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200-DV-10U Sediment and Pore Water Analysis and Report for Samples at Borehole C8096

Michael Lindberg

October 2011



Pacific Northwest
NATIONAL LABORATORY

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(9/2003)

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M Lindberg

October 2011

Prepared for the U.S. Department of Energy
under Contract DE-AC05-76RL01830

Pacific Northwest National Laboratory
Richland, Washington 99352

10/28/11 11:55

To: Virginia Rohay

From: Michael J. Lindberg

A handwritten signature in black ink, appearing to read 'MJL', with a stylized flourish at the end.

Environmental Sciences Laboratory
Energy and Environment Directorate, Pacific Northwest National Laboratory

Subject: Analytical Data Report for Sediment Samples Collected From 200-DV-1 OU Borehole C8096, Sample Delivery Group ESL090025, SAF Number F11-070

This letter contains the following information for sample delivery group ESL090025

- Cover Sheet
- Narrative
- Analytical Results
- Quality Control
- Geologic Logs
- Geologic Photos
- Chain of Custodies

Introduction

On August 30, 2011 sediment samples were received from 200-DV-1 OU Borehole C8096 for geochemical studies.

Analytical Results/Methodology

The analyses for this project were performed at the 331 building located in the 300 Area of the Hanford Site. The analyses were performed according to Pacific Northwest National Laboratory (PNNL) approved procedures and/or nationally recognized test procedures. The data sets include the sample identification numbers, analytical results, estimated quantification limits (EQL), and quality control data.

Quality Control

The preparatory and analytical quality control requirements, calibration requirements, acceptance criteria, and failure actions are defined in the on-line QA plan "Conducting Analytical Work in Support of Regulatory Programs" (CAW). This QA plan implements the Hanford Analytical Services Quality Assurance Requirements Documents (HASQARD) for PNNL.

Definitions

| | |
|------|---|
| Dup | Duplicate |
| RPD | Relative Percent Difference |
| NR | No Recovery (percent recovery less than zero) |
| ND | Non-Detectable |
| %REC | Percent Recovery |

Sample Receipt

Samples were received with a chain of custody (COC) and were analyzed according to the sample identification numbers supplied by the client. All Samples were refrigerated upon receipt until prepared for analysis.

All samples were received with custody seals intact unless noted in the Case Narrative.

Holding Times

Holding time is defined as the time from sample preparation to the time of analyses. The prescribed holding times were met for all analytes unless noted in the Case Narrative.

Analytical Results

All reported analytical results meet the requirements of the CAW or client specified SOW unless noted in the case narrative.

Case Narrative Report

Hold Time:

Due to the requirements of the statement of work and sampling events in the field, the 28 day and the 48 hr requirements could not be met. All applicable hold times were started from the time of preparation and not the time of sampling.

Preparation Blank (PB):

No discrepancies noted.

Duplicate (DUP):

No discrepancies noted.

Laboratory Control Samples (LCS):

No discrepancies noted.

Post Spike (PS):

Post-Spike Recovery for Calcium (NR) was outside acceptance limits (75-125) in 1J17002-PS1 for ICP-OES Vadose-AE
The native concentration of the sample was greater than 5 times the spike concentration. There should be no impact to data as reported.

Post-Spike Recovery for Magnesium (NR) was outside acceptance limits (75-125) in 1J17002-PS1 for ICP-OES Vadose-AE
The native concentration of the sample was greater than 5 times the spike concentration. There should be no impact to data as reported.

Matrix Spike (MS):

No discrepancies noted.

Other QC Criteria:

No discrepancies noted.

I certify that this data package is in compliance with the SOW, 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 Analytical Manager as verified by this signature.

Michael Lindberg

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under Contract DE-AC05-76RLOJ830

The following analyses were performed on the following samples included in this report:

Metals 1:1 DI Water Extract by ICPMS
Alkalinity, Titrimetic (pH 4.5)
Anions By Ion Chromatography
Carbon, Total, Combustion or Oxidation
Inorganic Carbon, Total, Combustion or Oxidation
Iodine-129 1:1 DI Water Extract by ICPMS
Metals 1:1 Water Extract by ICPOES
Metals Acid Extract by ICPOES
Moisture Content
Particle Size Distribution (Dry Sieve)
pH of Waters By Electrode
Specific Conductance
Tc_U 1:1 DI Water Extract by ICPMS
Total Carbon NP Soil

SAMPLES ANALYZED IN THIS REPORT

| HEIS No. | Laboratory ID | Matrix | Date Collected | Date Received |
|-----------------|----------------------|---------------|-----------------------|----------------------|
| B2CP73 | 1108012-01 | SOIL | 8/23/11 12:30 | 8/30/11 14:40 |
| B2CP74 | 1108012-02 | SOIL | 8/23/11 13:25 | 8/30/11 14:40 |

Wet Chemistry

Alkalinity as CaCO₃ (ug/g dry) by Standard Methods 2320B

| Lab ID | HEIS No. | Results | EQL | Analyzed | Batch |
|---------------|-----------------|----------------|------------|-----------------|--------------|
| 1108012-01 | B2CP73 | 8.22E1 | 3.25E1 | 10/13/11 | 1J12003 |
| 1108012-02 | B2CP74 | 9.05E1 | 2.77E1 | 10/13/11 | 1J12003 |

Wet Chemistry

Specific Conductance (EC) (mS/cm) by EPA 120.1

| Lab ID | HEIS No. | Results | EQL | Analyzed | Batch |
|------------|----------|---------|---------|----------|---------|
| 1108012-01 | B2CP73 | 2.39E-1 | 1.00E-2 | 10/12/11 | 1J12002 |
| 1108012-02 | B2CP74 | 2.13E-1 | 1.00E-2 | 10/12/11 | 1J12002 |

Wet Chemistry

Moisture Content (% by Weight) by AGG-WC-001

| Lab ID | HEIS No. | Results | EQL | Analyzed | Batch |
|---------------|-----------------|----------------|------------|-----------------|--------------|
| 1108012-01 | B2CP73 | 1.91E1 | N/A | 10/07/11 | 1J07003 |
| 1108012-02 | B2CP74 | 8.93E0 | N/A | 10/07/11 | 1J07003 |

Wet Chemistry

pH (pH Units) by AGG-pH-001

| Lab ID | HEIS No. | Results | EQL | Analyzed | Batch |
|---------------|-----------------|----------------|------------|-----------------|--------------|
| 1108012-01 | B2CP73 | 7.04E0 | N/A | 10/12/11 | 1J12001 |
| 1108012-02 | B2CP74 | 7.41E0 | N/A | 10/12/11 | 1J12001 |

Anions by Ion Chromatography

| CAS # | Analyte | Results | Units | EQL | Analyzed | Batch | Method |
|-----------------|---------------|----------------|----------|-------------------|----------|---------|------------|
| HEIS No. | B2CP73 | Lab ID: | | 1108012-01 | | | |
| 16984-48-8 | Fluoride | <1.00E0 | ug/g dry | 1.00E0 | 10/12/11 | 1J12004 | AGG-IC-001 |
| 16887-00-6 | Chloride | 9.45E0 | ug/g dry | 2.50E0 | 10/12/11 | 1J12004 | AGG-IC-001 |
| 14797-55-8 | Nitrate | 3.42E1 | ug/g dry | 5.00E0 | 10/12/11 | 1J12004 | AGG-IC-001 |
| 14808-79-8 | Sulfate | 2.25E1 | ug/g dry | 7.51E0 | 10/12/11 | 1J12004 | AGG-IC-001 |
| 14265-44-2 | Phosphate | <7.51E0 | ug/g dry | 7.51E0 | 10/12/11 | 1J12004 | AGG-IC-001 |
| HEIS No. | B2CP74 | Lab ID: | | 1108012-02 | | | |
| 16984-48-8 | Fluoride | <1.00E0 | ug/g dry | 1.00E0 | 10/12/11 | 1J12004 | AGG-IC-001 |
| 16887-00-6 | Chloride | 3.66E0 | ug/g dry | 2.50E0 | 10/12/11 | 1J12004 | AGG-IC-001 |
| 14797-55-8 | Nitrate | 1.56E1 | ug/g dry | 5.00E0 | 10/12/11 | 1J12004 | AGG-IC-001 |
| 14808-79-8 | Sulfate | 1.89E1 | ug/g dry | 7.50E0 | 10/12/11 | 1J12004 | AGG-IC-001 |
| 14265-44-2 | Phosphate | <7.50E0 | ug/g dry | 7.50E0 | 10/12/11 | 1J12004 | AGG-IC-001 |

Total Metals by PNNL-AGG-ICP-AES/1:1 Water Extract

| CAS # | Analyte | Results | Units | EQL | Analyzed | Batch | Method |
|-----------------|---------------|---------------------------|----------|---------|----------|---------|------------------|
| HEIS No. | B2CP73 | Lab ID: 1108012-01 | | | | | |
| 7440-39-3 | Barium | <1.24E-1 | ug/g dry | 1.24E-1 | 10/17/11 | 1J17001 | PNNL-AGG-ICP-AES |
| HEIS No. | B2CP74 | Lab ID: 1108012-02 | | | | | |
| 7440-39-3 | Barium | <1.24E-1 | ug/g dry | 1.24E-1 | 10/17/11 | 1J17001 | PNNL-AGG-ICP-AES |

Total Metals by PNNL-AGG-ICP-AES/Acid Extract

| CAS # | Analyte | Results | Units | EQL | Analyzed | Batch | Method |
|-----------------|---------------|---------------------------|----------|--------|----------|---------|------------------|
| HEIS No. | B2CP73 | Lab ID: 1108012-01 | | | | | |
| 7440-70-2 | Calcium | 7.54E3 | ug/g dry | 2.88E1 | 10/17/11 | 1J17002 | PNNL-AGG-ICP-AES |
| 7440-09-7 | Potassium | 1.35E3 | ug/g dry | 1.06E2 | 10/17/11 | 1J17002 | PNNL-AGG-ICP-AES |
| 7439-95-4 | Magnesium | 4.33E3 | ug/g dry | 7.90E0 | 10/17/11 | 1J17002 | PNNL-AGG-ICP-AES |
| 7440-23-5 | Sodium | 1.70E2 | ug/g dry | 7.81E1 | 10/17/11 | 1J17002 | PNNL-AGG-ICP-AES |
| HEIS No. | B2CP74 | Lab ID: 1108012-02 | | | | | |
| 7440-70-2 | Calcium | 4.26E4 | ug/g dry | 2.61E1 | 10/17/11 | 1J17002 | PNNL-AGG-ICP-AES |
| 7440-09-7 | Potassium | 7.63E2 | ug/g dry | 9.64E1 | 10/17/11 | 1J17002 | PNNL-AGG-ICP-AES |
| 7439-95-4 | Magnesium | 3.97E3 | ug/g dry | 7.17E0 | 10/17/11 | 1J17002 | PNNL-AGG-ICP-AES |
| 7440-23-5 | Sodium | 3.25E2 | ug/g dry | 7.09E1 | 10/17/11 | 1J17002 | PNNL-AGG-ICP-AES |

Radionuclides by ICP-MS/1:1 Water Extract

| CAS # | Analyte | Results | Units | EQL | Analyzed | Batch | Method |
|-----------------|---------------|---------------------------|----------|---------|----------|---------|--------------|
| HEIS No. | B2CP73 | Lab ID: 1108012-01 | | | | | |
| 15046-84-1 | Iodine-129 | <7.44E-3 | ug/g dry | 7.44E-3 | 10/25/11 | 1J21002 | PNNL-AGG-415 |
| HEIS No. | B2CP74 | Lab ID: 1108012-02 | | | | | |
| 15046-84-1 | Iodine-129 | <7.44E-3 | ug/g dry | 7.44E-3 | 10/25/11 | 1J21002 | PNNL-AGG-415 |

Radionuclides by ICP-MS/1:1 Water Extract

| CAS # | Analyte | Results | Units | EQL | Analyzed | Batch | Method |
|-----------------|---------------|---------------------------|----------|---------|----------|---------|--------------|
| HEIS No. | B2CP73 | Lab ID: 1108012-01 | | | | | |
| 14133-76-7 | Technetium-99 | <7.81E-5 | ug/g dry | 7.81E-5 | 10/20/11 | 1J20001 | PNNL-AGG-415 |
| U-238 | Uranium 238 | 1.04E-3 | ug/g dry | 1.60E-4 | 10/20/11 | 1J20001 | PNNL-AGG-415 |
| HEIS No. | B2CP74 | Lab ID: 1108012-02 | | | | | |
| 14133-76-7 | Technetium-99 | <7.80E-5 | ug/g dry | 7.80E-5 | 10/20/11 | 1J20001 | PNNL-AGG-415 |
| U-238 | Uranium 238 | 9.40E-3 | ug/g dry | 1.60E-4 | 10/20/11 | 1J20001 | PNNL-AGG-415 |

RCRA Metals By PNNL-AGG-415/1:1 Water Extract

| CAS # | Analyte | Results | Units | EQL | Analyzed | Batch | Method |
|-----------------|---------------|----------------|----------|-------------------|----------|---------|--------------|
| HEIS No. | B2CP73 | Lab ID: | | 1108012-01 | | | |
| 14092-98-9 | Chromium | <6.89E-3 | ug/g dry | 6.89E-3 | 10/13/11 | 1J13002 | PNNL-AGG-415 |
| 7440-38-2 | Arsenic | 5.91E-3 | ug/g dry | 5.68E-3 | 10/13/11 | 1J13002 | PNNL-AGG-415 |
| 14687-58-2 | Selenium | <1.58E-2 | ug/g dry | 1.58E-2 | 10/13/11 | 1J13002 | PNNL-AGG-415 |
| 14378-37-1 | Silver | <6.26E-3 | ug/g dry | 6.26E-3 | 10/13/11 | 1J13002 | PNNL-AGG-415 |
| 14041-58-8 | Cadmium | <7.72E-4 | ug/g dry | 7.72E-4 | 10/13/11 | 1J13002 | PNNL-AGG-415 |
| 13966-27-3 | Lead | <2.71E-3 | ug/g dry | 2.71E-3 | 10/13/11 | 1J13002 | PNNL-AGG-415 |
| 14191-86-7 | Mercury | <1.46E-3 | ug/g dry | 1.46E-3 | 10/13/11 | 1J13002 | PNNL-AGG-415 |
| HEIS No. | B2CP74 | Lab ID: | | 1108012-02 | | | |
| 14092-98-9 | Chromium | <6.89E-3 | ug/g dry | 6.89E-3 | 10/13/11 | 1J13002 | PNNL-AGG-415 |
| 7440-38-2 | Arsenic | 9.46E-3 | ug/g dry | 5.67E-3 | 10/13/11 | 1J13002 | PNNL-AGG-415 |
| 14687-58-2 | Selenium | <1.58E-2 | ug/g dry | 1.58E-2 | 10/13/11 | 1J13002 | PNNL-AGG-415 |
| 14378-37-1 | Silver | <6.26E-3 | ug/g dry | 6.26E-3 | 10/13/11 | 1J13002 | PNNL-AGG-415 |
| 14041-58-8 | Cadmium | <7.71E-4 | ug/g dry | 7.71E-4 | 10/13/11 | 1J13002 | PNNL-AGG-415 |
| 13966-27-3 | Lead | <2.71E-3 | ug/g dry | 2.71E-3 | 10/13/11 | 1J13002 | PNNL-AGG-415 |
| 14191-86-7 | Mercury | <1.46E-3 | ug/g dry | 1.46E-3 | 10/13/11 | 1J13002 | PNNL-AGG-415 |

Carbon Analysis/Soil

Total Carbon (ug/g) by AGG-TOC-001

| Lab ID | HEIS No. | Results | EQL | Analyzed | Batch |
|------------|----------|---------|--------|----------|---------|
| 1108012-01 | B2CP73 | 2.73E3 | 2.00E2 | 10/10/11 | 1J10002 |
| 1108012-02 | B2CP74 | 1.61E4 | 2.00E2 | 10/10/11 | 1J10002 |

Carbon Analysis/Soil

Total Inorganic Carbon (ug/g) by AGG-TOC-001

| Lab ID | HEIS No. | Results | EQL | Analyzed | Batch |
|------------|----------|---------|--------|----------|---------|
| 1108012-01 | B2CP73 | 2.81E3 | 2.94E2 | 10/10/11 | 1J10003 |
| 1108012-02 | B2CP74 | 1.52E4 | 2.94E2 | 10/10/11 | 1J10003 |

Carbon Analysis/Soil

Total Organic Carbon (ug/g) by ASTM E1915

| Lab ID | HEIS No. | Results | EQL | Analyzed | Batch |
|------------|----------|---------|--------|----------|--------|
| 1108012-01 | B2CP73 | <4.94E2 | 4.94E2 | 10/10/11 | [CALC] |
| 1108012-02 | B2CP74 | 8.88E2 | 4.94E2 | 10/10/11 | [CALC] |

Particle Size Distribution (Dry Sieve)

| CAS # | Analyte | Results | Units | EQL | Analyzed | Batch | Method |
|-----------------|------------------------|----------------|-----------|-------------------|----------|---------|--------------|
| HEIS No. | B2CP73 | Lab ID: | | 1108012-01 | | | |
| PAS2.5IN | Particle Size 63000 uM | 1.00E2 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS1.25IN | Particle Size 31500 uM | 1.00E2 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS5/8IN | Particle Size 16000 uM | 1.00E2 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS5/16IN | Particle Size 8000 uM | 1.00E2 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS#5 | Particle Size 4000 uM | 1.00E2 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS#10 | Particle Size 2000 uM | 9.99E1 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS#18 | Particle Size 1000 uM | 9.92E1 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS#35 | Particle Size 500 uM | 9.87E1 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS#60 | Particle Size 250 uM | 9.76E1 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS#120 | Particle Size 125 uM | 9.27E1 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS#230 | Particle Size 63 uM | 5.73E1 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| HEIS No. | B2CP74 | Lab ID: | | 1108012-02 | | | |
| PAS2.5IN | Particle Size 63000 uM | 1.00E2 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS1.25IN | Particle Size 31500 uM | 8.36E1 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS5/8IN | Particle Size 16000 uM | 4.93E1 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS5/16IN | Particle Size 8000 uM | 3.89E1 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS#5 | Particle Size 4000 uM | 3.41E1 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS#10 | Particle Size 2000 uM | 2.99E1 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS#18 | Particle Size 1000 uM | 1.95E1 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS#35 | Particle Size 500 uM | 1.13E1 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS#60 | Particle Size 250 uM | 6.50E0 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS#120 | Particle Size 125 uM | 3.37E0 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |
| PAS#230 | Particle Size 63 uM | 1.54E0 | % Passing | N/A | 10/15/11 | 1J10004 | ASTM D422-63 |

PARTICLE SIZE DISTRIBUTION ANALYSIS HYDROMETER

1108012-01 (B2CP73)

| Particle Size (uM) | % Passing |
|--------------------|-----------|
| 96.4 | 92.9 |
| 66.6 | 79.4 |
| 36.6 | 52.3 |
| 19.0 | 27.1 |
| 10.7 | 17.42 |
| 7.54 | 14.52 |
| 6.12 | 11.61 |
| 5.29 | 10.65 |
| 1.52 | 6.78 |

1108012-02 (B2CP74)

| Particle Size (uM) | % Passing |
|--------------------|-----------|
| 91.0 | 23.6 |
| 63.6 | 21.5 |
| 35.9 | 17.8 |
| 19.1 | 13.3 |
| 10.8 | 9.97 |
| 7.54 | 8.16 |
| 6.12 | 7.25 |
| 5.25 | 6.04 |
| 1.49 | 3.63 |

Wet Chemistry - Quality Control
Environmental Science Laboratory

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|--|----------|---------------------------|----------|-------------|-------------------------------|------|--------------------|-------|-----------|-------|
| Batch 1J12001 - 1:1 Water Extract (pH_EC_Alk) | | | | | | | | | | |
| Duplicate (1J12001-DUP1) | | Source: 1108012-01 | | | Prepared & Analyzed: 10/12/11 | | | | | |
| pH | 6.97E0 | N/A | pH Units | | 7.04E0 | | | 0.999 | 35 | |
| Duplicate (1J12001-DUP2) | | Source: 1108012-02 | | | Prepared & Analyzed: 10/12/11 | | | | | |
| pH | 7.82E0 | N/A | pH Units | | 7.41E0 | | | 5.38 | 35 | |
| Batch 1J12002 - 1:1 Water Extract (pH_EC_Alk) | | | | | | | | | | |
| Blank (1J12002-BLK1) | | | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Specific Conductance (EC) | <1.00E-2 | 1.00E-2 | mS/cm | | | | | | | |
| Duplicate (1J12002-DUP1) | | Source: 1108012-01 | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Specific Conductance (EC) | 2.43E-1 | 1.00E-2 | mS/cm | | 2.39E-1 | | | 1.41 | 35 | |
| Duplicate (1J12002-DUP2) | | Source: 1108012-02 | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Specific Conductance (EC) | 2.25E-1 | 1.00E-2 | mS/cm | | 2.13E-1 | | | 5.30 | 35 | |
| Batch 1J12003 - 1:1 Water Extract (pH_EC_Alk) | | | | | | | | | | |
| Blank (1J12003-BLK1) | | | | | Prepared: 10/12/11 | | Analyzed: 10/13/11 | | | |
| Alkalinity as CaCO3 | <2.35E1 | 2.35E1 | ug/g wet | | | | | | | |
| Duplicate (1J12003-DUP1) | | Source: 1108012-01 | | | Prepared: 10/12/11 | | Analyzed: 10/13/11 | | | |
| Alkalinity as CaCO3 | 9.17E1 | 3.25E1 | ug/g dry | | 8.22E1 | | | 10.9 | 35 | |
| Duplicate (1J12003-DUP2) | | Source: 1108012-02 | | | Prepared: 10/12/11 | | Analyzed: 10/13/11 | | | |
| Alkalinity as CaCO3 | 9.35E1 | 2.77E1 | ug/g dry | | 9.05E1 | | | 3.33 | 35 | |

Anions by Ion Chromatography - Quality Control
Environmental Science Laboratory

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch 1J12004 - 1:1 Water Extract (IC)

Blank (1J12004-BLK1)

Prepared & Analyzed: 10/12/11

| | | | | | | | | | | |
|-----------|----------|---------|----------|--|--|--|--|--|--|--|
| Fluoride | <1.00E-1 | 1.00E-1 | ug/g wet | | | | | | | |
| Chloride | <2.50E-1 | 2.50E-1 | " | | | | | | | |
| Nitrate | <5.00E-1 | 5.00E-1 | " | | | | | | | |
| Sulfate | <7.50E-1 | 7.50E-1 | " | | | | | | | |
| Phosphate | <7.50E-1 | 7.50E-1 | " | | | | | | | |

LCS (1J12004-BS1)

Prepared & Analyzed: 10/12/11

| | | | | | | | | | | |
|-----------|--------|---------|----------|--------|--|------|--------|--|--|--|
| Fluoride | 2.01E0 | 1.00E-1 | ug/g wet | 2.00E0 | | 101 | 80-120 | | | |
| Chloride | 4.99E0 | 2.50E-1 | " | 5.01E0 | | 99.7 | 80-120 | | | |
| Nitrate | 1.07E1 | 5.00E-1 | " | 1.00E1 | | 107 | 80-120 | | | |
| Sulfate | 1.51E1 | 7.50E-1 | " | 1.50E1 | | 101 | 80-120 | | | |
| Phosphate | 1.49E1 | 7.50E-1 | " | 1.50E1 | | 98.9 | 80-120 | | | |

Duplicate (1J12004-DUP1)

Source: 1108012-01

Prepared & Analyzed: 10/12/11

| | | | | | | | | | | |
|-----------|---------|--------|----------|--|--------|--|--|--------|--|----|
| Fluoride | <1.00E0 | 1.00E0 | ug/g dry | | ND | | | | | 20 |
| Chloride | 9.64E0 | 2.50E0 | " | | 9.45E0 | | | 2.03 | | 20 |
| Nitrate | 3.48E1 | 5.00E0 | " | | 3.42E1 | | | 1.97 | | 20 |
| Sulfate | 2.25E1 | 7.50E0 | " | | 2.25E1 | | | 0.0273 | | 20 |
| Phosphate | <7.50E0 | 7.50E0 | " | | ND | | | | | 20 |

Duplicate (1J12004-DUP2)

Source: 1108012-02

Prepared & Analyzed: 10/12/11

| | | | | | | | | | | |
|-----------|----------|---------|----------|--|--------|--|--|-------|--|----|
| Fluoride | <9.99E-1 | 9.99E-1 | ug/g dry | | ND | | | | | 20 |
| Chloride | 3.70E0 | 2.50E0 | " | | 3.66E0 | | | 0.982 | | 20 |
| Nitrate | 1.56E1 | 4.99E0 | " | | 1.56E1 | | | 0.536 | | 20 |
| Sulfate | 2.04E1 | 7.49E0 | " | | 1.89E1 | | | 7.52 | | 20 |
| Phosphate | <7.49E0 | 7.49E0 | " | | ND | | | | | 20 |

Post Spike (1J12004-PS1)

Source: 1108012-01

Prepared & Analyzed: 10/12/11

| | | | | | | | | | | |
|-----------|---------|-----|-------|---------|---------|------|--------|--|--|--|
| Fluoride | 7.82E-1 | N/A | ug/mL | 7.69E-1 | 5.50E-2 | 94.5 | 75-125 | | | |
| Chloride | 2.82E0 | N/A | " | 1.92E0 | 9.44E-1 | 97.5 | 75-125 | | | |
| Nitrate | 7.22E0 | N/A | " | 3.85E0 | 3.41E0 | 98.9 | 75-125 | | | |
| Sulfate | 7.98E0 | N/A | " | 5.77E0 | 2.25E0 | 99.2 | 75-125 | | | |
| Phosphate | 5.56E0 | N/A | " | 5.77E0 | 2.37E-1 | 92.2 | 75-125 | | | |

Total Metals by PNNL-AGG-ICP-AES/1:1 Water Extract - Quality Control
Environmental Science Laboratory

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|--|----------|-----------------|----------|-------------|-------------------------------|------|--------------------|-----|-----------|-------|
| Batch 1J17001 - 1:1 Water Extract (ICP/ICPMS) | | | | | | | | | | |
| Blank (1J17001-BLK1) | | | | | Prepared: 10/10/11 | | Analyzed: 10/17/11 | | | |
| Barium | <1.24E-1 | 1.24E-1 | ug/g wet | | | | | | | |
| LCS (1J17001-BS1) | | | | | Prepared: 10/10/11 | | Analyzed: 10/17/11 | | | |
| Barium | 4.70E0 | 1.24E-1 | ug/g wet | 5.00E0 | | 94.1 | 80-120 | | | |
| Duplicate (1J17001-DUP1) | | | | | Prepared: 10/10/11 | | Analyzed: 10/17/11 | | | |
| | | | | | Source: 1108012-01 | | | | | |
| Barium | <1.24E-1 | 1.24E-1 | ug/g dry | | | ND | | | | 35 |
| Duplicate (1J17001-DUP2) | | | | | Prepared: 10/10/11 | | Analyzed: 10/17/11 | | | |
| | | | | | Source: 1108012-02 | | | | | |
| Barium | <1.24E-1 | 1.24E-1 | ug/g dry | | | ND | | | | 35 |
| Post Spike (1J17001-PS1) | | | | | Prepared & Analyzed: 10/17/11 | | | | | |
| | | | | | Source: 1108012-02 | | | | | |
| Barium | 2.55E2 | N/A | ug/L | 2.50E2 | 4.74E0 | 100 | 75-125 | | | |

Total Metals by PNNL-AGG-ICP-AES/Acid Extract - Quality Control
Environmental Science Laboratory

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|--|---------|-----------------|---------------------------|---------------------------------------|---------------------------------------|------|-------------|-------|-----------|-------|
| Batch 1J17002 - ASTM D 5198 (ICP/ICPMS) | | | | | | | | | | |
| Blank (1J17002-BLK1) | | | | | | | | | | |
| | | | | Prepared: 10/07/11 Analyzed: 10/17/11 | | | | | | |
| Calcium | <7.02E0 | 7.02E0 | ug/g wet | | | | | | | |
| Potassium | <2.59E1 | 2.59E1 | " | | | | | | | |
| Magnesium | <1.92E0 | 1.92E0 | " | | | | | | | |
| Sodium | <1.90E1 | 1.90E1 | " | | | | | | | |
| LCS (1J17002-BS1) | | | | | | | | | | |
| | | | | Prepared: 10/07/11 Analyzed: 10/17/11 | | | | | | |
| Calcium | 6.03E0 | 7.02E-1 | ug/g wet | 5.82E0 | | 104 | 80-120 | | | |
| Potassium | 6.16E1 | 2.59E0 | " | 5.82E1 | | 106 | 80-120 | | | |
| Magnesium | 5.53E0 | 1.92E-1 | " | 5.82E0 | | 95.1 | 80-120 | | | |
| Sodium | 6.51E0 | 1.90E0 | " | 5.82E0 | | 112 | 80-120 | | | |
| Duplicate (1J17002-DUP1) | | | | | | | | | | |
| | | | Source: 1108012-01 | | Prepared: 10/07/11 Analyzed: 10/17/11 | | | | | |
| Calcium | 7.16E3 | 2.89E1 | ug/g dry | | 7.54E3 | | | 5.19 | 35 | |
| Potassium | 1.36E3 | 1.07E2 | " | | 1.35E3 | | | 0.304 | 35 | |
| Magnesium | 4.18E3 | 7.93E0 | " | | 4.33E3 | | | 3.59 | 35 | |
| Sodium | 1.67E2 | 7.85E1 | " | | 1.70E2 | | | 1.76 | 35 | |
| Duplicate (1J17002-DUP2) | | | | | | | | | | |
| | | | Source: 1108012-02 | | Prepared: 10/07/11 Analyzed: 10/17/11 | | | | | |
| Calcium | 3.46E4 | 2.62E1 | ug/g dry | | 4.26E4 | | | 20.8 | 35 | |
| Potassium | 7.44E2 | 9.65E1 | " | | 7.63E2 | | | 2.57 | 35 | |
| Magnesium | 4.36E3 | 7.18E0 | " | | 3.97E3 | | | 9.46 | 35 | |
| Sodium | 3.46E2 | 7.10E1 | " | | 3.25E2 | | | 6.28 | 35 | |
| Post Spike (1J17002-PS1) | | | | | | | | | | |
| | | | Source: 1108012-02 | | Prepared & Analyzed: 10/17/11 | | | | | |
| Calcium | 2.19E5 | N/A | ug/L | 5.00E2 | 2.29E5 | NR | 75-125 | | | |
| Potassium | 5.33E3 | N/A | " | 1.25E3 | 4.10E3 | 98.6 | 75-125 | | | |
| Magnesium | 2.12E4 | N/A | " | 5.00E2 | 2.13E4 | NR | 75-125 | | | |
| Sodium | 2.23E3 | N/A | " | 5.00E2 | 1.74E3 | 97.6 | 75-125 | | | |

Radionuclides by ICP-MS/1:1 Water Extract - Quality Control
Environmental Science Laboratory

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|--|----------|-----------------|----------|-------------|---------------|------|-------------|-------|-----------|-------|
| Batch 1J20001 - 1:1 Water Extract (ICP/ICPMS) | | | | | | | | | | |
| Blank (1J20001-BLK1) Prepared & Analyzed: 10/20/11 | | | | | | | | | | |
| Technetium-99 | <7.80E-5 | 7.80E-5 | ug/g wet | | | | | | | |
| Uranium 238 | <1.60E-4 | 1.60E-4 | " | | | | | | | |
| LCS (1J20001-BS1) Prepared & Analyzed: 10/20/11 | | | | | | | | | | |
| Technetium-99 | <3.90E-3 | 3.90E-3 | ug/g wet | | | | 80-120 | | | |
| Uranium 238 | <8.00E-3 | 8.00E-3 | " | | | | 80-120 | | | |
| LCS (1J20001-BS2) Prepared & Analyzed: 10/20/11 | | | | | | | | | | |
| Technetium-99 | <3.90E-3 | 3.90E-3 | ug/g wet | | | | 80-120 | | | |
| Uranium 238 | <8.00E-3 | 8.00E-3 | " | | | | 80-120 | | | |
| Duplicate (1J20001-DUP1) Source: 1108012-01 Prepared & Analyzed: 10/20/11 | | | | | | | | | | |
| Technetium-99 | <7.80E-5 | 7.80E-5 | ug/g dry | | ND | | | | 35 | |
| Uranium 238 | 1.03E-3 | 1.60E-4 | " | | 1.04E-3 | | | 0.297 | 35 | |
| Duplicate (1J20001-DUP2) Source: 1108012-02 Prepared & Analyzed: 10/20/11 | | | | | | | | | | |
| Technetium-99 | <7.79E-5 | 7.79E-5 | ug/g dry | | ND | | | | 35 | |
| Uranium 238 | 1.06E-2 | 1.60E-4 | " | | 9.40E-3 | | | 12.4 | 35 | |
| Post Spike (1J20001-PS1) Source: 1108012-02 Prepared & Analyzed: 10/20/11 | | | | | | | | | | |
| Technetium-99 | 1.06E0 | N/A | ug/L | 1.09E0 | 2.10E-5 | 97.5 | 75-125 | | | |
| Uranium 238 | 1.92E0 | N/A | " | 1.00E0 | 9.40E-1 | 98.2 | 75-125 | | | |
| Batch 1J21002 - 1:1 Water Extract (ICP/ICPMS) | | | | | | | | | | |
| Blank (1J21002-BLK1) Prepared: 10/21/11 Analyzed: 10/25/11 | | | | | | | | | | |
| Iodine-129 | <7.44E-3 | 7.44E-3 | ug/g wet | | | | | | | |

Radionuclides by ICP-MS/1:1 Water Extract - Quality Control
Environmental Science Laboratory

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|--|----------|---------------------------|----------|-------------|--------------------|------|--------------------|-----|-----------|-------|
| Batch 1J21002 - 1:1 Water Extract (ICP/ICPMS) | | | | | | | | | | |
| Duplicate (1J21002-DUP1) | | Source: 1108012-01 | | | Prepared: 10/21/11 | | Analyzed: 10/25/11 | | | |
| Iodine-129 | <7.44E-3 | 7.44E-3 | ug/g dry | | ND | | | | | 35 |
| Duplicate (1J21002-DUP2) | | Source: 1108012-02 | | | Prepared: 10/21/11 | | Analyzed: 10/25/11 | | | |
| Iodine-129 | <7.43E-3 | 7.43E-3 | ug/g dry | | ND | | | | | 35 |
| Post Spike (1J21002-PS1) | | Source: 1108012-02 | | | Prepared: 10/21/11 | | Analyzed: 10/25/11 | | | |
| Iodine-129 | 8.93E-1 | N/A | ug/L | 1.00E0 | ND | 90.8 | 75-125 | | | |

RCRA Metals By PNNL-AGG-415/1:1 Water Extract - Quality Control
Environmental Science Laboratory

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch 1J13002 - 1:1 Water Extract (ICP/ICPMS)

Blank (1J13002-BLK1)

Prepared & Analyzed: 10/13/11

| | | | | | | | | | | |
|----------|----------|---------|----------|--|--|--|--|--|--|--|
| Chromium | <6.89E-3 | 6.89E-3 | ug/g wet | | | | | | | |
| Arsenic | <5.67E-3 | 5.67E-3 | " | | | | | | | |
| Selenium | <1.58E-2 | 1.58E-2 | " | | | | | | | |
| Silver | <6.26E-3 | 6.26E-3 | " | | | | | | | |
| Cadmium | <7.71E-4 | 7.71E-4 | " | | | | | | | |
| Lead | <2.71E-3 | 2.71E-3 | " | | | | | | | |
| Mercury | <1.46E-3 | 1.46E-3 | " | | | | | | | |

LCS (1J13002-BS1)

Prepared & Analyzed: 10/13/11

| | | | | | | | | | | |
|----------|--------|---------|----------|--------|--|------|--------|--|--|--|
| Chromium | 5.00E0 | 3.44E-1 | ug/g wet | 5.00E0 | | 99.9 | 80-120 | | | |
| Arsenic | 4.73E0 | 2.84E-1 | " | 5.00E0 | | 94.6 | 80-120 | | | |
| Selenium | 4.84E0 | 7.92E-1 | " | 5.00E0 | | 96.7 | 80-120 | | | |
| Silver | 4.91E0 | 3.13E-1 | " | 5.00E0 | | 98.1 | 80-120 | | | |
| Cadmium | 4.83E0 | 3.86E-2 | " | 5.00E0 | | 96.6 | 80-120 | | | |
| Lead | 4.79E0 | 1.36E-1 | " | 5.00E0 | | 95.7 | 80-120 | | | |

Duplicate (1J13002-DUP1)

Source: 1108012-01

Prepared & Analyzed: 10/13/11

| | | | | | | | | | | |
|----------|----------|---------|----------|--|---------|--|--|------|--|----|
| Chromium | <6.89E-3 | 6.89E-3 | ug/g dry | | ND | | | | | 35 |
| Arsenic | 7.48E-3 | 5.67E-3 | " | | 5.91E-3 | | | 23.5 | | 35 |
| Selenium | <1.58E-2 | 1.58E-2 | " | | ND | | | | | 35 |
| Silver | <6.26E-3 | 6.26E-3 | " | | ND | | | | | 35 |
| Cadmium | <7.71E-4 | 7.71E-4 | " | | ND | | | | | 35 |
| Lead | <2.71E-3 | 2.71E-3 | " | | ND | | | | | 35 |
| Mercury | <1.46E-3 | 1.46E-3 | " | | ND | | | | | 35 |

Duplicate (1J13002-DUP2)

Source: 1108012-02

Prepared & Analyzed: 10/13/11

| | | | | | | | | | | |
|----------|----------|---------|----------|--|---------|--|--|------|--|----|
| Chromium | <6.88E-3 | 6.88E-3 | ug/g dry | | ND | | | | | 35 |
| Arsenic | 1.04E-2 | 5.67E-3 | " | | 9.46E-3 | | | 9.87 | | 35 |
| Selenium | <1.58E-2 | 1.58E-2 | " | | ND | | | | | 35 |
| Silver | <6.25E-3 | 6.25E-3 | " | | ND | | | | | 35 |
| Cadmium | <7.70E-4 | 7.70E-4 | " | | ND | | | | | 35 |
| Lead | <2.71E-3 | 2.71E-3 | " | | ND | | | | | 35 |
| Mercury | <1.46E-3 | 1.46E-3 | " | | ND | | | | | 35 |

RCRA Metals By PNNL-AGG-415/1:1 Water Extract - Quality Control
Environmental Science Laboratory

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch 1J13002 - 1:1 Water Extract (ICP/ICPMS)

| Post Spike (1J13002-PS1) | Source: 1108012-02 | | | Prepared & Analyzed: 10/13/11 | | | | | | |
|---------------------------------|---------------------------|-----|------|--|---------|------|--------|--|--|--|
| Chromium | 5.08E0 | N/A | ug/L | 5.00E0 | 3.68E-2 | 101 | 75-125 | | | |
| Arsenic | 5.55E0 | N/A | " | 5.00E0 | 9.46E-1 | 92.2 | 75-125 | | | |
| Selenium | 5.12E0 | N/A | " | 5.00E0 | 2.67E-1 | 97 | 75-125 | | | |
| Silver | 4.79E0 | N/A | " | 5.00E0 | ND | 95.9 | 75-125 | | | |
| Cadmium | 4.86E0 | N/A | " | 5.00E0 | 7.97E-3 | 97 | 75-125 | | | |
| Lead | 4.56E0 | N/A | " | 5.00E0 | 3.74E-4 | 91.2 | 75-125 | | | |
| Mercury | 4.99E0 | N/A | " | 5.00E0 | 1.20E-2 | 99.5 | 75-125 | | | |

Logged by Michelle Valenta Michelle Valo | Drilling Contractor _____
 Reviewed by _____ Date 10/4/11 Driller _____
 Lithologic Class. Scheme Folk-Wentworth Procedure _____ Rev _____ Drill Method _____

| DEPTH (ft) | SAMPLES | | MOISTURE | GRAPHIC LOG | | | | LITHOLOGIC DESCRIPTION | sediment class, range in particle size, maximum particle size, mafic %, sorting, roundness, color, consolidation, reaction to 10% HCl, structure, fabric, and any other characteristics | COMMENTS |
|----------------|---------|-----------|----------|-------------|---|---|---|---|---|----------|
| | TYPE | ID NUMBER | | C | Z | S | G | | | |
| 133.9 | C | B2CP73 | M | | | | | 70% silt, 20% v. fine sand, 10% mud. sandy mud - (SM). fine grained, laminations visible, some laminations of v. fine sand. well-sorted 2.5Y 5/2 (grayish brown) weak rxn to HCl. | Samples are in lexan liners. 6" long, 4" diameter. | |
| 135.8 136.4 | | B2CP74 | | | | | | top 1/3 of sample same as above - SM. mod rxn to HCl. bottom 2/3 - 20% gravel, 75% sand, 5% mud + silt. as gravelly sand. max gravel = 30mm, well-rounded, white caliche mixed throughout sand. 2.5Y 5/2. caliche + sand. strong rxn to HCl. v. poorly sorted. caliche color - 2.5Y 8/2 (pale yellow) | depths overlap - depth listed as 135.8-138.3 | |
| 138.3 | C | | M | | | | | | | |

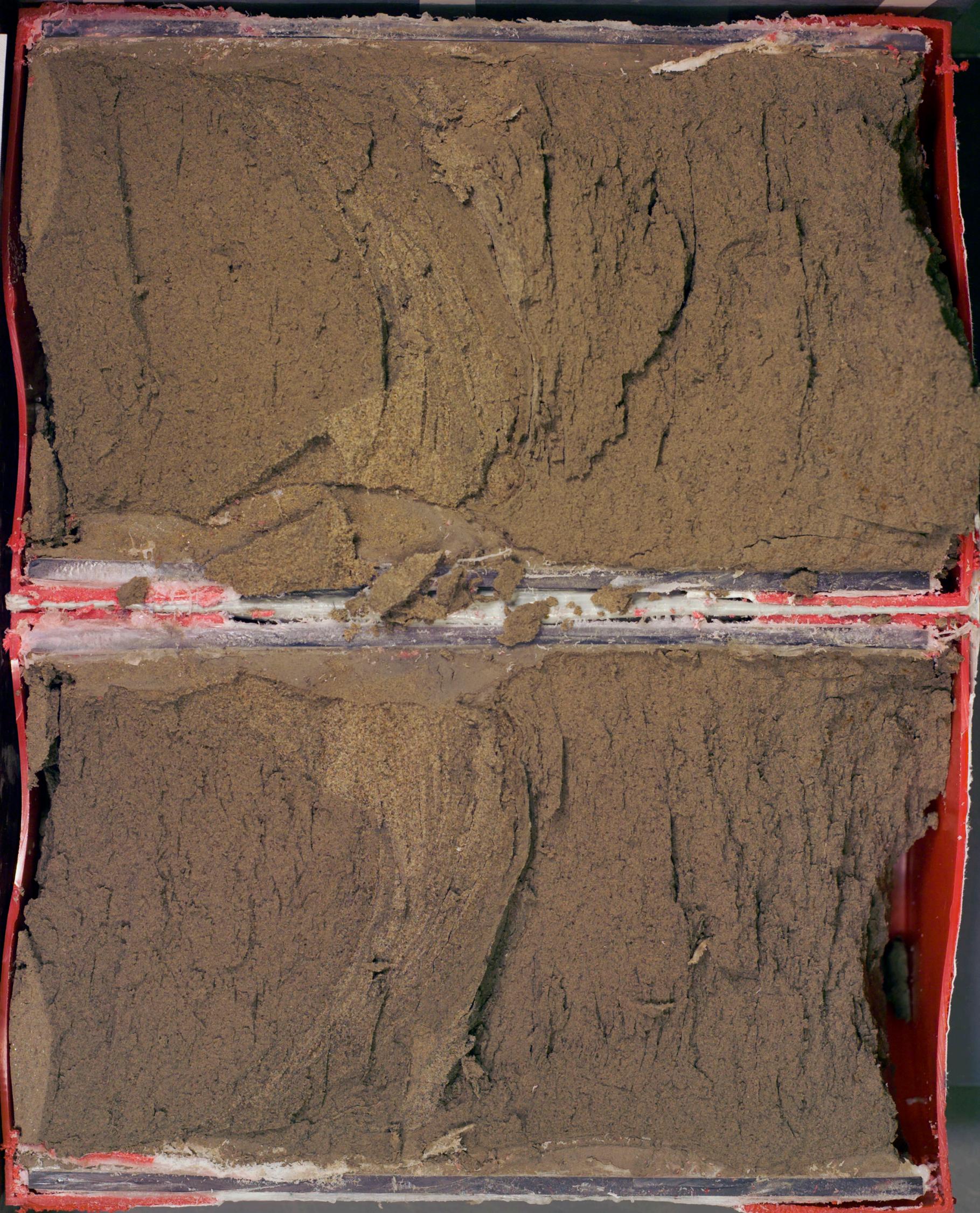
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
CENTIMETERS

MILLIMETERS

1 DECIMETER

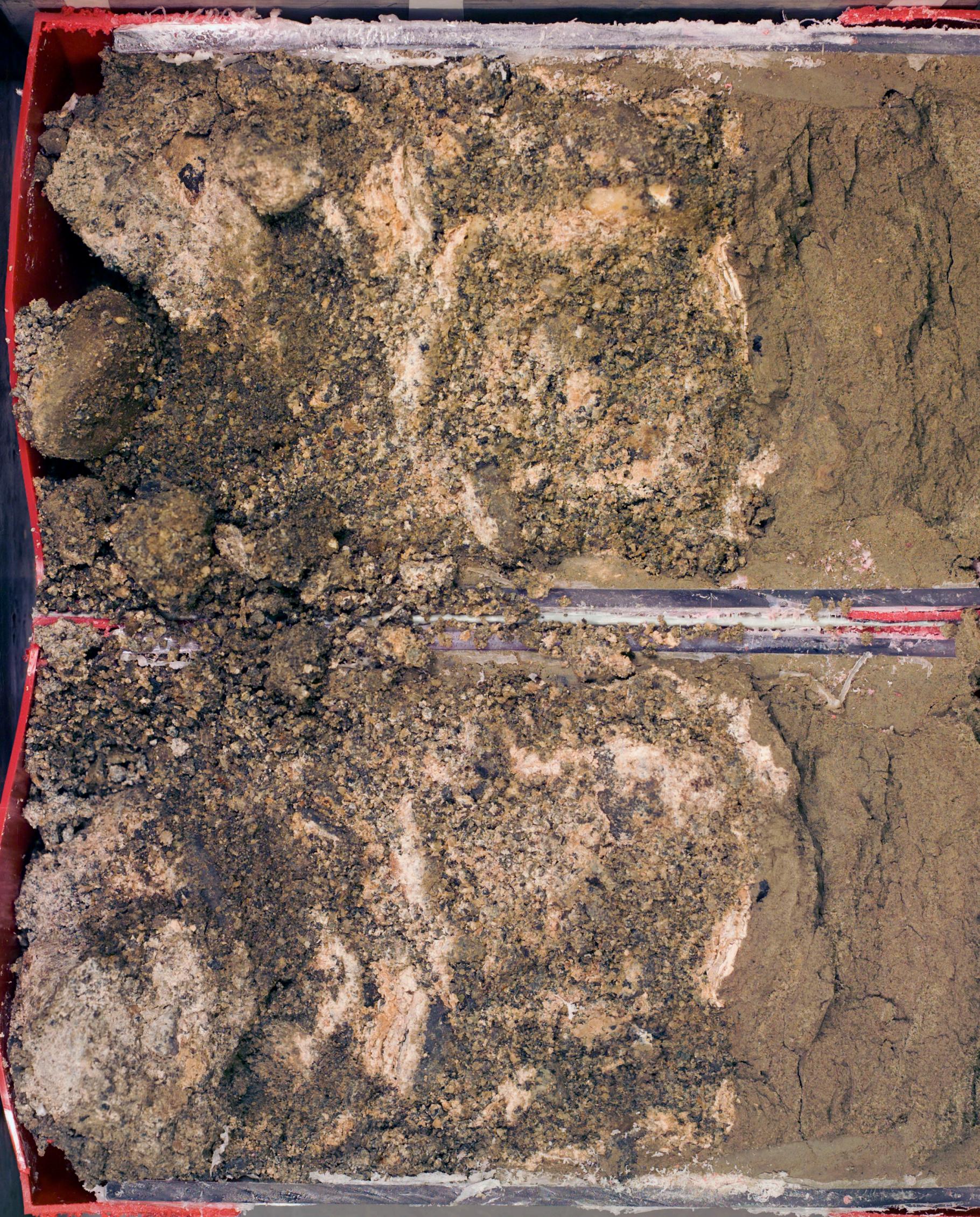
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

C8096 B2CP73 133.9-136.4 ft SS Core



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
CENTIMETERS
MILLIMETERS 1 DECIMETER
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

C8096 B2CP74 135.8-138.3 ft SS Core



| CH2MHill Plateau Remediation Company | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | | F11-070-001 | PAGE 1 OF 1 |
|---|--|--|--------------------|---|--|---|---|
| COLLECTOR Crow | | COMPANY CONTACT STINNETT, MW | | TELEPHONE NO. 373-5940 | PROJECT COORDINATOR STINNETT, MW | PRICE CODE 8N | DATA TURNAROUND 45 Days / 45 Days |
| SAMPLING LOCATION C8096 (299-W22-91); I-004 | | PROJECT DESIGNATION 200-DV-1 - Vadose Zone Sampling - Sediments | | | SAF NO. F11-070 | AIR QUALITY <input type="checkbox"/> | |
| ICE CHEST NO. NA | | FIELD LOGBOOK NO. HNF-N-645-1 pg 28 | | ACTUAL SAMPLE DEPTH 133.9' - 136.4' | COA 302632ES10 | METHOD OF SHIPMENT GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO Environmental Sciences Laboratory | | OFFSITE PROPERTY NO. N/A | | | BILL OF LADING/AIR BILL NO. N/A | | |
| MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other | | POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993) | | PRESERVATION | Cool~4C | None | None |
| | | | | HOLDING TIME | 28 Days | 6 Months | 6 Months |
| | | | | TYPE OF CONTAINER | aG | Split Spoon Liner | G/P |
| | | | | NO. OF CONTAINER(S) | 1 | 1 | 1 |
| | | | | VOLUME | 500mL | 1000g | 1L |
| | | | | SAMPLE ANALYSIS | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | SEE ITEM (2) IN SPECIAL INSTRUCTIONS | Generic Testing (No CAS); |
| | | SPECIAL HANDLING AND/OR STORAGE RADIOACTIVE TIE TO: B2CP75 | | | | | |
| SAMPLE NO. | | MATRIX* | SAMPLE DATE | SAMPLE TIME | | | |
| B2CP73 | | SOIL | 8-23-11 | 1230 | | | |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | | SPECIAL INSTRUCTIONS | |
|---|--|----------------------|--------------------|--|----------------------|
| RELINQUISHED BY/REMOVED FROM RCrow/RCrow | | DATE/TIME 8-23-11 | DATE/TIME 1540 | RECEIVED BY/STORED IN SSU-R1 | DATE/TIME 8-23-11 |
| RELINQUISHED BY/REMOVED FROM SSU-R1 | | DATE/TIME 8/30/11 | DATE/TIME 1400 | RECEIVED BY/STORED IN ERIC CHRISTIAN CHPRC | DATE/TIME 8/30/11 |
| RELINQUISHED BY/REMOVED FROM ERIC CHRISTIAN CHPRC | | DATE/TIME 8/30/11 | DATE/TIME 14:40 | RECEIVED BY/STORED IN I. Kudiyalov | DATE/TIME 8/30/11 |
| RELINQUISHED BY/REMOVED FROM | | DATE/TIME | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |
| RELINQUISHED BY/REMOVED FROM | | DATE/TIME | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |
| RELINQUISHED BY/REMOVED FROM | | DATE/TIME | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |
| RELINQUISHED BY/REMOVED FROM | | DATE/TIME | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |
| LABORATORY SECTION | | RECEIVED BY | | TITLE | |
| FINAL SAMPLE DISPOSITION | | DISPOSAL METHOD | | DISPOSED BY | |

B R M # 13564

| CH2MHill Plateau Remediation Company | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | | F11-070-002 | PAGE 1 OF 1 |
|---|--|---|----------------------------|---|--|---|---|
| COLLECTOR Crow | | COMPANY CONTACT STINNETT, MW | | TELEPHONE NO. 373-5940 | PROJECT COORDINATOR STINNETT, MW | PRICE CODE 8N | DATA TURNAROUND 45 Days / 45 Days |
| SAMPLING LOCATION C8096 (299-W22-91); I-005 | | PROJECT DESIGNATION 200-DV-1 - Vadose Zone Sampling - Sediments | | | SAF NO. F11-070 | AIR QUALITY <input type="checkbox"/> | |
| ICE CHEST NO. N/A | | FIELD LOGBOOK NO. HNF-N- 645-1 pg 28 | | ACTUAL SAMPLE DEPTH 135.8' - 138.3' | COA 302632ES10 | METHOD OF SHIPMENT GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO Environmental Sciences Laboratory | | OFFSITE PROPERTY NO. N/A | | | BILL OF LADING/AIR BILL NO. N/A | | |
| MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other | POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993) | | PRESERVATION | Cool--4C | None | None | |
| | | | HOLDING TIME | 28 Days | 6 Months | 6 Months | |
| | | | TYPE OF CONTAINER | aG | Split Spoon Liner | G/P | |
| | | | NO. OF CONTAINER(S) | 1 | 1 | 1 | |
| | | | VOLUME | 500mL | 1000g | 1L | |
| | SPECIAL HANDLING AND/OR STORAGE RADIOACTIVE TIE TO: B2CP76 | | SAMPLE ANALYSIS | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | SEE ITEM (2) IN SPECIAL INSTRUCTIONS | Generic Testing (No CAS); | |
| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | | | | |
| B2CP74 | SOIL | 8-23-11 | 1325 | / | / | / | |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | | SPECIAL INSTRUCTIONS | |
|---------------------------------|------------------------|-------------------------|------------------|--|--|
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | SPECIAL INSTRUCTIONS ** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. (1) ASTM E 1915A {Total carbon, Total Inorganic Carbon, Total organic carbon}; (2) 6010M_ICP_ASTM_AE (TAL) {Calcium, Magnesium, Potassium, Sodium}; Particle Size (Dry Sieve) - D422 {Dry Sieve Particle Size}; Particle Size (Hydrometer) - D422 {No CAS}; 2320_ALKALINITY {Alkalinity, Bicarbonate, Calcium Carbonate}; GAMMA_GS {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; BRM# 13569 | |
| RCrow/RCrow | 8-23-11 1540 | SSU-RI | 8-23-11 1540 | | |
| SSUR1 | 8/30/11 1400 | ERIC CHRISTIAN CHPRC | Ee 8/30/11 1400 | | |
| ERIC CHRISTIAN CHPRC | Ee 8/30/11 1440 | D. Kuyach | 8-30-11 1440 | | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | | |
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME | | |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME | | |