



**DEPARTMENT OF THE AIR FORCE**

HEADQUARTERS 49TH FIGHTER WING (ACC)  
HOLLOMAN AIR FORCE BASE, NEW MEXICO

MAR 2000  
**RECEIVED**

14 MAR 2000

**MEMORANDUM FOR NEW MEXICO ENVIRONMENT DEPARTMENT**

Attn: Mr. Cornelius Amindyas  
Hazardous & Radioactive Materials Bureau  
P.O. Box 26110  
Santa Fe NM 87502

**FROM:** 49 CES/CEVR  
550 Tabosa Avenue  
Holloman AFB NM 88330-8458

**SUBJECT:** 300-Pound Open Burn Unit (OBU) RSI Response

1. Enclosed, for your reference, are two documents from Foster Wheeler Environmental Corporation (FW) concerning our response to the subject Request for Supplemental Information (RSI) dated 8 Dec 99. The first attachment is the additional soil sampling plan, dated 24 Jan 00. The second attachment is a letter report summarizing our actions and results, dated 8 Mar 00.
2. After your conversation with Mr. Jose Gallegos on 14 Mar 00, I understand that you have already submitted a closure approval letter for the 300-pound OBU. I also understand with the approval letter, the closure process is complete and in accordance with the closure plan.
2. If you have any questions or require additional information, please contact Mr. Court Fesmire or Mr. Gallegos at (505) 572-5395.

JOHN R. POLAND, REM  
Chief, Environmental Flight

**Attachments:**

FW letter dated 24 Jan 00, re: Additional Soil Sampling Plan for the 300-Pound OBU  
FW letter dated 8 Mar 00, re: Results of Additional Soil Sampling and Recommendations for No Further Action at the 300-Pound OBU

**cc (w/o attachments):**

Mr. Tom Zink  
USACE, Omaha District  
Attn: CENWO-PM-H (Zink)  
215 North 17<sup>th</sup> St  
Omaha NE 68102-4978

Mr. James Mourning  
Foster Wheeler Corp  
P.O. Box 540  
Holloman AFB NM 88330



## FOSTER WHEELER ENVIRONMENTAL CORPORATION

January 24, 2000  
TERC-011.001-00X-001

Mr. Tom Zink, P.G.  
U.S. Army Corps of Engineers  
Attn: CENWO-MD-HA, 9<sup>th</sup> Floor  
215 North 17<sup>th</sup> Street  
Omaha, NE 68102-4978

Subject: TERC Contract No. DACW-45-94-D-0003, Delivery Order 11, WAD 01; Additional Soil Sampling Plan for the 300-Pound Open Burn Treatment Unit at Holloman Air Force Base, New Mexico.

Dear Mr. Zink:

Foster Wheeler Environmental Corporation (Foster Wheeler) is submitting two copies of the Additional Soil Sampling Plan for the 300-Pound Open Burn Treatment Unit at Holloman Air Force Base (AFB), New Mexico. This sampling plan has been prepared in response to the New Mexico Environment Department (NMED) comment letter (received by Holloman AFB on December 14, 1999) regarding the technical incompleteness of the previously submitted Final Closure Report for the 300-Pound Open Burn Treatment Unit (OBU). The comment letter stated that the residual levels reported for metals and organic compounds, including benzene, during the closure activities are all below the Region 6 human health medium-specific screening levels for soils and that these levels of contamination do not present excess risk to human health. The only significant concern of the letter with regards to the closure activities was the ecological risk (as verified by Gary Drendel/Foster Wheeler with Kirby Olson/NMED) at Trench 4 with respect to cadmium. The laboratory analytical results showed the presence of cadmium at two locations (0-1 foot depths) in Trench 4, Sidewall "C" (western sidewall). Through several telephone conversations between Holloman AFB, NMED, and Foster Wheeler, it was established that additional soil sampling will be performed along Sidewall C of Trench 4. Additional sampling is required since the Hazard Quotient (HQ) for cadmium at Trench 4 at the 0-1 foot interval was calculated to be 4.5 (based on the deer mouse). The additional sampling is specifically designed to provide more detailed information regarding the extent of the cadmium contamination at Trench 4 and facilitate the recalculation of the deer mouse HQ for cadmium at Trench 4.

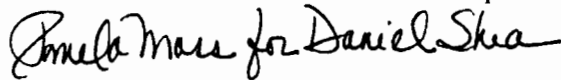
As we have previously discussed, the scope and detail of this sampling plan have been kept to a minimum. As requested, this package includes: (1) a summary of the sampling plan approach; (2) the standard operating procedure (SOP) for hand auger sampling (Attachment 1); and (3) Figure 1 that shows the soil sampling locations at Trench 4, Sidewall "C" (Attachment 2).



All additional sampling activities will be performed in accordance with the NMED-approved Final Construction Workplan for the 300-Pound Open Burn Treatment Unit Closure, dated August 1997. This includes Section 5.0 – Regulatory Compliance Plan, Section 6.0 – Site Health and Safety Plan, Section 7.0 – Sampling and Analysis Plan, and Section 8.0 – Quality Assurance Project Plan. This sampling event will consist of obtaining eight soil samples that are to be taken from the 0 to 1 foot depth interval using hand auger sampling methods (see Attachment 1) at the locations as shown on the enclosed Figure 1. As agreed by both Holloman AFB and the NMED, the soil samples will only be analyzed for cadmium. The results of the eight additional soil samples and the eight existing soil samples (documented in the Final Closure Report for the 300-LB OBU) will be used to recalculate the 95% upper confidence limit UCL for cadmium. The HQ will also be recalculated based on the revised 95% UCL value. The appropriate course of action for final closure of the site (i.e. no further action, additional sampling, or soil removal) will be determined upon completion of the sampling and risk assessment activities.

Thank you for your time and effort regarding this matter. If you have any questions or require additional information please do not hesitate to contact me at (303) 980-3685.

Sincerely,  
Foster Wheeler Environmental Corporation



Daniel C. Shea, P.E.  
Task Manager, Holloman AFB

DS/lm  
Enclosures

cc: J. Gallegos/USAF, Holloman (2 copies w/enclosures)  
G. Drendel/FWENC, Denver (1 copy w/enclosures)  
D. Johnson/FWENC, Albuquerque (1 copy w/enclosures)  
J. Morning/FWENC, Holloman AFB (2 copies w/enclosures)  
P. Moss/FWENC, Denver (1 copy w/enclosures)  
S. Seyedian/FWENC, Denver (1 copy w/o enclosures)  
TERC-4 Program File (1 copy w/enclosures)



**ATTACHMENT 1  
STANDARD OPERATING PROCEDURES  
FOR  
HAND AUGER SAMPLING**

## **SOP—Hand Auger Sampling**

The following procedure will be used for hand auger sampling.

1. Wear appropriate PPE as specified in the HSPA, Section 6.0 of the Work Plan. In addition, samplers will don new sampling gloves at each location.
2. Use decontaminated hand driven inch stainless steel bucket auger. The diameter of the auger may be modified to suit site-specific conditions and will be specified in the project-specific addendum.
3. Begin turning the auger in a clockwise direction and continue until the desired sampling depth is obtained.
4. Remove the auger and fill jars with soil using stainless steel spatulas or spoons.
5. Empty remaining contents of the auger into a decontaminated stainless steel pan. Homogenization of soil samples will be conducted by first removing rocks, twigs, leaves, and other debris if they are not considered part of the sample. The soil should be removed from the sampling device and placed in a stainless steel pan, then thoroughly mixed using a stainless steel spoon. The soil in the pan should be scraped from the sides, corners and bottom of the pan, rolled to the middle of the pan, and initially mixed. The sample should then be quartered and moved to the four corners of the pan. Each quarter of the sample should be mixed individually, and then rolled to the center of the container and the entire sample mixed again.
6. If it is determined that the sample volume is insufficient to satisfy the analytical requirements, another sample must be obtained from a location immediately adjacent to the first sample.
7. Decontaminate according to the procedures outlined in Decontamination Methods SOP G1 (Appendix G).
8. Place analytical samples into the shipping cooler and chill on ice to 4 °C. Prepare samples(s) for delivery to the laboratory for analysis within 24 hours of collection.
9. Fill out field logbook, sample log sheet, custody seals, labels, and Chain-Of-Custody forms.

**ATTACHMENT 2  
FIGURE 1  
ADDITIONAL SOIL SAMPLING PLAN  
AT  
300-LB OBU TRENCH 4 SITE**



SIDEWALL "A"

TRENCH 4

7 & 8

9 & 10

11 & 12

SIDEWALL "D"

SIDEWALL "B"

21 & 22

1 & 2

3 & 4

5 & 6

13 & 14

25'

SIDEWALL "C"

19 & 20

17 & 18

15 & 16

10'

23

5'

12.5'

24

25

26

27

28

29

30

10'

25'

25'

FIGURE IS NOT TO SCALE

**LEGEND:**

● LOCATION OF PREVIOUS SOIL SAMPLE

⊙ LOCATION OF PROPOSED SOIL SAMPLE

--- TRENCH BOUNDARY

**NOTES:**

1. APPROXIMATE TRENCH DIMENSIONS 100' LONG X 12' WIDE X 8' DEEP

2. ALL ADDITIONAL SOIL SAMPLES WILL BE OBTAINED THROUGH HAND AUGER SAMPLING (SEE ATTACHMENT 1) AT 0 - 1 FOOT DEPTHS

HOLLOMAN AIR FORCE BASE  
ADDITIONAL SOIL SAMPLING PLAN  
AT 300-LB OBU TRENCH 4 SITE

FIGURE 1



FOSTER WHEELER ENVIRONMENTAL CORPORATION



## FOSTER WHEELER ENVIRONMENTAL CORPORATION

March 8, 2000  
TERC-011.001-00X-002

Mr. Tom Zink, P.G.  
U.S. Army Corps of Engineers  
Attn: CENWO-MD-HA, 9<sup>th</sup> Floor  
215 North 17<sup>th</sup> Street  
Omaha, NE 68102-4978

Subject: TERC Contract No. DACW-45-94-D-0003, Delivery Order 11, WAD 01; Results of Additional Soil Sampling and Recommendation for No Further Action at the 300-Pound Open Burn Treatment Unit at Holloman Air Force Base, New Mexico.

Dear Mr. Zink:

Foster Wheeler Environmental Corporation (Foster Wheeler) is submitting two copies of the Results of Additional Soil Sampling and Recommendation for No Further Action at the 300-Pound Open Burn Treatment Unit at Holloman Air Force Base, New Mexico. This letter report includes a summary of the site history associated with the additional soil sampling, results of the additional soil sampling and refined ecological risk calculations, and site recommendations.

### 1.0 Site History

The New Mexico Environment Department (NMED) submitted a comment letter (received by Holloman AFB on December 14, 1999) regarding the technical incompleteness of the Final Closure Report for the 300-Pound Open Burn Treatment Unit (OBU) (Foster Wheeler/U.S. Army Corps of Engineers May, 1999). Based on discussions with NMED, the only significant concern of the letter with regards to closure activities was the potential ecological risk of cadmium at Trench 4.

The Closure Report includes data for 8 surface soil (0-1') samples that were collected from the sidewalls of Trench 4. The maximum concentration of cadmium was 5.9 mg/kg and occurred at location 15 on sidewall C in the southwest corner of the trench. As a result of discussions with Kirby Olson, NMED, potential ecological risk was addressed by calculating the risk to deer mouse using NMED methodology. The cadmium exposure point concentration was based on the 95% Upper Confidence Limit (UCL) on the arithmetic mean, calculated using EPA methodology. The distribution of cadmium was considered lognormal and the UCL was 4.1 mg/kg. The Hazard Quotient (HQ) for cadmium was 4.5. Based on these findings, NMED requested additional surface soil data to refine the risk estimate and to further characterize the extent of the elevated cadmium in this area.





## 2.0 Additional Soil Sampling

Foster Wheeler collected 8 additional surface soil samples from the area immediately west of Trench 4 as described in the Additional Soil Sampling Plan for the 300-Pound Open Burn Treatment Unit (Foster Wheeler, January 24, 2000). These sampling locations (#23-30) are identified in the attached map, along with the sampling locations from the Closure Report. The samples were collected on January 26, 2000 analyzed for cadmium by Laucks Testing Laboratories.

## 3.0 Sampling Results and Ecological Risk Calculations

The cadmium results for the additional soil samples are summarized in the attached table and the sample data package is also included as an attachment (Laucks Testing Laboratories Sample Data Package). Below is a summary of the risk calculations for the deer mouse based on the additional samples.

**Deer Mouse HQ.** The 8 additional soil samples provide a total of 16 surface soil samples at Trench 4. These data were determined to be distributed lognormally. The lognormal 95% UCL for cadmium is 2.6 mg/kg. The estimated dose to the deer mouse, corresponding to this UCL concentration is 0.072 mg/kg-day. This assumes that 100 percent of its diet is obtained from the area that has been sampled in and around Trench 4. The toxicity reference value (TRV) used in the risk calculation is 0.025 mg/kg-day. The HQ is calculated by dividing the estimated dose by the TRV. The deer mouse HQ is 2.9. It is important to note that the calculated deer mouse HQ is 1.1 using the Holloman background UTL concentration for cadmium of 1.0359 mg/kg. This shows that at the upper end of background the HQ exceeds 1. However, it is unlikely that there is actual risk at background, and the elevated HQ may be a result of the conservative assumptions used in deriving the exposure parameters or the toxicity reference value. These values may be somewhat overestimating risk.

The estimated risk to the deer mouse was refined by further consideration of the exposure area and the home range of the deer mouse. The total exposure area is only a fraction of the home range of a deer mouse. The home range of a deer mouse is approximately 1/4 of an acre or 11,000 square feet (EPA 1993, Wildlife Exposure Factors Handbook). The total surficial area of the trench and the additional sampling area is about 3,200 square feet. This is less than 1/3 of the home range of the deer mouse. The risk calculation was refined by incorporating this information. The P-factor accounts for the fraction of the diet (and incidentally ingested soil) that is obtained from the site, and is derived by dividing the area of the site by the home range. This results in a P-factor of 0.29 ( $3,200 \text{ ft}^2 / 11,000 \text{ ft}^2$ ), or in other words, 29% of the deer mouse diet is obtained from the site area. The P-factor is incorporated into the calculation of the dose and results in a daily cadmium dose of 0.021 mg/kg/day. The hazard quotient (HQ) at a dose of 0.021 mg/kg/day is 0.84 (i.e.,  $\text{Dose/TRV} = 0.021/0.025$ ). Since the HQ is less than 1.0, this is considered an acceptable risk.



**Extent of elevated cadmium.** The extent of elevated cadmium at Trench 4 has been fully characterized. Previous sampling indicated a maximum concentration of cadmium of 5.9 mg/kg at location 15 on sidewall C in the southwestern corner of the trench. The results of the additional sampling showed elevated cadmium of 5.5 mg/kg at location 27, which is 10 feet west of location 15. However, cadmium was not elevated at location 30, which is 20 feet west of location 15, or at location 24, which is 5 feet west and 12.5 feet north of location 15. Both of these locations had 1.1 mg/kg cadmium.

#### 4.0 Conclusions and Recommendations

This letter report summarizes the results of the additional soil sampling and the revised ecological risk calculations. These findings have been reviewed with NMED. NMED's concerns have been fully addressed and NMED agrees that the site should be recommended for No Further Action (NFA).

#### 5.0 References

Foster Wheeler Environmental Corporation. 1999. Additional Soil Sampling Plan for the 300-Pound Open Burn Treatment Unit at Holloman Air Force Base, New Mexico. Submitted to Tom Zink, U.S. Army Corps of Engineers. January 24, 2000

Foster Wheeler Environmental Corporation and U.S. Army Corps of Engineers. 1999. Final Closure Report for the 300-Pound Open Burn Treatment Unit. Holloman Air Force Base. May, 1999.

Laucks Testing Laboratories. 2000. Sample Data Package. February 23, 2000.


If you have any questions or require additional information, please do not hesitate to contact me at (303)-980-3546.

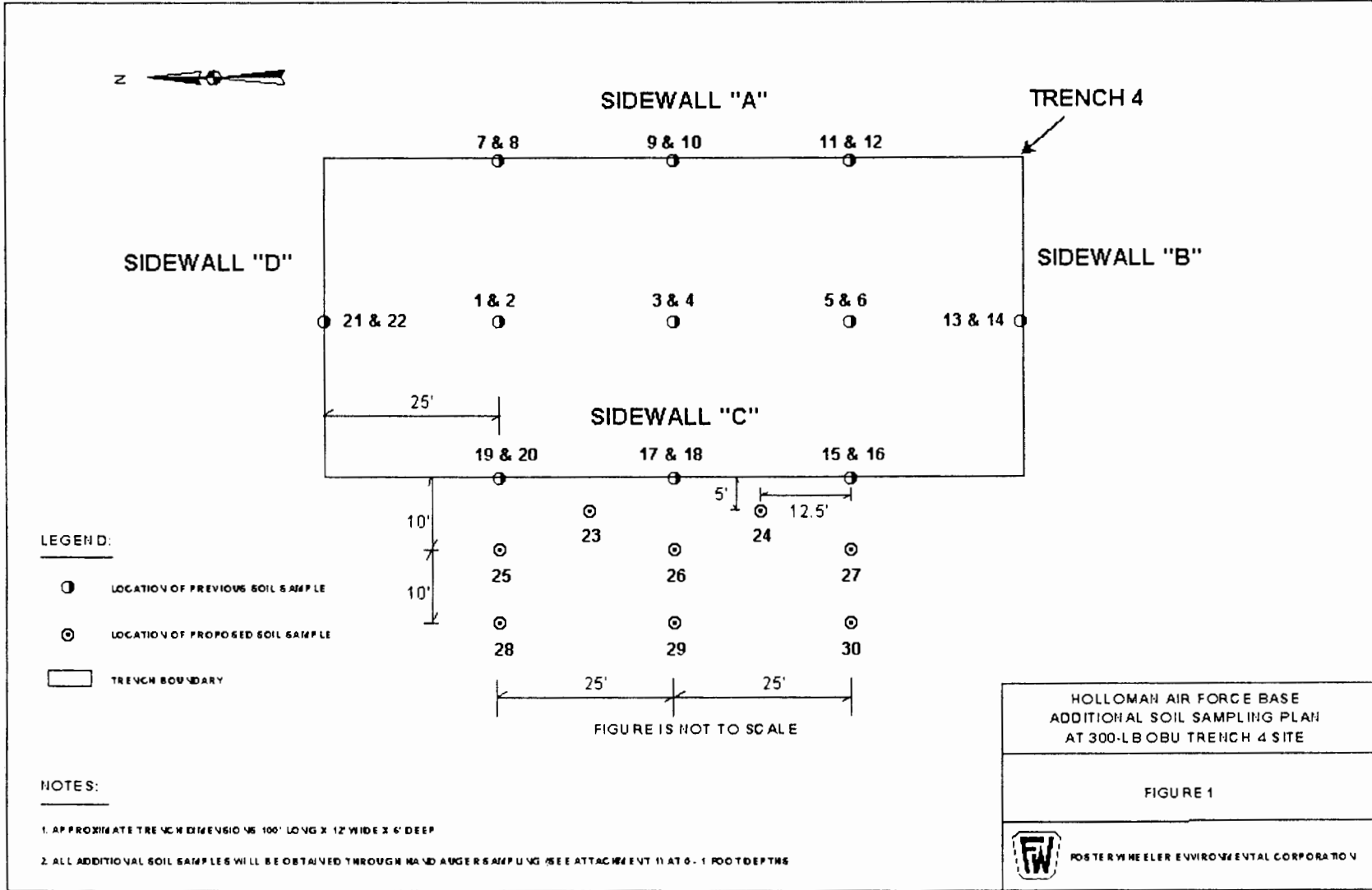
Sincerely,  
Foster Wheeler Environmental Corporation



Gary Drendel  
Risk Assessment Manager

GD/lm  
Enclosures

cc: J. Gallegos/USACE, Holloman (2 copies w/enclosures)  
D. Johnson/FWENC, Albuquerque (1 copy w/enclosures)  
J. Morning/FWENC, Holloman AFB (2 copies w/enclosures)  
P. Moss/FWENC, Denver (1 copy w/enclosures)  
S. Seyedian/FWENC, Denver (1 copy w/o enclosures)  
D. Shea/FWENC, Denver (1 copy w/enclosures)  
TERC-4 Program File (1 copy w/enclosures) 



**Summary Table of Cadmium Data for Surface Soils (0-1') at Trench Four, 300-Pound OBU**

Sample Number	Location on Map	Collection Date	Value <sup>(1)</sup>		Detection Limit	Units
OBU04S07	7	9-Mar-98	0.5	ND	1.0	mg/kg
OBU04S09	9	9-Mar-98	0.55	ND	1.1	mg/kg
OBU04S11	11	10-Mar-98	0.5	ND	1.0	mg/kg
OBU04S13	13	10-Mar-98	0.55	ND	1.1	mg/kg
OBU04S15	15	10-Mar-98	5.9	=	NA	mg/kg
OBU04S17	17	10-Mar-98	0.5	ND	1.0	mg/kg
OBU04S19	19	10-Mar-98	2.2	=	NA	mg/kg
OBU04S21	21	10-Mar-98	0.55	ND	1.1	mg/kg
OBU04S23	23	26-Jan-00	1.4	=	NA	mg/kg
OBU04S24	24	26-Jan-00	1.1	=	NA	mg/kg
OBU04S25	25	26-Jan-00	1.8	=	NA	mg/kg
OBU04S26	26	26-Jan-00	0.45	ND	0.90	mg/kg
OBU04S27	27	26-Jan-00	5.5	=	NA	mg/kg
OBU04S28	28	26-Jan-00	1.5	=	NA	mg/kg
OBU04S29	29	26-Jan-00	0.43	ND	0.86	mg/kg
OBU04S30	30	26-Jan-00	1.1	=	NA	mg/kg

*Notes:*

(1) = For nondetections , half of the detection limit was used for calculating the UCL.

NA = not available

ND = nondetection

mg/kg = milligrams per kilogram

**LAUCKS TESTING LABORATORIES  
SAMPLE DATA PACKAGE**

**FOSTER WHEELER ENVIRONMENTAL**

**LABORATORY NO.: 0001570**

**SDG NO.: OBU16**

**FEBRUARY 23, 2000**

# LAUCKS TESTING LABORATORIE

940 S. Harney  
Seattle, WA 98108

To: Foster Wheeler Environmental  
Project No. : Holoman AFB 300 # Open Burn Unit  
Laboratory No. : 0001570  
SDG No.: OBU16  
Date of Report: February 23, 2000

## **SAMPLE RECEIPT, IDENTIFICATION, AND GENERAL COMMENTS:**

### **Sample Receipt and Identification:**

The samples submitted under the laboratory number(s) indicated above were identified and analyzed as tabulated below. The samples were collected and received on the dates noted on the enclosed chain-of-custody copies, Attachment A.

<u>Client Sample Identification</u>	<u>Laucks Sample Identification</u>	<u>Testing Analytical Request</u>
OBU04S23	0001570-01	Cadmium by 6010
OBU04S24	0001570-02	Cadmium by 6010
OBU04S25	0001570-03	Cadmium by 6010
OBU04S26	0001570-04	Cadmium by 6010
OBU04S27	0001570-05	Cadmium by 6010
OBU04S28	0001570-06	Cadmium by 6010
OBU04S29	0001570-07	Cadmium by 6010
OBU04S30	0001570-08	Cadmium by 6010

### **Sample Receipt Comments:**

There were no anomalies in the receipt of these samples.

### **Sample Identification on Forms:**

When completing forms created through the CLP software, every attempt is made to use both your sample IDs as well as the laboratory sample IDs. The forms have varied default sizes to their sample identification fields, and are not amenable to alteration or editing. When it is not possible to use your complete sample ID because of field length limitations, Laucks will usually do one of two things: 1) use as much of your ID as will fit, beginning from the RIGHT hand side of the sample ID number; or 2) select some sub-set of your sample identifier if it is clearly a discrete number. In addition, all forms will contain our sample IDs, which can be cross-referenced from the table above.

**LAUCKS TESTING LABORATORIES**

940 S. Harney  
Seattle, WA 98108

**GENERAL REMARKS ON INORGANIC ANALYSES:**

The following comments describe general analysis conditions. For remarks specific to the samples reported in this case, see "SPECIFIC REMARKS ON INORGANIC ANALYSES."

**ICP Metals:**

The preparation blank for metals in soil is calculated to mg/kg by assuming a sample weight of 1.00g/200mL. Total solids of 100% are also assumed.

On the first timed and dated page of each ICP run, the data to be reported or rejected will be tabulated for that run.

**SPECIFIC REMARKS ON INORGANIC ANALYSES:**

**Holding Time Compliance:**

Laucks calculates holding time compliance for inorganic determinations using the date on which reportable data were acquired.

**Metals:**

The holding time for metals is six months from the date of collection, excepting mercury, which is 28 days. All analyses were performed within holding time.

**ICP Metals:**

The matrix spike sample percent recovery of cadmium was outside of the established control limits of 75-125% for sample OBU04S23. No further corrective action was required. All relevant data have been flagged with an "N" on Forms I and V.

## ABBREVIATIONS

Several abbreviations can appear in our reports. The most commonly employed abbreviations are as follows:

- U The analyte of interest was not detected to the limit of detection indicated.
- SDL Sample Detection Limit. The SDL can vary from sample to sample, depending on sample size, matrix interferences, moisture content and other sample-specific conditions.
- PQL Practical Quantitation Limit. The limit is drawn from the test method and usually represents the SDL multiplied by a matrix-specific factor.
- DB Dry Basis. The value reported has been back-calculated to normalize for the moisture content of the sample.
- AR As-Received. The value has not been normalized for moisture.

## INORGANIC ANALYSES:

- B The reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" shall be entered.
- E The reported value is estimated because of the presence of interference. An explanatory note shall be included under Comments on the Cover Page (if the problem applies to all samples) or on the specific Form I-IN (if it is an isolated problem).
- M Duplicate injection precision not met.
- N Spiked sample recovery not within control limits.
- S The reported value was determined by the Method of Standard Additions (MSA)
- W Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50 % of spike absorbance.
- \* Duplicate analysis not within control limits.
- + Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W" or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

CRDL Client Requested Detection Limit, usually the limit of detection specified at your request. Might also be referred to as Contract required Detection Limit.



**LAUCKS TESTING LABORATORIES**

940 S. Harney  
Seattle, WA 98108

RELEASE OF DATA

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature."

Respectfully submitted,



Jenna Gorham  
Project Manager

23 Feb 2000  
(DATE)



Mike Nelson  
Technical Director

23 Feb 2000  
(DATE)

*HOW TO CONTACT US:*

All Laucks Testing Laboratories staff members can be reached at the same telephone and facsimile numbers: (206) 767-5060 by phone, (206) 767-5063 by FAX.

*REQUESTS FOR DUPLICATE COPIES:*

This packet has been checked for accuracy. All pages are present and in sequential order. Please see Attachment B for a detailed record.

In the event that duplicate data copies are needed, Laucks will accommodate your request at a fee of twenty five cents (\$0.25) per copy, plus shipping. If the data are in storage, there will also be a fee for retrieval.

THIS INFORMATION WILL BE USED FOR REPORTING/BILLING\* (SEE BELOW)

COMPANY: Foster Wheeler  
 ADDRESS: 241 ARKANSAS St. (RV Storage)  
HAFB, NM. 88330  
 ATTENTION: \_\_\_\_\_  
 PROJECT NAME: \_\_\_\_\_  
 PROJECT CONTACT: DAVE Rizzato  
 TELEPHONE: (206) 767-5060 FAX: (206) 767-5063  
 JOB/P.O. NO.: 300 # OBU

CHAIN OF CUSTODY RECORD

08214

SDG # FW11499  
 OBU16 PAGE 1 OF 1 (1/27/00)

**Laucks**  
 Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX 767-5063  
 1106 Ledwith Ave., Yakima, WA 98902 (509) 248-4895 FAX 452-1265

WORK ORDER ID# 0001570

SUBMITTED AT:

TESTS TO PERFORM

MATRIX: WATER, SOIL OR SPECIFY  
 NO. OF CONTAINERS  
Cadmium (6010)

OBSERVATIONS,  
 COMMENTS, SPECIAL  
 INSTRUCTIONS

LAB. NO.	SAMPLE ID / LOCATION	DATE	TIME	MATRIX	NO. OF CONTAINERS	TESTS TO PERFORM	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
1	OBU04S 23	1-26-00	1305	Soil	1	X	Shipper # 125 29044 2210012661  Fax Results to (505) 479-2081
2	OBU04S 24	1-26-00	1310	Soil	1	X	
3	OBU04S 25	1-26-00	1315	Soil	1	X	
4	OBU04S 26	1-26-00	1320	Soil	1	X	
5	OBU04S 27	1-26-00	1323	Soil	1	X	
6	OBU04S 28	1-26-00	1328	Soil	1	X	
7	OBU04S 29	1-26-00	1335	Soil	1	X	
8	OBU04S 30	1-26-00	1340	Soil	1	X	

A. A standard turnaround time is assumed unless otherwise marked.

B. The laboratory may not be responsible for missed holding time for samples received with less than 50% of the analytical hold time remaining. Please contact the laboratory for further information.

<b>INSTRUCTIONS</b> 1. USE ONE LINE PER SAMPLE. 2. BE SPECIFIC IN TEST REQUESTS. 3. CHECK OFF TESTS TO BE PERFORMED FOR EACH SAMPLE.		<b>*BILLING INFORMATION, IF DIFFERENT THAN ABOVE</b> NAME _____ ADDRESS _____ ATTN: _____ CITY, STATE, ZIP _____		<b>* RUSH TURNAROUND IS SUBJECT TO PRIOR LABORATORY APPROVAL</b>		<b>TOTAL NO. OF CONTAINERS</b> TURNAROUND REQUEST <input type="checkbox"/> STD. 10-14 WORKING DAYS <input checked="" type="checkbox"/> 24-48 HRS. (100% SUR) <input type="checkbox"/> 72 HRS. (75% SUR) <input type="checkbox"/> 5 DAYS (50% SUR) <input type="checkbox"/> OTHER: _____ <input type="checkbox"/> TEMP: _____ CUSTODY SEAL: <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
RELINQUISHED BY (SIGN AND PRINT) <u>James Clark</u>		DATE TIME <u>1-26-00 1500</u>		RECEIVED BY (SIGN AND PRINT) <u>PAM R. JOHNSON</u>		DATE TIME <u>1/27/00</u>	

# Laucks

## Testing Laboratories, Inc.

### COOLER RECEIPT FORM

WORKORDER #: 0001570

Contractor Cooler \_\_\_\_\_

QA Lab Cooler # \_\_\_\_\_

Number of Coolers 1/1

Project: HAFB

Date samples were received at the laboratory: 1/27/00

A. **PRELIMINARY EXAMINATION PHASE:** Date cooler was opened: 1/27/00

By: (print) PAM R. JOHNSON (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc.)? [Signature] YES NO

If YES, record carrier name and airbill number: GH-725290W42210012661

2. Were custody seals on outside of cooler? [Signature] YES NO

How many and where: 1 in front

Seal date: NA Seal name: See Attached

3. Were custody seals unbroken and intact at the date and time of arrival? [Signature] YES NO

4. Did you screen samples for radioactivity using the Geiger Counter? [Signature] YES NO

5. Were custody papers sealed in a plastic bag and taped inside to the lid? [Signature] YES NO

6. Were custody papers filled out properly (ink, signed, etc.)? [Signature] YES NO

7. Did you sign custody papers in the appropriate place? [Signature] YES NO

8. Was project identifiable from custody papers? If YES, enter project name at top of this form.

9. If required, was enough cooling material present? [Signature] Type of ice: bags YES NO

10. Have designated person initial here to acknowledge receipt of cooler: [Signature] date 1/27/00

B. **LOG-IN PHASE:** Date samples were logged-in: 1/27/00

By (print) PAM R. JOHNSON (sign) [Signature]

11. Describe type of packing in cooler: bubblewrap

12. Were all bottles sealed in separate plastic bags? [Signature] YES NO

13. Did all bottles arrive unbroken and were labels in good condition? [Signature] YES NO

**KS TESTING LABORATORY**  
 CUSTODY SEAL  
 7 St., Seattle, WA 98108  
 7-5060 • FAX (206) 767-5063  
 SIGNATURE [Signature]



### Laucks Testing Laboratories, Inc., Supplemental Sample Receipt Log

Work Order Number: 0001970  
 Assigned SDG Number: ~~F01119~~ 08016  
 (127210)

Temperature	pH of Bottle Types										Number of Cooler	
1												
2	4.3	} soils										
3												
4												
5	2.9											
6												
7												
8	3.8											

Allowable temperature and pH ranges (neutral pH defined as a value between 5 and 9)

- Temperature                      Allowable temperature range is 4± 2 degrees Celsius
- Acid Preserved pH              pH must be less than 2
- Base Preserved pH              pH must be greater than 12
- N/C =                                Not Checked for pH

**Metals Data**

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: LAUCKS TESTING LABS, INC.

Contract:

Lab Code: LAUCKS

Case No.:

SAS No.:

SDG No.: OBU16

EPA Sample No.	Client Identification	Full Lab Sample ID	Lab Sample ID for Forms/Raw Data
A04S23	OBU04S23	0001570-01	01570-01
A04S23D	OBU04S23D	0001570-01D	01570-01D
A04S23S	OBU04S23S	0001570-01S	01570-01S
B04S24	OBU04S24	0001570-02	01570-02
C04S25	OBU04S25	0001570-03	01570-03
D04S26	OBU04S26	0001570-04	01570-04
E04S27	OBU04S27	0001570-05	01570-05
F04S28	OBU04S28	0001570-06	01570-06
G04S29	OBU04S29	0001570-07	01570-07
H04S30	OBU04S30	0001570-08	01570-08

Where D= Duplicate and S= Spike.

Were ICP interelement correction factors applied?

Yes/No YES

Were ICP background corrections applied?

Yes/No YES

If yes, were raw data generated before application of background corrections?

Yes/No NO

Comments: See SDG Narrative for specific comments on the metals analysis.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature:

*Kathy Kreps*

Name:

Kathy Kreps

Date:

February 18, 2000

Title:

Laboratory Director

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.:

A04S23

Lab Name: LAUCKS TESTING LABS, INC.

Contract: \_\_\_\_\_

Lab Code: LAUCKS

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: OBU16

Matrix (soil/water): SOIL

Lab Sample ID: 01570-01

Level (low/med): LOW

Date Received: 01/27/00

% Solids: 88.3

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

*EPA Qualifier*

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium	1.4	N	P	
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead				
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide				

*J*

Color Before: BROWN

Clarity Before: \_\_\_\_\_

Texture: MEDIUM

Color After: BROWN

Clarity After: \_\_\_\_\_

Artifacts: \_\_\_\_\_

Comments:

CLIENT ID: OBU04S23



INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.:

B04S24

Lab Name: LAUCKS TESTING LABS, INC. Contract: \_\_\_\_\_

Lab Code: LAUCKS Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_

SDG No.: OBU16

Matrix (soil/water): SOIL Lab Sample ID: 01570-02

Level (low/med): LOW Date Received: 01/27/00

% Solids: 89.8

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

*EPA Qualifier*

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium	1.1	N	P	
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead				
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide				

J

Color Before: BROWN

Clarity Before: \_\_\_\_\_

Texture: MEDIUM

Color After: BROWN

Clarity After: \_\_\_\_\_

Artifacts: \_\_\_\_\_

Comments:

CLIENT ID: OBU04S24

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.:

C04S25

Lab Name: LAUCKS TESTING LABS, INC.

Contract: \_\_\_\_\_

Lab Code: LAUCKS

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: OBU16

Matrix (soil/water): SOIL

Lab Sample ID: 01570-03

Level (low/med): LOW

Date Received: 01/27/00

% Solids: 86.3

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

EPA Qualifier

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium	1.8	N	P	
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead				
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide				

J

Color Before: BROWN

Clarity Before: \_\_\_\_\_

Texture: MEDIUM

Color After: BROWN

Clarity After: \_\_\_\_\_

Artifacts: \_\_\_\_\_

Comments:

CLIENT ID: OBU04S25

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.:

D04S26

Lab Name: LAUCKS TESTING LABS, INC.

Contract: \_\_\_\_\_

Lab Code: LAUCKS

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: OBU16

Matrix (soil/water): SOIL

Lab Sample ID: 01570-04

Level (low/med): LOW

Date Received: 01/27/00

% Solids: 80.8

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

*EPA Qualifier*

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium	0.17 B	N	P	
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead				
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide				

J

Color Before: BROWN

Clarity Before: \_\_\_\_\_

Texture: MEDIUM

Color After: BROWN

Clarity After: \_\_\_\_\_

Artifacts: \_\_\_\_\_

Comments:

CLIENT ID: OBU04S26

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.:

E04S27

Lab Name: LAUCKS TESTING LABS, INC.

Contract: \_\_\_\_\_

Lab Code: LAUCKS

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: OBU16

Matrix (soil/water): SOIL

Lab Sample ID: 01570-05

Level (low/med): LOW

Date Received: 01/27/00

% Solids: 91.6

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

*EPA Qualifier*

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium	5.5	N		P
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead				
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide				

*J*

Color Before: BROWN

Clarity Before: \_\_\_\_\_

Texture: MEDIUM

Color After: BROWN

Clarity After: \_\_\_\_\_

Artifacts: \_\_\_\_\_

Comments:

CLIENT ID: OBU04S27

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.:

F04S28

Lab Name: LAUCKS TESTING LABS, INC.

Contract: \_\_\_\_\_

Lab Code: LAUCKS

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

SDG No.: OBU16

Matrix (soil/water): SOIL

Lab Sample ID: 01570-06

Level (low/med): LOW

Date Received: 01/27/00

% Solids: 87.3

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

EPA Qualifier

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium	1.5	N	P	
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead				
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide				

J

Color Before: BROWN

Clarity Before: \_\_\_\_\_

Texture: MEDIUM

Color After: BROWN

Clarity After: \_\_\_\_\_

Artifacts: \_\_\_\_\_

Comments:

CLIENT ID: OBU04S28

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.:

G04S29

Lab Name: LAUCKS TESTING LABS, INC. Contract: \_\_\_\_\_

Lab Code: LAUCKS Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_

SDG No.: OBU16

Matrix (soil/water): SOIL Lab Sample ID: 01570-07

Level (low/med): LOW Date Received: 01/27/00

% Solids: 82.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium	0.16	U	N	P
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead				
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide				

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: \_\_\_\_\_ Artifacts: \_\_\_\_\_

Comments:

CLIENT ID: OBU04S29

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.:

**H04S30**

Lab Name: LAUCKS TESTING LABS, INC. Contract: \_\_\_\_\_

Lab Code: LAUCKS Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_

SDG No.: OBU16

Matrix (soil/water): SOIL Lab Sample ID: 01570-08

Level (low/med): LOW Date Received: 01/27/00

% Solids: 90.1

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

*EPA Qualifier*

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium	1.1	N	P	
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead				
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide				

*J*

Color Before: BROWN

Clarity Before: \_\_\_\_\_

Texture: MEDIUM

Color After: BROWN

Clarity After: \_\_\_\_\_

Artifacts: \_\_\_\_\_

Comments:

CLIENT ID: OBU04S30