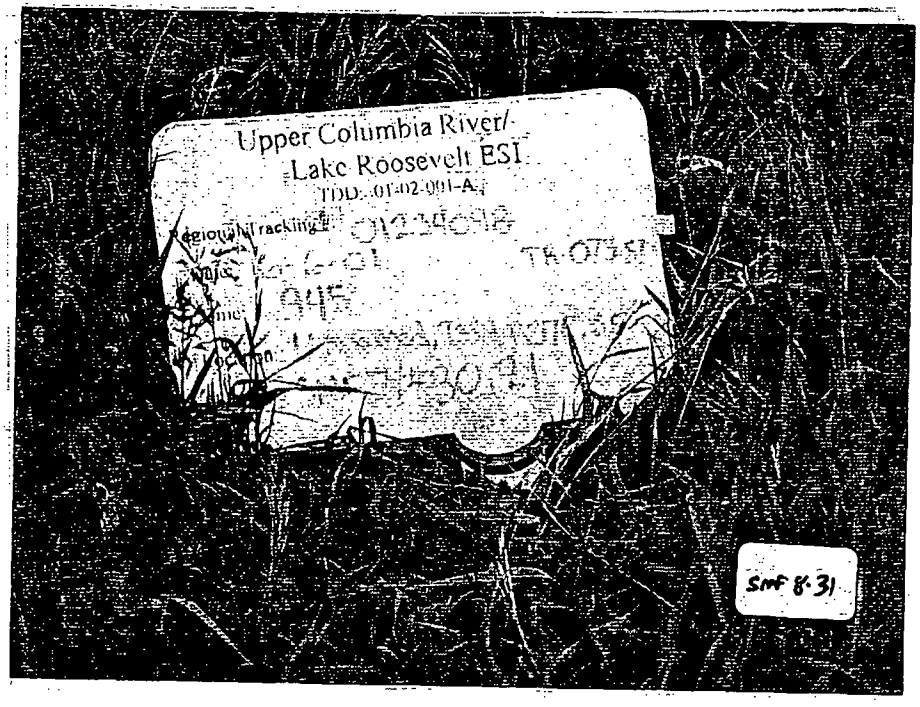

Upper Columbia River/
Lake Roosevelt FSI
Regional Tracking #:
Date:
Time:
Location:
Photo #:
SNF 7/21/22
SNF 8-22

Upper Columbia River
Lake Roosevelt ESI
Regional Tracking #:
Date:
Time:
Location:
SMF 8-27

SMF8-25

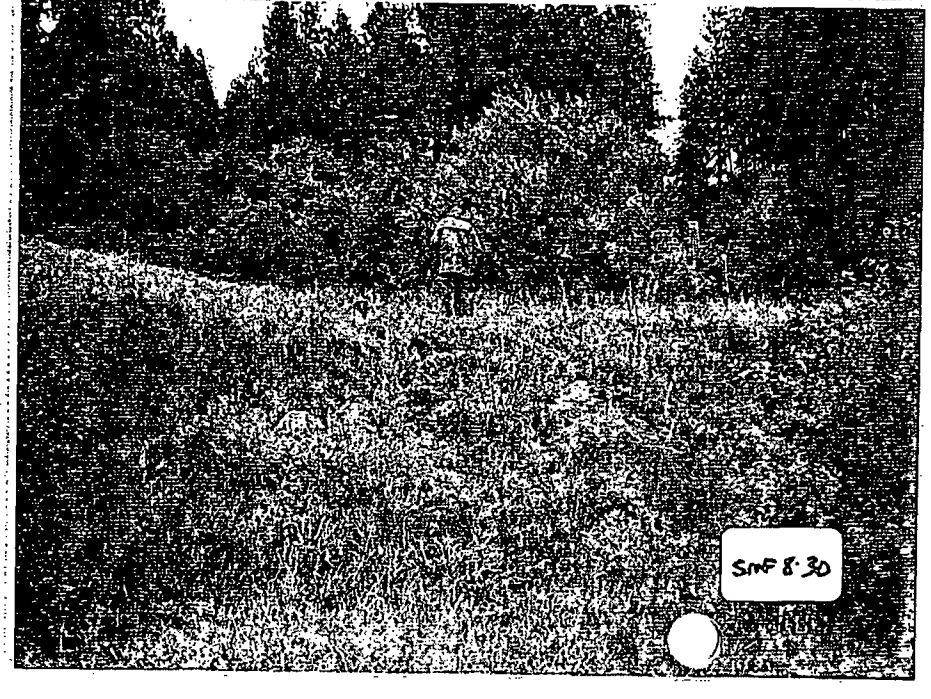

SMF 8-28

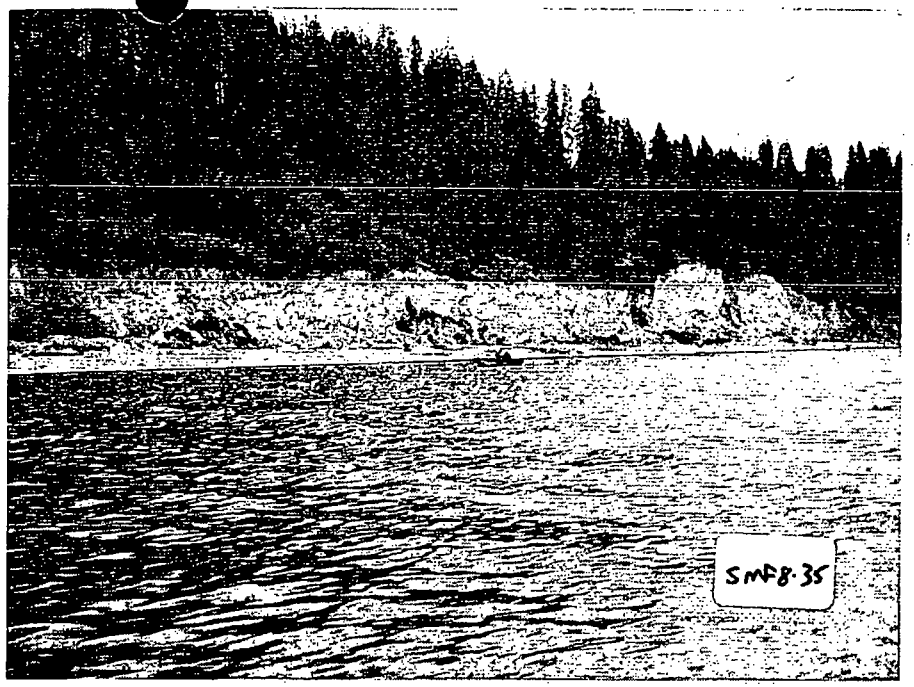
SMF 8-26

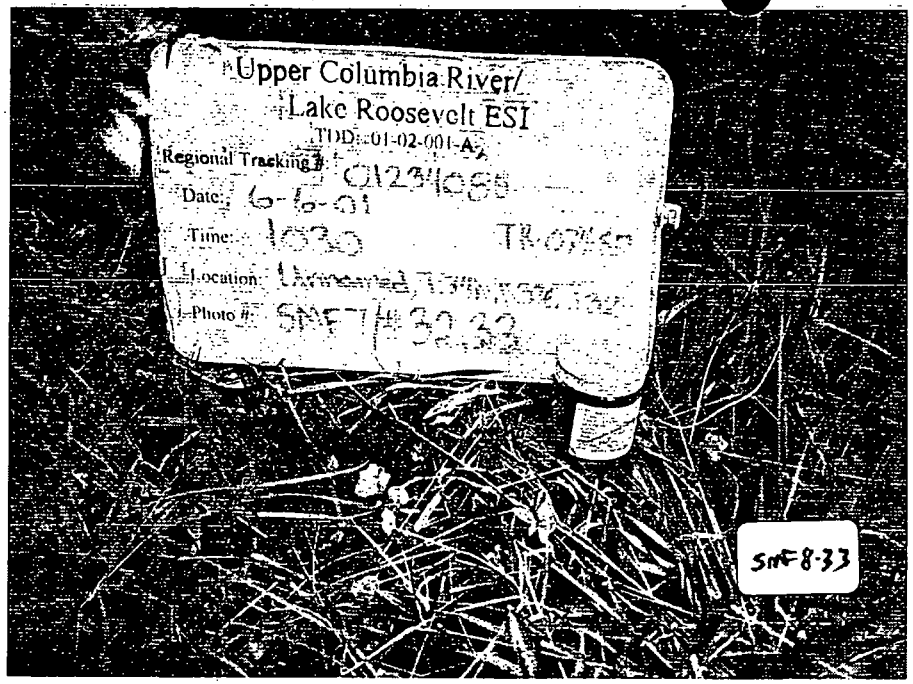

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #
SMF 8-31

Upper Columbia River/
Lake Roosevelt ESI
SMF 8-29

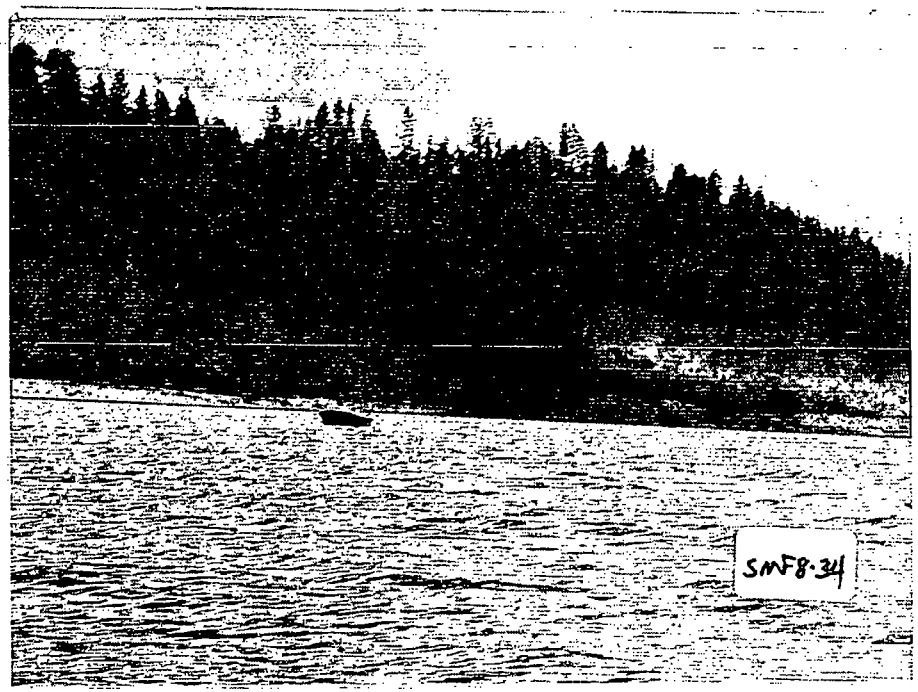
SMF 8-32


SMF 8-30


SMF8-35


Upper Columbia River/
Lake Roosevelt ESI
TOD: 01-02-001-A
Regional Tracking #:
Date: 6-6-01
Time:
Location:
Photo #:
SMF8-33

SMF8-36

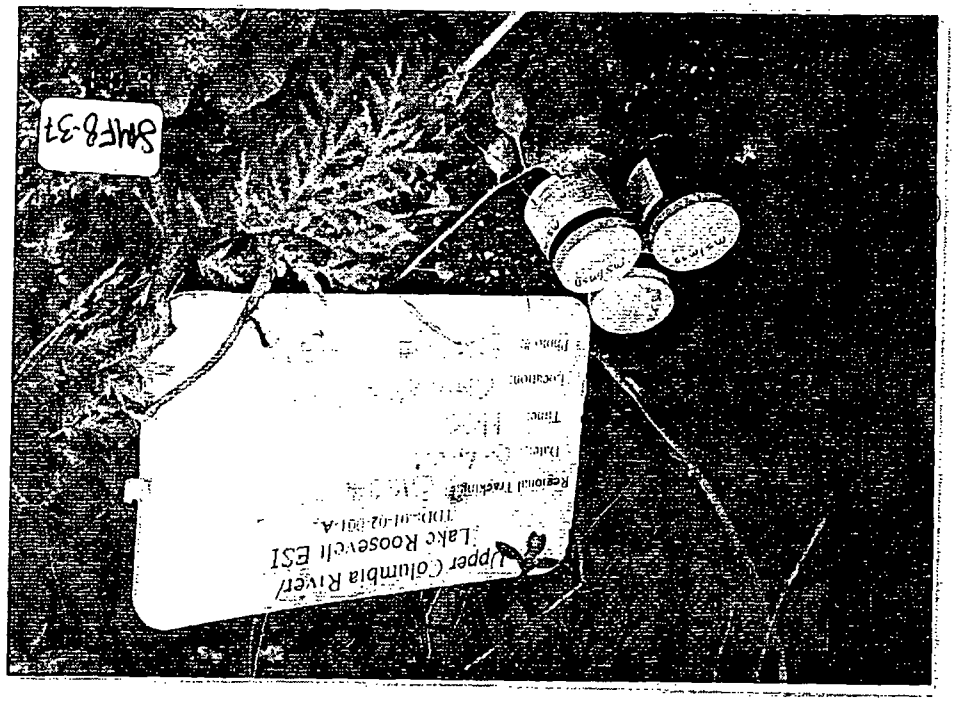

SMF8-34

TR 074 SD

SMF#8 33

SMF#8 35

Second boat of fisherman observed on way to Chewaka Creek from South
photo faces SE



TR 077 SD

SMF#8 36

Sample location

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

Photo No.	Date	Time	By	Dir.	Description
SMF9-1	6/6/01	1245	SMF	E	Unnamed tributary north of Cheweka Creek, sampling area.
SMF9-2	6/6/01	1245	SMF	E	Unnamed tributary north of Cheweka Creek, sampling area viewed from lakeshore.
SMF9-3	6/6/01	1245	SMF	E	Unnamed tributary north of Cheweka Creek, sample material in jar, and sampling location. (RT#01234100) White board incorrectly identifies film roll as SMF8.
SMF9-4	6/6/01	1300	SMF	E	Unnamed tributary @ T34N, R37E, section 29, northwest ¼, sampling area. (RT#0123401) White board incorrectly identifies film roll as SMF8.
SMF9-5	6/6/01	1300	SMF	E	Unnamed tributary @ T34N, R37E, section 29, northwest ¼, sample material in jar (RT# 01234101), and sampling location. White board incorrectly identifies film roll as SMF8.
SMF9-6	6/6/01	1330	SMF	E	Unnamed tributary @ T34N, R37E, section 20, sampling area.
SMF9-7	6/6/01	1330	SMF	E	Unnamed tributary @ T34N, R37E, section 20, sample material in jar (RT# 01234102), and sampling location. White board incorrectly identifies film roll as SMF8.
SMF9-8	6/6/01	1415	SMF	E	Quillisascut Creek, sampling area.
SMF9-9	6/6/01	1415	SMF	N	Quillisascut Creek, sample material in jar (RT# 01234086), and sampling location. White board incorrectly identifies film roll as SMF8.
SMF9-10	6/6/01	1515	SMF	E	Unnamed tributary @ T34N, R37E, section 6, sampling area.
SMF9-11	6/6/01	1515	SMF	N	Unnamed tributary @ T34N, R37E, section 6, sample material in jar (RT# 01234087), and sampling location. White board incorrectly identifies film roll as SMF8.
SMF9-12	6/6/01	1600	SMF	W	Cuba Canyon Creek, drainage trace.
SMF9-13	6/6/01	1600	SMF	W	Cuba Canyon Creek, sample material in jars (RT# 01234103), and sampling location. White board incorrectly identifies film roll as SMF8.
SMF9-14	6/8/01	0945	SMF	W	Marcus Flats north of Pingston Creek, sampling location roughly 30 feet offshore based on current waterline.
SMF9-15	6/8/01	0945	SMF	NW	Marcus Flats north of Pingston Creek, sample material in jars (RT# 01234124). White board incorrectly identifies film roll as SMF7.
SMF9-16	6/8/01	1120	SMF	N	Fish (likely rainbow trout) observed with large white patches on skin.
SMF9-17	6/8/01	1120	SMF	E	Unnamed ephemeral @ T37N, R38E, section 22, SW ¼, drainage trace looking upstream.
SMF9-18	6/8/01	1120	SMF	W	Unnamed ephemeral @ T37N, R38E, section 22, SW ¼, drainage trace looking downstream.
SMF9-19	6/8/01	1120	SMF	E	Unnamed ephemeral @ T37N, R38E, section 22, SW ¼, sample material in jars (RT# 01234127), and sampling location. White board incorrectly identifies film roll as SMF7.

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

Photo No.	Date	Time	By	Dir.	Description
SMF9-20	6/8/01	1130	SMF	E	Unnamed ephemeral @ T37N, R38E, section 22, NW ¼, sample material in jars (RT# 01234125), and sampling location. White board incorrectly identifies film roll as SMF7.
SMF9-21	6/8/01	1130	SMF	E	Unnamed ephemeral @ T37N, R38E, section 22, NW ¼, sampling area, with sampling location in foreground.
SMF9-22	6/8/01	1245	SMF	E	Unnamed tributary east of Evans Campground, marshy streambed.
SMF9-23	6/8/01	1245	SMF	N	Unnamed tributary east of Evans Campground, sample material in jar, and sampling location. White board incorrectly identifies film roll as SMF7.
SMF9-24	6/8/01	1500	SMF	W	Flat Creek, sampling area.

SMPL-1

SMPL-2

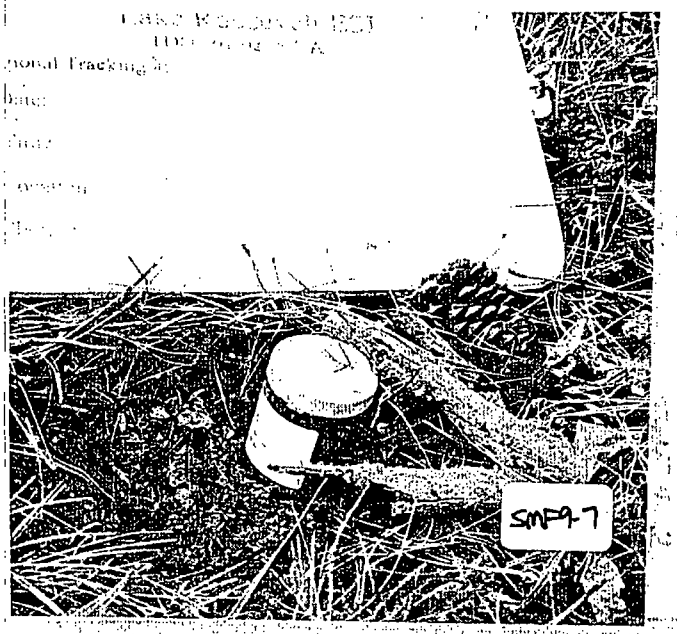
per Columbia River/
Lake Roosevelt ESI
TDD-01-02-001-A

SMPL-3

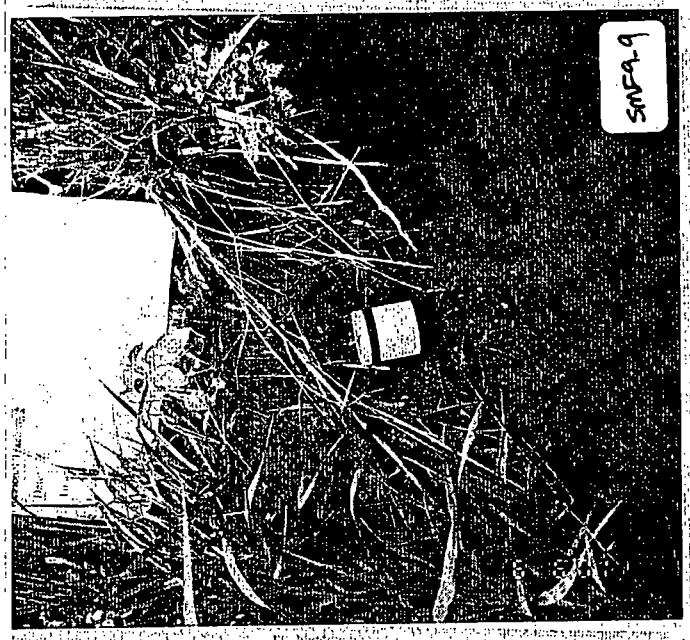
Upper Columbia River/
Lake Roosevelt ESI

SMPL-4

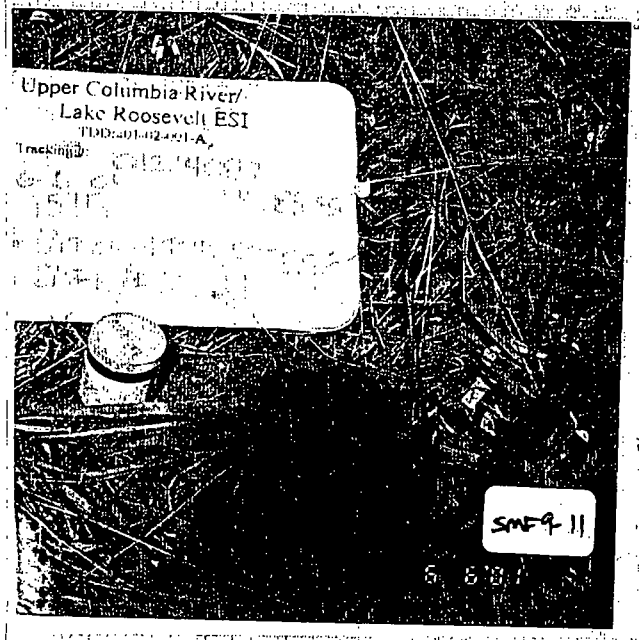
SMPL-5

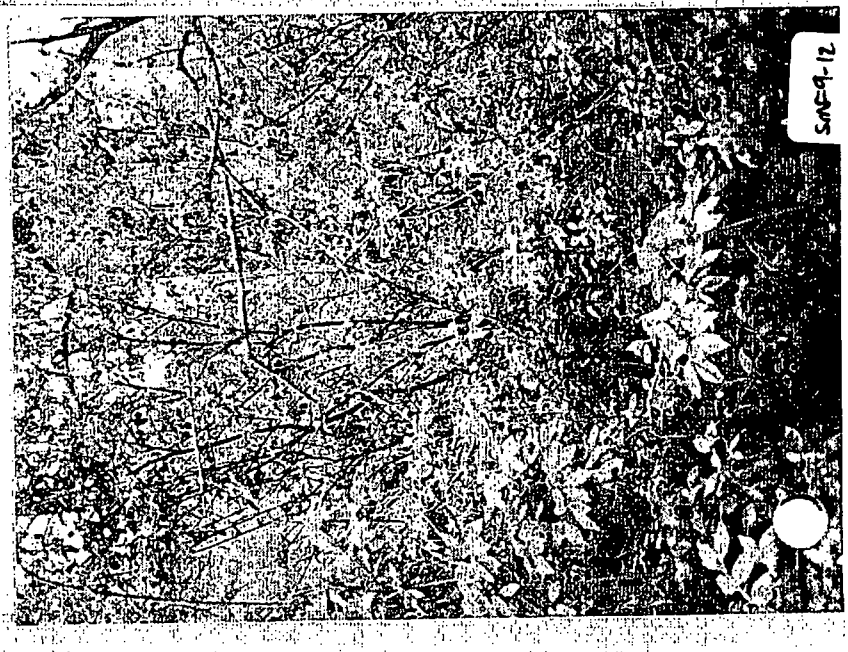

SMF9-7

SMF9-8

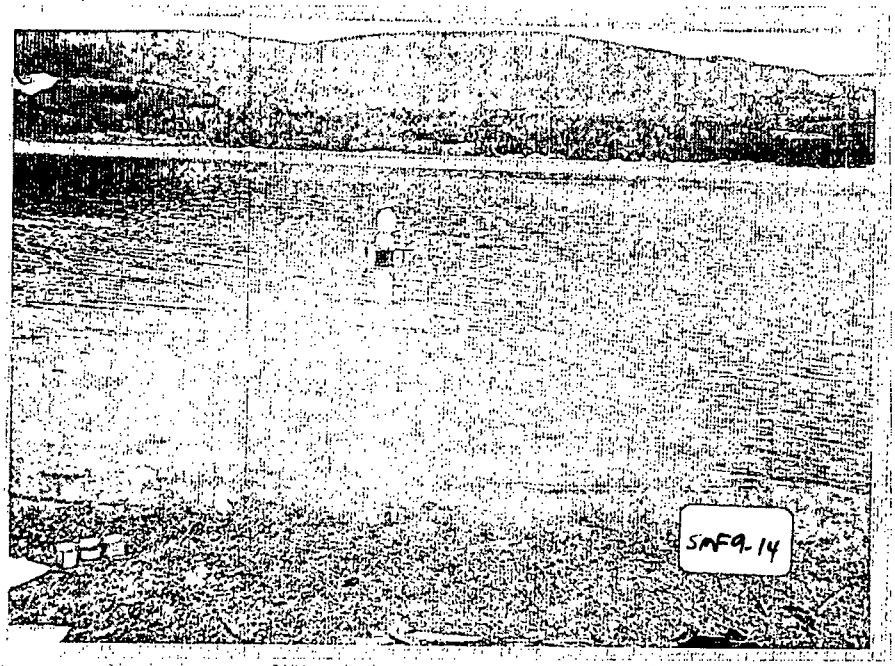

SMF9-9

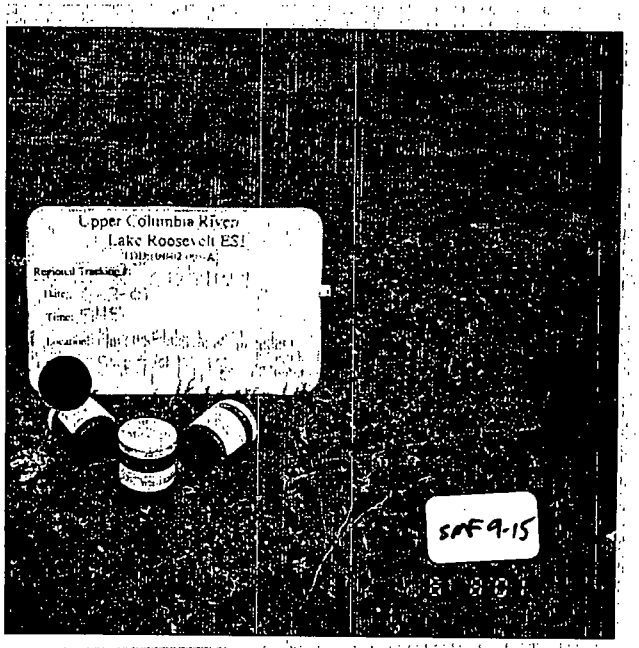
SMF9-10


Upper Columbia River/
Lake Roosevelt ESI
SMF9-11

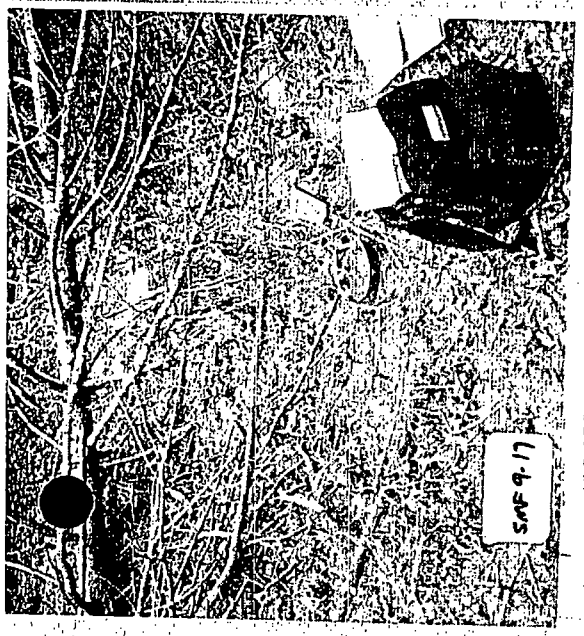

SMF9-12

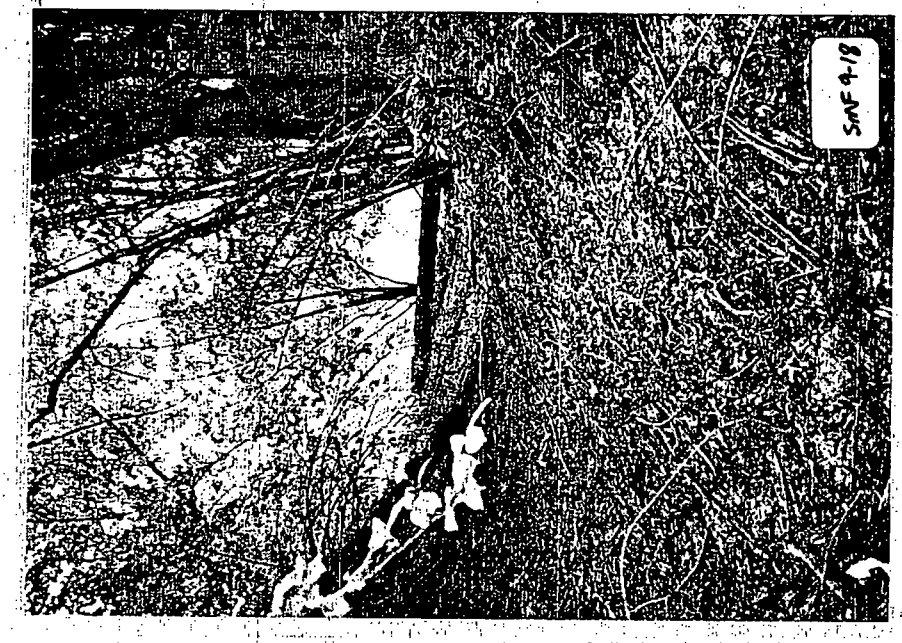
SMF9-13

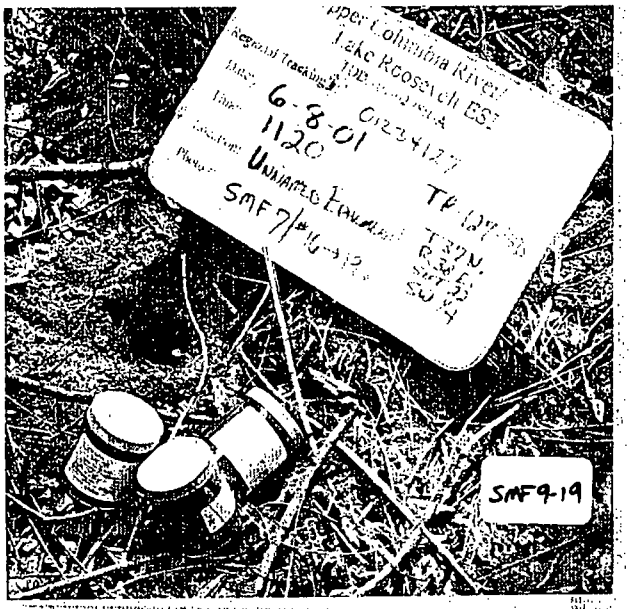

SMF9-14

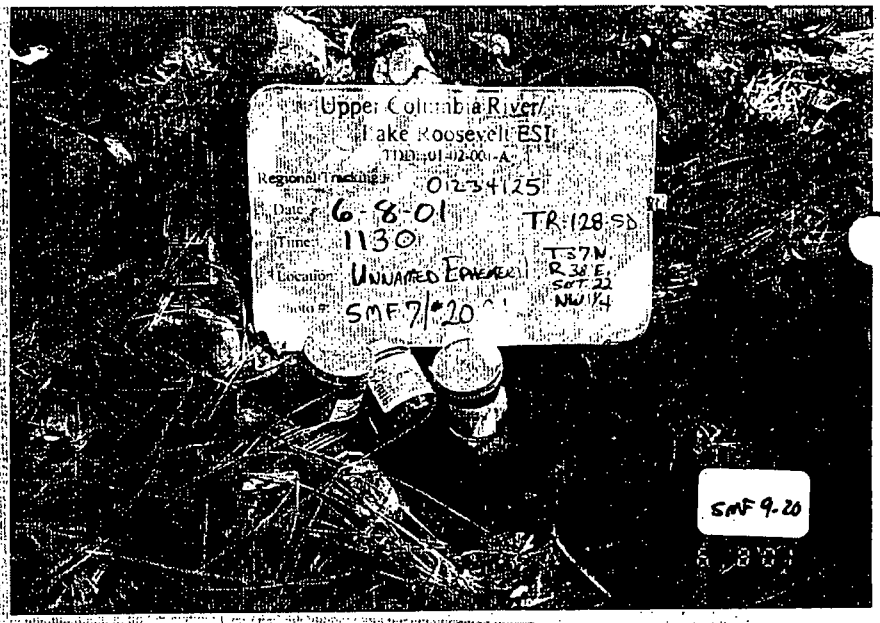

Upper Columbia River
Lake Roosevelt ESI
SMF 9-15

SMF 9-16

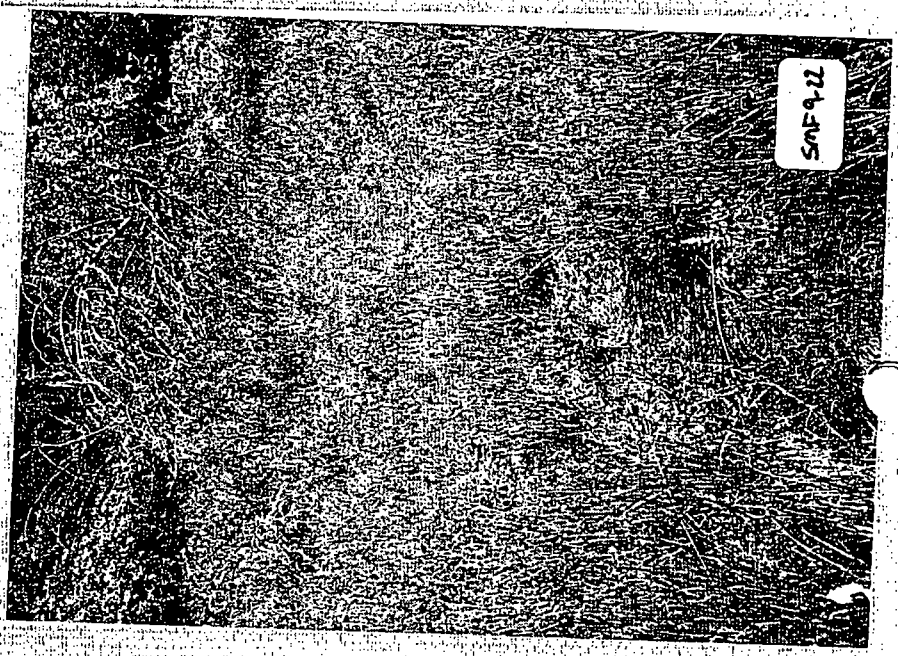

SMF 9-17

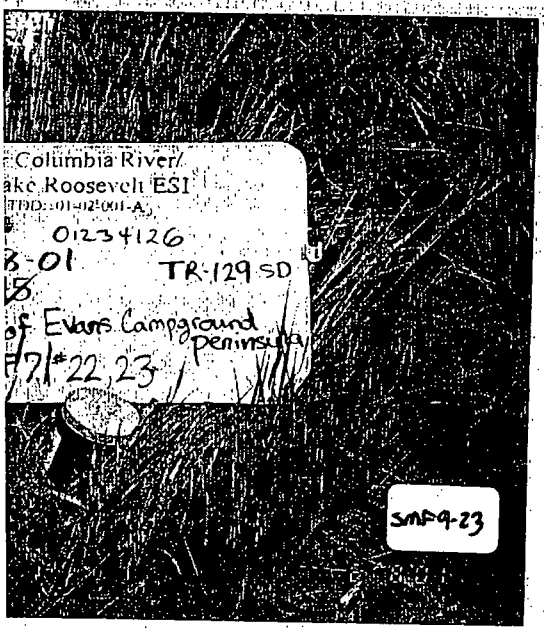

SMF 9-18

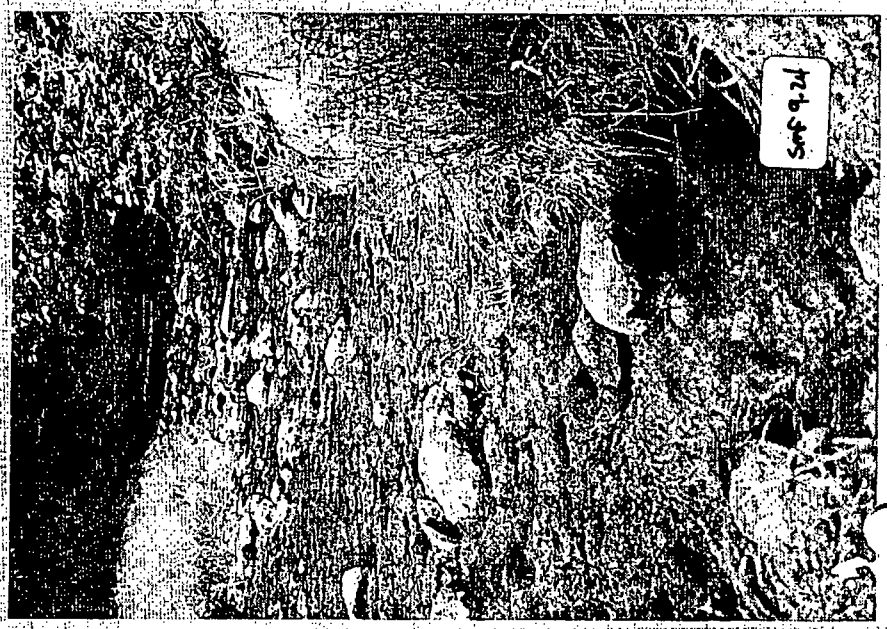

Upper Columbia River/
Lake Roosevelt ESI
6-8-01
1120
SMF 9-19


Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking # 01234125
Date 6-8-01
TR-128-SD
Time 1130
Location Unnamed Embayment
T37N
R38E
SMF 7/#20
SMF 9-20

SMF 9-21


SMF 9-22

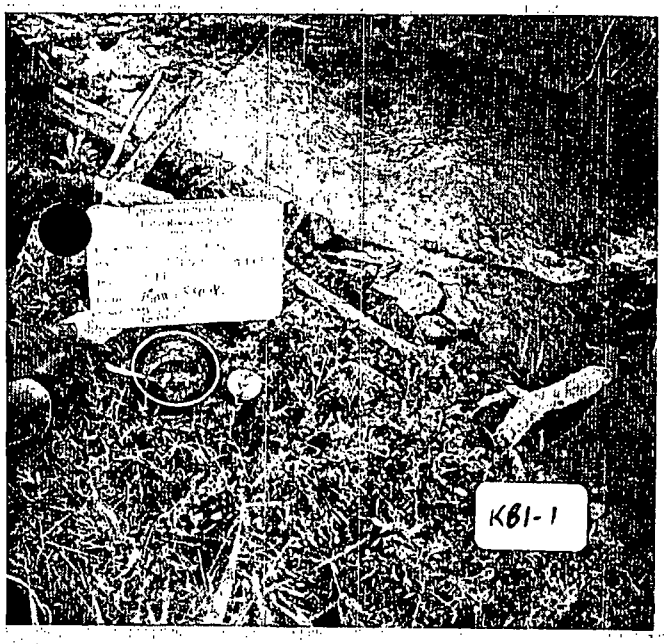

Columbia River/
ake Roosevelt ESI
01234126
8-01
TR-129 SD
of Evans Campground
peninsula
7/#22 23
SMF 9-23

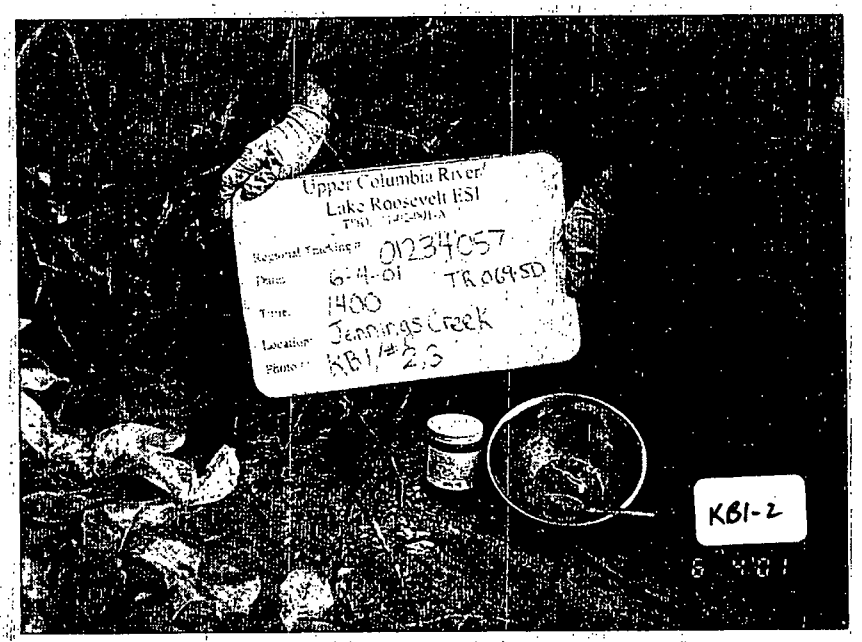

SMF 9-24

PHOTOGRAPH IDENTIFICATION SHEET

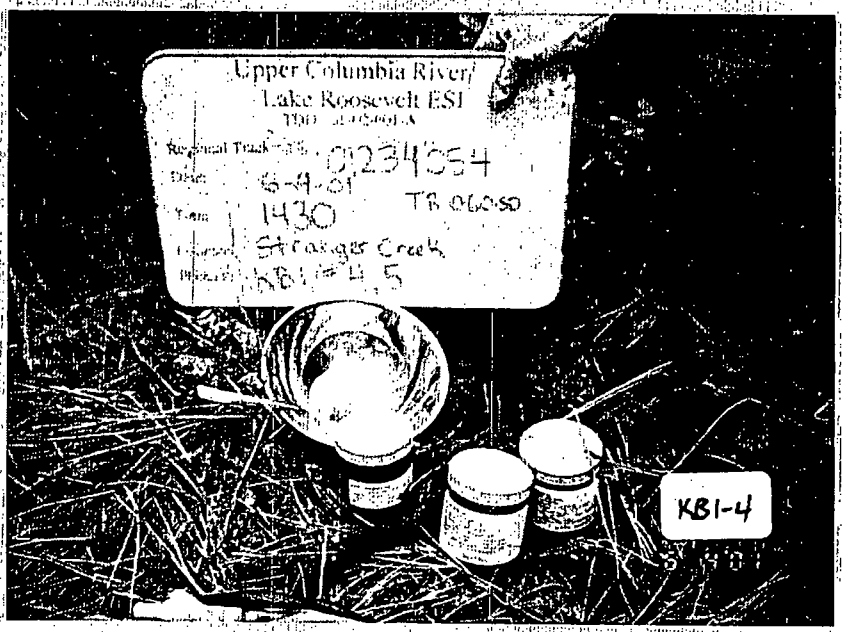
Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

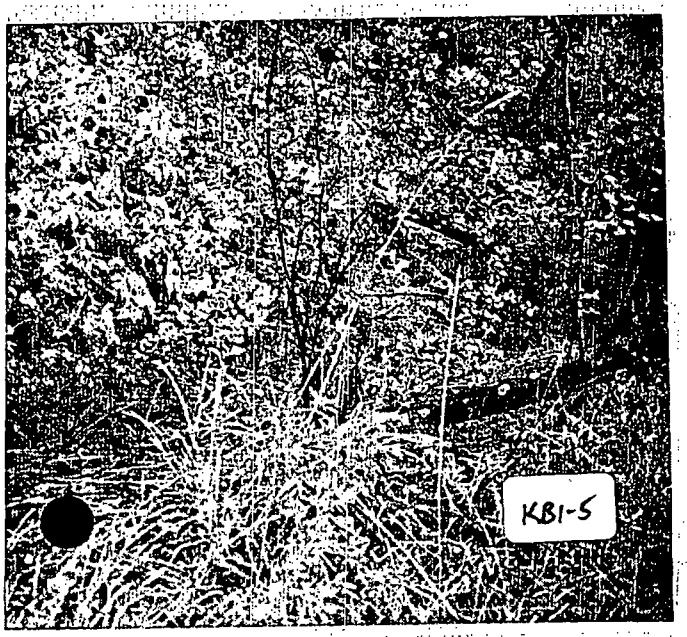
Photo No.	Date	Time	By	Dir.	Description
KB1-1	6/4/01	1245	KB	W	Magee Creek, sample material in jar (RT# 01234056), and sampling area.
KB1-2	6/4/01	1400	KB	SE	Jennings Creek, sample material in jar (RT# 01234057), and sampling area.
KB1-3	6/4/01	1400	KB	SE	Jennings Creek, sampling area.
KB1-4	6/4/01	1430	KB	W	Unnamed tributary @ T33N, R37E, section 28, sample material in jar (RT# 01234054), and sampling area.
KB1-5	6/4/01	1430	KB	NA	Unnamed tributary @ T33N, R37E, section 28, sampling area.
KB1-6	6/4/01	1550	KB	SW	Unnamed tributary @ T33N, R37E, section 21, sample material in jar (RT# 01234058), and sampling location.
KB1-7	6/4/01	1550	KB	NE	Unnamed tributary @ T33N, R37E, section 21, sampling area.
KB1-8	6/4/01	1645	KB	E	Unnamed tributary @ T33N, R37E, section 28, sample material in jar (RT# 01234055), and sampling location. (Non-proposed location)
KB1-9	6/4/01	1645	KB	E	Unnamed tributary @ T33N, R37E, section 28 (RT# 01234055), sampling area. (Non-proposed location)
KB1-10	6/5/01	0945	KB	E	Kettle River, sample material in jars (RT# 01234095), and sampling location.
KB1-11	6/5/01	0945	KB	SE	Kettle River, sampling area.
KB1-12	6/5/01	1100	KB	SE	Doyle Creek, sample material in jar (RT# 01234094).
KB1-13	6/5/01	1100	KB	SW	Doyle Creek, sampling area.
KB1-14	6/5/01	1145	KB	SE	Matsen Creek, sample material in jar (RT# 01234093).
KB1-15	6/5/01	1145	KB	SE	Matsen Creek, sampling area.
KB1-16	6/5/01	1320	KB	W	Unnamed tributary to Kettle River draining ponds near Boyds, sample material in jar (RT# 01234092).
KB1-17	6/5/01	1320	KB	W	Unnamed tributary to Kettle River draining ponds near Boyds, sampling area.
KB1-18	6/5/01	1345	KB	W	Deadman Creek, sampling area.
KB1-19	6/5/01	1345	KB	E	Deadman Creek, sample material in jars (RT# 01234066).
KB1-20	6/5/01	1430	KB	W	Unnamed ephemeral tributary @ T37N, R38E, section 4, NE ¼, sample material in jars (RT# 01234089).
KB1-21	6/5/01	1430	KB	NA	Unnamed ephemeral tributary @ T37N, R38E, section 4, NE ¼, sampling area.
KB1-22	6/5/01	1530	KB	E	Unnamed ephemeral tributary @ T37N, R37E, section 9, NE ¼, SE ¼, sample material in jars (RT# 01234091).
KB1-23	6/5/01	1530	KB	W	Unnamed ephemeral tributary @ T37N, R37E, section 9, NE ¼, SE ¼, sampling area.
KB1-24	6/5/01	1600	KB	W	Unnamed ephemeral tributary @ T37N, R37E, section 9, NW ¼, NE ¼, sampling area.

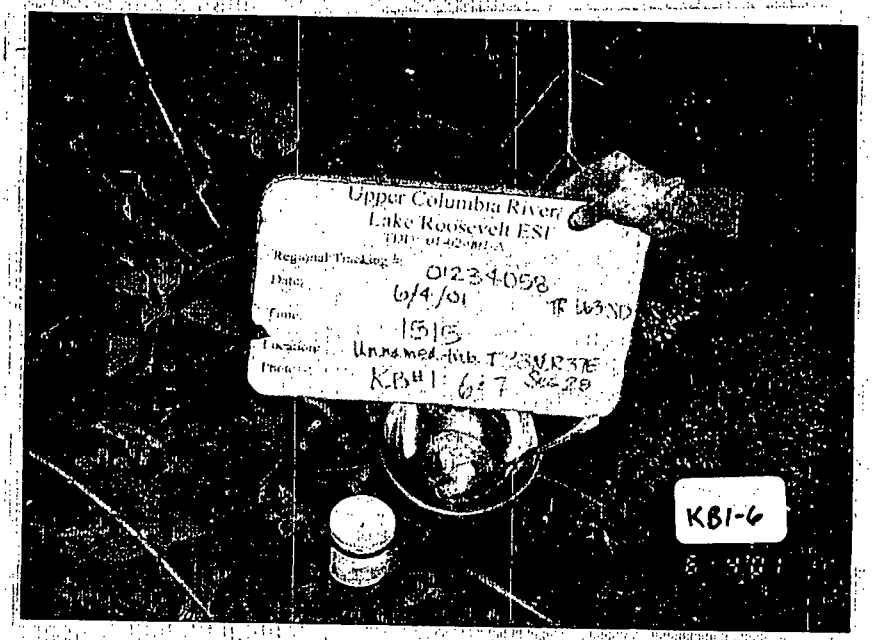

KBI-1


Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #: 01234057
Date: 6-4-01
TR 069SD
Time: 1400
Location: Jennings Creek
Photo #: KBI #2,3
KBI-2

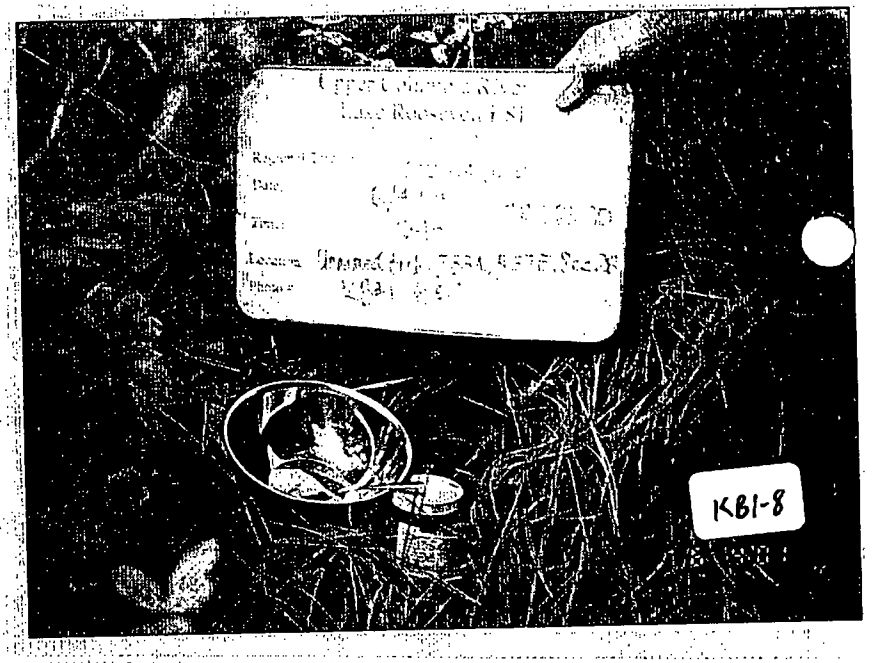
KBI-3


Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #: 01234054
Date: 6-4-01
TR 060SD
Time: 1430
Strangers Creek
Photo #: KBI #4,5
KBI-4


KBI-5

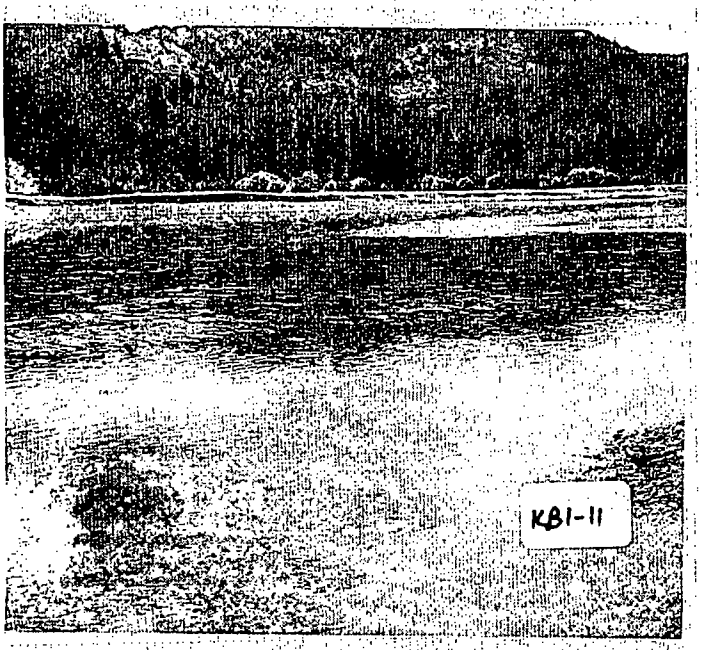

Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #: 01234058
Date: 6/4/01
TR 063SD
Time: 1515
Location: Unnamed drib.
Photo #: KBI #6,7
KBI-6

KBI-7

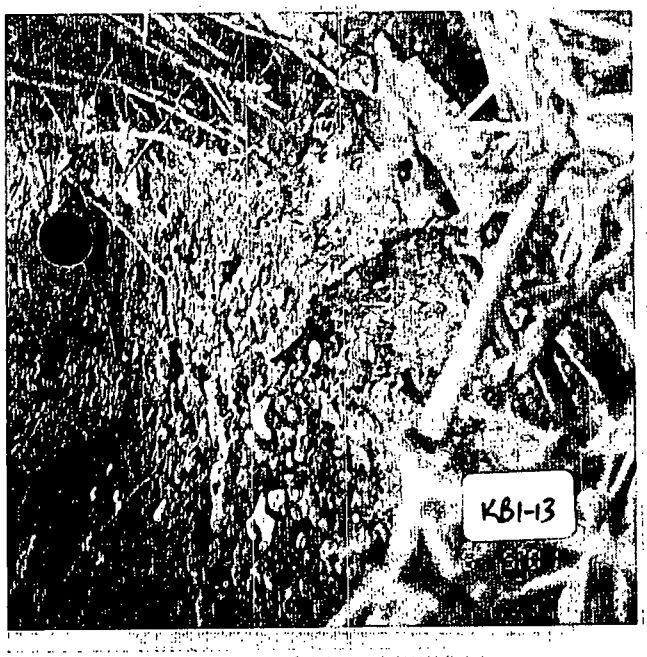

KBI-8

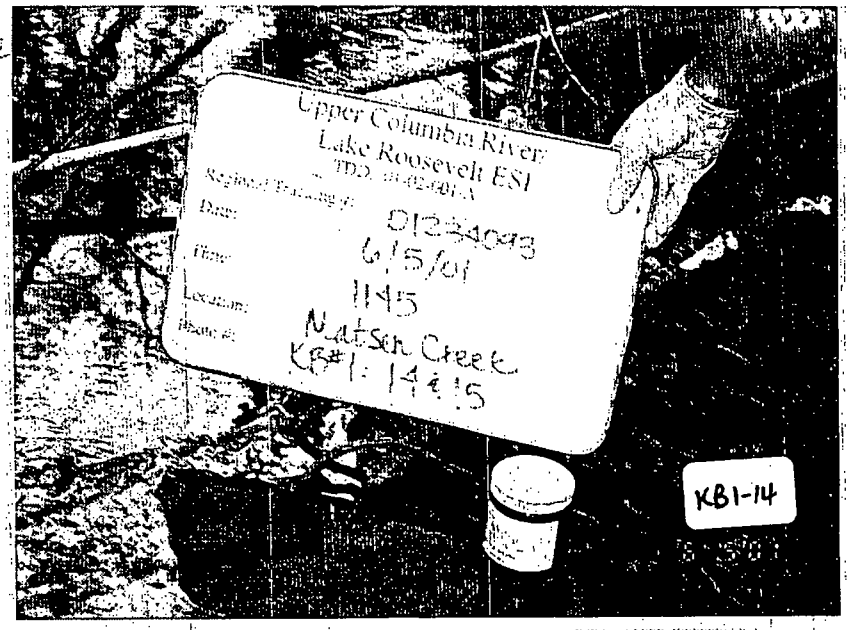
KBI-9

Upper Columbia River
Lake Roosevelt RSI
01234045
KBI-10


KBI-11

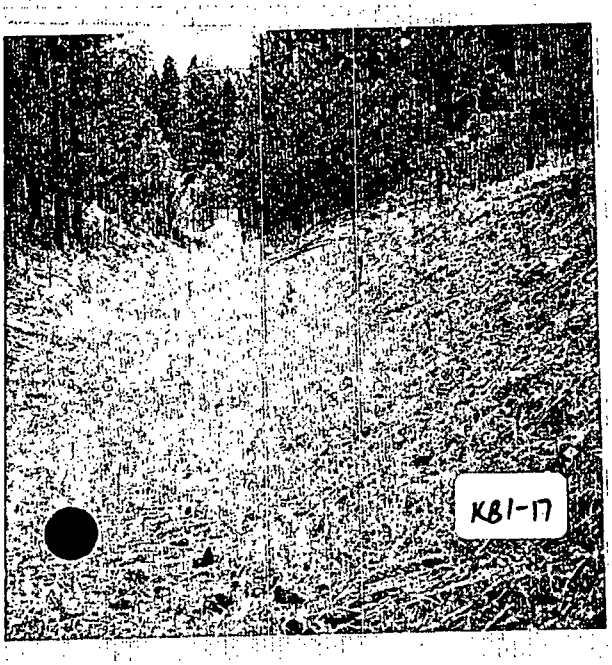
KBI-1


KB1-13

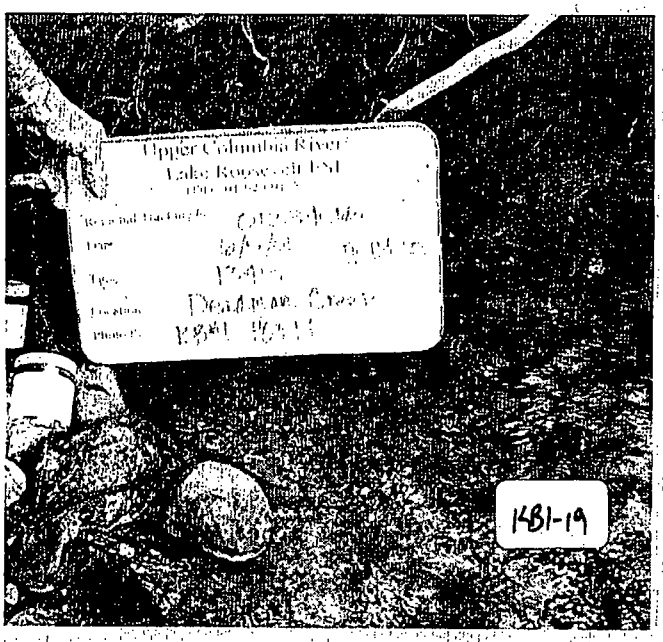

Upper Columbia River
Lake Roosevelt ESI
01234093
6/5/01
1145
Natson Creek
KB#1: 14 & 15
KB1-14

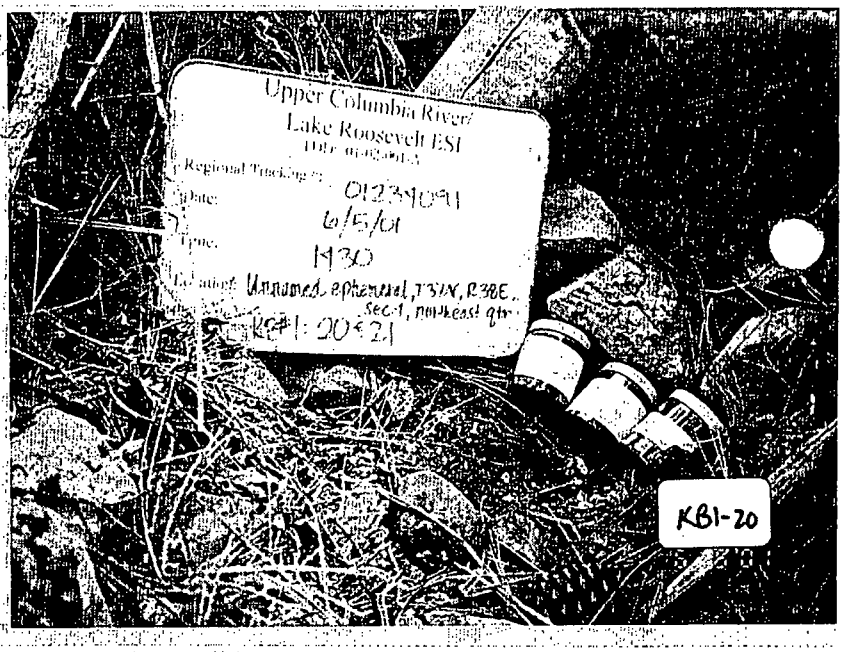
KB1-15

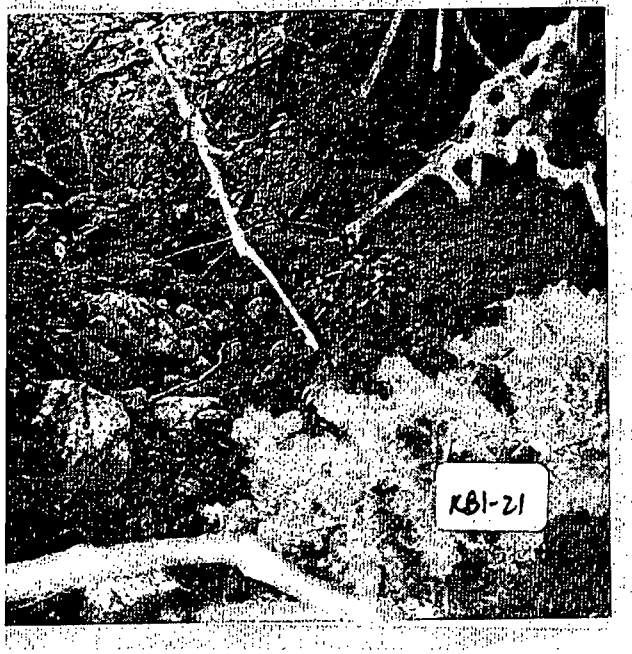
Upper Columbia River
Lake Roosevelt ESI
01234092
6/5/01
1320
TR: 119 SD
Unnamed trib, drainage pond near Boyds
KB#1: 16 & 17
KB1-16

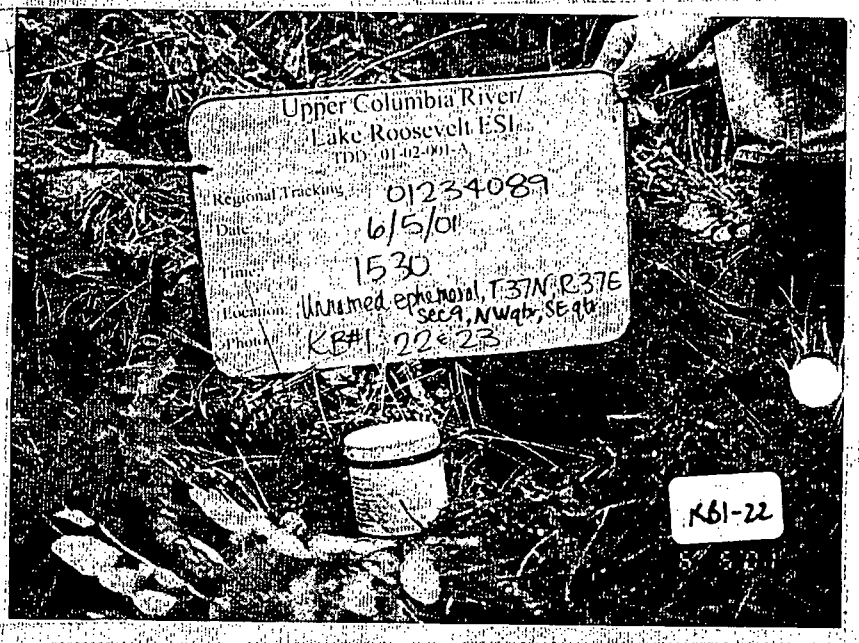

KB1-17

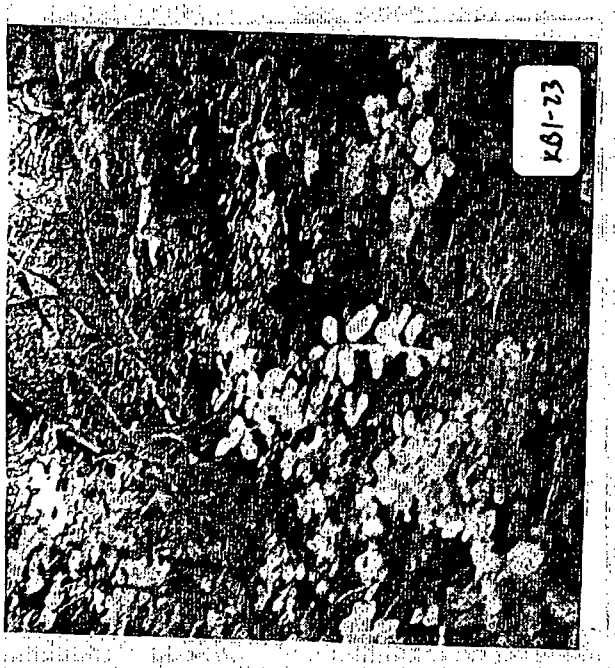
KB1-18

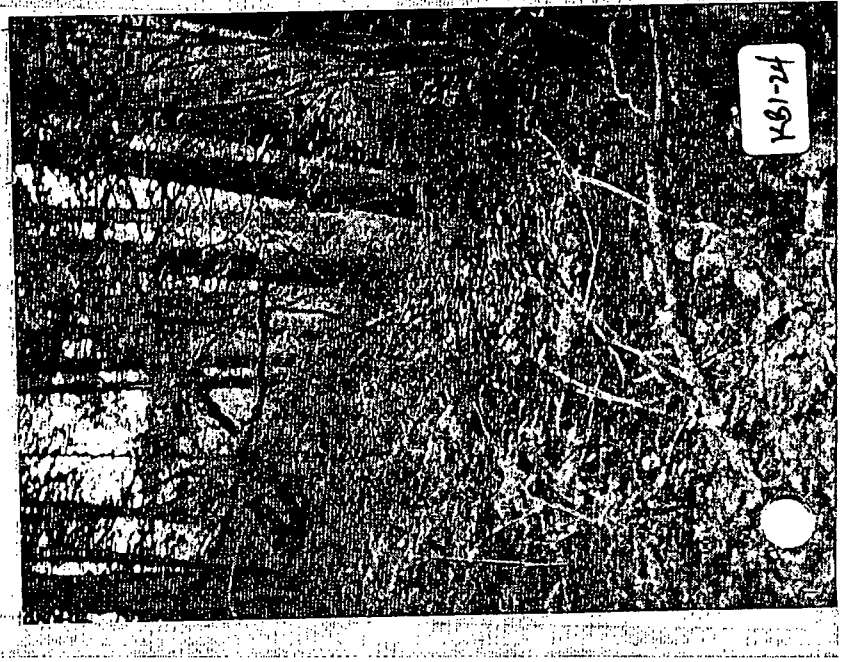

Upper Columbia River/
Lake Roosevelt ESI
KB1-19


Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #: 01234091
Date: 6/5/01
Time: 1430
Location: Unnamed ephemeral, T37N, R38E, sec 1, northeast qtr
KB#1: 20 & 21
KB1-20


KB1-21


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234089
Date: 6/5/01
Time: 1530
Location: Unnamed ephemeral, T37N, R37E sec 9, NW qtr, SE qtr
KB#1: 22 & 23
KB1-22

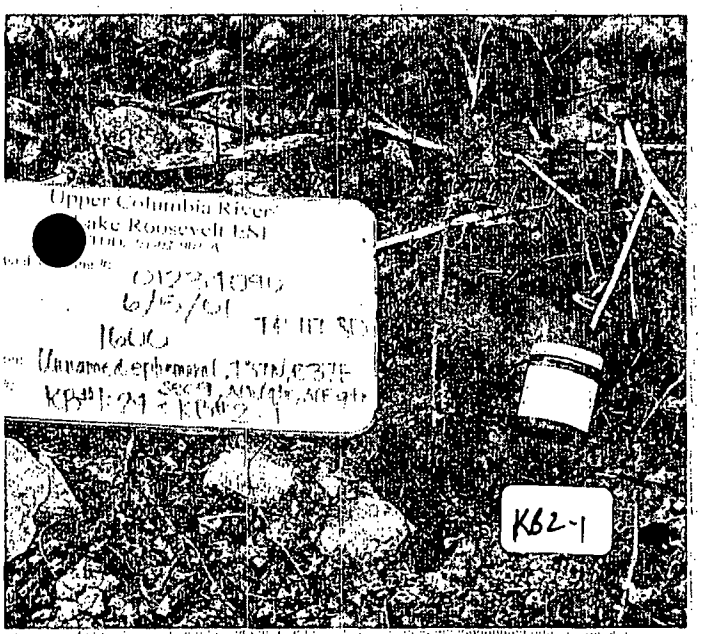

KB1-23


KB1-24

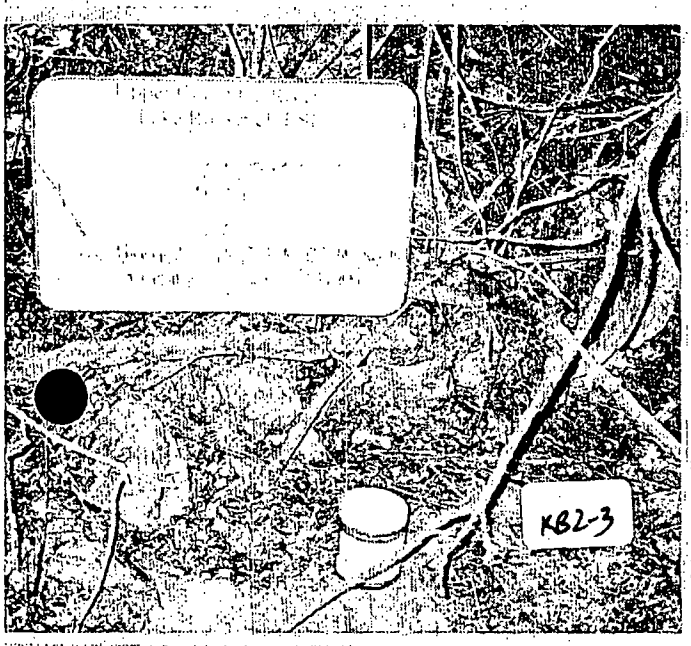
PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

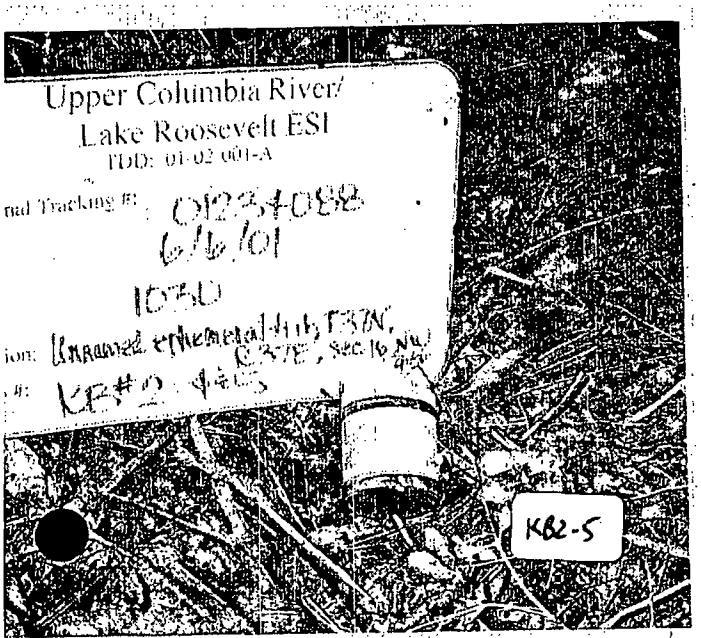
Photo No.	Date	Time	By	Dir.	Description
KB2-1	6/5/01	1600	KB	NA	Unnamed ephemeral tributary @ T37N, R37E, section 9, NW ¼, NE ¼, sample material in jar (RT# 01234090).
KB2-2	6/6/01	0900	KB	SE	Unnamed tributary @ T37N, R37E, section 16, SW ¼, sampling area.
KB2-3	6/6/01	0900	KB	NA	Unnamed tributary @ T37N, R37E, section 16, SW ¼, sample material in jar (RT# 01234065).
KB2-4	6/6/01	1030	KB	E	Unnamed ephemeral tributary @ T37W, R37E, section 16, NW ¼, sampling area.
KB2-5	6/6/01	1030	KB	SW	Unnamed ephemeral tributary @ T37W, R37E, section 16, NW ¼, sample material in jar (RT# 01234088).
KB2-6	6/6/01	1130	KB	SW	Unnamed tributary across from Marcus Island, sampling area.
KB2-7	6/6/01	1130	KB	N	Unnamed tributary across from Marcus Island, sample material in jar (RT# 01234111).
KB2-8	6/6/01	1245	KB	NE	Unnamed ephemeral tributary @ T37N, R37E, section 22, sampling location.
KB2-9	6/6/01	1245	KB	NE	Unnamed ephemeral tributary @ T37N, R37E, section 22, sample material in jar (RT# 01234110), and sampling location.
KB2-10	6/6/01	1245	KB	NE	Unnamed ephemeral tributary @ T37N, R37E, section 22, sampling area.
KB2-11	6/6/01	1400	KB	W	Nancy Creek, sampling area.
KB2-12	6/6/01	1400	KB	SW	Nancy Creek, sample material in jar (RT# 01234109), and sampling location.
KB2-13	6/6/01	1500	KB	S	Hallam Creek, sampling area.
KB2-14	6/6/01	1500	KB	N	Hallam Creek, sample material in jars (RT# 10234106), and sampling location.
KB2-15	6/6/01	1600	KB	E	Pingston Creek, sampling area.
KB2-16	6/6/01	1600	KB	N	Pingston Creek, sample material in jars (RT# 01234108)
KB2-17	6/6/01	1645	KB	E	Martin Spring Creek (ephemeral), sample material in jars (RT# 01234107).
KB2-18	6/6/01	1645	KB	E	Martin Spring Creek (ephemeral), sampling area.
KB2-19	6/7/01	0915	KB	E	Unnamed tributary @ T35N, R37E, section 31, sampling area with Lake Roosevelt in background.
KB2-20	6/7/01	0915	KB	N	Unnamed tributary @ T35N, R37E, section 31, sample material in jar (RT# 01234112).
KB2-21	6/7/01	1000	KB	S	Unnamed tributary @ T36N, R37E, section 32, sample material in jar (RT# 01234113).
KB2-22	6/7/01	1000	KB	W	Unnamed tributary @ T36N, R37E, section 32, sampling area.
KB2-23	6/7/01	1030	KB	E	Martin Creek, sampling area.
KB2-24	6/7/01	1030	KB	NW	Martin Creek, sample material in jar (RT# 01234114).


Upper Columbia River/
Lake Roosevelt ESI
6/5/01
1600
KB2-1

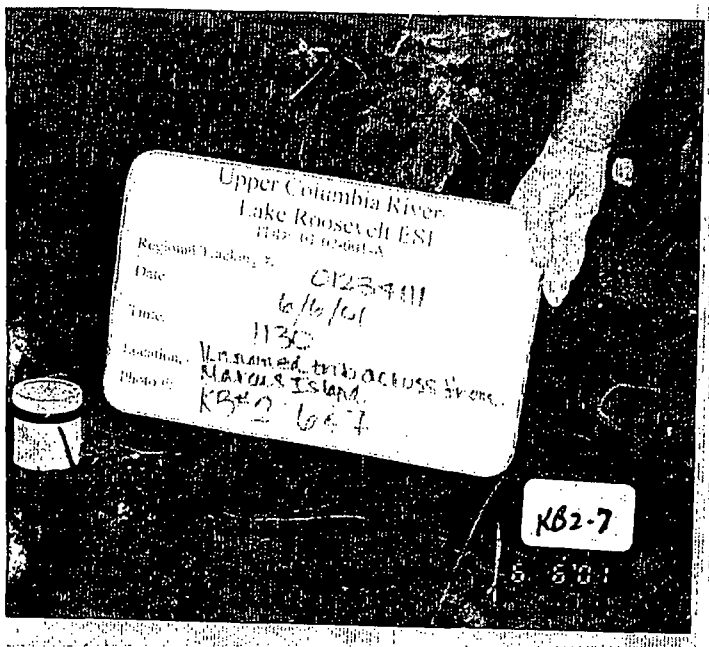
KB2-2

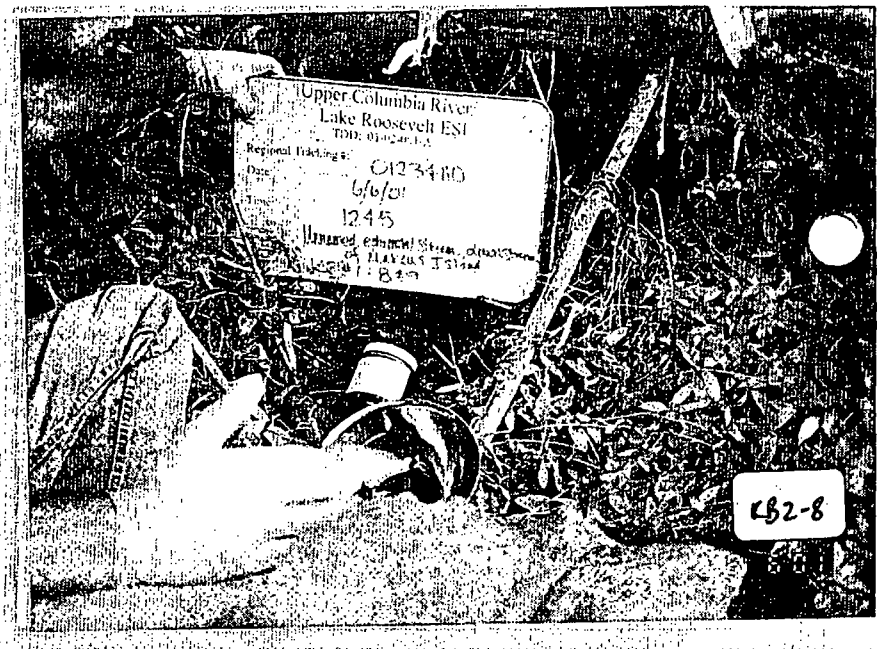

KB2-3

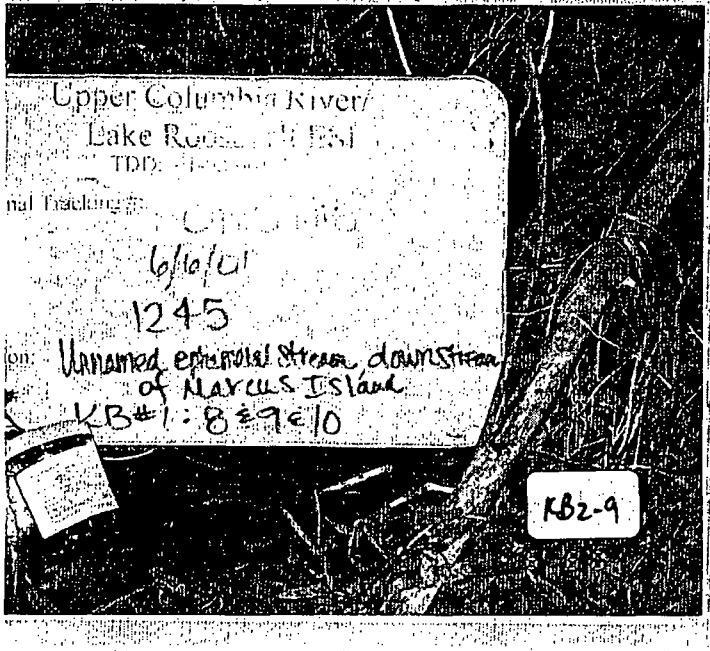
KB2-4


Upper Columbia River/
Lake Roosevelt ESI
FDD: 01-02 001-A
01234088
6/6/01
1030
KB2-5

KB2-6

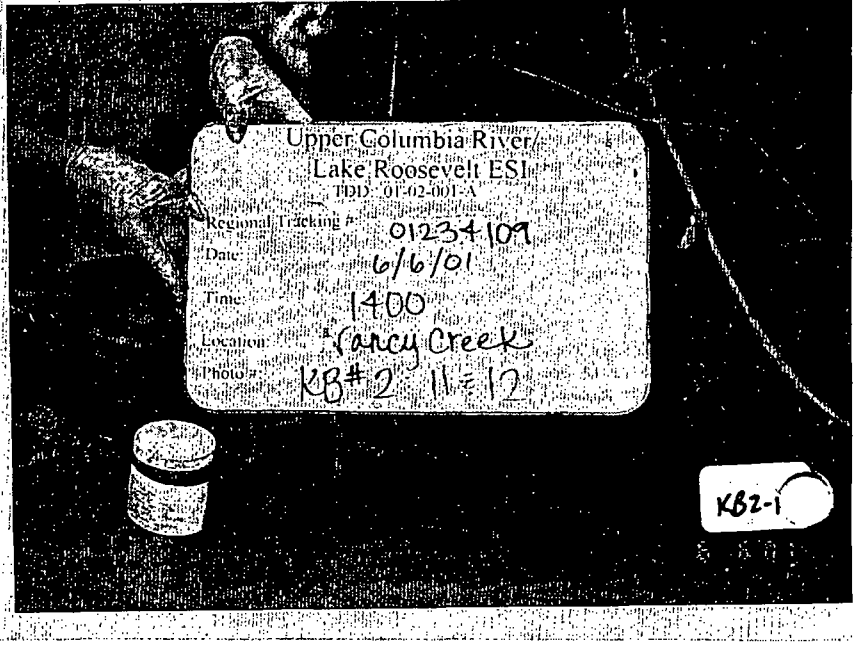

Upper Columbia River
Lake Roosevelt ESI
Date
6/6/01
Time
1130
KB2-7

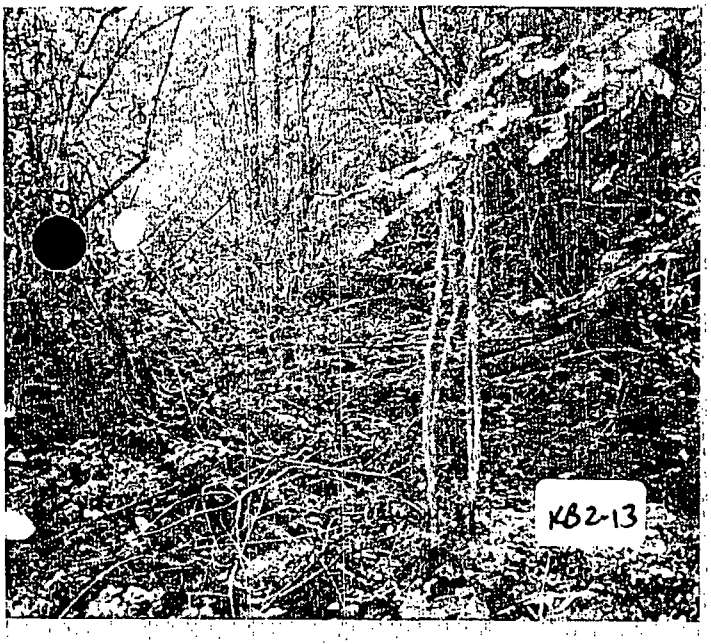

Upper Columbia River
Lake Roosevelt ESI
01234110
6/6/01
1245
KB2-8

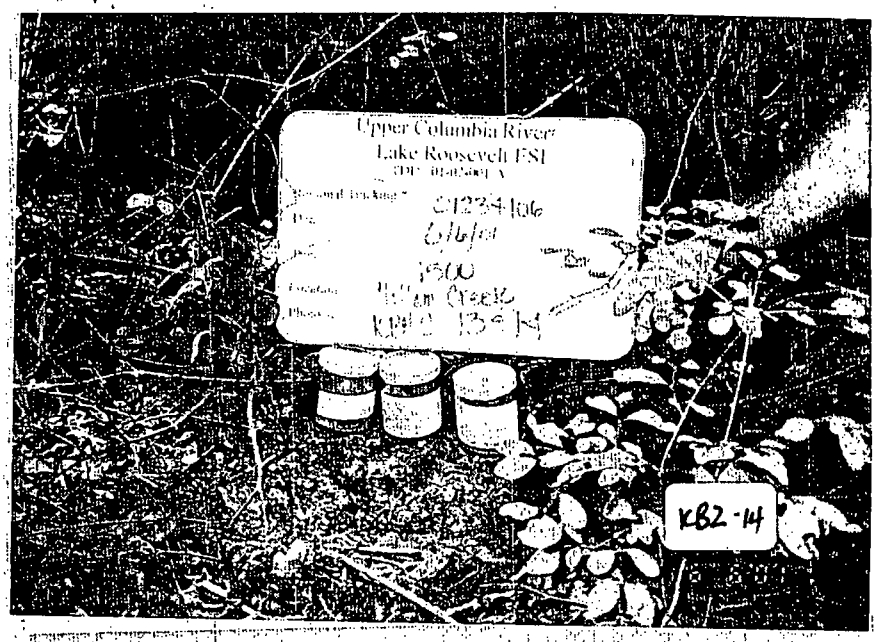

Upper Columbia River
6/6/01
1245
Unnamed ephemeral stream, downstream
of Marcus Island
KB#1: 8 & 9 & 10
KB2-9

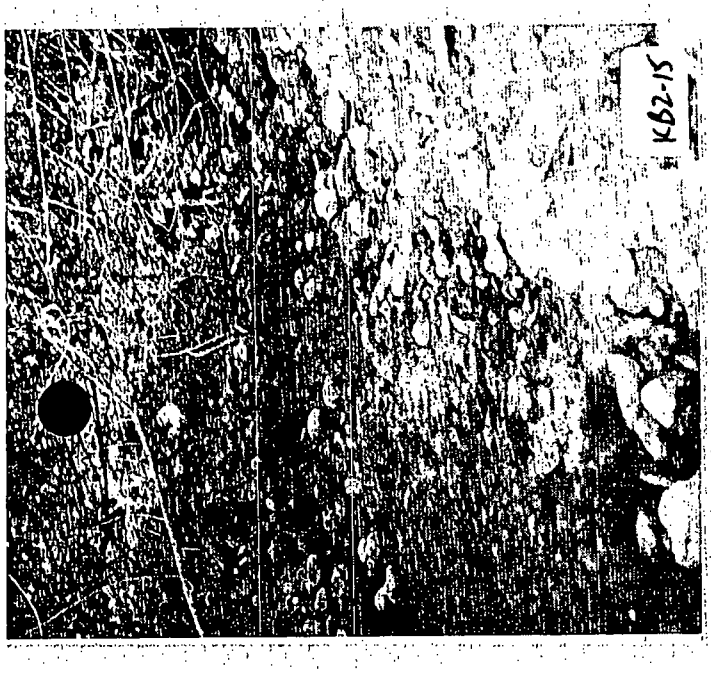
KB2-10

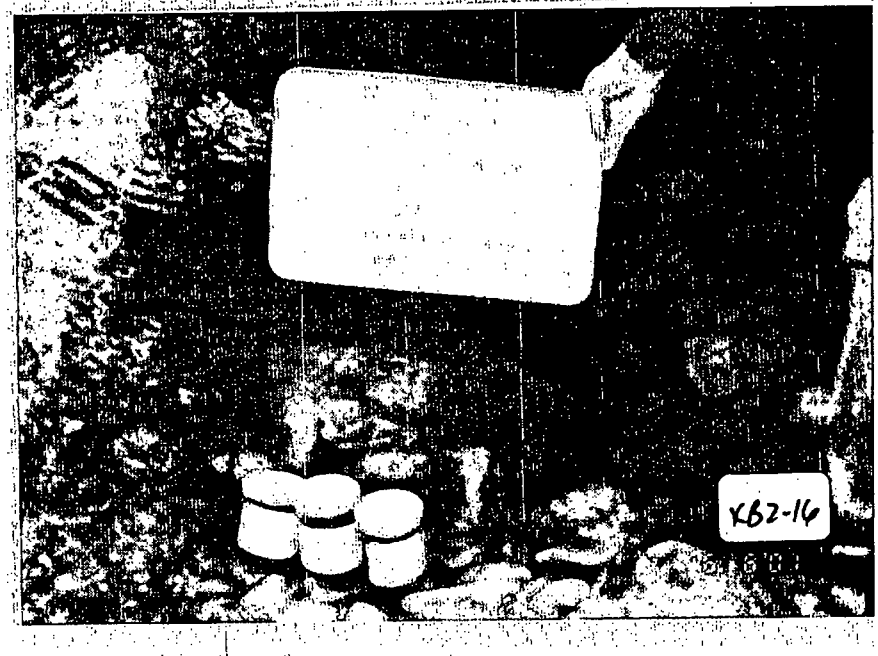
KB2-11

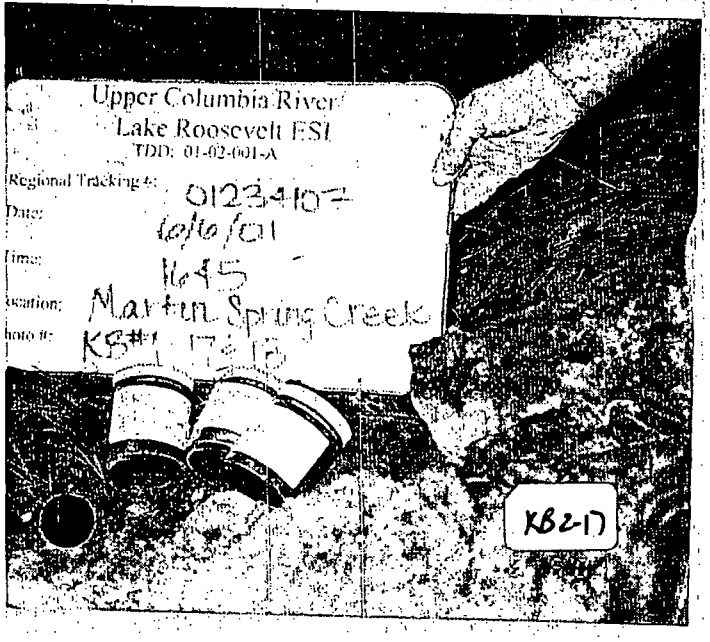

Upper Columbia River
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #
01234109
Date
6/6/01
Time
1400
Location
Cancy Creek
Photo #
KB#2 11 & 12

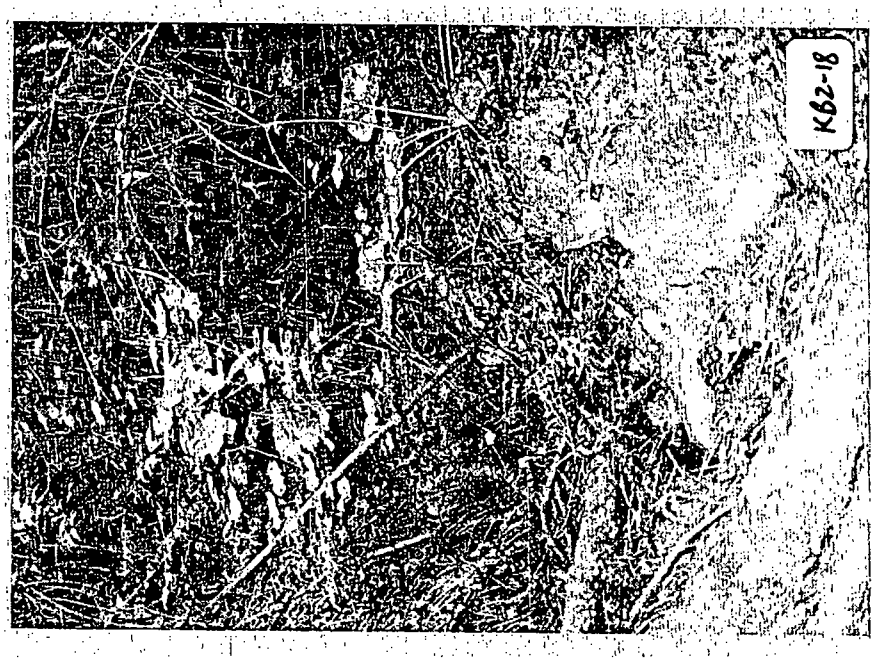

KB2-13

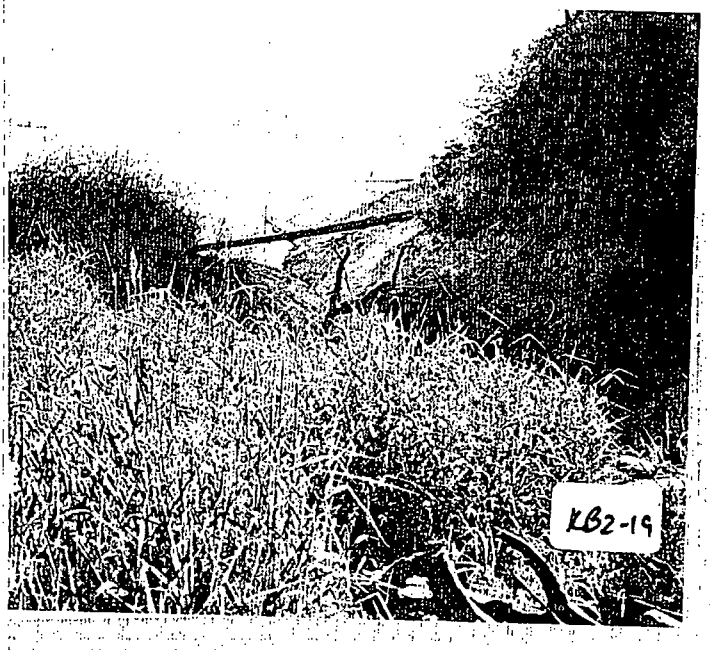

Upper Columbia River
Lake Roosevelt ESI
KB2-14

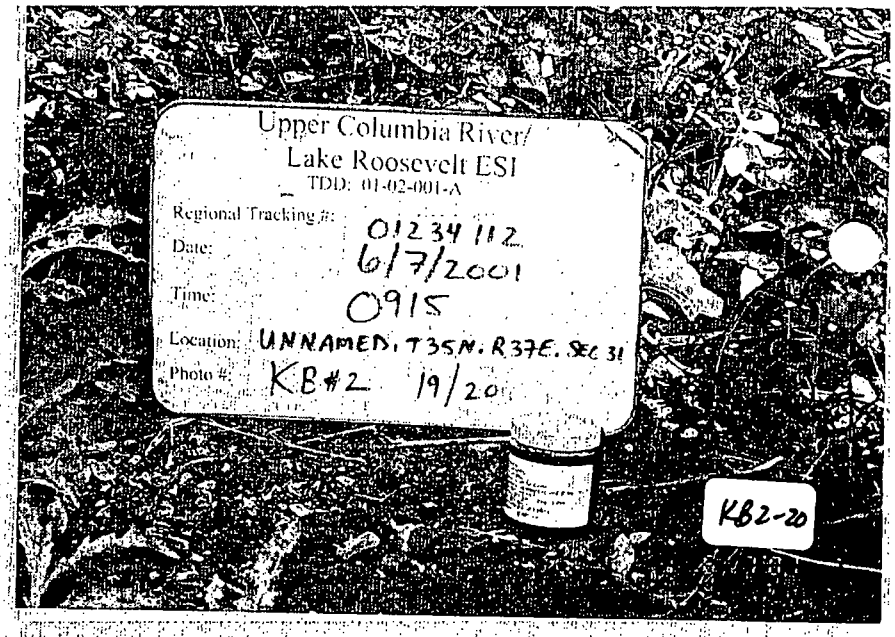

KB2-15

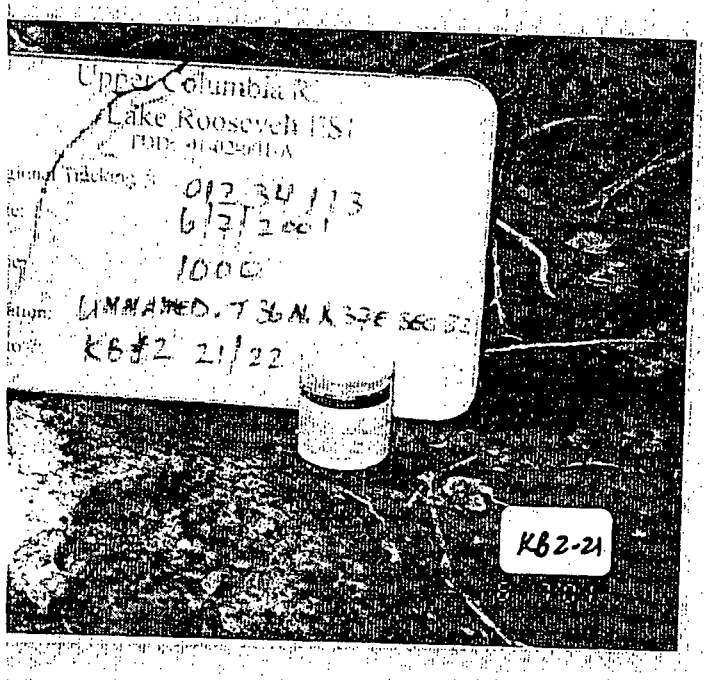

KB2-16


Upper Columbia River
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234107
Date: 10/6/01
Time: 1645
Location: Martin Spring Creek
KB2-17


KB2-18

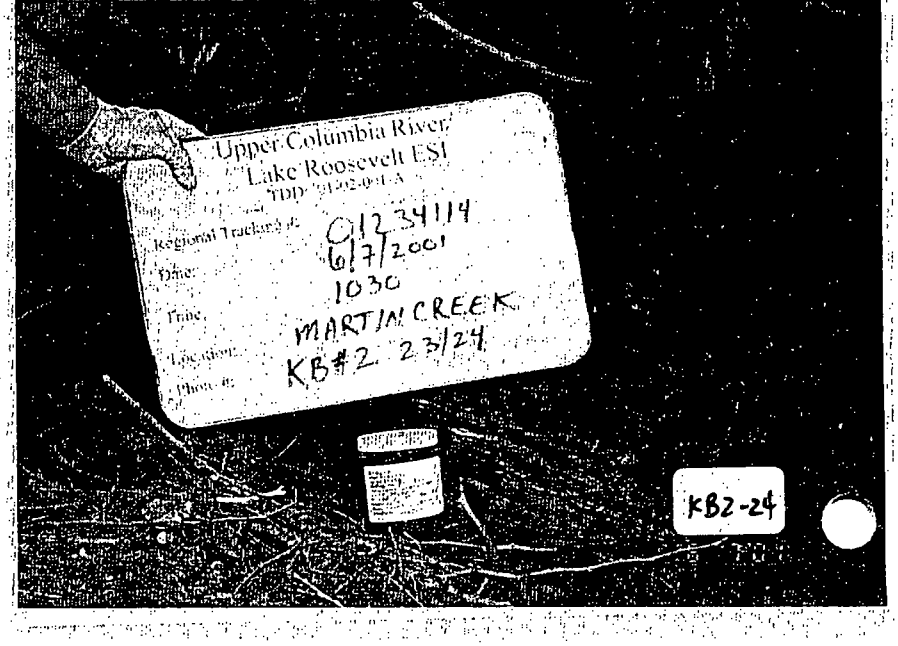

KB2-19


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234112
Date: 6/7/2001
Time: 0915
Location: UNNAMED, T35N, R37E, SEC 31
Photo #: KB#2 19/20
KB2-20


Lake Roosevelt ESI
012 34 113
6/7/2001
1000
KB#2 21/22
KB2-21

KB2-22

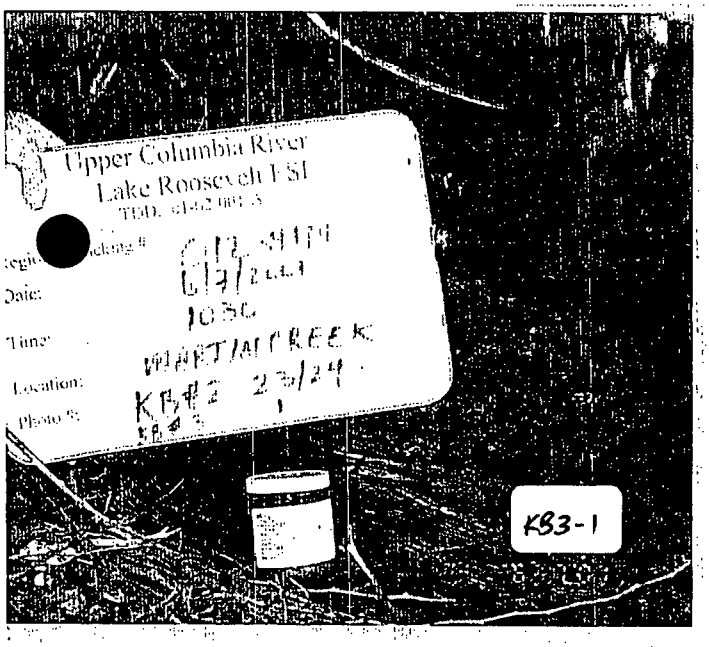
KB2-23

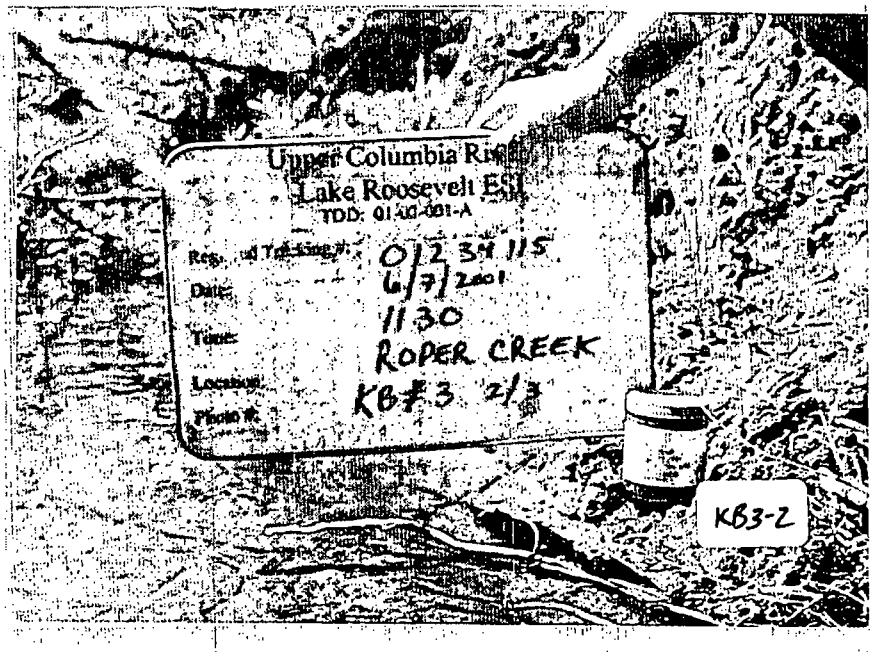

Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #: 01234114
Date: 6/7/2001
Time: 1030
MARTIN CREEK
KB#2 23/24
KB2-24

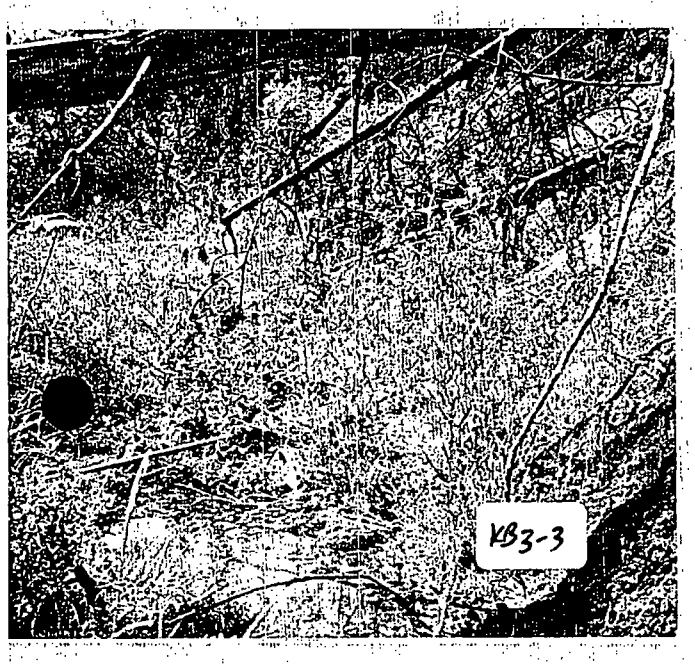
PHOTOGRAPH IDENTIFICATION SHEET

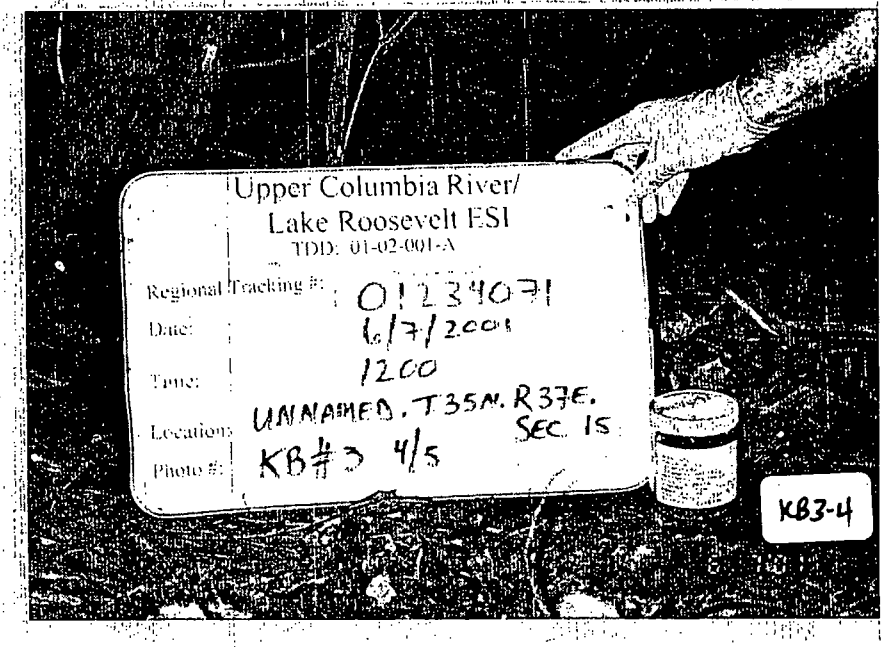
Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

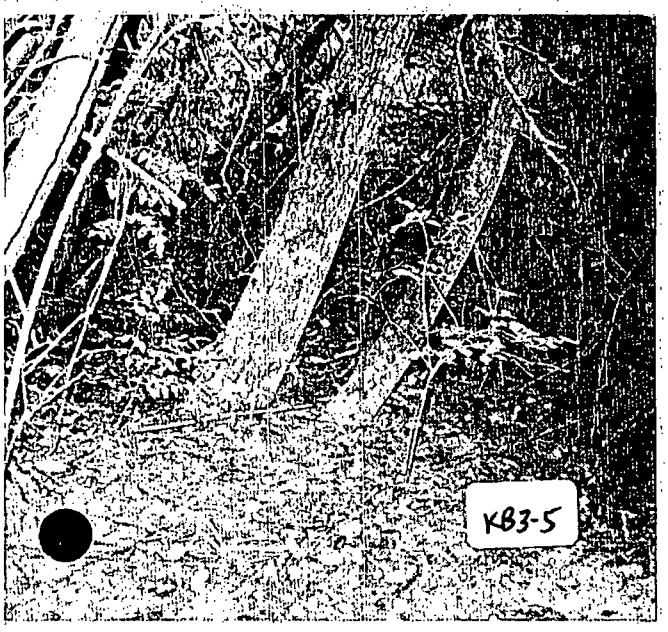
Photo No.	Date	Time	By	Dir.	Description
KB3-1	6/7/01	1030	KB	NW	Martin Creek, sample material in jar (RT# 01234114).
KB3-2	6/7/01	1130	KB	S	Roper Creek, sample material in jar (RT# 01234115), and sampling location.
KB3-3	6/7/01	1130	KB	S	Roper Creek, sampling area.
KB3-4	6/7/01	1200	KB	SE	Unnamed tributary @ T35N, R37E, section 15, sample material in jar (RT# 01234071).
KB3-5	6/7/01	1200	KB	SE	Unnamed tributary @ T35N, R37E, section 15, sampling area.
KB3-6	6/7/01	1300	KB	E	Rickey Creek, sample material in jar (RT# 01234116).
KB3-7	6/7/01	1300	KB	SW	Rickey Creek, sampling area.
KB3-8	6/7/01	1400	KB	N	Unnamed tributary @ T36N, R37E, section 14, SW ¼, sample material in jar (RT# 01234020).
KB3-9	6/7/01	1400	KB	E	Unnamed tributary @ T36N, R37E, section 14, SW ¼, sampling area.
KB3-10	6/7/01	1430	KB	SE	Unnamed tributary @ T36N, R37E, section 15, SE ¼ (eastern tributary), sample material in jar (RT# 01234119).
KB3-11	6/7/01	1430	KB	E	Unnamed tributary @ T36N, R37E, section 15, SE ¼ (eastern tributary), sampling area.
KB3-12	6/7/01	1500	KB	NE	Unnamed tributary @ T36N, R37E, section 15, SE ¼ (western tributary), sampling area.
KB3-13	6/7/01	1500	KB	NE	Unnamed tributary @ T36N, R37E, section 15, SE ¼ (western tributary), sample material in jar (RT# 01234104).
KB3-14	6/7/01	1600	KB	W	Unnamed tributary @ T36N, R37E, section 22, NE ¼ (a.k.a. Tributary #100), sampling area.
KB3-15	6/7/01	1600	KB	S	Unnamed tributary @ T36N, R37E, section 22, NE ¼ (a.k.a. Tributary #100), sample material in jar (RT# 01234118), and sampling location.
KB3-16	6/7/01	1645	KB	SE	Unnamed tributary @ T36N, R37E, section 22, SE ¼, sample material in jar (RT# 01234117), and sampling location.
KB3-17	6/7/01	1645	KB	W	Unnamed tributary @ T36N, R37E, section 22, SE ¼, sampling area.
KB3-18	6/8/01	1000	KB	E	Deep Creek, sampling area.
KB3-19	6/8/01	1000	KB	SW	Deep Creek, sample material in jars (RT# 01234122).
KB3-20	6/8/01	1145	KB	NE	Rattlesnake Creek, sample material in jars (RT# 01234139). Incorrect RT# noted on white board
KB3-21	6/8/01	1145	KB	NE	Rattlesnake Creek, sampling area.
KB3-22	6/8/01	1300	KB	E	Onion Creek, sample material in jars (RT# 01234140). Incorrect RT# noted on white board.
KB3-23	6/8/01	1300	KB	E	Onion Creek, sampling area.
KB3-24	6/8/01	1615	KB	NE	Unnamed ephemeral tributary @ T37N, R38E, section 28, sampling area.
KB3-25	6/8/01	1615	KB	NE	Unnamed ephemeral tributary @ T37N, R38E, section 28, sample material in jars (RT#01234123.)

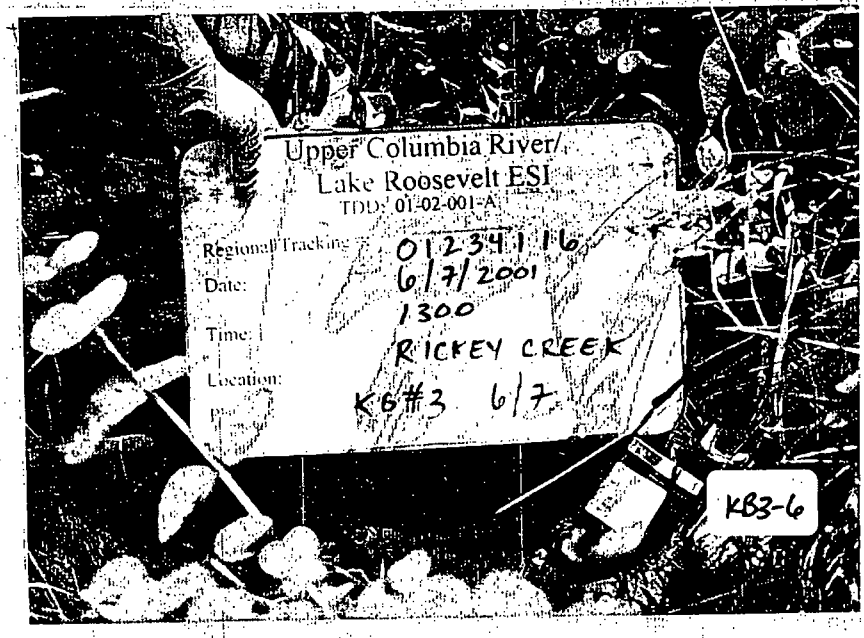

Upper Columbia River
Lake Roosevelt ESI
Date:
Time:
Location:
Photo #:
KB3-1


Upper Columbia River
Lake Roosevelt ESI
TDD: 01-02-001-A
Date:
Time:
Location:
Photo #:
01234115
6/7/2001
1130
ROPER CREEK
KB#3 2/3
KB3-2

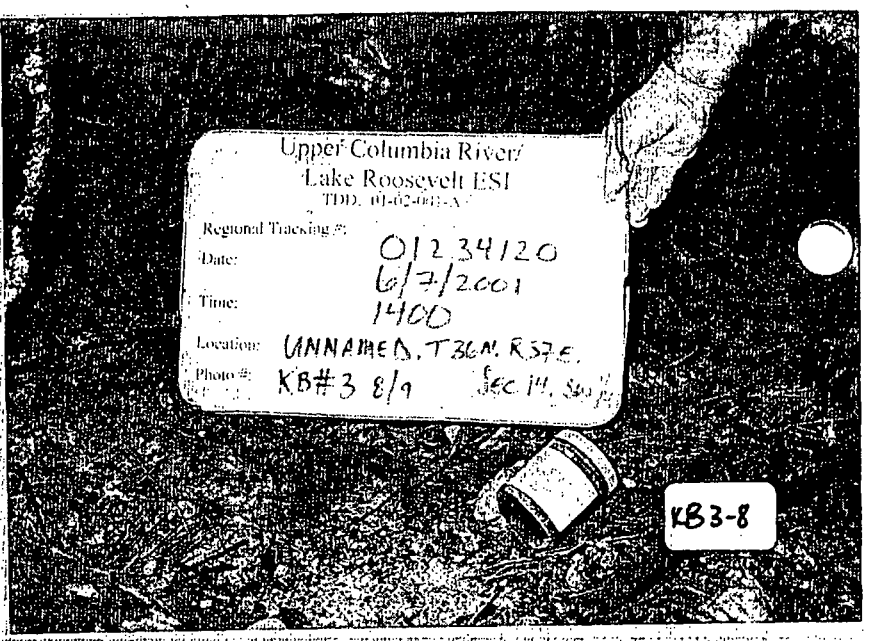

KB3-3

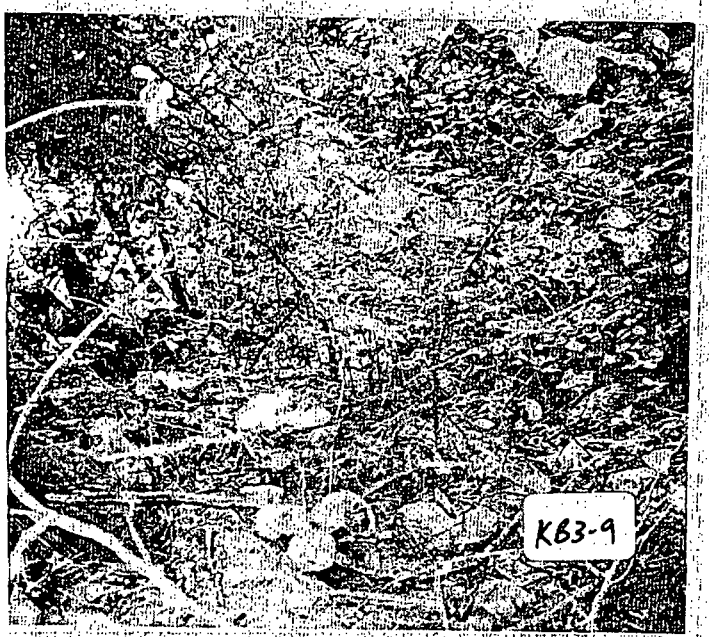

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #:
Date:
Time:
Location:
Photo #:
01234071
6/7/2001
1200
UNNAMED, T35N. R37E.
SEC. 15
KB#3 4/5
KB3-4

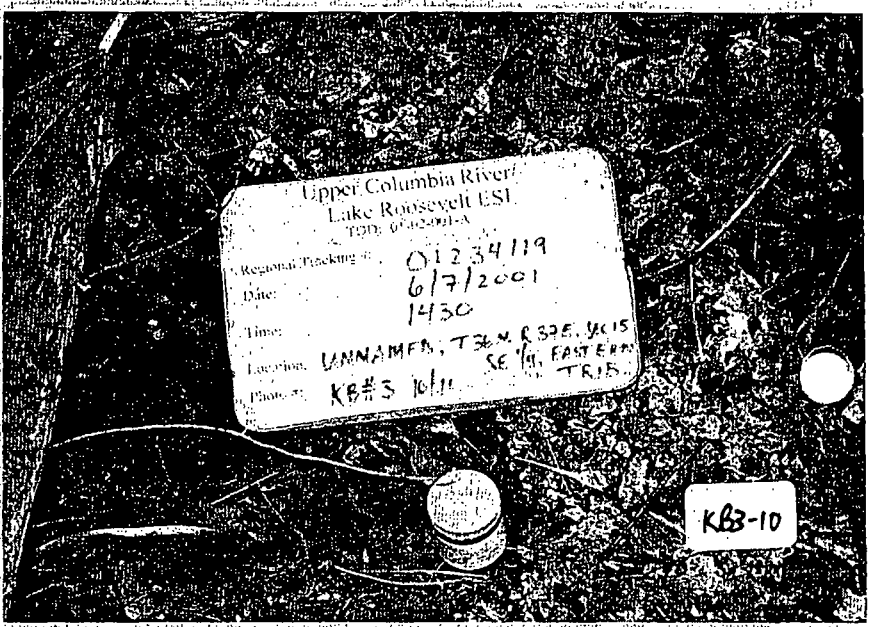

KB3-5

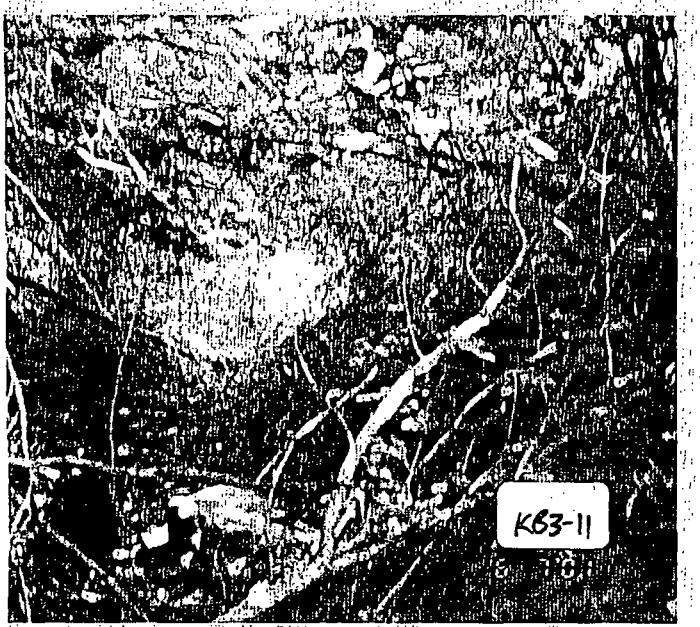

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking
Date:
Time:
Location:
01234116
6/7/2001
1300
RICKEY CREEK
KB#3 6/7
KB3-6

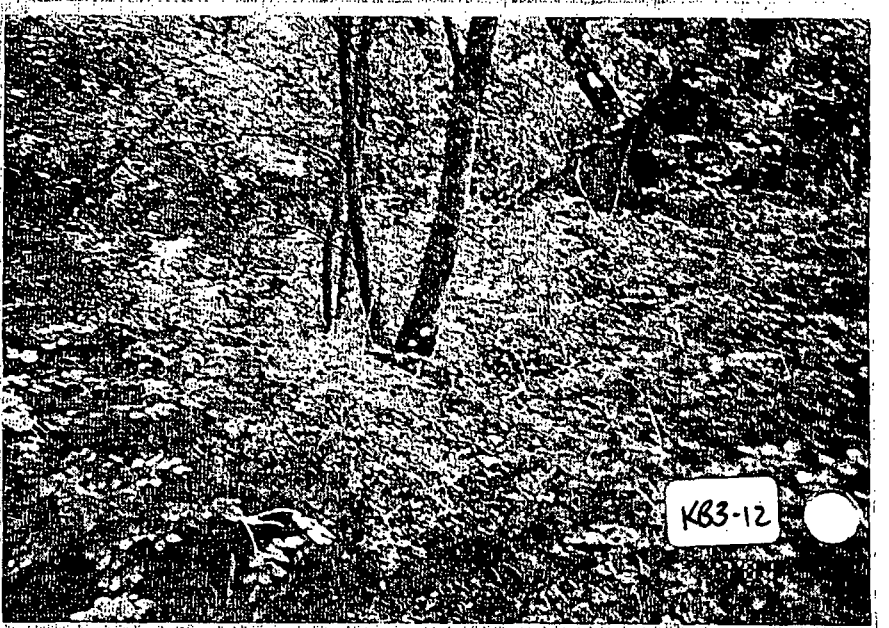
KB3-7

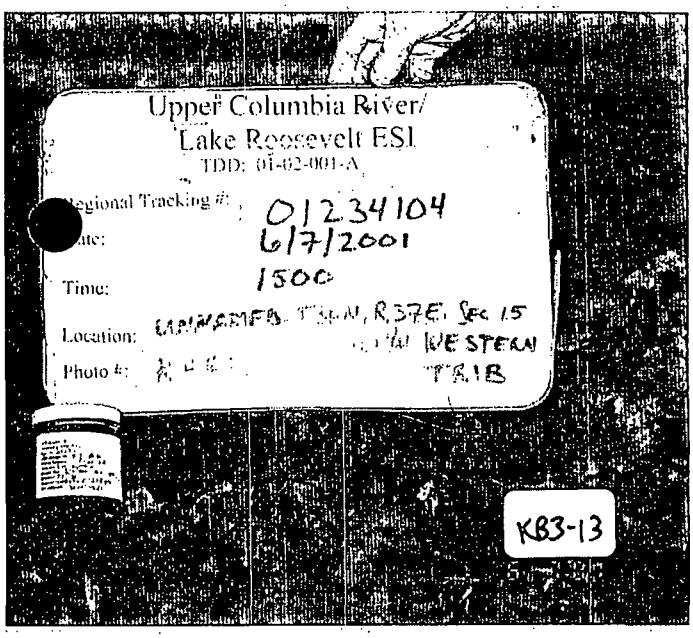

Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #: 01234120
Date: 6/7/2001
Time: 1400
Location: UNNAMED, T36N, R37E,
Photo #: KB#3 8/9
KB3-8


KB3-9

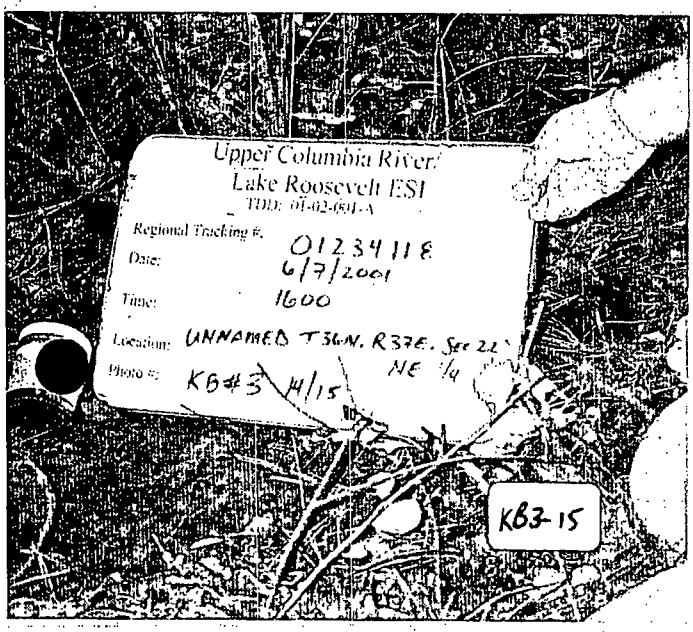

Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #: 01234119
Date: 6/7/2001
Time: 1430
Location: UNNAMED, T36N, R37E, SEC 14, EASTERN TRIB.
Photo #: KB#3 10/11
KB3-10

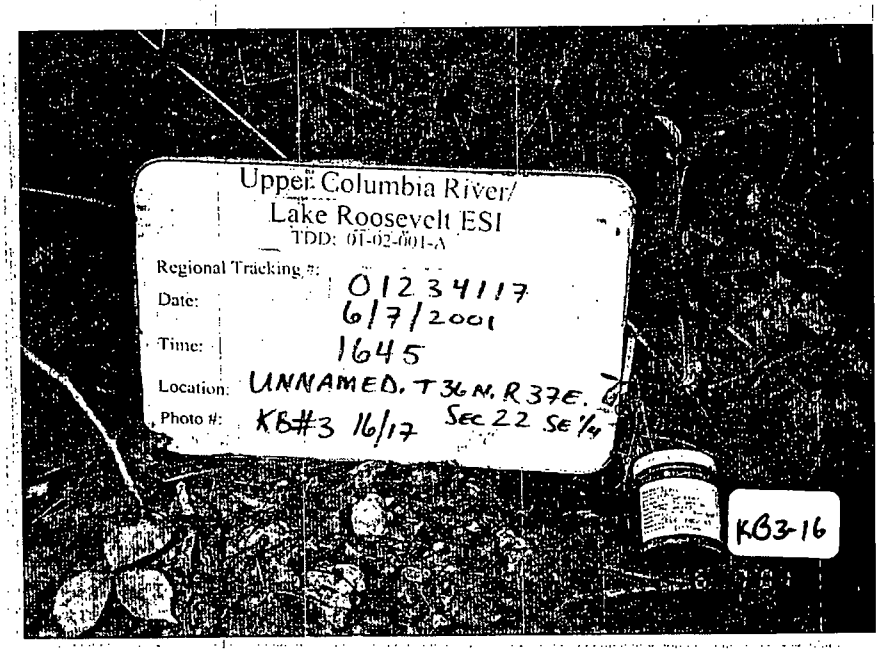

KB3-11

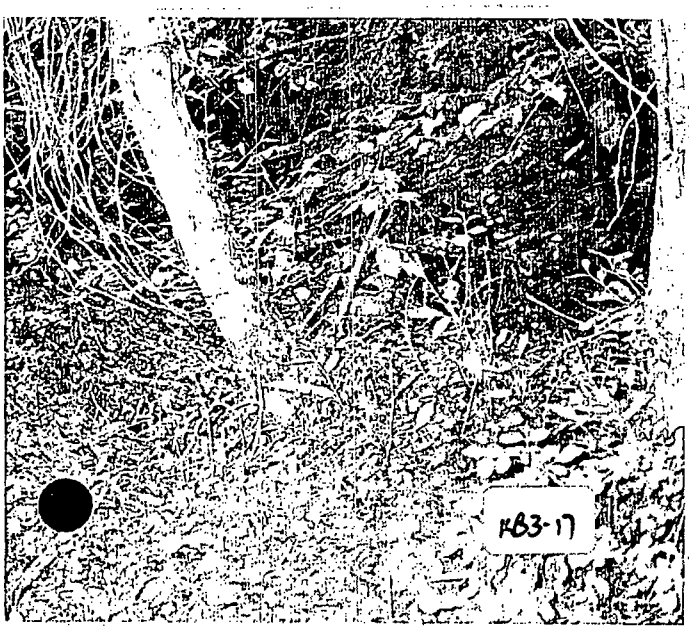

KB3-12

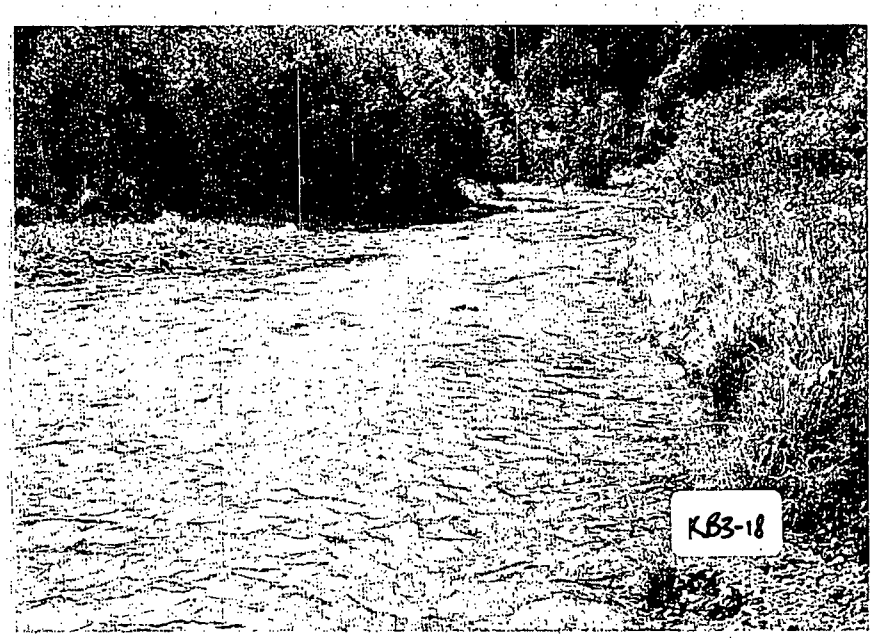

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234104
Date: 6/7/2001
Time: 1500
Location: UNNAMED T36N, R37E, Sec 15
WESTERN
Photo #:
TRIB
KB3-13

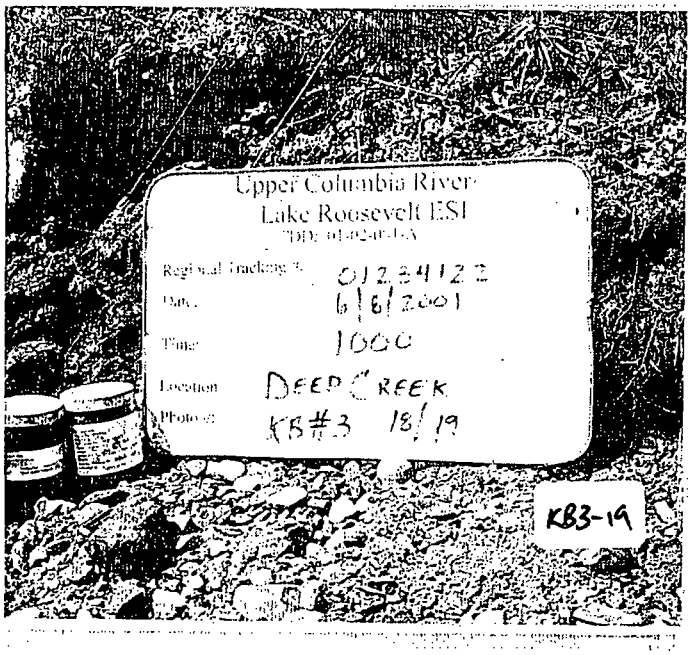
KB3-14


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234118
Date: 6/7/2001
Time: 1600
Location: UNNAMED T36N, R37E, Sec 22
NE 1/4
Photo #: KB#3 14/15
KB3-15

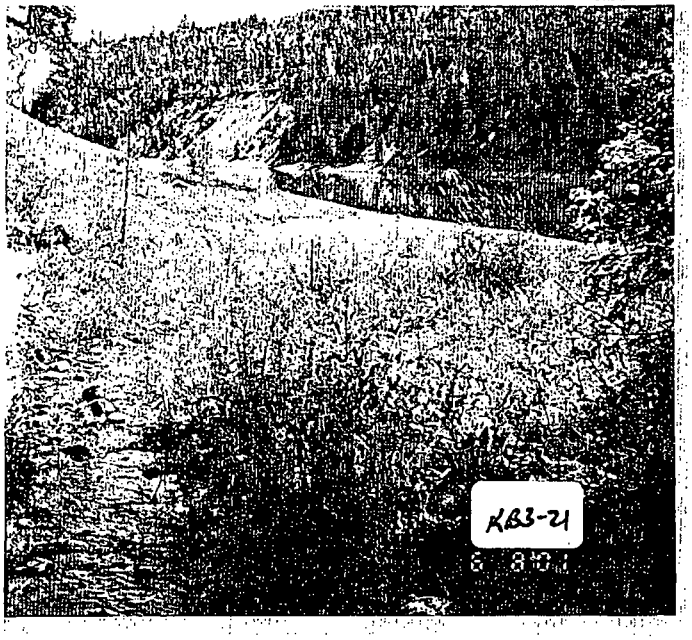

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234117
Date: 6/7/2001
Time: 1645
Location: UNNAMED, T36N, R37E,
Sec 22 SE 1/4
Photo #: KB#3 16/17
KB3-16

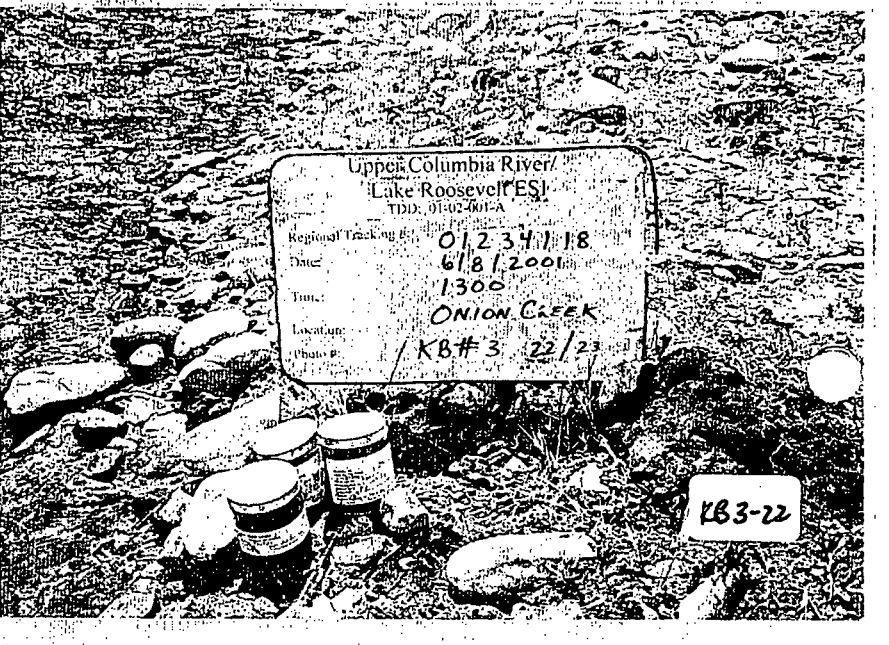

KB3-17

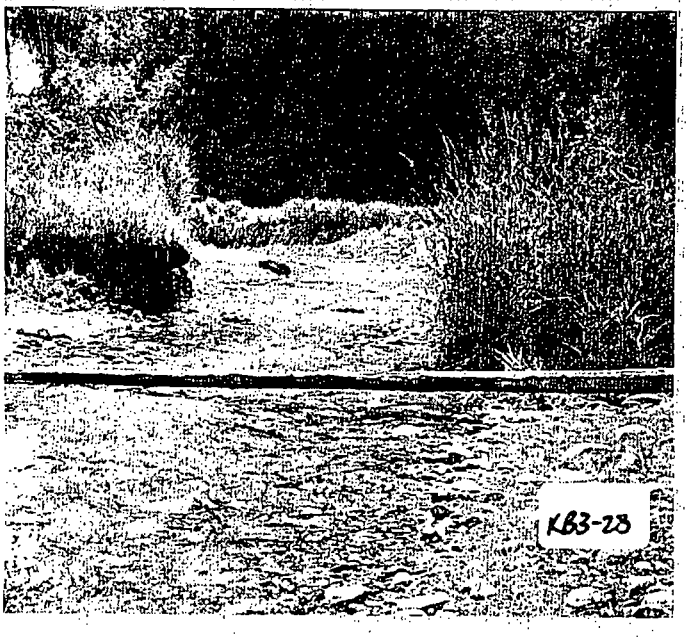

KB3-18

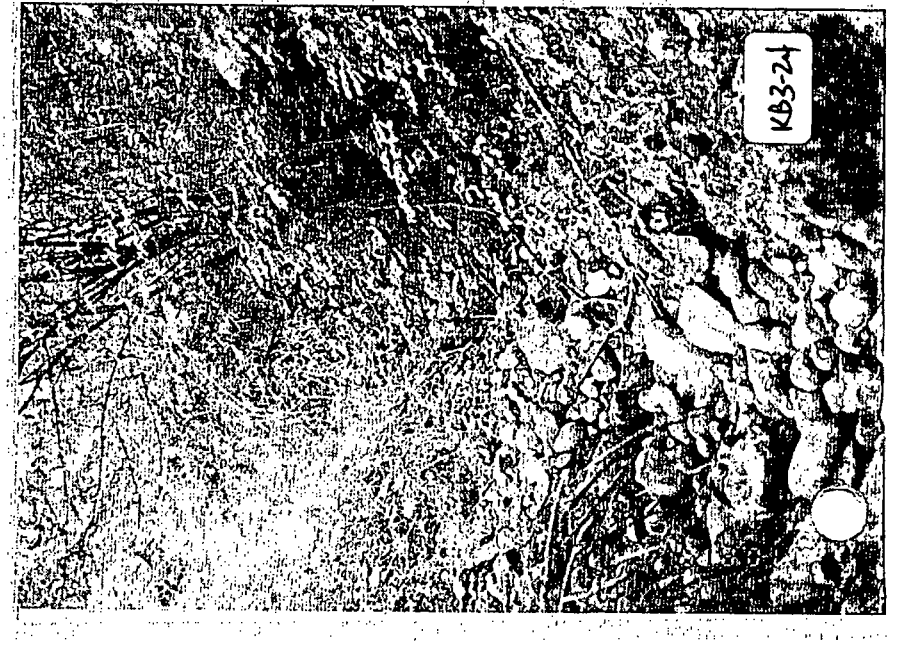

Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #: 01234122
Date: 6/6/2001
Time: 1000
Location: DEEP CREEK
Photo #: KB#3 18/19
KB3-19

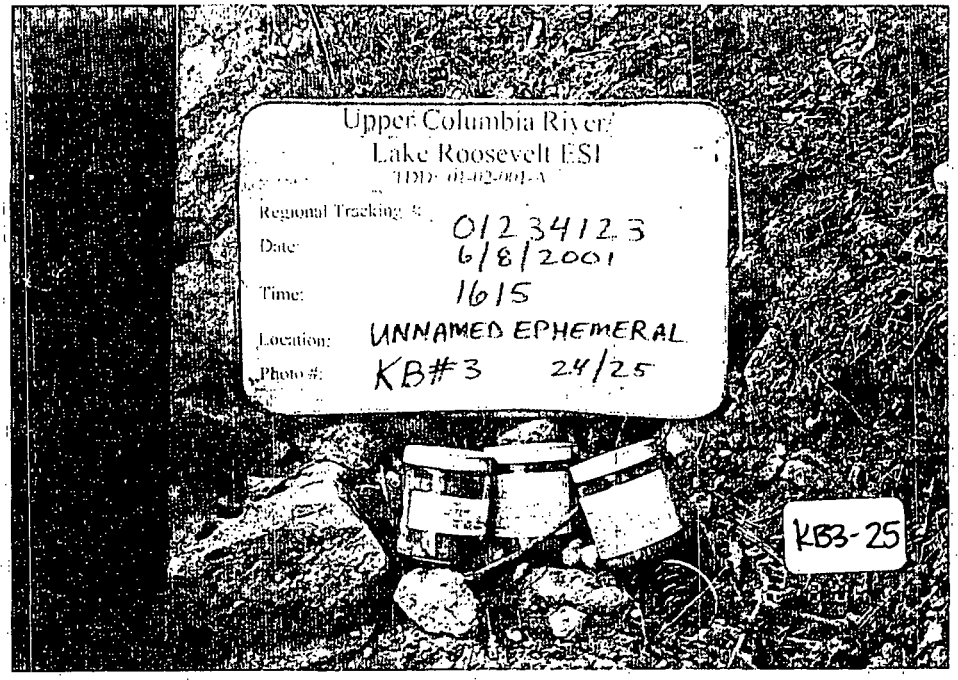
Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234117
Date: 6/8/2001
Time: 1145
Location: RATTLESNAKE CREEK
Photo #: KB#3 20/21
KB3-20


KB3-21


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234118
Date: 6/8/2001
Time: 1300
Location: ONION CREEK
Photo #: KB#3 22/23
KB3-22


KB3-23

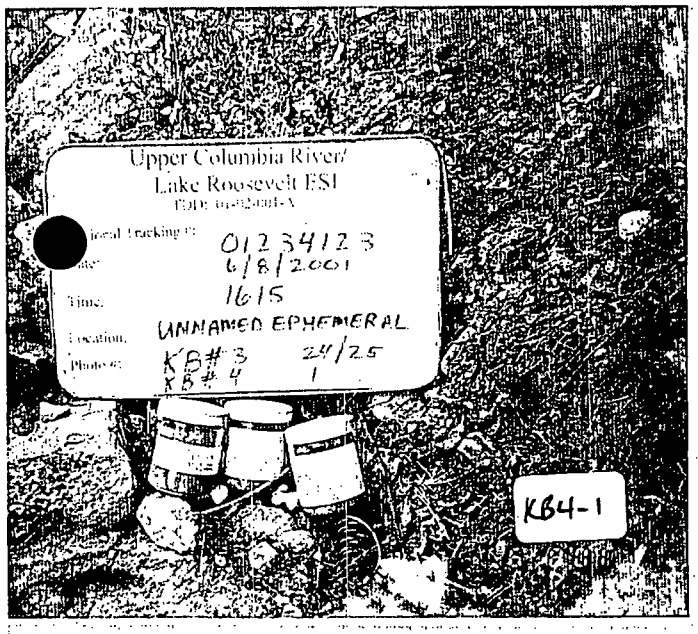

KB3-24

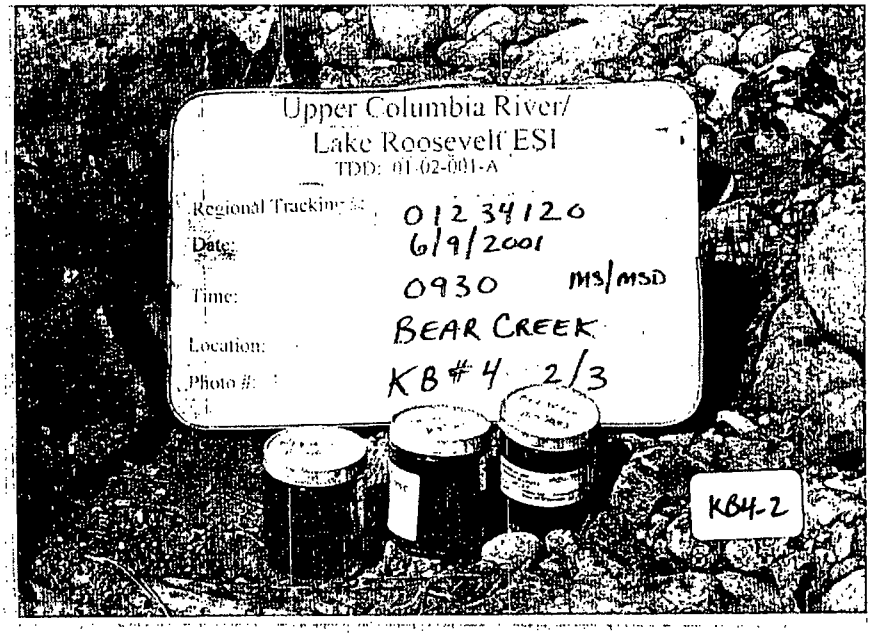

Upper Columbia River
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234123
Date: 6/8/2001
Time: 1615
Location: UNNAMED EPHEMERAL
Photo #: KB#3 24/25
KB3-25

PHOTOGRAPH IDENTIFICATION SHEET

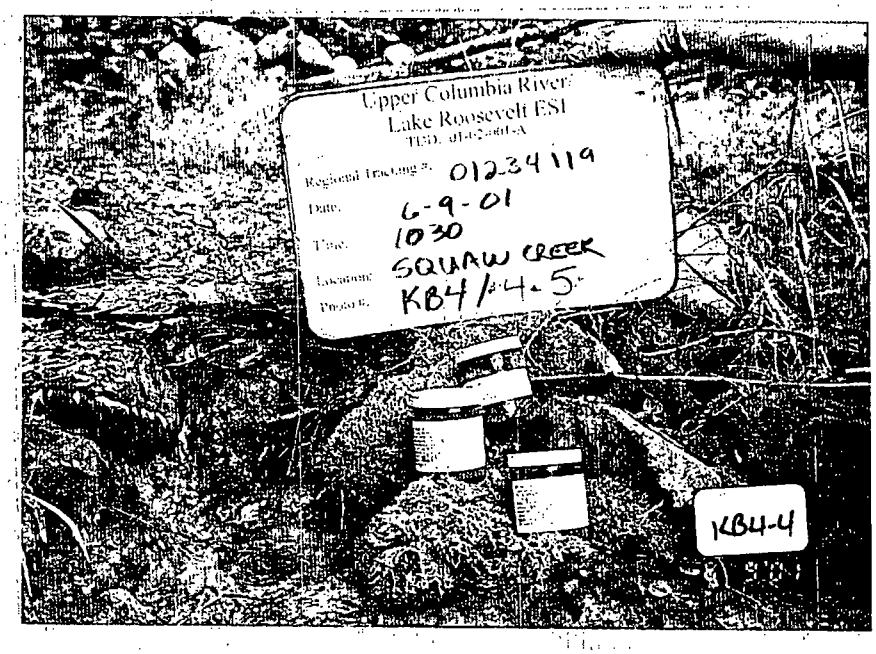
Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

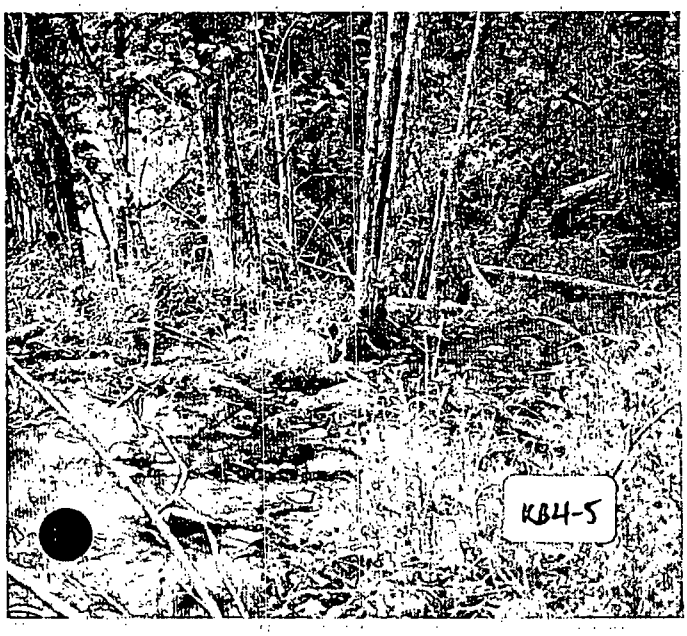
Photo No.	Date	Time	By	Dir.	Description
KB4-1	6/8/01	1615	KB	NE	Unnamed ephemeral tributary @ T37N, R38E, section 28, sample material in jars (RT# 01234123).
KB4-2	6/9/01	0930	KB	NW	Bear Creek, sample material in jars (RT# 01234142). Incorrect RT# noted on white board.
KB4-3	6/9/01	0930	KB	NW	Bear Creek, sampling area.
KB4-4	6/9/01	1030	KB	NW	Squaw Creek, sample material in jars (RT# 01234141).. Incorrect RT# noted on white board.
KB4-5	6/9/01	1030	KB	SE	Squaw Creek, sampling area.
KB4-6	6/9/01	1500	KB	E	Unnamed tributary @ T36N, R37E, section 33, SW ¼ (a.k.a. Tributary #90), sampling area.
KB4-7	6/9/01	1500	KB	E	Unnamed tributary @ T36N, R37E, section 33, SW ¼ (a.k.a. Tributary #90), sample material in jar (RT# 01234128).
KB4-8	6/9/01	1530	KB	E	Unnamed tributary @ T35N, R37E, section 33, NW ¼ (a.k.a. Tributary #91), sample material in jars. (RT#01234129)
KB4-9	6/9/01	1530	KB	E	Unnamed tributary @ T35N, R37E, section 33, NW ¼ (a.k.a. Tributary #91), sampling area.
KB4-10	6/9/01	1645	KB	S	Unnamed tributary @ T37N, R37E, section 33 (a.k.a. Tributary #112), sample material in jar (RT# 01234121).
KB4-11	6/9/01	1645	KB	S	Unnamed tributary @ T35N, R37E, section 33 (a.k.a. Tributary #112), sampling area.
KB4-12	6/9/01	1730	KB	SW	Unnamed tributary (adjacent to Tributary #100), sample material in jar (RT# 01234136). White board incorrectly lists photo numbers associated with this site, and incorrect RT#.
KB4-13	6/9/01	1730	KB	E	Unnamed tributary (adjacent to Tributary #100), sample area.


Upper Columbia River/
Lake Roosevelt ESI
01234123
6/8/2001
1615
UNNAMED EPHEMERAL
KB#3 24/25
KB#4 1
KB4-1

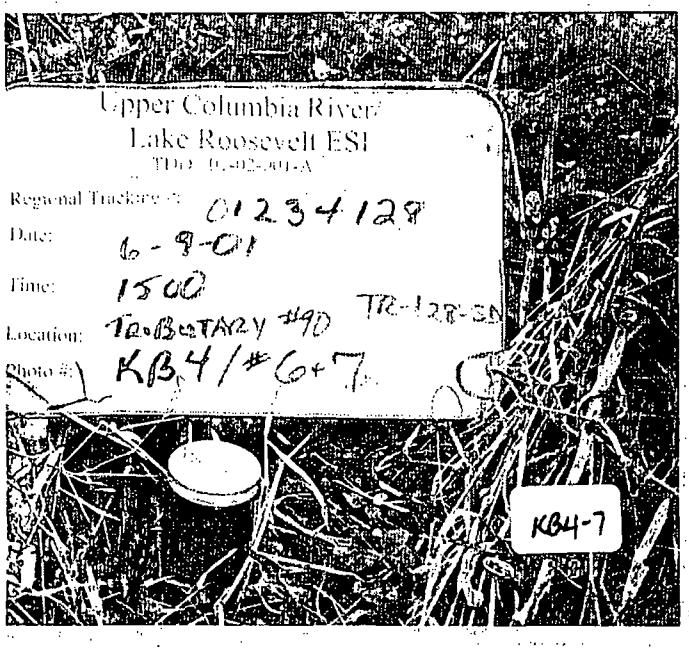

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234120
Date: 6/9/2001
Time: 0930 MS/MSD
Location: BEAR CREEK
Photo #: KB#4 2/3
KB4-2

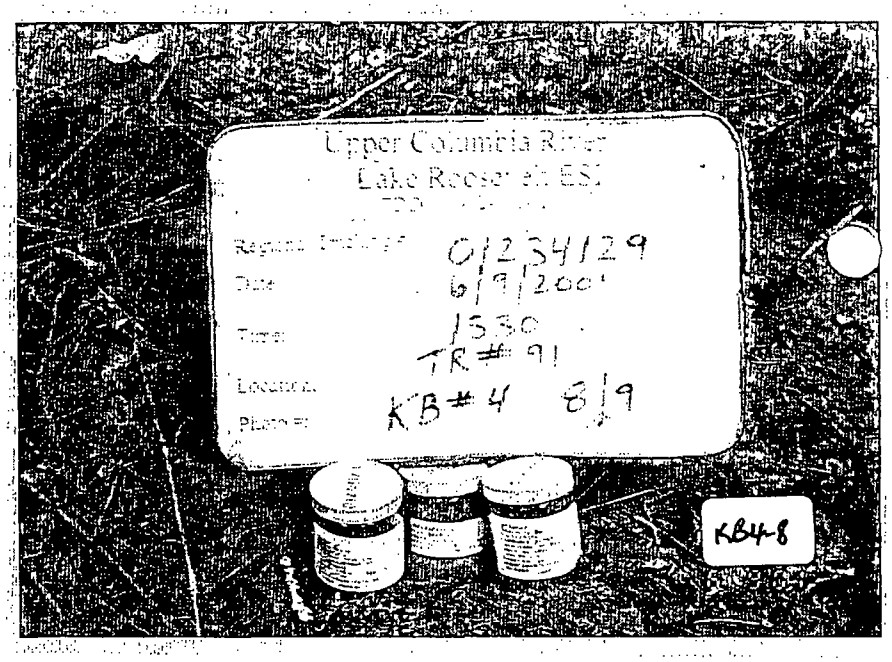
KB4-3


Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #: 01234119
Date: 6-9-01
Time: 1030
Location: SQUAW CREEK
Photo #: KB4/4-5
KB4-4

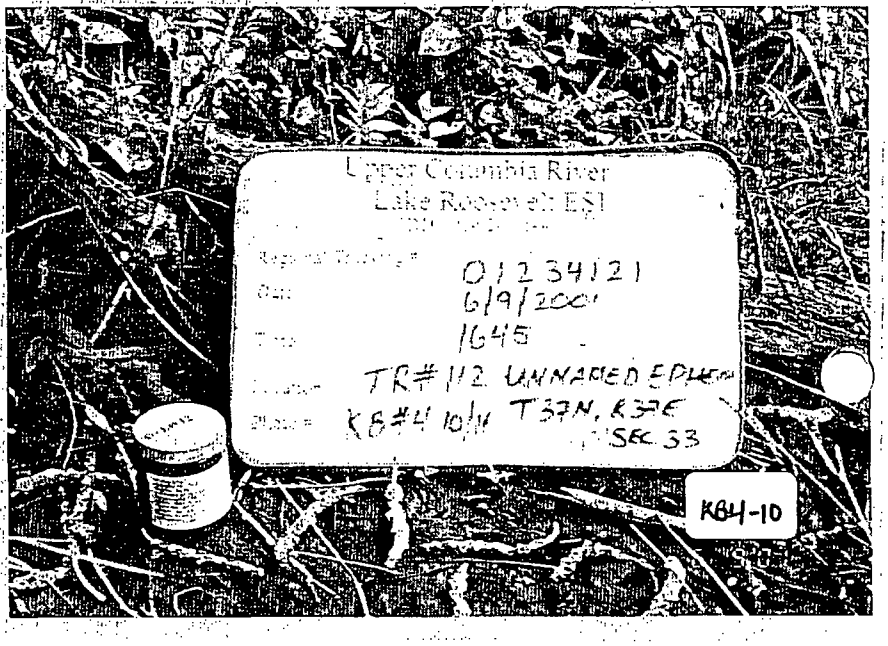

KB4-5

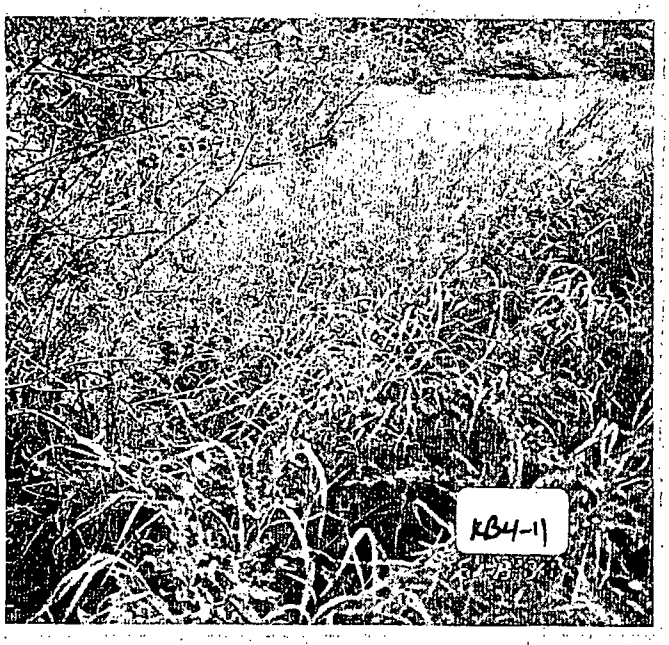
KB4-6

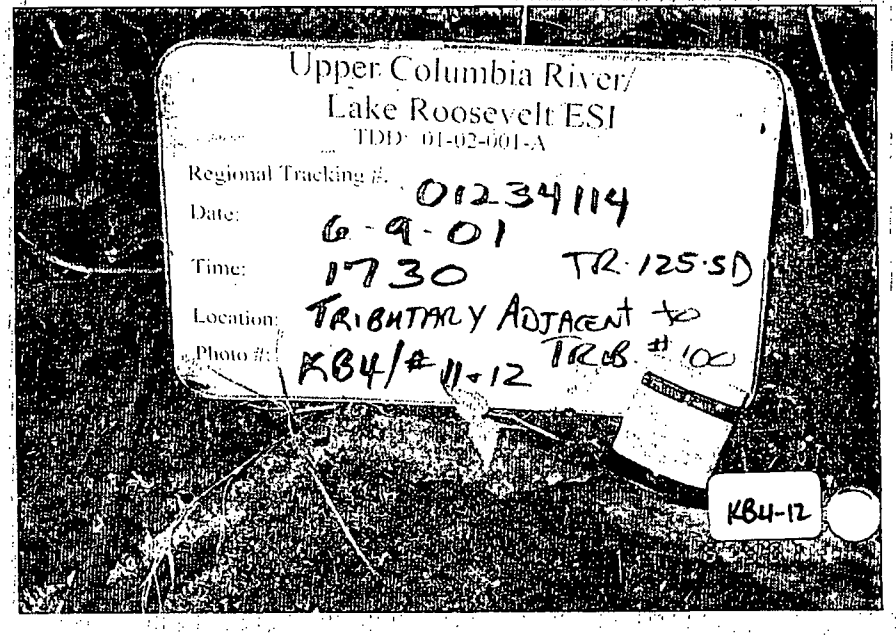

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234128
Date: 6-9-01
Time: 1500
Location: TRIBUTARY #90 TR-128-SD
Photo #: KB4/#6+7
KB4-7


Upper Columbia River
Lake Roosevelt ESI
01234129
6/9/2001
1530
TR#91
KB#4 8/9
KB4-8

KB4-9


Upper Columbia River
Lake Roosevelt ESI
01234121
6/9/2001
1645
TR#112 UNNAMED EPHEM
KB#4 10/11 T37N, R32E
SEC 33
KB4-10


KB4-11


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234114
Date: 6-9-01
Time: 1730 TR-125-SD
Location: TRIBUTARY ADJACENT to TRIB. #100
Photo #: KB4/#11+12
KB4-12

KB4-13

PHOTOGRAPH IDENTIFICATION SHEET

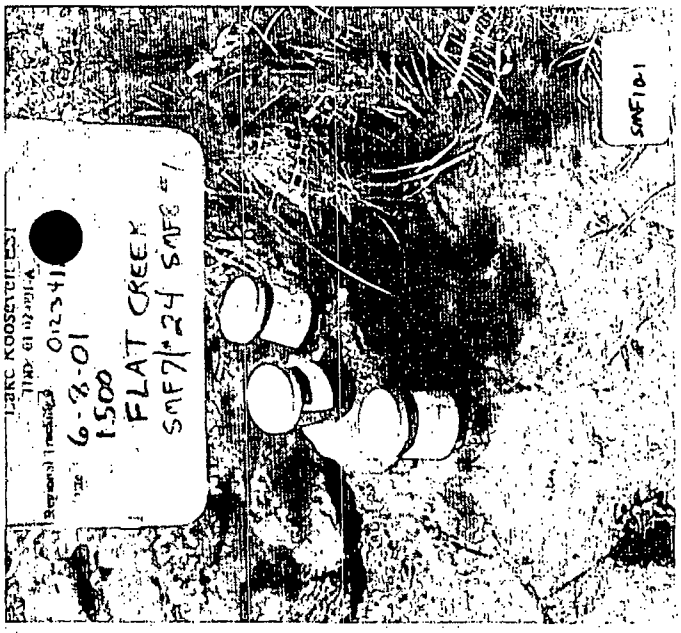
Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

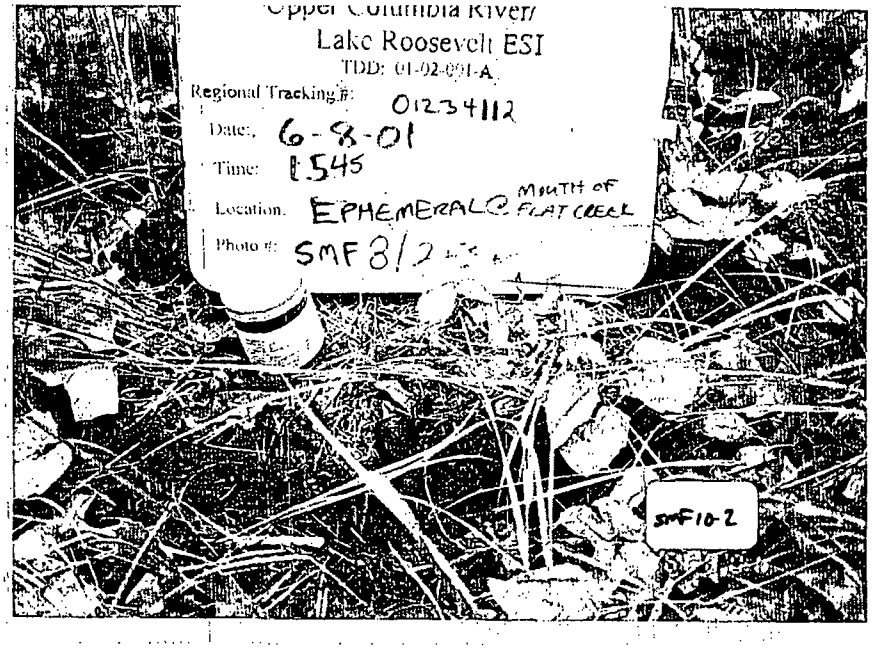
Photo No.	Date	Time	By	Dir.	Description
SMF10-1	6/8/01	1500	SMF	W	Flat Creek, sample material in jars (RT# 01234138), and sampling location. White board lists incorrect film roll and tracking numbers.
SMF10-2	6/8/01	1545	SMF	W	Ephemeral tributary at the mouth of Flat Creek, sample material in jars and sampling location (RT# 012341143). White board lists incorrect film roll number and tracking number.
SMF10-3	6/8/01	1545	SMF	W	Ephemeral tributary at the mouth of Flat Creek, sample material in jars and sampling location, with likely drainage in background. (RT#012341143) White board lists incorrect film roll number and tracking number.
SMF10-4	6/8/01	1645	SMF	W	Fifteen Mile Creek, sampling location.
SMF10-5	6/8/01	1645	SMF	W	Fifteen Mile Creek, sample material in jars (RT# 01234137). White board lists incorrect film roll number and tracking number.
KB5-6	6/25/01	0945	KB	NW	Unnamed tributary @ T38N, R40E, section 20, SW ¼, sample material in jars (RT# 01264050). White board lists incorrect film roll number.
KB5-7	6/25/01	0945	KB	E	Unnamed tributary @ T38N, R40E, section 20, SW ¼, sampling area.
KB5-8	6/25/01	1215	KB	S	Unnamed tributary @ T38N, R40E, section 34, SW ¼, sample material in jars (RT# 01264059). White board lists incorrect film roll number.
KB5-9	6/25/01	1215	KB	E	Unnamed tributary @ T38N, R40E, section 34, SW ¼, sampling area.
KB5-10	6/25/01	1300	KB	SW	Unnamed tributary @ T38N, R40E, section 34, SW ¼, soil sample material in jars (RT# 01264053). White board lists incorrect film roll number.
KB5-11	6/25/01	1300	KB	SW	Unnamed tributary @ T38N, R40E, section 34, SW ¼, soil sampling area.
KB5-12	6/25/01	1345	KB	NE	Unnamed tributary @ T38N, R40E, section 34, SW ¼, surface water sample (RT# 01264052). White board lists incorrect film roll number and incomplete range description.
KB5-13	6/25/01	1315	KB	NW	Unnamed tributary @ T38N, R40E, section 34, SW ¼, sampling area.
KB5-14	6/25/01	1315	KB	NE	Unnamed tributary @ T38N, R40E, section 34, SW ¼, sample material in jars (RT# 01264051). White board lists incorrect film roll number and incomplete range description.
KB5-15	6/25/01	1315	KB	NE	Unnamed tributary @ T38N, R40E, section 34, sampling area.
KB5-16	6/25/01	1445	KB	NW	Unnamed tributary @ T38N, R40E, section 34, SW ¼, soil sample material in jars (RT# 01264054). White board lists incorrect film roll number.
KB5-17	6/25/01	1445	KB	NW	Unnamed tributary @ T38N, R40E, section 34, soil sampling area (RT# 01264054).

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

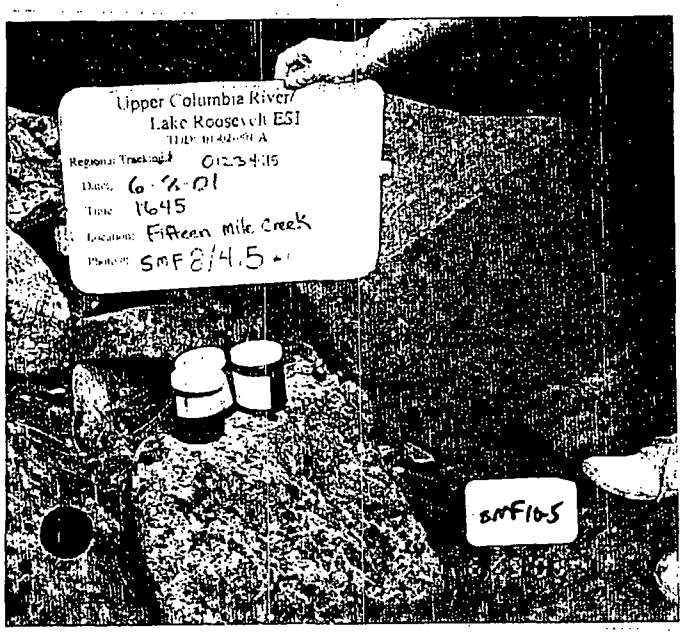
Photo No.	Date	Time	By	Dir.	Description
KB5-18	6/25/01	1500	KB	NW	Unnamed tributary @ T38N, R40E, section 33, SE ¼, soil sample material in jars (RT# 01264055). White board lists incorrect film roll number.
KB5-19	6/25/01	1500	KB	NW	Unnamed tributary @ T38N, R40E, section 33, SE ¼, soil sampling area (RT# 01264055).
KB5-20	6/26/01	1000	KB	W	Unnamed tributary @ T37N, R41E, section 20, NE ¼, sample material in jars (RT# 01264058). White board lists incorrect film roll number.
KB5-21	6/26/01	1000	KB	N	Unnamed tributary @ T37N, R41E, section 20, NE ¼, sampling area.
KB5-22	6/26/01	1230	KB	N	South Fork Deep Creek, sample material in jars (RT# 01264060). White board lists incorrect film roll number.
KB5-23	6/26/01	1230	KB	N	South Fork Deep Creek, sampling area.
KB5-24	6/26/01	1245	KB	N	South Fork Deep Creek, surface water sample (RT# 01264061). White board lists incorrect film roll number.
KB5-25	6/26/01	1245	KB	N	South Fork Deep Creek, surface water sampling area.

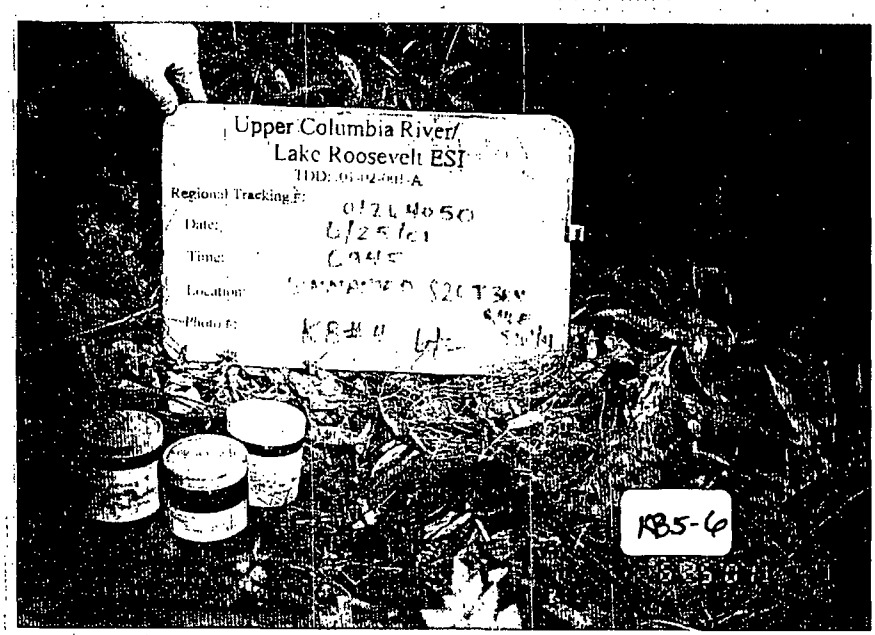

Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234
Date: 6-8-01
Time: 1500
FLAT CREEK
SMF7/24 SMF8 #1
SMF10-1


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234112
Date: 6-8-01
Time: 1545
Location: EPHEMERALC MOUTH OF FLAT CREEK
Photo #: SMF 8/2
SMF10-2

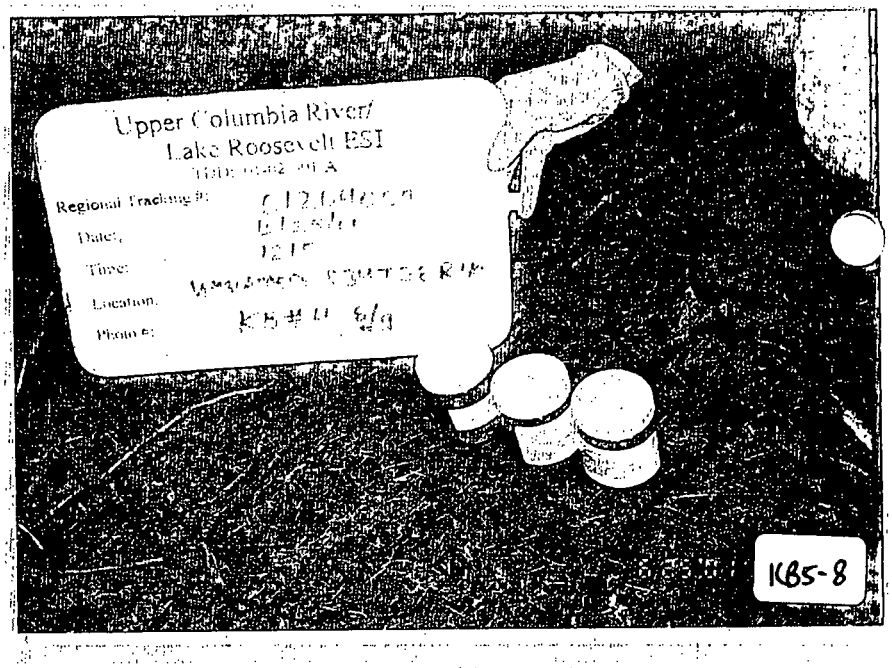
Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234112
Date: 6-8-01
Time: 1545
Location: EPHEMERALC MOUTH OF FLAT CREEK
Photo #: SMF 8/
SMF10-3

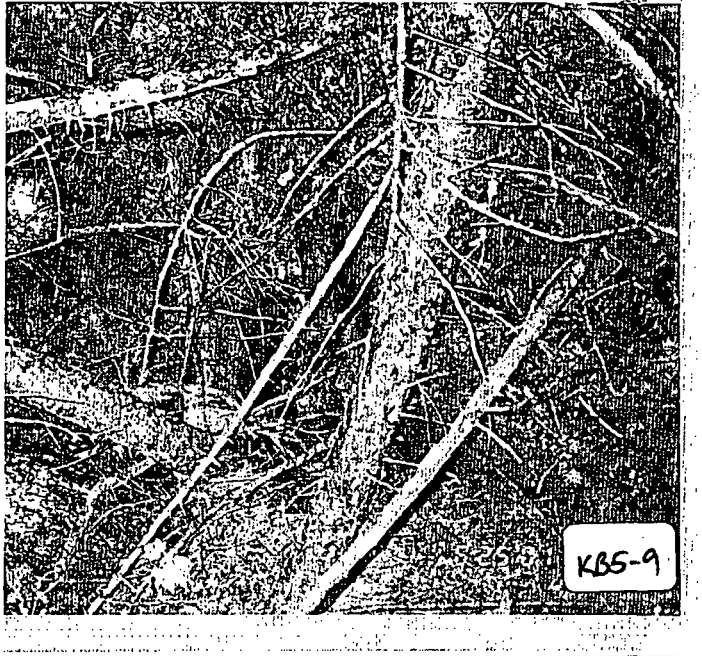
SMF10-4

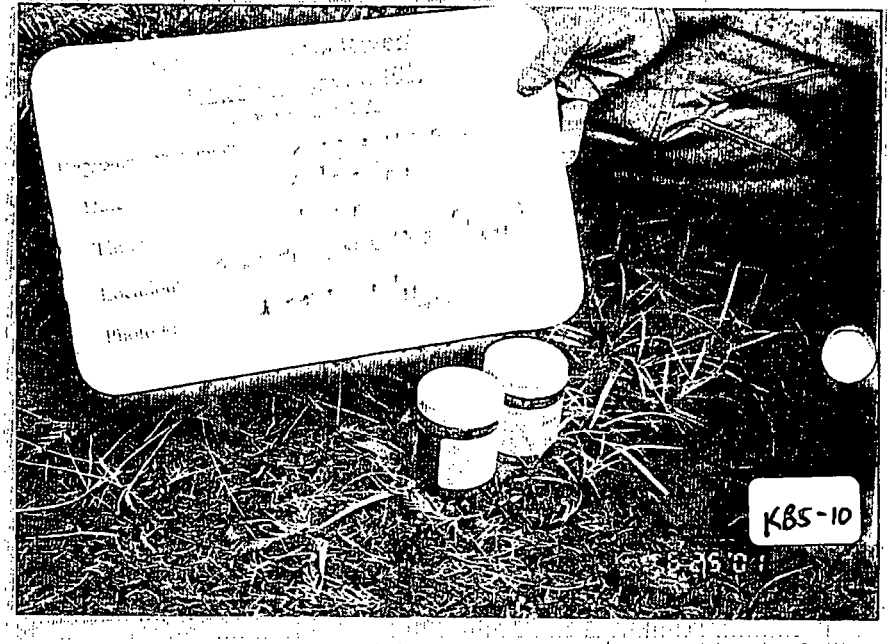

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01234115
Date: 6-8-01
Time: 1645
Location: Fifteen mile Creek
Photo #: SMF 8/4.5
SMF10-5


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01240050
Date: 6/25/01
Time: 0945
Location:
Photo #:
KB5-6

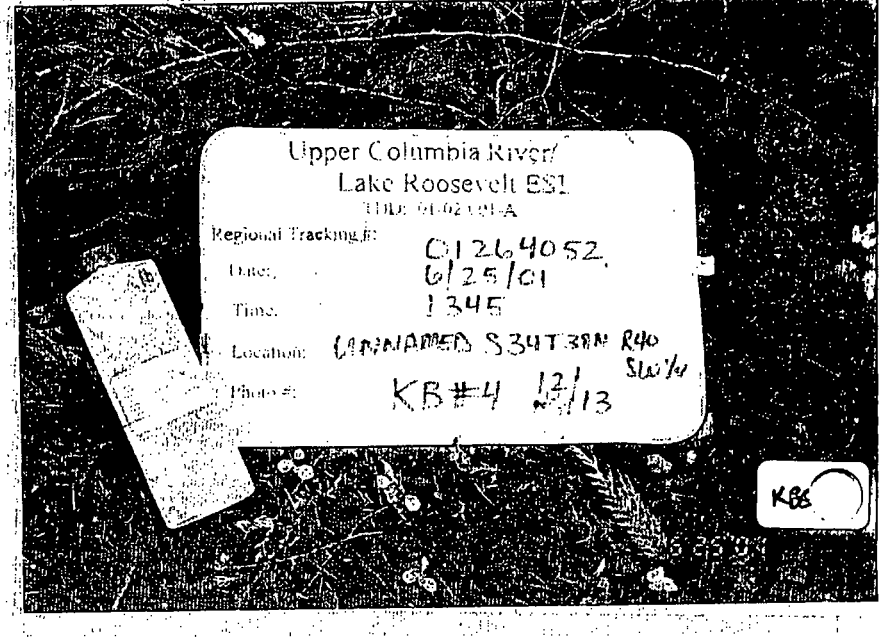
KB5-7

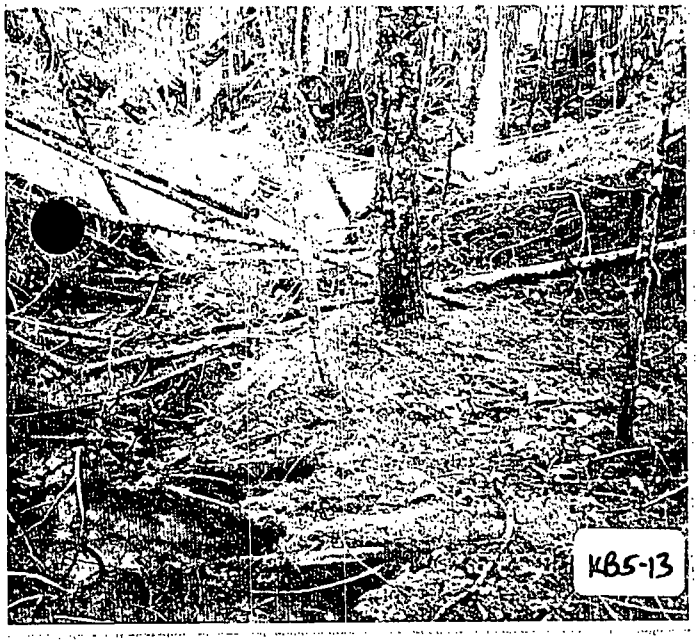

Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #:
Date:
Time:
Location:
Photo #:
KB5-8

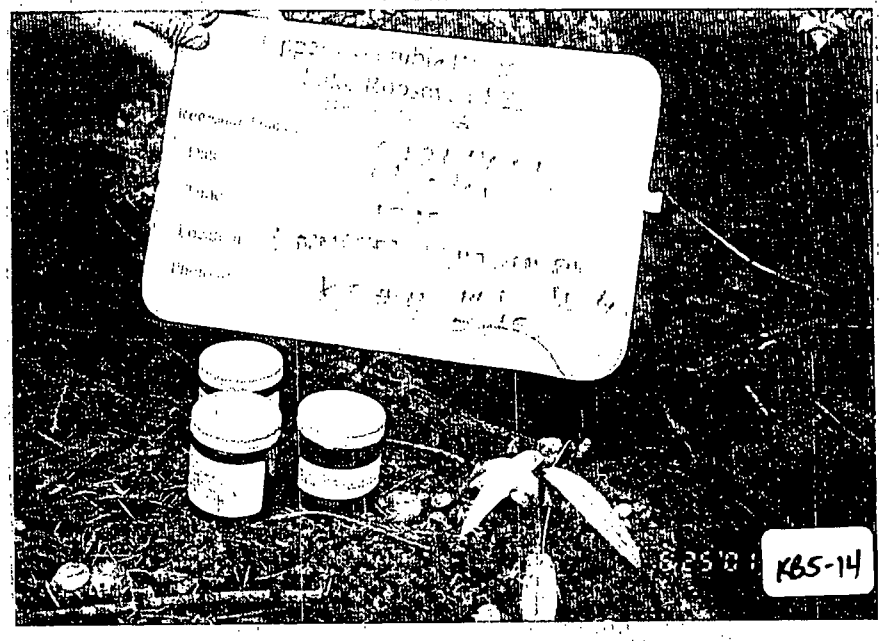

KB5-9


KB5-10

KB5-11


Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #: 01264052
Date: 6/25/01
Time: 1345
Location: UNNAMED S34T38N R40 SW1/4
Photo #: KB#4 12/13
KB5


KBS-13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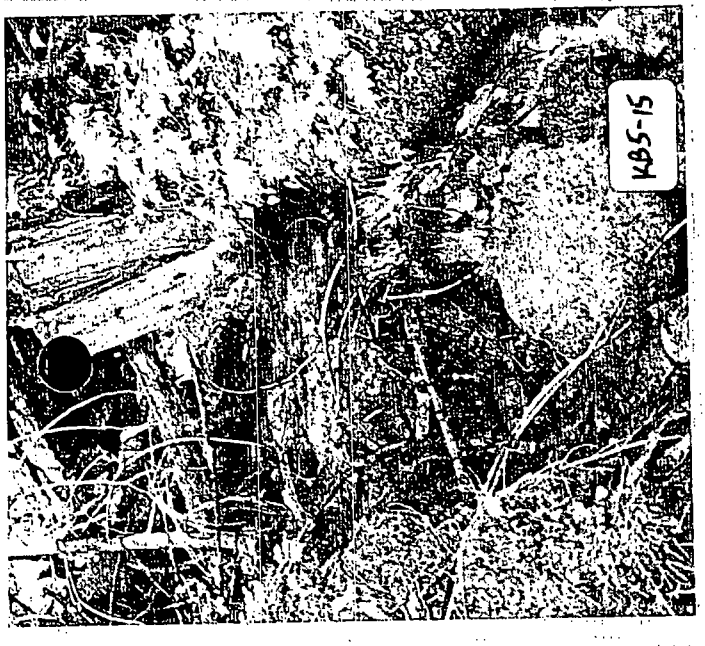
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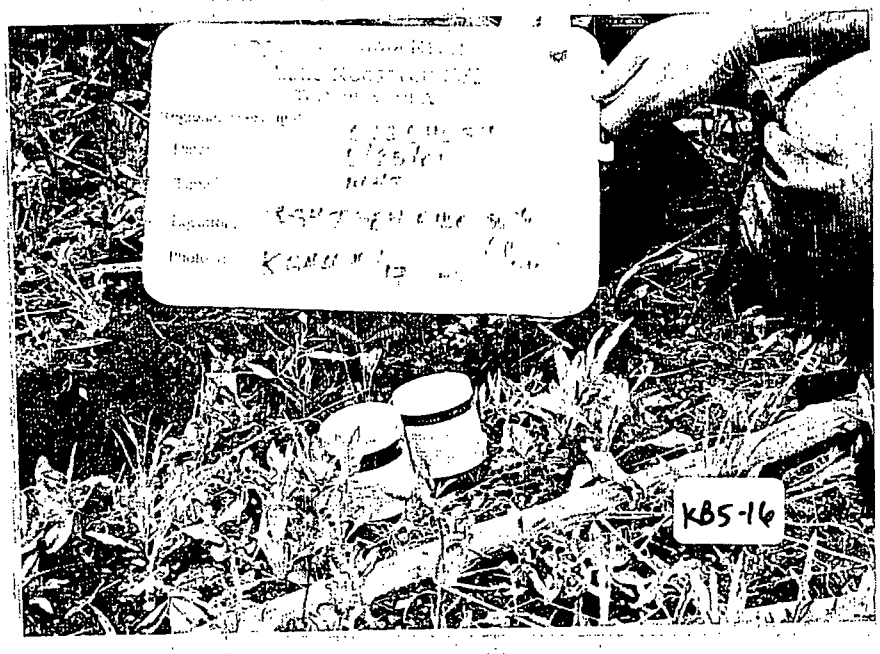
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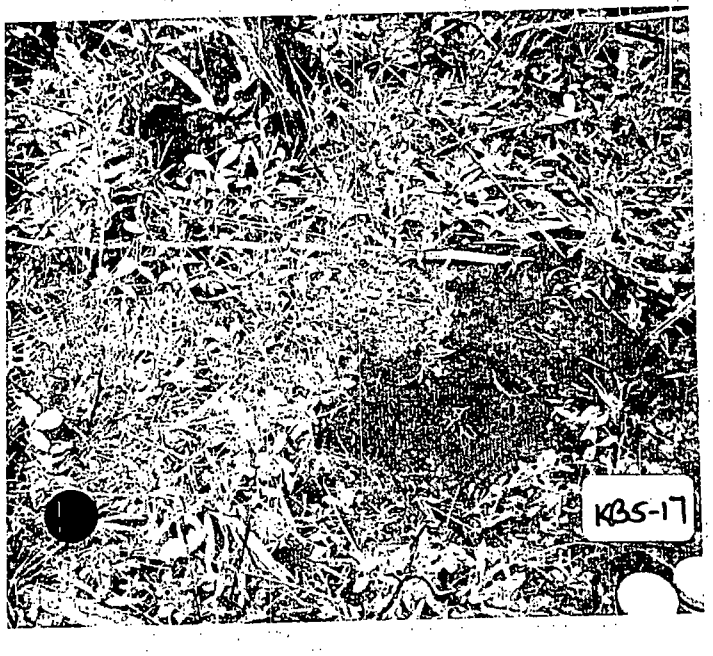
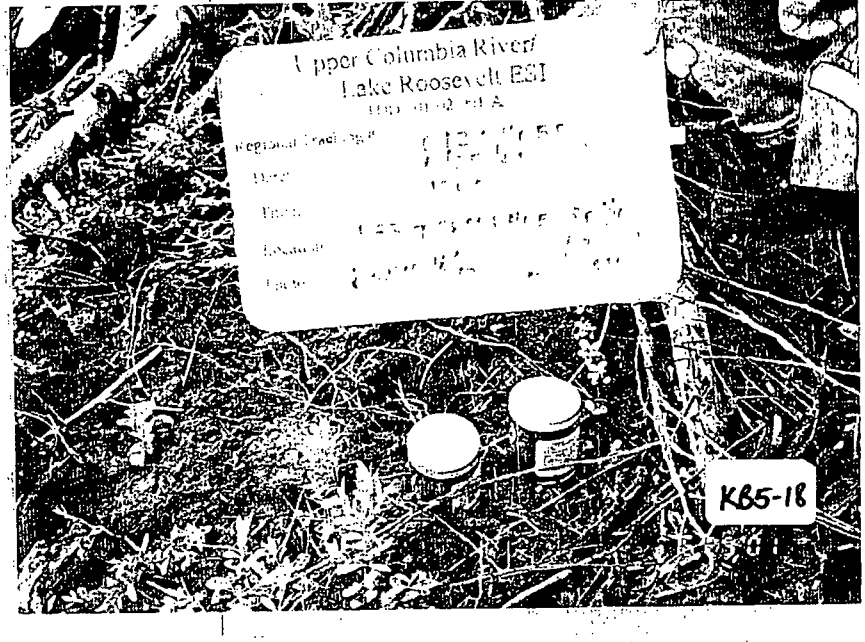
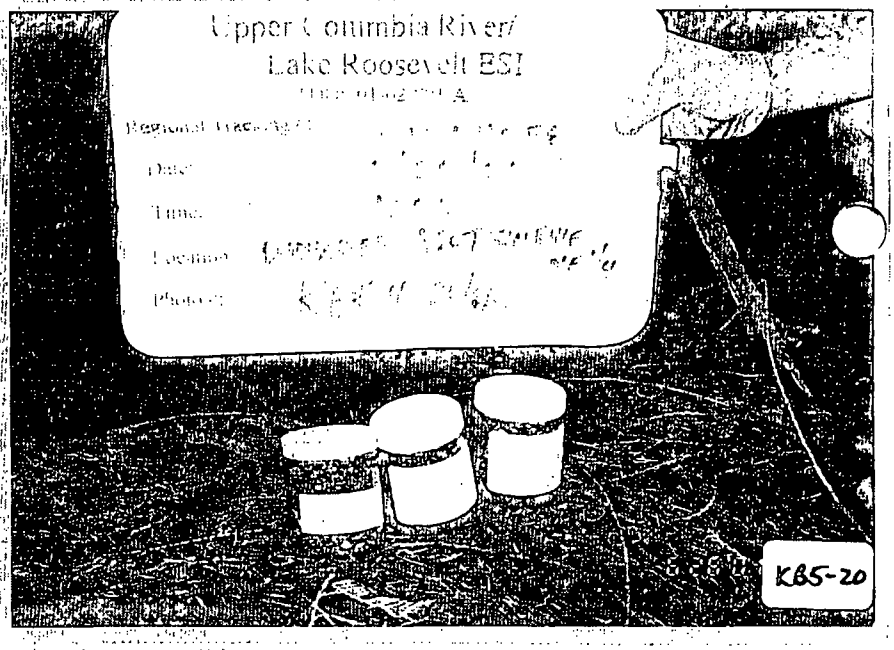
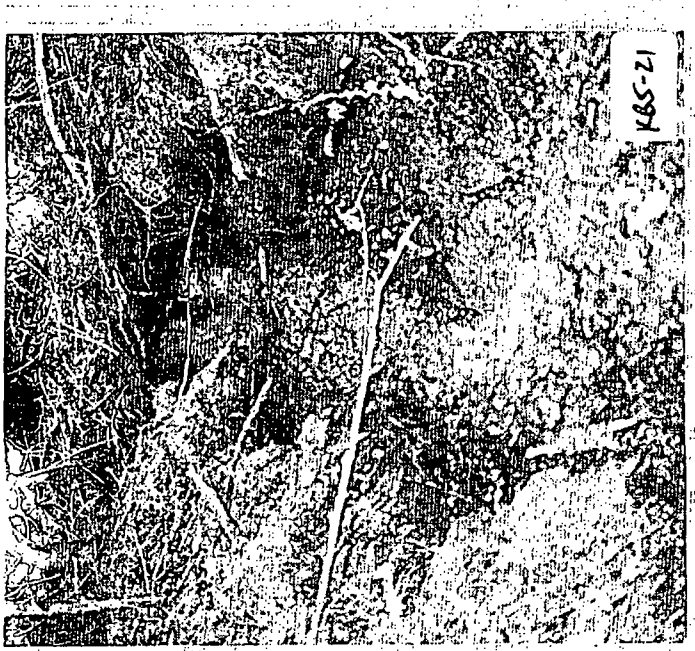
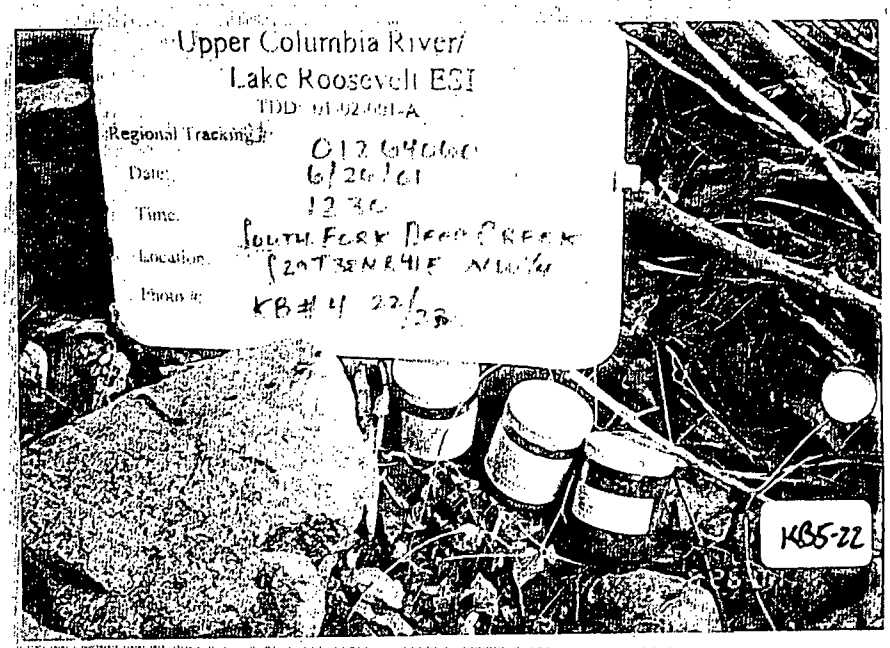

KBS-17

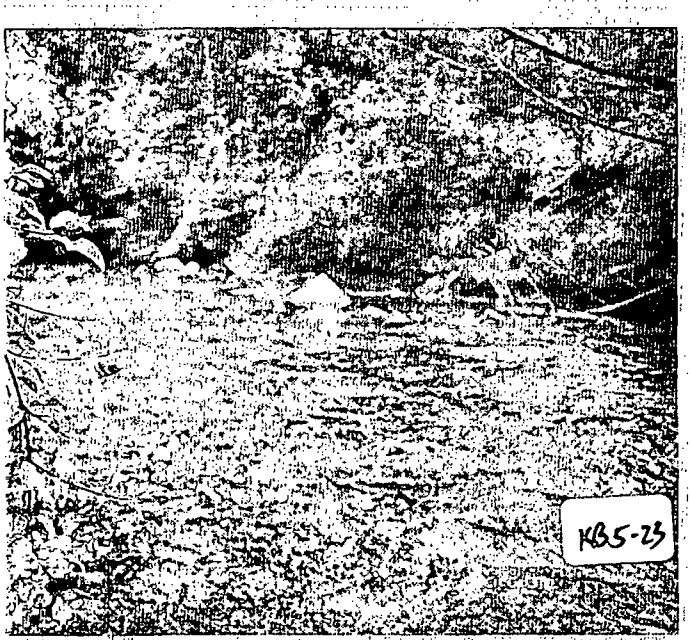

Upper Columbia River/
Lake Roosevelt ESI
KBS-18

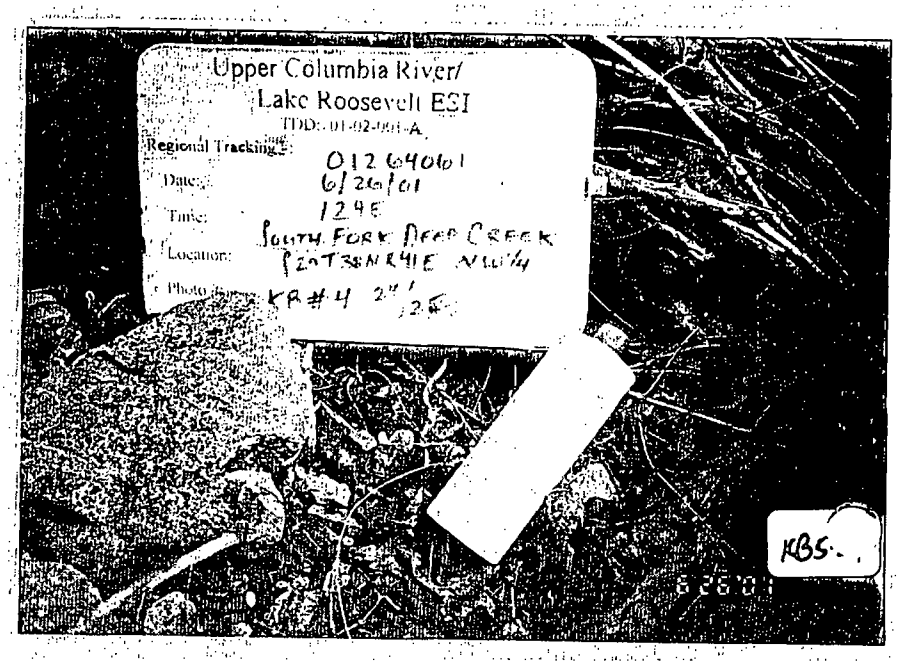
KBS-19


Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #:
Date:
Time:
Location:
Photo #:
KBS-20


KBS-21


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 012 640601
Date: 6/26/01
Time: 1230
Location: South Fork Deep Creek
T20T38N R41E N1/4
Photo #: KB#4 22/28
KBS-22


KBS-23


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 012 640601
Date: 6/26/01
Time: 1245
Location: South Fork Deep Creek
T20T38N R41E N1/4
Photo #: KB#4 24/25
KBS-
6 26 01

KBS-25

PHOTOGRAPH IDENTIFICATION SHEET

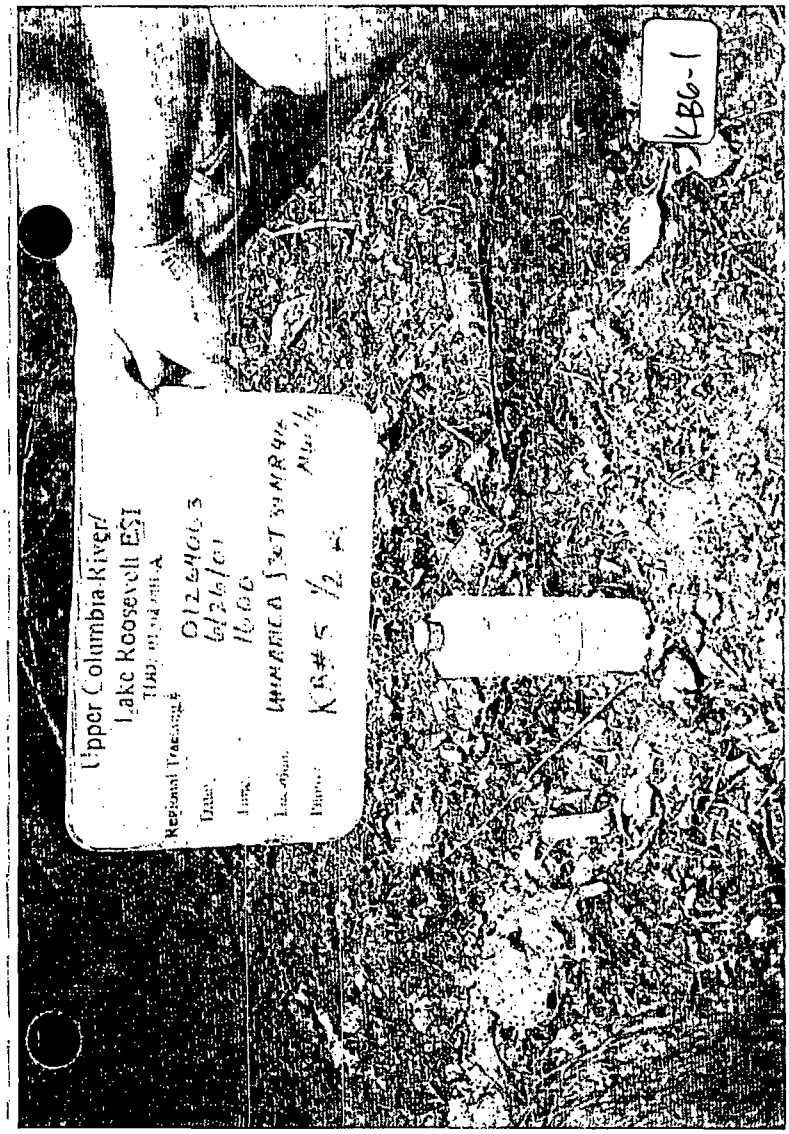
Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

Photo No.	Date	Time	By	Dir.	Description
KB6-1	6/26/01	1600	KB	N	Unnamed tributary @ T39N, R41E, section 30, NW ¼, surface water sample (RT# 01264063). White board lists incorrect film roll number.
KB6-2	6/26/01	1600	KB	N	Unnamed tributary @ T39N, R41E, section 30, NW ¼, surface water sampling area.
KB6-3	6/26/01	1615	KB	N	Unnamed tributary @ T39N, R41E, section 30, NW ¼, sample material in jars (RT# 01264062). White board lists incorrect film roll number.
KB6-4	6/26/01	1615	KB	N	Unnamed tributary @ T39N, R41E, section 30, NW ¼, sampling area.
KB6-5	6/27/01	0900	KB	S	Unnamed tributary @ T40N, R41E, section 28, SW ¼, sample material in jars (RT# 01264068). White board lists incorrect film roll number.
KB6-6	6/27/01	0900	KB	N	Unnamed tributary @ T40N, R41E, section 28, SW ¼, sampling area.
KB6-7	6/27/01	0930	KB	S	Unnamed tributary @ T40N, R41E, section 28, SW ¼, surface water sample (RT# 01264069). White board lists incorrect film roll number.
KB6-8	6/27/01	0930	KB	N	Unnamed tributary @ T40N, R41E, section 28, SW ¼, surface water sampling area.
KB6-9	6/27/01	1430	KB	E	Unnamed tributary @ T30N, R37E, section 9, NE ¼, sample material in jars (RT# 01264056). White board lists incorrect film roll number.
KB6-10	6/27/01	1430	KB	SE	Unnamed tributary @ T30N, R37E, section 9, NE ¼, sampling area (RT# 01264056).
KB6-11	6/27/01	1515	KB	NE	Unnamed tributary @ T30N, R37E, section 9, NE ¼, sample material in jars (RT# 01264072). White board lists incorrect film roll number and sample tracking number.
KB6-12	6/27/01	1515	KB	SE	Unnamed tributary @ T30N, R37E, section 9, NE ¼, sampling area (RT# 01264072).
KB6-13	6/27/01	1630	KB	W	Unnamed tributary @ T30N, R37E, section 9, NE ¼, sample material in jars (RT# 01264065). White board lists incorrect film roll number.
KB6-14	6/27/01	1630	KB	W	Unnamed tributary @ T30N, R37E, section 9, NE ¼, sampling area (RT# 01264065).
KB6-15	6/27/01	1645	KB	W	Unnamed tributary @ T30N, R37E, section 9, NE ¼, sample material in jars (RT# 01264066). White board lists incorrect film roll number.
KB6-16	6/27/01	1645	KB	W	Unnamed tributary @ T30N, R37E, section 9, NE ¼, sampling area (RT# 01264066).
KB6-17	6/28/01	0930	KB	E	Flume Creek, sample material in jars (RT# 01264070). White board lists incorrect film roll number.
KB6-18	6/28/01	0930	KB	S	Flume Creek, sampling area.
KB6-19	6/28/01	0945	KB	E	Flume Creek, surface water sample (RT# 01261067). White board lists incorrect film roll number.

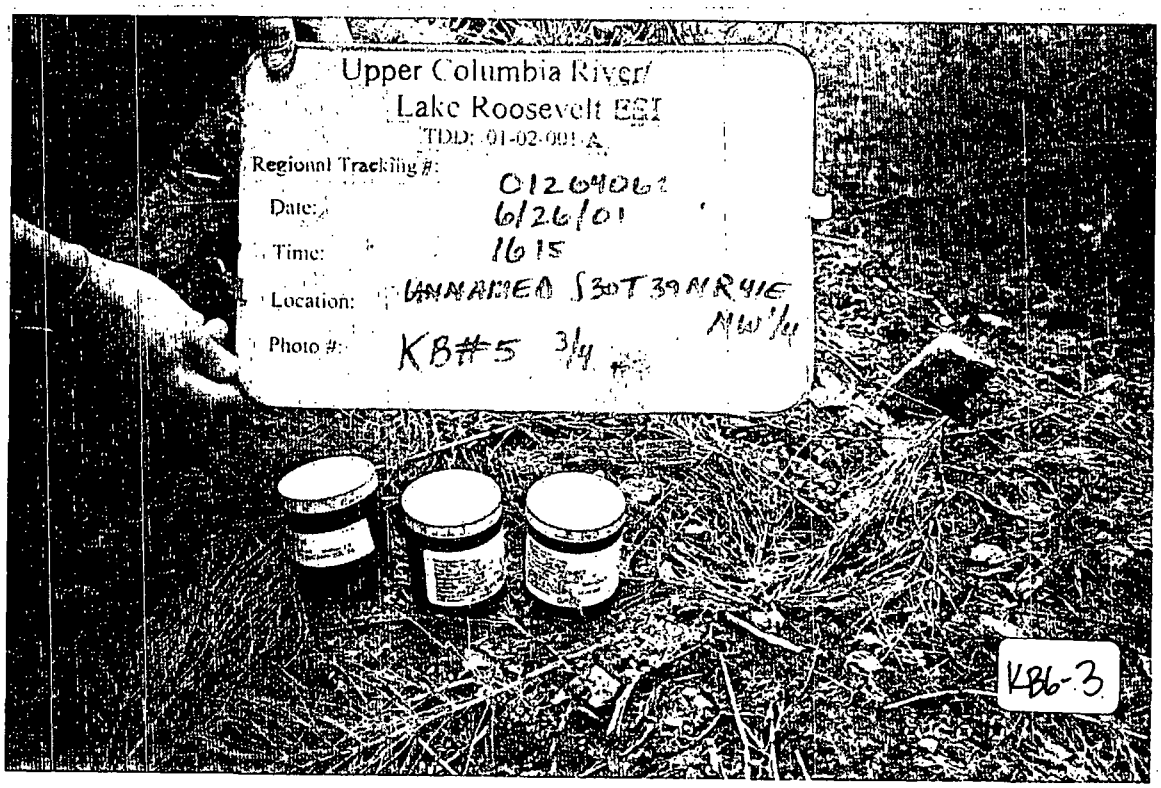
PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

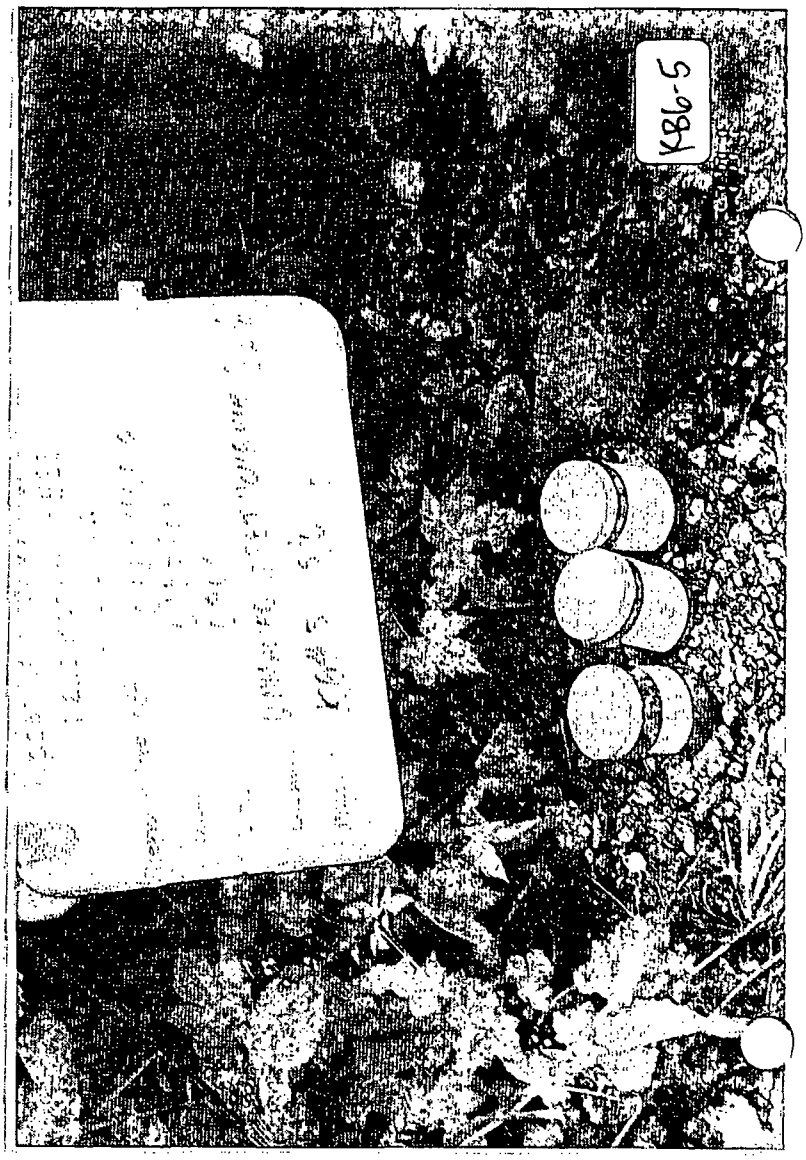
Photo No.	Date	Time	By	Dir.	Description
KB6-20	6/28/01	0945	KB	S	Flume Creek, surface water sampling area.
KB6-21	6/28/01	0945	KB	W	Private property posting.
KB6-22	6/28/01	1045	KB	NW	South Fork Flume Creek, sample material in jars (RT# 01264073). White board lists incorrect film roll number.
KB6-23	6/28/01	1045	KB	NW	South Fork Flume Creek, sediment and surface water sampling area.
KB6-24	6/28/01	1055	KB	NW	Flume Creek, surface water sample (RT# 01261074). White board lists incorrect film roll number.


Upper Columbia River/
Lake Roosevelt ESI
KB6-1

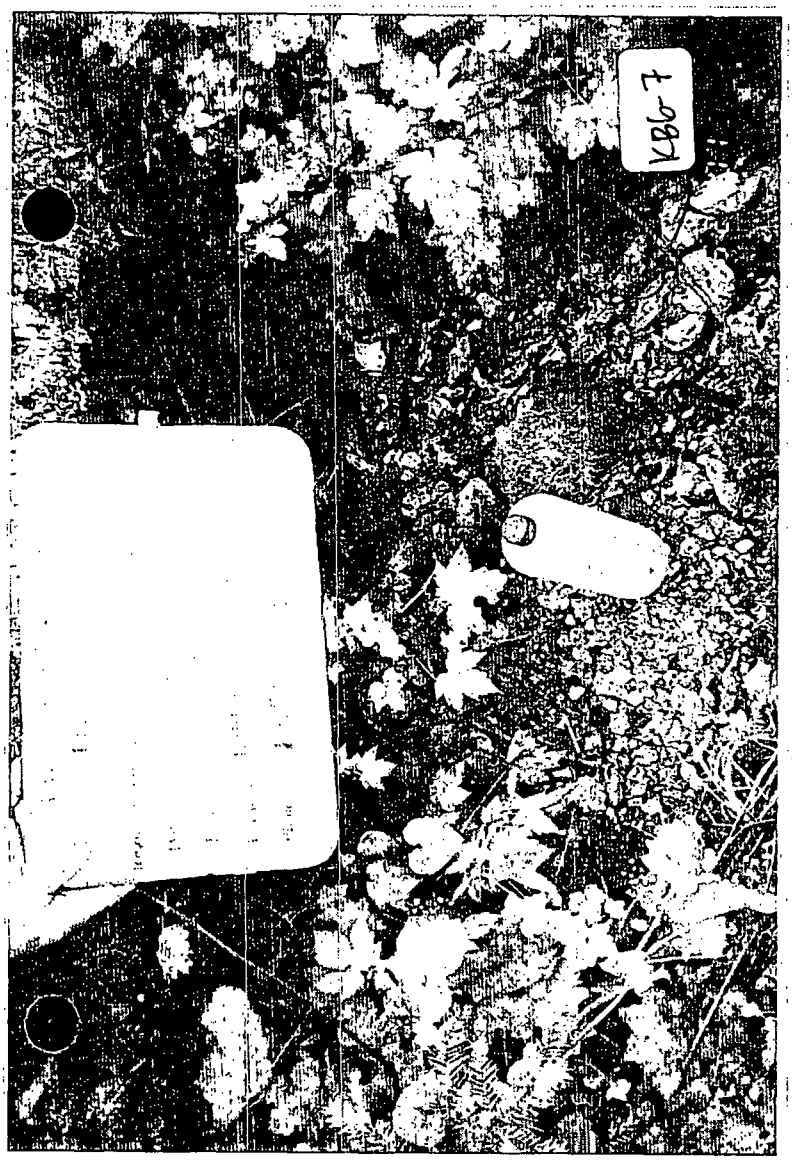
KB6-2

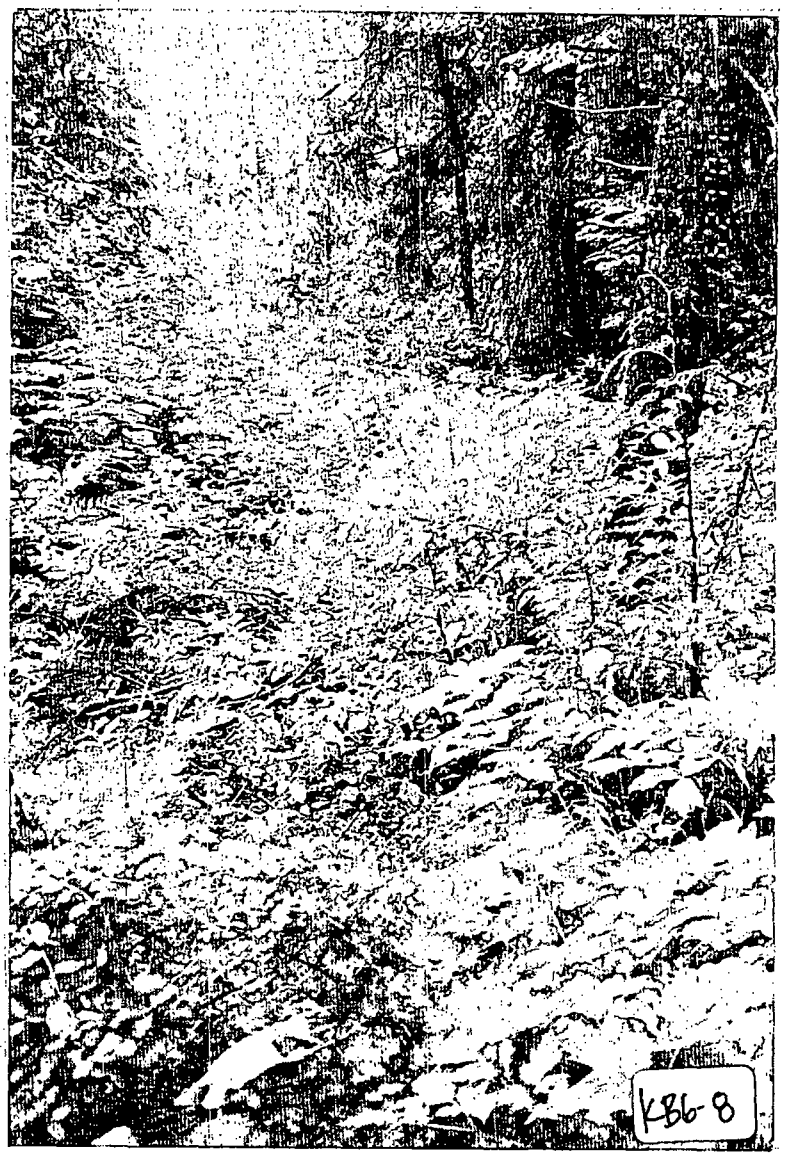

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #: 01204061
Date: 6/26/01
Time: 1615
Location: UNNAMED S30T39NR41E NW1/4
Photo #: KB#5 3/4
KB6-3

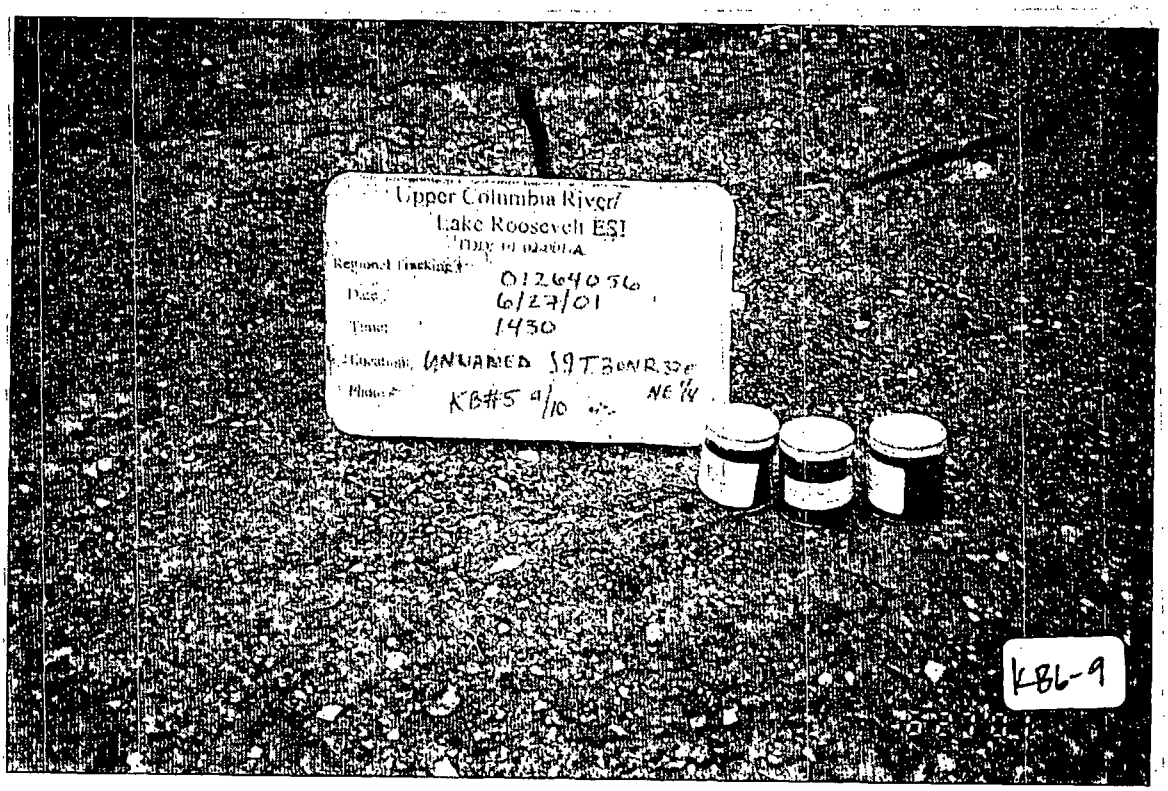
KB6-4


KB6-5

KB6-6


KB6-7


KB6-8


Upper Columbia River/
Lake Roosevelt ESI
Regional Tracking #: 01264056
Date: 6/27/01
Time: 1430
Location: UNNAMED
Phase: KB#5 9/10
KB6-9

K86-10

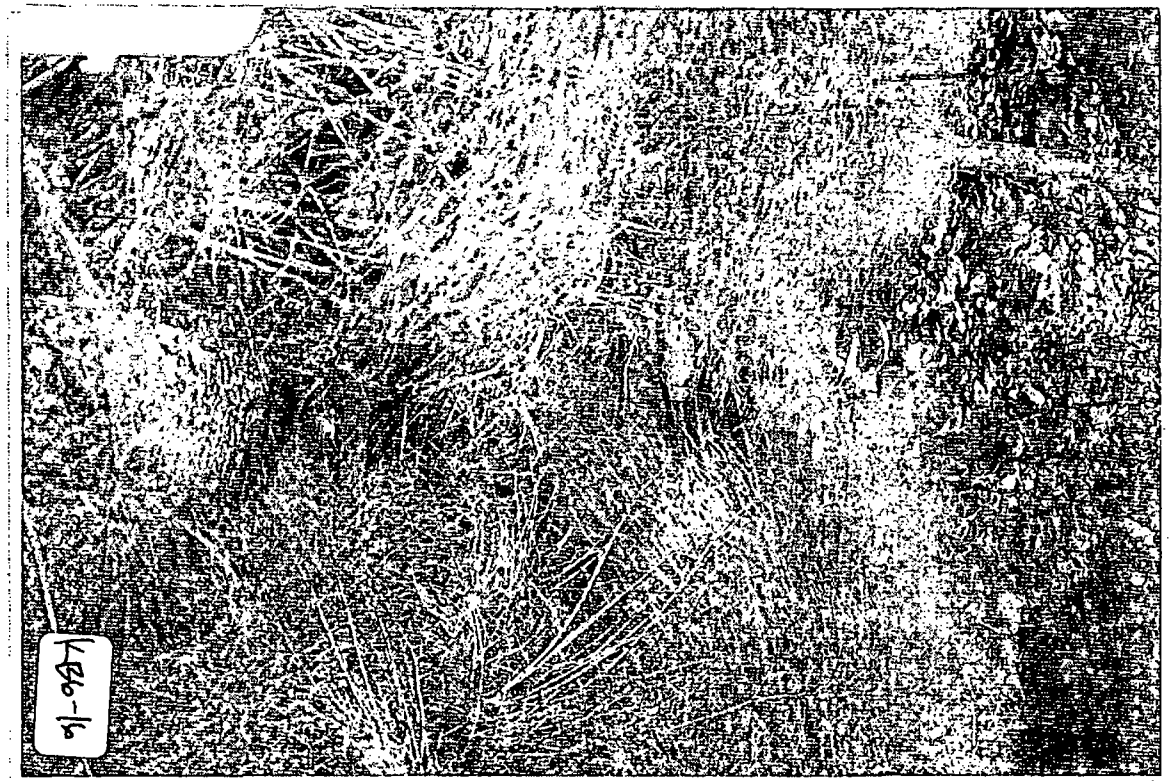
K86-11
Upper Columbia River/
Lake Roosevelt EST
Regional Trackings

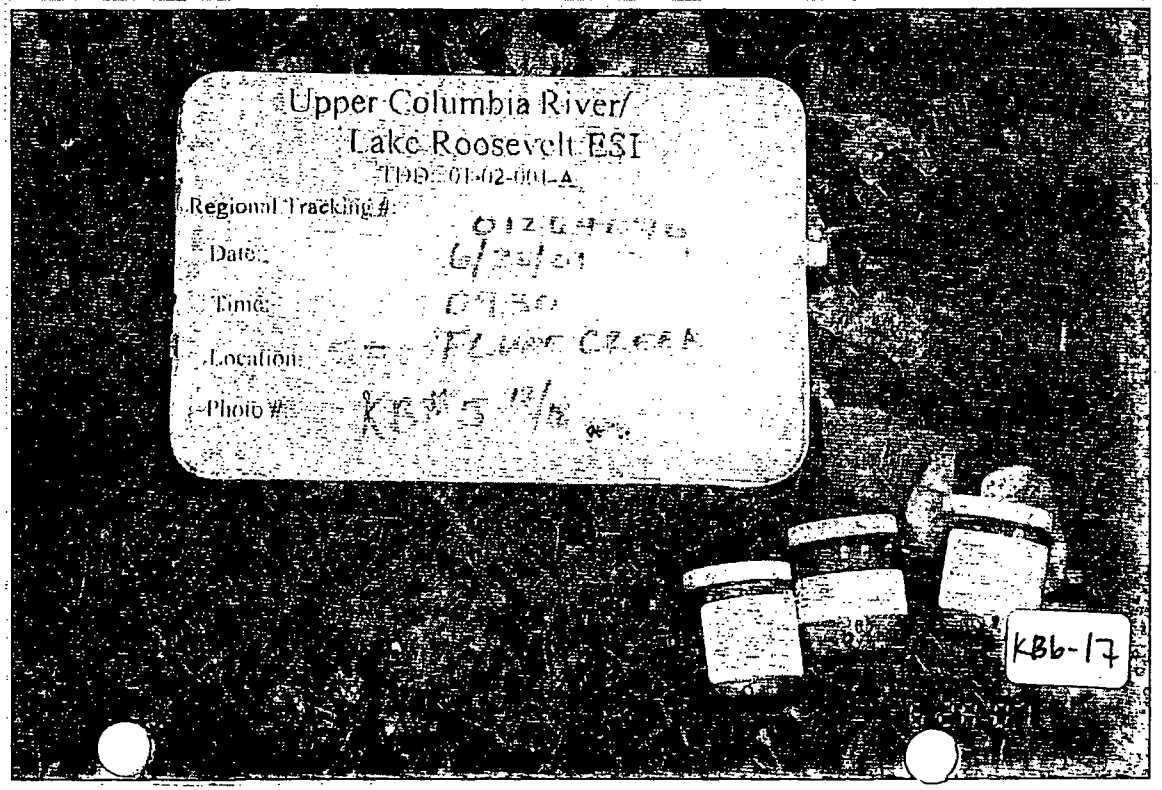
K86-12

Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #:
Date:
Time:
Location:
KB6-13

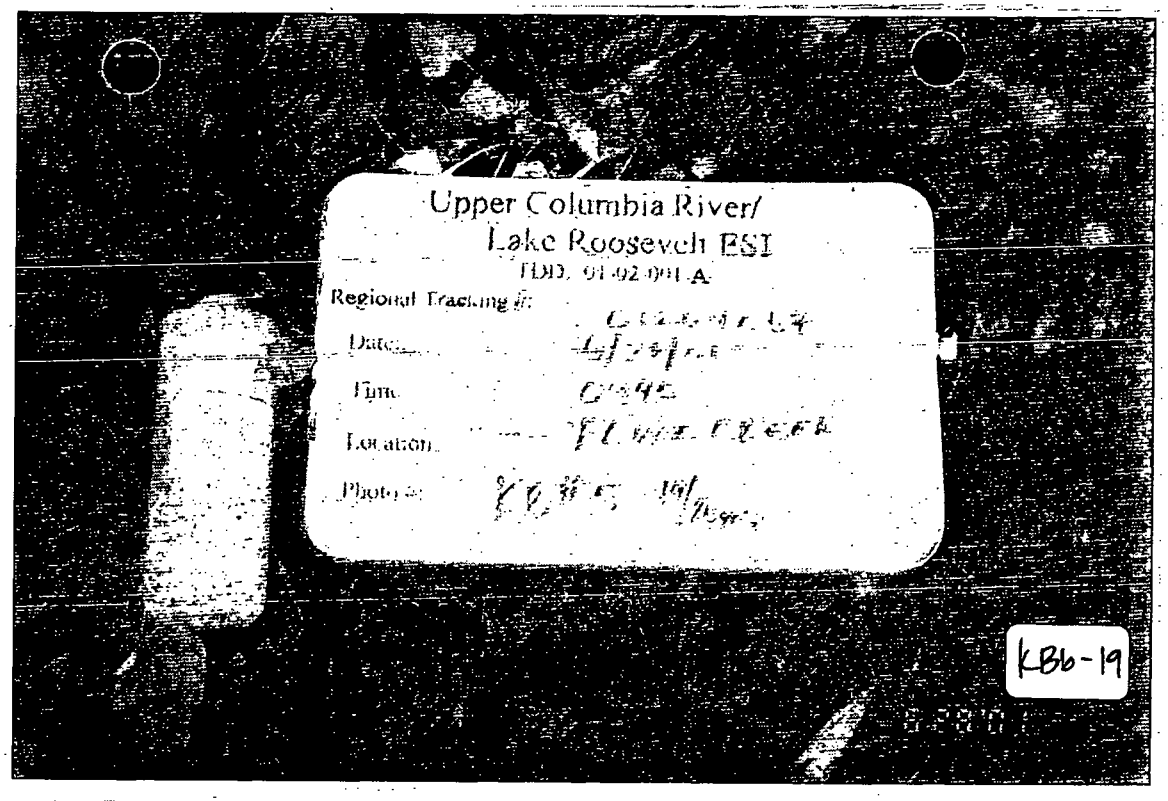
KB6-14

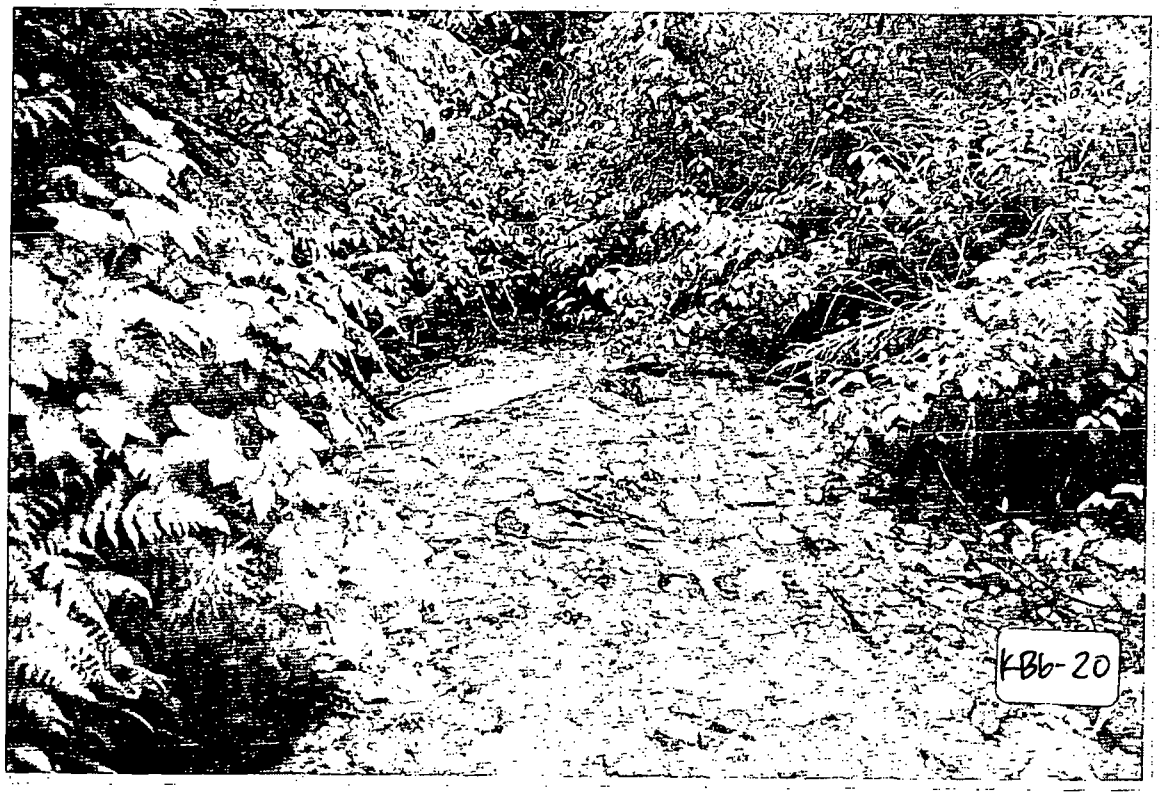
Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #:
Date:
Time:
Location:
Photo #:
KB6-15


KBb-16


Upper Columbia River/
Lake Roosevelt ESI
TDD: 01-02-001-A
Regional Tracking #:
Date:
Time:
Location:
Photo #:
KBb-17

KBb-18


Upper Columbia River/
Lake Roosevelt RSI
TDD: 01-02-001-A
Regional Tracking #:
Date:
Time:
Location:
Photo #:
KB6-19


KB6-20

POSTED
PRIVATE PROPERTY
HUNTING, FISHING, TRAPPING OR
TRESPASSING FOR ANY PURPOSE
IS STRICTLY FORBIDDEN
VIOLATORS WILL BE PROSECUTED
KB6-21

Upper Columbia River/
Lake Roosevelt RSI
Regional Tracking
Date
Time
Location
Product
KBo-22

KBo-23

Upper Columbia River/
Lake Roosevelt RSI
Regional Tracking
Date
Time
Location
South Fork Flume Creek
Product
KBo-24

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial #: 897925 TDD #: 01-02-0001-A
Lens Type: 35-70 mm zoom Site Name: Upper Columbia River/Lake Roosevelt ESI

Photo No.	Date	Time	By	Dir.	Description
KB7-1	6/28/01	1300	KB	W	Linton Creek, sample material in jars (RT# 01264075). White board lists incorrect film roll number and photo numbers.
KB7-2	6/28/01	1300	KB	E	Linton Creek, sampling area.

KB7-2

KB7-1
KB #6 2/
Linton Creek
1300
6/28/01
01201073

APPENDIX I

CITY OF ADDY MUNICIPAL WATER SUPPLY WELLS ANALYTICAL RESULTS

SAM802P1 SAM802M1 D W A I N 24/10/01

SAM8 SAMPLE VIEW PROGRAM 07:29:54.4

SYSTEM ID: 00367 J STEVENS CO PUD - ADDY Grp/Type: AC

OMM

PGP-ID: IOC

NR RORS	LAB	SAMPL	CLLCT-DATE	PTM	SRC	TYPE	MEAS	ND	NA	UK	UNSUIT	ER
1	112	57412	12 12 1995	IOC	02		4	24	2			_
2	112	57411	12 12 1995	IOC	03		9	19	2			_
3	112	23149	06 11 2001	NIT	04			1	2			_
4	112	18513	07 18 2000	NIT	04			1	2			_
5	112	15630	12 27 1999	NIT	04			1	2			_
6	125	59718	10 20 1998	IOC	04		8	28	7			_
7	112	05321	11 03 1997	NIT	04			1	2			_
8	125	04499	07 19 2001	LCR	93		1	1				_
9	125	04500	07 19 2001	LCR	93		2					_
10	125	04501	07 19 2001	LCR	93			2				_
11	125	04502	07 19 2001	LCR	93		1	1				_
12	125	04498	07 18 2001	LCR	93			2				_

SAMPLE NR:

TRAN: ____ SAML

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---

AGAIN PMENU BACK FWD SAMP

RECEIVED

OCT 26 2001

Environmental Cleanup Office

LAB/SAMPLE: 112 57412 COLLECT DATE: 12 12 1995 TEST METHOD: IO
C

PA	DOH	TEST	ANALYSIS	MEASUREMENT
1036	111	NICKEL	ND	
1045	12	SELENIUM	ND	
1050	13	SILVER	ND	
1052	14	SODIUM		3.2000
1085	113	THALLIUM	ND	
1095	24	ZINC	ND	
1915	15	HARDNESS		65.0000
1064	16	CONDUCTIVITY		143.0000
0100	17	TURBIDITY	ND	
1905	18	COLOR	ND	
1017	21	CHLORIDE	ND	
1024	116	CYANIDE	ND	
1025	19	FLUORIDE	ND	
1040	20	NITRATE-N	ND	
1041	114	NITRITE-N	ND	
1055	22	SULFATE	ND	
1057	26	TDS-TOTAL DISSOLVED SOLIDS		80.0000
	171	ORTHOPHOSPHATE	NA	

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF
12---
AGAIN PMENU RTRN BACK NEXT
'PF4' To Return To Sample List; 'PF8' To Advance; 'PF7' BackUp

SAM802P1 SAM802M2 DWAIN PAGE 1 24/10/01
TEST METHOD: NIT SAM8 SAMPLE VIEW PROGRAM 07:31:17.
9
SYSTEM: 00367 J STEVENS CO PUD - ADDY GRP/TYPE: A COMM
LAB/SAMPLE NR: 112 23149 COLLECT DATE: 06 11 2001 DATA ERRORS:
SOURCE: 04 LAB RECEIVED: 06 12 2001 REPORTED: 06 13 2001
SAMPLE TYPE: U MULT SRCE 95 & 96:
SAMPLE PURPOSE: C LOCATION DESC: WF
UNSUITABLE:

EPA	DOH	TESTS	ANALYSIS	MEASUREMENT
1040	20	NITRATE-N	ND	
1041	114	NITRITE-N	NA	
1038	161	TOTAL NITRATE/NITRITE	NA	

TRAN: ____ SAML
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
AGAIN PMENU RTRN BACK NEXT
'PF4' To Return To Sample List; 'PF8' To Advance; 'PF7' BackUp

LAB/SAMPLE: 125 59718 COLLECT DATE: 10 20 1998 TEST METHOD: IO
C

PA	DOH	TEST	ANALYSIS	MEASUREMENT
1025	19	FLUORIDE	ND	
1041	114	NITRITE-N	ND	
1040	20	NITRATE-N	ND	
1038	161	TOTAL NITRATE/NITRITE	ND	
1028	8	IRON	ND	
1032	10	MANGANESE	ND	
1050	13	SILVER	ND	
1017	21	CHLORIDE	ND	
1055	22	SULFATE	ND	
1095	24	ZINC	ND	
1052	14	SODIUM		3.1000
1915	15	HARDNESS		67.0000
1064	16	CONDUCTIVITY		143.0000
0100	17	TURBIDITY	ND	
1905	18	COLOR	ND	
1057	26	TDS-TOTAL DISSOLVED SOLIDS		86.0000
1030	9	LEAD	ND	
1022	23	COPPER	ND	

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF
12---
AGAIN PMENU RTRN BACK NEXT
'PF4' To Return To Sample List; 'PF8' To Advance; 'PF7' BackUp

```
SAM802P1  SAM802M1                D W A I N                        24/10/01
                            SAM8  SAMPLE  VIEW  PROGRAM             07:32:45.7
SYSTEM ID: 00367  J  STEVENS CO PUD - ADDY                        Grp/Type: AC

PGP-ID: VOC

NR      LAB  SAMPL  CLLCT-DATE   PTM    SRC TYPE MEAS  ND  NA  UK  UNSUIT ER
RORS
 1      125  90190  11 16 2000  524.2   04          61   2                _
 2      125  48812  11 03 1997  524.2   96          60   1                _
_                                                                         _
_                                                                         _
_                                                                         
```