**RPP-RPT-51294, Rev. 0**

# Completion Report for the 241-S Tank Farm Direct Push Barrier Characterization

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Abstract: This report documents field activities at 241-S Tank Farm

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## TERMS

| | |
|---|---|
| bgs | below ground surface |
| Ecology | Washington State Department of Ecology |
| Energy*Solutions* | Energy*Solutions* Government Group, Inc. |
| RPP | River Protection Project |
| WAC | *Washington Administrative Code* |
| DOW | Description of Work |
| WAC | Washington Administrative code |
| WRPS | Washington River Protection Solutions, LLC |

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# COMPLETION REPORT FOR 241-S TANK FARM DIRECT PUSH BARRIER CHARACTERIZATION

## 1.0 INTRODUCTION

The U.S. Department of Energy assigned the River Protection Project (RPP) Washington River Protection Solutions, LLC (WRPS) Richland, Washington, to collect and provide subsurface data from inside and near the S Tank Farm located in the 200 West Area of the Hanford Site. WRPS contracted Energy*Solutions* Government Group, Inc. (Energy*Solutions*) to perform the field activities required to gather this data. This data was intended to provide information about the distribution and movement of contaminants in the vadose zone under and adjacent to the Tank Farms, and it will be used for eventual retrieval of stored tank waste and closure planning for the single-shell tanks.

FSWO-DOW-039, *Description of Work: 241-S Tank Farm Direct Push Barrier Characterization*, Rev. 0 (see Appendix A) provides a detailed description of the scope of work performed. Energy*Solutions* was responsible for the provision of equipment and personnel to conduct the direct push activities, soil sample collection, and safety oversight. The following were included in the overall Energy*Solutions* work scope: Providing subcontract geophysical logging services, technical support, and preparing final reports. The following appendices contain copies of documentation generated during the performance of the above work scope.

Appendix A, FSWO-DOW-039, *Description of Work: 241-S Tank Farm Direct Push Barrier Characterization*, Rev. 0
Appendix B, Global Positioning System Coordinates and Map
Appendix C, Drilling and Sampling Daily Work Records
Appendix D, Small Diameter Geophysical Logging for S Tank Farm Barrier Characterization
Appendix E, Sample Determination Meeting Minutes
Appendix F, Chain of Custody Forms and Field Logbook Entries
Appendix G, State of Washington Department of Ecology Documents
Appendix H, Safety Documentation

## 2.0 SUMMARY OF ACTIVITIES

Guidance documentation and preparation for control of field activities were completed with the release of Description of Work FSWO-DOW-039, *241-S Farm Direct Push Barrier Characterization*, Rev. 0, and Job Hazard Analysis (JHA-11-005), S Farm Barrier Characterization on April 19, 2011.

Mobilization to S Farm began on May 5, 2011, with the mobilization and staging a direct push rig and equipment at the entrance to S Farm. All field related activities were completed and all equipment was surveyed and released, or packaged for disposal, on September 28, 2011. There were 93 working field days during this period. There were six days of delay at job initiation due to Work Package review/modification and release issues. Four full days of down time (no work) caused by weather related work stoppages and eight full days of work stoppage due to craft, fork lift, logging data collection, and sampler support issues over the deployment duration. During the 93 working day interval, an additional 88+ hours of work time were lost due to delays of at least one hour duration. These delays ranged from technical issues related to the difficult driving conditions experienced on the east side of the tank farm (e.g., broken inner strings, difficulties removing disposable tips, etc.), field support issues related to Health Physics Technicians, Nuclear Chemical Operator, sampling support training/meetings, and other work related issues and equipment related delays caused by hydraulic leaks and broken equipment (drive heads, spindle crossovers, etc.).

Seven exploration holes were placed to 153+ ft below ground surface (bgs) and logged with Bismuth Germinate Oxide spectral gamma and neutron-neutron moisture logging instruments. Over 1066 ft of exploration tubing were placed and 816 ft of sampling probe hole. Seven sampling boreholes were placed adjacent to the exploration holes with 19 samples collected at varying intervals based on log responses in the adjacent exploration holes (See Table 1 below). Difficult driving conditions, encountered primarily on the eastern side of the farm, resulted in the inability drive below 43 ft bgs in borehole C8404. Three attempts failed (refused) at the 41-42.5 ft bgs level. For each attempt, the rig was moved 2-3 ft east and then north of the original location by 2-3 ft. It is assumed that this is below the tank backfill interface and that a local restrictive geologic condition exists in this vicinity. All pushing efforts on the east side of S Farm encountered difficult driving conditions in the 40 to 65 ft bgs zone.

In general, S Farm caused equipment issues during operations as demonstrated by technical issues (equipment failures) that required numerous driving equipment change-outs during the deployment. As an indication of the difficult conditions, below is a partial list of equipment that was damaged, replaced, or placed in burial containers for disposal at the end of the deployment:

- 105 - 4 ft x 1.5 in. inner string rods
- 54 - 4 ft x 2.5 in. exploration rods
- 38 - 4 ft x 2 .625 in. OD sampling rods
- 12 - 2.5 in. OD and 2.625 in. OD drive heads
- 2 - spindle cross-over drive heads
- Over 150 lynch pins and 12 keeper pins were broken during driving

Three different probe driving rigs were utilized at varying times to perform the required work scope.

# 3.0 DIRECT PUSHING, SAMPLING AND LOGGING DETAILS

## 3.1 DIRECT PUSHING

Per FSWO-DOW-039, Rev. 0, exploration hole placement and sampling was accomplished with the use of a hydraulic hammer system. For investigative purposes, a 6.35 cm (2.5-in.) outside diameter x 4.45 cm (1.75-in.) inside diameter casing was driven at predetermined locations to specified depths, or refusal. Once a push location was geophysically logged, the data was reviewed by WRPS personnel and sample locations and depths were selected. At designated boreholes, a second location within 0.6-1 m (2-3 ft) of the exploratory hole was then pushed for sample retrieval.

## 3.2 SOIL SAMPLING

Soil sampling with the rotary hammer unit was accomplished with the dual-wall sampling system. With the dual-wall system, once sample depth has been reached, the inner rod with the dummy drive tip is removed, and the drive tip is replaced with a sampler. The sampler consists of a 6.67 cm (2.625-in.) outside diameter x 4.76 cm (1.875-in.) inside diameter outer sample barrel, which holds a 4.13 cm (1.625-in.) outside diameter x 48.63 cm (18.75-in.) long inner sample barrel. The inner sample barrel houses three 3.18 cm (1.25-in.) outside diameter x 15.24 cm (6-in.) long stainless steel sample liners. Once the sampler and inner rod have been lowered and seated into the outer drive rod, the two are simultaneously advanced far enough to ensure that the sampler is completely filled with material. Unless refusal is met, the sampler is typically driven 0.61 m (2 ft). Table 1 shows locations, intervals, sample numbers, and percent of sample recovered.

Table 1. Sample Intervals.

| Borehole Number | Depth (ft) | Sample Number | Percent Recovery |
|---|---|---|---|
| C8394 | 43-45 | B2D430,B2D431,B2D432, B2D3P0 | 100% |
| | 88-90 | B2D433,B2D434,B2D435, B2D436 | 100% |
| | 126-128 | B2D437,B2D438,B2D439, B2D440 | 100% |
| C8396 | 55-57 | B2FYT4, B2FYT5, B2FYT6, B2FYT7 | 100% |
| | 103-105 | B2FYT9,B2FYV0, B2FYV1, B2FYV2, | 100% |
| | 117-119 | B2FYV4, B2FYV5, B2FYV6, B2FYV7, | 100% |

Table 1. Sample Intervals.

| Borehole Number | Depth (ft) | Sample Number | Percent Recovery |
|---|---|---|---|
| C8398 | 46-48 | B2FDH6, B2FDH7, B2FDH8, B2FDH9 | 100% |
| | 86-88 | B2FDJ0, B2FDJ1, B2FDJ2, B2FDJ3 | 100% |
| | 131-133 | B2FDJ4, B2FDJ5, B2FDJ6, B2FDJ7 | 100% |
| C8400 | 54-56 | B2FYP3, B2FYP4, B2FYP5, B2FYP6 | 100% |
| | 93-95 | B2FYP8, B2FYP9,B2FYR0,B2FYR1 | 100% |
| | 126-128 | B2FYR3,B2FYR4, B2FYR5,B2FYR6 | 100% |
| C8402 | 47-49 | B2FDK1, B2FDK6, B2FDK7, B2FDK8 | 100% |
| | 107-109 | B2FDK5, B2FDK6, B2FDK7, B2FDK8, | 100% |
| | 126-128 | B2FKD9,B2FDL0, B2FDL1, B2FDL2 | 100% |
| C8406 | 52-54 | B2FXL3, B2FXL6, B2FXL7, B2FXL8 | 100% |
| | 98-100 | B2FXL4, B2FXL9,B2FXMO,B2FXM1 | 100% |
| | 130-132 | B2FXL4, B2FXM2,B2FXM3, B2FXM4 | 100% |
| C8408 | 47-49 | B2HOY1, B2HOY2, B2HOY3, B2HOY4, | 100% |
| | 94-96 | B2HOY6, B2HOY7, B2HOY8, B2HOY9, | 100% |
| | 129-131 | B2H101,B2H102, B2H103, B2H104 | 100% |

The sample tip, drive head, sample liners, and inner sample barrel were cleaned by CH2M HILL Plateau Remediation Company Groundwater Sampling Operations Group using standard *Resource Conservation and Recovery Act of 1976* protocol cleaning methods in accordance with *ATL LO-080-156, Cleaning of Containers and Sample Collection Equipment*. This cleaning ensured that no cross contamination was introduced from previous use of the equipment or from the manufacturing process.

Samples were obtained and analyzed in accordance with WRPS Sample Authorization Form #V011-006. Samples were analyzed for anions, alkalinity, pH, radioisotopes, and several other

analytes. Metals were analyzed using ICP mass spectrometry methods. Copies of the Sample Authorization forms and Chain of Custody forms are provided in Appendix F.

### 3.3 GLOBAL POSITIONING SATELLITE SURVEYING

With the use of a Trimble[1] 5800 Global Positioning Satellite Survey system, or equivalent equipment, and per FSWO-DOW-027, Rev. 0, the original locations of the exploratory boreholes were identified using paint and stakes. Once the task was completed and the boreholes decommissioned, each exploratory and sample borehole was recorded for accuracy. These recorded coordinates were placed on a map showing their locations in direct relation to the underground storage tanks in the vicinity. The coordinates, elevation, and a map showing completed push locations/boreholes are provided in Appendix B, and Table 2 below provides the coordinates and elevations of the sampling boreholes.

### 3.4 GEOPHYSICAL LOGGING

Pacific Northwest Geophysics and Three Rivers Scientific conducted the geophysical logging data collection and analysis services on the exploration 6.35 cm (2.5-in.) probe boreholes. For the geophysical logging, a portable small diameter logging system was used to collect spectral gamma and moisture data from the bottom of the borehole to the ground surface. Calibration details, survey results, and data interpretation, as well as copies of the collected and processed log data, are provided in Appendix D.

## 4.0 BOREHOLE DECOMMISSIONING

Decommissioning of all the boreholes was conducted in accordance with the *Washington Administrative Code* (WAC) 173-160 requirements. While decommissioning the sample boreholes, the tubing was back pulled while granular bentonite was simultaneously added to the tubing until it reached the surface. Logging boreholes required decommissioning while simultaneously placing resistivity probes. This was done by knocking the drive tip out of the bottom of the tubing, back pulling the tubing, and filling it with bentonite to near the desired probe placement depth. Silica sand was then added to the depth at which the resistivity probe was to be placed. The resistivity probe was placed and additional diatomaceous earth and then sand (approximately 1.52 m [5 ft]) were added to the borehole, encasing the probe in diatomaceous earth with sand above. Fifteen to 19 liters (4 to 5 gal) of saline water was then added to enhace the electrical connection between the probe and the surrounding formation materials. Granular bentonite was placed from above the sand to near the next probe depth. The process was repeated for multiple probe installations. Once the probes were installed, granular bentonite was added from above the silica sand to surface while back pulling the remaining tubing. A protective steel casing was cemented in place approximately 30.48 cm (12 in.) deep at

[1]Trimble is a registered trademark of Trimble Navigation Ltd., Sunnyvale, California.

the surface to protect the protruding probe wiring. The State of Washington Department of Ecology (Ecology) documentation is provided in Appendix G.

Table 2 shows the logged and sample boreholes, coordinates, pushed depths, and resistivity probe placement depths.

Table 2. Borehole Information.

| Borehole # and Type | Northing (meters) | Easting (meters) | Elevation (meters) | Hole Depth (ft) | Probe Depth ( ft bgs) |
|---|---|---|---|---|---|
| C8393 Logging | 134461.04 | 566854.46 | 203.81 | 152.3 | 150, 131, 111, 91, 71, 51, and 31 ft |
| C8394 Sampling | 134460.91 | 566855.40 | 203.83 | 128 | N/A |
| C8395 Logging | 134476.219 | 566817.138 | 203.796 | 152.3 | 150, 131, 111, 91, 71, 51, and 31 ft |
| C8396 Sampling | 134474.51 | 566816.97 | 203.79 | 119 | N/A |
| C8397 Logging | 134520.138 | 566810.51 | 203.445 | 152.3 | 150, 131, 111, 91, 71, 51, and 31 ft |
| C8398 Sampling | 134520.23 | 566811.19 | 203.48 | 133 | NA |
| C8399 Logging | 134491.707 | 566780.731 | 203.073 | 152.3 | 150, 131, 111, 91, 71, 51, and 31 ft |
| C8400 Sampling | 134458.7 | 566780.61 | 203.48 | 128 | N/A |
| C8401 Logging | 134459.69 | 566795.526 | 203.311 | 152.3 | 150, 131, 111, 91, 71, 51, and 31 ft |
| C8402 Sampling | 1344458.67 | 566795.62 | 208.38 | 128 | N/A |
| C8403 Logging | 134431.901 | 566864.054 | 202.843 | 152.3 | 150, 131, 111, 91, 71, 51, and 31 ft |
| C8404 (3 attempts) | N/A | N/A | N/A | 41-42.5 | N/A |
| C8405 Logging | 134450.706 | 566814.6 | 203.374 | 152.3 | 150, 131, 111, 91, 71, 51, and 31 ft |
| C8406 Sampling | 134449.96 | 566814.55 | 203.45 | 132 | N/A |
| C8407 Logging | 134450.725 | 566762.806 | 203.084 | 152.3 | 150, 131, 111, 91, 71, 51, and 31 ft |
| C8408 Sampling | 134450.76 | 566763.46 | 203.15 | 131 | N/A |

## 5.0 ENVIRONMENTAL, SAFETY AND HEALTH

During the S Tank Farm activities, Energy*Solutions* Operations Safety personnel performed job site surveillance for safety and health compliance. The results of the surveillances performed by Energy*Solutions* are provided in Appendix H. The work scope conducted under the subject Statement of Work was completed with no lost time, reportable *Occupational Safety and Health Act of 1970* injuries, or first aid cases, and there were no incidences of equipment or personnel radiological contamination.

## 6.0 REFERENCES

GRP-FS-04-G-013, *Laboratory Cleaning of Sampling Equipment*, Groundwater Remediation Project Environmental Engineering Procedure, Fluor Hanford, Richland, Washington.

WAC 173-160, "Minimum Standards for Construction and Maintenance of Wells," *Washington Administrative Code*, as amended.

*Resource Conservation and Recovery Act of 1976*, 42 USC 6901 et seq.

*Occupational Safety and Health Act of 1970*, 29 USC 651 et seq.

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# APPENDIX A

FSWO-DOW-039, *DESCRIPTION OF WORK: 241-S TANK FARM DIRECT PUSH BARRIER CHARACTERIZATION*, REV. 0

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# DATA TRANSMITTAL FORM (DTF)

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To: (Client/Company)
H. A. Sydnor/WRPS/372-3967

From: (Originator/Phone Number)
KD Reynolds/375-9598

Project Title:
241-S Tank Farm Direct Push Barrier Characterization

Design Baseline Document? [ ] Yes [x] No

Project/Crosswalk No.
3647227.001

Required Response Date:
4/18/11

Was QA-managed safety software (Level A, B, or C) used in the documentation attached to this DTF (i.e., report, evaluation, or calculation)? [ ] Yes [x] No [ ] N/A If the answer to this question is "yes," per FSWO QP 3-2 and QP 3-10, identify the applicable software by name and version in the space below.

Originator Remarks:
This Description of Work (DOW) describes activities relating to placement of an exploration and subsequent sampling push seven locations in the 241-S Tank Farm. This activity includes geophysical logging support, safety oversight, and project management.

File Information (see QP 17-1, Attachment A): Lifetime: [ ] Client Maintained [ ] FSWO Maintained Non-Permanent: [x] Client Maintained [ ] FSWO Maintained

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SIGNATURES

| Reason | Disp | Title | Name | Signature | Date |
|---|---|---|---|---|---|
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| 2 | | Project/Task Manager | KD Reynolds | | 4/18/11 |
| 2 | | QA | N/A | | |
| 2 | | Responsible Manager | MG Gardner | | 4/19/11 |
| 2 | | Safety | KD Hutchings | | 4/19/11 |
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Rev. 0

# DESCRIPTION OF WORK
# 241-S TANK FARM DIRECT PUSH BARRIER CHARACTERIZATION

April 2011

Prepared for
Washington River Protection Solutions, LLC

by
Remediation and Well Services
Energy*Solutions* Federal Services, Inc., Northwest Operations

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TABLE

Table 1. Coordinates for Up to Five Exploration Direct Pushes. ....5

## TERMS

| | |
|---|---|
| DOE | U.S. Department of Energy |
| DOW | description of work |
| Ecology | State of Washington Department of Ecology |
| Energy*Solutions* | Energy*Solutions* Federal Services, Inc., Northwest Operations |
| ES&H | Environmental, Safety, and Health |
| ID | inside diameter |
| OD | outside diameter |
| RCRA | *Resource Conservation and Recovery Act of 1976* |
| SST | single-shell tank |
| WAC | *Washington Administrative Code* |
| Well ID | Well identification |
| WMA | waste management area |
| WRPS | Washington River Protection Solutions, LLC |

FSWO-DOW-039, Rev. 0

# DESCRIPTION OF WORK: 241-S TANK FARM DIRECT PUSH BARRIER CHARACTERIZATION

## 1.0 INTRODUCTION AND BACKGROUND

### 1.1 INTRODUCTION

The U.S. Department of Energy (DOE) Office of River Protection and the State of Washington Department of Ecology (Ecology) (the regulator for *Resource Conservation and Recovery Act of 1976* [RCRA] treatment, storage, and disposal facilities) have agreed that a RCRA Corrective Action Project be created with explicit milestones. These milestones are part of the *Hanford Federal Facility Agreement and Consent Order* (i.e., M45 milestone series). The Closure and Corrective Measures Program is managing the RCRA Corrective Action Program. This program includes collection of subsurface vadose zone data.

A multi-discipline team which consists of Washington River Protection Solutions, LLC (WRPS), personnel, Energy*Solutions* Federal Services, Inc., Northwest Operations (Energy*Solutions*) and other lower-tier subcontractors is necessary to implement the field activities of the site-specific work plans. This description of work (DOW) identifies specific actions for characterization efforts in 241-S Tank Farm.

Current planning includes placement of interim surface barriers at several single-shell tank(SST) farms. To design an interim surface barrier, the geographic extent of the subsurface mobile contaminant plume must be understood. RPP-ENV-41309, *Criteria for Prioritizing Hanford Site Tank Farm Interim Surface Barriers and for Evaluating Their Performance*, Rev. 0, provides quantitative estimates and other quantitative analyses so that decision makers can prioritize the placement of interim surface barriers.

This work is being conducted at the direction of the WRPS Closure and Corrective Measures group This DOW provides the work instructions for conducting the characterization and sampling efforts.

### 1.2 TANK FARM BACKGROUND

The Hanford Site has 149 underground SSTs that store hazardous radioactive waste. These tanks are grouped into 12 tank farms. The tanks sit below grade with at least 2m (7 ft) of soil cover that shields operating personnel from radiation exposure. Tank pits are located on top of the tanks and provide access to the tanks, pumps, and monitoring equipment. Many of the tanks have leaked, and there have been leaks in the associated infrastructure (e.g., pipelines, diversion boxes). Some of the leaked waste has been shown to have impacted groundwater and exceeded compliance standards.

Figure 1 is a general location map of the 241- S Tank Farm. This map shows the proposed exploration push locations and details of the known below-ground infrastructure.

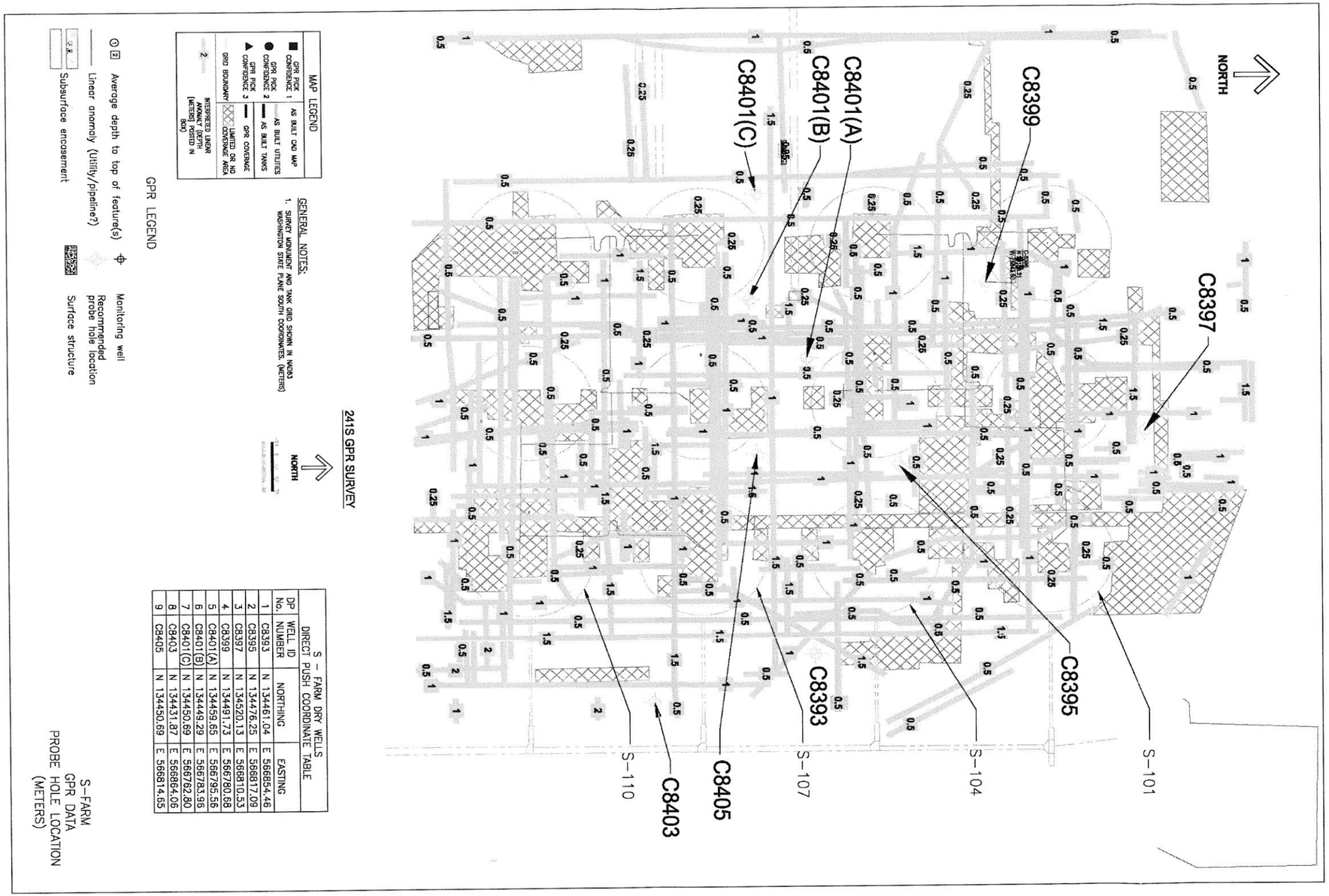
### 1.2.1 Physical Setting

The SST farms were constructed in excavations into the near-surface sediments that overlie the Columbia River Basalt Group. Columbia River basalt forms the basement bedrock. Up to approximately 150 m (500 ft) of continental sediments overlie basalt. From oldest to youngest, these deposits include the following.

- Several facies of the Miocene-to-Pliocene age, fluvial-lacustrine Ringold Formation.
- Variably cemented and pedogenically altered deposits of the Plio-Pleistocene unit (referred to as Lower Cold Creek), which developed on the eroded and weathered surface of the Ringold Formation.
- A relatively loose, fine-grained silty-to-sandy unit designated the Hanford formation/Plio-Pleistocene unit interval (referred to as Upper Cold Creek).
- Deposits from Pleistocene age cataclysmic floods (i.e., Hanford formation) that blanket the study area with mostly sand- and silt-dominated facies, capped by a sequence of gravel-dominated facies.

The S Tank Farm lies within a shallow, north-south oriented topographic depression. The depression formed within the southwestern extent of a flood bar deposit known as the Cold Creek bar (DOE, 1988). This topographic feature, in combination with construction disturbances, is conductive to collecting surface runoff, especially along the east side of S Farm.

Figure 1. 241-S Tank Farm Direct Push Borehole Locations.




S – FARM DRY WELLS DIRECT PUSH COORDINATE TABLE

| DP No. | WELL ID NUMBER | NORTHING | EASTING |
|---|---|---|---|
| 1 | C8393 | N 134461.04 | E 566854.46 |
| 2 | C8395 | N 134476.25 | E 566817.09 |
| 3 | C8397 | N 134520.13 | E 566810.53 |
| 4 | C8399 | N 134491.73 | E 566780.68 |
| 5 | C8401(A) | N 134459.65 | E 566795.56 |
| 6 | C8401(B) | N 134449.29 | E 566783.95 |
| 7 | C8401(C) | N 134450.69 | E 566762.80 |
| 8 | C8403 | N 134431.87 | E 566864.06 |
| 9 | C8405 | N 134450.69 | E 566814.65 |

## 2.0 METHOD

To obtain information about the vertical and horizontal extent of contamination, and to evaluate the final dimensions of the interim cover, a hydraulic hammer-driven probe system mounted on a tractor-type carrier has been selected. For this application, the locations for investigation (exploration) are selected through an iterative process as outlined in Section 3.0. Targeted sample depths are determined by review of neutron-neutron moisture and bismuth germinate oxide spectral gamma geophysical logging data. At the direction of the WRPS Closure and Corrective Measures Technical Lead, approximately three samples will be collected in sampling probe holes adjacent to each exploratory probe hole.

### 2.1 EXPLORATORY PROBE HOLES

Seven direct push sample locations have been allotted for S Farm interim barrier evaluation efforts. Each location includes an exploratory push for geophysical log data collection and a neighboring sampling push. All of the push locations will be advanced to approximately 46 meters (150 ft) below ground surface or refusal. This depth is targeted in order to investigate the vadose zone from the surface to the cemented portion of the Lower Cold Creek Unit (cemented caliche). All pushes (sample or exploratory) greater than 9.14 m (30 ft) in total depth require an Ecology-approved variance (*Washington Administrative Code* [WAC] 173-160, "Minimum Standards for Construction and Maintenance of Wells").

The exploratory probe holes are investigated by use of a single tubing string that is 6.4 cm (2.5-in.) outside diameter (OD) x 4.45 cm (1.75-in.) inside diameter (ID) (e.g., the exploratory push). All push holes will be decommissioned per applicable WAC 173-160 requirements (e.g., filled with bentonite or bentonite/cement grout as required) as the push tubing is extracted.

### 2.2 SAMPLE PROBE HOLES

Coordinates for all locations were obtained and locations were staked in the field. During the field walk-down (staking process), optional locations were determined based on accessibility and data needs. Three options have been identified for Location C8401/C8402. The final location will be selected based on quick turn results and field conditions and will be identified in a change notice to the Field Sampling and Analysis plan. See Table 1 for coordinates for all locations.

The decision to place a sampling boring adjacent to the exploratory push will be made by the WRPS Closure and Corrective Measures Lead in consultation with site professionals after a review of the geophysical data. Collection of as many as 21, or more, soil samples are planned for this project. The precise sampling depths and sites selected for sample collection will be based on review of the geophysical logging data collected from the exploratory push.

Sampling is conducted using a "dual-wall" system. This system consists of outer (drive) tubing that is 6.67 cm (2.625-in.) OD x 4.76 cm (1.875-in.) ID and inner tubing that is 3.81 cm (1.5-in.) OD x 2.54 cm (1.0-in.) ID. The dual-wall sampling system holds three stainless steel

liners that are 3.17 cm (1.25-in.) OD x 2.7 cm (1.08-in.) ID. The predetermined sample depth is driven using a "dummy" tip and the following sampling steps are performed.

- Remove the dummy tip.
- Place sampler on inner string and lower into place at the bottom of the drive tubing.
- Drive sampler approximately 60.96 cm to 66.04 cm (24 in. to 26 in.) to fill liners.
- Remove sampler from tubing and provide to the nuclear chemical operator.
- Replace tip and lock in place.
- Advance casing to next sample interval.

This process is repeated until all sample depths have been achieved or the tubing meets refusal. Upon completion of the final sample extraction, or upon meeting refusal, the dummy tip or sampler is removed and the borehole is decommissioned per WAC 173-160 requirements.

**Table 1. Coordinates for Direct Push Locations.**

| Location # | | Northing | Easting |
|---|---|---|---|
| 1 | **C8393/C8394** | 134461.04 | 566854.46 |
| 2 | **C8395/C8396** | 134476.25 | 566817.09 |
| 3 | **C8397/C8398** | 134520.13 | 566810.53 |
| 4 | **C8399/C8400** | 134491.73 | 566780.68 |
| 5 (Options A, B, or C) | **C8401/C8402** | (A) 134459.65<br>(B) 134449.29<br>(C) 134450.69 | (A) 566795.56<br>(B) 566783.96<br>(C) 566762.80 |
| 6 | **C8403/C8404** | 134431.87 | 566864.06 |
| 7 | **C8405/C8406** | 134450.69 | 566814.65 |

# 3.0 PROBE HOLE LOCATIONS

## 3.1 PROBE HOLE LOCATION DOCUMENTATION

Figure 1 is a general location map of 241-S Tank Farm and the immediate surrounding area. Specific probe hole locations are also identified in Figure 1. These locations were selected through an iterative process using ground-penetrating radar scan data and as-built infrastructure drawing reviews. The location coordinates of the selected sites (determined from the ground-penetrating radar and as-built review) were plotted with computer-aided drafting (see Figure 1 above). Probe hole locations will be documented on Well Information Reports/Field Activity Reports.

## 3.2 PROBE HOLE LOCATION INFORMATION

All exploratory and sampling probe hole activities will be tracked and documented on Field Activity Reports by referencing the Well identification (Well ID) number provided in Table 1. If the collection of a sample is attempted, a unique Well ID number will be used to track the probe hole location on the Field Activity Report, and the sample will be identified with that Well ID number on the sample label and the shipping documentation. The Well ID for a sample probe hole is one number greater than the corresponding exploration probe hole (e.g., if a zone of interest is identified during pushing at location 1 [in Table 1, Well ID C8393], the Well ID of the subsequent sampling push is C 8394). The unique Well ID numbers for all of the exploratory and sampling probe hole locations are listed in Table 1. All sampling and exploration probe hole activities will be documented in the Field Activity Reports and sampling chain of custody forms, and all exploration push locations will be identified prior to conducting the exploration push by use of global positioning survey equipment. Sampling location coordinates will be collected by use of global positioning survey equipment after conclusion of the sampling activity.

# 4.0 WORK TASKS

## 4.1 SITE SETUP

The push equipment will be mobilized and a controlled work area set up surrounding the preselected and marked locations (see Table 1 and Figure 1 above). A pre-survey of the Hydraulic Hammer Unit (HHU) will be conducted (per WRPS procedure) prior to moving the equipment into the work zone. As noted above, ground-penetrating radar scans and as-built drawing reviews and comparisons have been completed to properly select the push hole locations. The HHU consists of a mobile carrier with a hydraulically powered hammer and mast system. Support equipment to be used during field activities will be mobilized into the work area as needed. A forklift will transport needed support equipment to and from the push locations. WRPS personnel will provide support, as necessary, for guiding the equipment to the work location and for subsequent movement of the unit to the listed push hole locations.

WRPS Radiological Control Technicians and Nuclear Chemical Operators will be onsite to support work during activities that create potential personnel exposure. Contamination control measures will consist of laying spill protection material beneath the equipment (when required). Spill protection can consist of placement of rubber matting, felt and/or plastic sheeting on and around the HHU when necessary and prudent. Control of the work area and control of potential contamination are aided by restricting site entries by unnecessary personnel. WRPS Health Physics personnel will provide direction and support to ensure radiological protection is maintained for all personnel associated with the work.

## 4.2 PRECAUTIONARY MEASURES

During advancement of the push hole, casing (push rods) will be driven into the subsurface by use of the HHU. The probe hole locations have been positioned to avoid impacting known/mapped structures. Additionally, all due caution will be taken and push advance rates and resistance will be carefully observed to preclude damage to any tank farm infrastructures should the as-built drawings be in error. If rod advance indicates that obstructions are present, push advance will stop, the direct push equipment and work area will be placed in safe condition and the WRPS Closure and Corrective Measures Lead (Harold Sydnor) or his designee and the WRPS shift supervisor will be notified. If during push operations the push hole is deemed to be "at refusal" as defined by trained operators of the direct push equipment (refusal is defined as a minimum of one inch of advance per minute of impact operations), the depth will be noted in the Field Activity Report.

All activities using the HHU will conform to the manufacturer's operating manual and applicable procedures that relate to the specific phase of work. As the push rods are extracted from the exploratory and sampling holes, the onsite health physics technician will monitor for radiological contamination. WRPS tank-farm-qualified Nuclear Chemical Operators will perform any decontamination required. The sealing requirements for decommissioning of the probe holes are defined in the appropriate sections of WAC 173-160.

### 4.3 GEOPHYSICAL LOGGING

At refusal or target total depth of the exploratory investigations, Pacific Northwest Geophysics will conduct logging operations to gather geophysical information. The following logging suites will be used.

1. Bismuth germanium oxide @ 100 seconds/0.5 ft.
2. Additional logging with the "Red" and/or "Green" Geiger/Muller equipment, if necessary, based on observed bismuth germanium oxide results.
3. Moisture logging.

Logging data will be collected from the total depth to surface. The logging analyst, Energy*Solutions* site personnel, and the WRPS Closure and Corrective Measures Lead will review the field log data. Based on the log data sets, sampling intervals may be selected. Logging activities will be conducted in accordance with applicable Pacific Northwest Geophysics and Energy*Solutions* procedures and the Energy*Solutions* Quality Assurance Plan.

## 5.0 SAMPLING

### 5.1 SAMPLING PROCESS

The sampling process will entail a multiple sampling methodology as described in Section 2.0.

After retrieving the sampler to surface, the sampling system will be disassembled and the stainless steel liners will be removed for packaging and shipment to the designated laboratory. If opening of the retrieved sampler would result in more than the allowable dose rates per the Radiation Work Permit, the samplers will be placed in transportation drums and either opened under controlled conditions at the designated laboratory or placed in a disposal container.

### 5.2 CLEANING

Quality control requires that all materials (e.g., sample liners, material retaining baskets [finger baskets], sample caps) used to perform sampling activities will be cleaned using U.S. Environmental Protection Agency guidelines/specifications as referenced in the RCRA. Cleaning and packaging of samplers, liners, etc., is the responsibility of the 222S Laboratory personnel. WRPS Nuclear Chemical Operators will transport the clean sampling equipment to the job site. Equipment used for push advance purposes (e.g., push rods, tips) will be high-pressure washed using an approved non-phosphate cleaner. The push equipment will be visibly free of dirt, grease and other possible contamination, which would potentially provide for cross-contamination of retrieved samples. After being cleaned, the equipment will be protected from

unwanted contamination from surface chemicals and push operation-related chemicals. This protection will be accomplished by covering the materials with plastic or other acceptable materials, if necessary. The cleaned and protected equipment will be tracked by use of cleaning certification documentation.

### 5.3 RINSATE SAMPLES

Field equipment rinsate blanks may be required for analysis purposes. This determination and collection of these rinsate samples is the responsibility of WRPS and their designated personnel.

### 5.4 EXPLORATION AND SAMPLING PUSH HOLE DECOMMISSIONING

Applicable requirements contained in WAC 173-160 will be used to control and guide actions for decommissioning the sampling and exploratory probe holes. Each exploratory and sampling hole will be filled with bentonite, a bentonite slurry, and/or grout (neat cement or cement-bentonite mixture) during the push rod extraction process.

## 6.0 ENVIRONMENTAL, SAFETY, AND HEALTH PROGRAM

The primary concern for Energy*Solutions* and the client (WRPS) is the safety of personnel assigned to perform activities related to the 241- S Barrier investigation/characterization. These issues are addressed and all Energy*Solutions*, WRPS, and applicable *Occupational Safety and Health Act of 1970* safety and health requirements are applied and adhered to during the field operations. An activity-specific Job Hazard Analysis outlines the specific activity hazards and the mitigation methodologies. The documentation governing the operation of the direct push rig, sampling, and decommissioning activities (JHA-11-005, *S Farm Barrier Characterization*, Rev. 0, or most current revision) is included as a portion of the WRPS Tank Farm Work Package.

Energy*Solutions* Safety or WRPS Tank Farm Industrial Hygiene and Safety personnel, or both, will survey the job site for safety and health compliance. Energy*Solutions* personnel and safety representatives will provide onsite inspections and visits during drilling, sampling, and decommissioning or construction activities to ensure compliance with the guidance outlined in the Activity Hazard Analysis. Routine inspection reports will be provided to the WRPS Closure and Corrective Measures Lead. An inspection will be conducted routinely, based on activities underway at the job site.

Energy*Solutions* subscribes to the Integrated Safety Management System and has implemented an Integrated Safety Management System approach into all of its work tasks. These requirements flow down, not only internally to Energy*Solutions* employees but also to

Energy*Solutions* subcontractors. All of the following are in effect and will be observed, enforced and followed.

- Safety rules and procedures for safe job performance.
- Radiological Work Permit.
- WAC 173-160, as amended.
- *Occupational Safety and Health Act of 1970.*
- Client-identified standards.

These requirements are communicated to everyone associated with the project (visitors included) using the Energy*Solutions* Activity Hazard Analysis. The Activity Hazard Analysis is part of the Energy*Solutions* Environmental, Safety, and Health (ES&H) Program.

This program encompasses environment, safety, and health, including pollution prevention and waste minimization. All work for this project will be analyzed in accordance with the five core functions of the Energy*Solutions* Integrated Safety Management System.

- Define the scope of work.
- Identify the work hazards and ES&H requirements.
- Analyze the work hazards and implement controls.
- Perform the work activity within the developed controls.
- Provide feedback on the adequacy of controls and safety management improvement.

The specific procedures used to accomplish these core functions are found in the Energy*Solutions* ES&H Program.

## 6.1 ENVIRONMENTAL, SAFETY, AND HEALTH PROGRAM KEY ELEMENTS

- Line management is responsible for the protection of employees, the public, and the environment.
- Clear and unambiguous lines of authority and responsibility for ensuring ES&H are established and maintained at all organizational levels.
- Personnel have "stop work" authority.
- Personnel possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities.
- Resources are effectively allocated to address ES&H, programmatic, and operational considerations. Protecting employees, the public, and the environment is a priority whenever activities are planned and performed.
- Before work is performed, the associated hazards are evaluated and an agreed-upon set of ES&H standards and requirements is established which, if properly implemented, provides adequate assurance that employees, the public, and the environment are protected from adverse consequences.

- Administrative and engineering controls to prevent and mitigate hazards are tailored to the work being performed and associated hazards. Emphasis should be on designing the work and/or controls to reduce or eliminate the hazards and to prevent accidents, unplanned releases, and exposures.

## 6.2 WRPS REQUIRED ENVIRONMENTAL, SAFETY, AND HEALTH ELEMENTS

WRPS has provided a Field Work Supervisor who is trained to the comprehensive list of WRPS, DOE and Hanford Site-specific procedures and requirements applicable to conducting work within the confines of the 241-S Tank Farm. While executing the work scope detailed in this DOW, Energy*Solutions* will comply with all applicable directives and orders resulting from WRPS requirements. The application of these requirements will be directed by the WRPS Field Work Supervisor.

# 7.0 QUALITY ASSURANCE

All work on the Hanford Site is subject to the requirements of DOE Order 5700.6C, *Quality Assurance*. A Quality Assurance program has been described in applicable sections of FS-WO-QAPP-001, *Federal Services Hanford Quality Assurance Program Plan*, and FSWO-QAP-001, *Quality Assurance Procedures*.

All work will be performed in accordance with approved procedures and this work plan.

# 8.0 REFERENCES

JHA-11-005, *S Farm Barrier Characterization,* Rev. 0, Energy*Solutions* Technical Services, Richland, Washington.

DOE/RW-0164, 1988, *Consultation Draft Site Characterization Plan Reference Repository Location, Hanford Site, Washington*, U.S. Department of Energy, Office of Civilian Radioactive Waste Management, Washington, D.C.

DOE Order 5700.6C, 1991, *Quality Assurance*, U.S. Department of Energy, Washington, D.C.

DOE/ORP-2005-01, 2006, *Initial Single-Shell Tank System Performance Assessment for the Hanford Site*, Rev. 0, U.S. Department of Energy Office of River Protection, Richland, Washington.

Ecology, EPA, and DOE, *Hanford Federal Facility Agreement and Consent Order*, 6 vols., Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington, as amended.

FS-WO-QAPP-001, *Federal Services Hanford Quality Assurance Program Plan*, Energy*Solutions* Federal Services, Western Operations, Richland, Washington.

FSWO-QAP-001, *Quality Assurance Procedures*, Energy*Solutions* Federal Services, Western Operations, Richland, Washington.

*Occupational Safety and Health Act of 1970*, 29 USC 651 et seq.

*Resource Conservation and Recovery Act of 1976*, 42 USC 6901 et seq.

RPP-ENV-41309, 2009, *Criteria for Prioritizing Hanford Site Tank Farm Interim Surface Barriers and for Evaluating Their Performance*, Rev.0, Washington River Protection Solutions, LLC, Richland, Washington.

RPP-ENV-49131, 2011, *Data Requirements for Characterization Supporting Near-Term Interim Barrier in S Farm*, Rev.0, Washington River Protection Solutions, LLC, Richland, Washington.

RPP-PLAN-49132, 2011, *Field Sampling and Analysis Plan for Soil Samples in Support of an Interim Barrier in S Farm*, Rev.0, Washington River Protection Solutions, LLC, Richland, Washington.

WAC 173-160, "Minimum Standards for Construction and Maintenance of Wells," *Washington Administrative Code*, as amended.

# APPENDIX B

GLOBAL POSITIONING SYSTEM COORDINATES AND MAP

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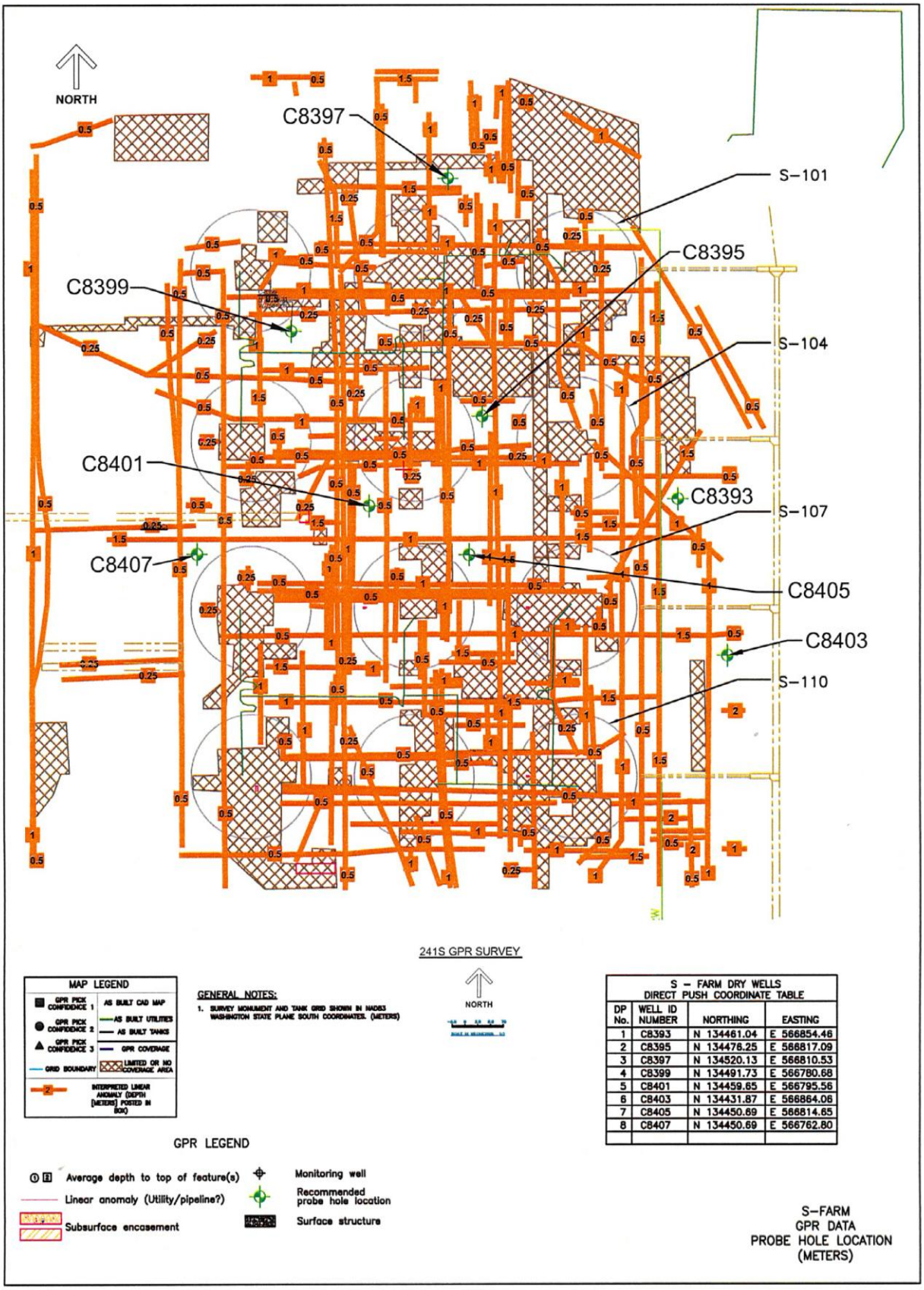
Borehole Information.

| Borehole # and Type | Northing (meters) | Easting (meters) | Elevation (meters) | Hole Depth (ft) | Probe Depth ( ft bgs) |
|---|---|---|---|---|---|
| C8393 Logging | 134461.04 | 566854.46 | 203.81 | 152.3 | 150, 131, 111, 91, 71, 51, and 31 ft |
| C8394 Sampling | 134460.91 | 566855.40 | 203.83 | 128 | N/A |
| C8395 Logging | 134476.219 | 566817.138 | 203.796 | 152.3 | 150, 131, 111, 91, 71, 51, and 31 ft |
| C8396 Sampling | 134474.51 | 566816.97 | 203.79 | 119 | N/A |
| C8397 Logging | 134520.138 | 566810.51 | 203.445 | 152.3 | 150, 131, 111, 91, 71, 51, and 31 ft |
| C8398 Sampling | 134520.23 | 566811.19 | 203.48 | 133 | NA |
| C8399 Logging | 134491.707 | 566780.731 | 203.073 | 152.3 | 150, 131, 111, 91, 71, 51, and 31 ft |
| C8400 Sampling | 134458.7 | 566780.61 | 203.48 | 128 | N/A |
| C8401 Logging | 134459.69 | 566795.526 | 203.311 | 152.3 | 150, 131, 111, 91, 71, 51, and 31 ft |
| C8402 Sampling | 1344458.67 | 566795.62 | 208.38 | 128 | N/A |
| C8403 Logging | 134431.901 | 566864.054 | 202.843 | 152.3 | 150, 131, 111, 91, 71, 51, and 31 ft |
| C8404 (3 attempts) | N/A | N/A | N/A | 41-42.5 | N/A |
| C8405 Logging | 134450.706 | 566814.6 | 203.374 | 152.3 | 150, 131, 111, 91, 71, 51, and 31 ft |
| C8406 Sampling | 134449.96 | 566814.55 | 203.45 | 132 | N/A |
| C8407 Logging | 134450.725 | 566762.806 | 203.084 | 152.3 | 150, 131, 111, 91, 71, 51, and 31 ft |
| C8408 Sampling | 134450.76 | 566763.46 | 203.15 | 131 | N/A |




S – FARM DRY WELLS DIRECT PUSH COORDINATE TABLE

| DP No. | WELL ID NUMBER | NORTHING | EASTING |
|---|---|---|---|
| 1 | C8393 | N 134461.04 | E 566854.46 |
| 2 | C8395 | N 134476.25 | E 566817.09 |
| 3 | C8397 | N 134520.13 | E 566810.53 |
| 4 | C8399 | N 134491.73 | E 566780.68 |
| 5 | C8401 | N 134459.65 | E 566795.56 |
| 6 | C8403 | N 134431.87 | E 566864.06 |
| 7 | C8405 | N 134450.69 | E 566814.65 |
| 8 | C8407 | N 134450.69 | E 566762.80 |
| | | | |

# APPENDIX C

DRILLING AND SAMPLING DAILY WORK RECORDS

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

PURPOSE: Complete moving tooling and support equipment from "BY" Farm. DATE: 05-05-11

LOCATION: "S" Tank Farm, 200 East Area, Hanford | EXCAVATION: DAN-11-0186 U-DIG #:11076292 | REPORT #: 01

START CARD NO. SE09635 | DECOMMISSION NO. AE12960 | RWP: CO-645, Rev. 1 AHA:11-005 Rev. 0

SAMPLING SUMMARY | SITE/EQUIPMENT INSPECTION: Yes No | HHU CASE#1 ~~HHU CAT#2~~ HHUXL#3

Sample #: Interval %

1. N/A
2.
3.
4.

BOREHOLE SUMMARY

Borehole # _____ Tubing ( ) @ N/A to ft bgs: S.U. ____

Borehole # _____ Tubing ( ) @ to ft bgs: S.U. ____

Borehole # _____ Tubing ( ) @ to ft bgs: S.U. ____

GEOPHYSICAL LOGGING

Boring # Interval Type

1. N/A
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Driving Emergencies. |
| 0620 | Drive to ACE in. |
| 0653 | Arrive at ACES, ACE in. Drive to BY for pre-job. |
| 0700 | Standby for pre-job. / No work package today. |
| 0815 | Pre-job with crew: Move remaining equipment to S-Farm |
| — | No fork lift available, No work package for S-Farm today. |
| 0920 | Drive to ENW pickup supplies for Passey to wire in switch for |
| — | CAT #2 for remote. Fuel up pickup at Conoco, Drive to S-Farm |
| 1115 | Arrive at S-Farm, put New jaws and teeth in Foot clamp. Passey |
| — | Working on wiring remote system. |
| 1415 | Drive to M0273 for field walkdown |
| — | Walkdown site location. |
| 1500 | Drive to ESFS |
| 1525 | Arrive at ESFS, paperwork, Time card. |
| 1530 | End of shift. |

N/A

OPERATOR/LICENSE: Repko/3012
*ES SUPPORT Passey and Walkup*
*NCO:*
*HPT:*
*FWS: Davis*

WEATHER: 72 F, partly cloudy with winds from the southwest at 10-20 mph. Gusts to >25 mph.

DOWNTIME: 9 hrs
No work package.

DISCARDED ITEMS:
4 - New jaws for Footclamp
4 - New Teeth for foot clamp

REFERENCE/CONTRACT INFORMATION: FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

REPORT BY: Mark A Repko
TITLE : *ES TECHNICAL PREPARER*
SIGNATURE: Mark A Repko

REVIEWED BY: D.E. Skoglie
TITLE: *ES TECHNICAL REVIEWER*
SIGNATURE: David E. Skoglie DATE: 5/6/11

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE: Standby, no HPT support to move into farm.** **DATE: 05-06-11**

**LOCATION:** "S" Tank Farm, 200 East Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:11076292** **REPORT #: 02**

**START CARD NO. SE09635** **DECOMMISSION NO. AE12960** **RWP: CO-645, Rev. 1** **AHA:**11-005 Rev. 0

**SAMPLING SUMMARY**

*Sample #'s* *Interval* *%*

1.
2.
3.
4.

N/A

**SITE/EQUIPMENT INSPECTION:** *Yes* *No*

*HHU CASE#1* *HHU CAT #2* *HHUXL#3*

**BOREHOLE SUMMARY**

*Borehole #* _____ *Tubing (* N/A *)* @ *to* *ft bgs: S.U.* ____

*Borehole #* _____ *Tubing (* *)* @ *to* *ft bgs: S.U.* ____

*Borehole #* _____ *Tubing (* *)* @ *to* *ft bgs: S.U.* ____

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1.
2.
3.

N/A

| TIME | WORK SUMMARY |
|---|---|
| **0600** | **Safety meeting at office. Topic: Near Miss.** |
| 0630 | Standby, no HPT support to move into farm. |
| 1100 | Lunch |
| 1130 | Standby, no HPT support to move into farm. |
| 1400 | Complete paperwork and timecard. |
| 1430 | End of shift. |

N/A

**OPERATOR/LICENSE: Walkup/3005**
*ES SUPPORT Passey*
*NCO:* N/A
*HPT:* N/A
*FWS: Davis*

**WEATHER: 69 F, partly cloudy with winds from the southwest at 5-15 mph.**

**DOWNTIME:**
8 HRS. - NO HPT SUPPORT

**DISCARDED ITEMS:**
N/A

**REFERENCE/CONTRACT INFORMATION: FSWO-DOW- TFC-WO-11-1935 ECN-11-000563**

**REPORT BY:** M. W. Walkup
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** [signature]

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** [signature] **DATE:** 5/06/11

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Mobilize CAT HHU and support equipment into farm and set-up on 1st probe borehole. **DATE:** 05-09-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 03

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

*Sample #'s* *Interval* *%*

1.
2.
3. NA
4.

**SITE/EQUIPMENT INSPECTION:** *Yes* *No*

*HHU CASE#1* *HHU CAT #2* *HHUXL#3*

**BOREHOLE SUMMARY**

*Borehole #* _____ *Tubing (* *) @* *to* *ft bgs; S.U.* ____

*Borehole #* _____ *Tubing (* *) @* *to* *ft bgs; S.U.* ____

*Borehole #* _____ *Tubing (* *) @* *to* *ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1. NA
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: General Safety---Carelessness. |
| 0645 | AT S-Farm, waiting for POD |
| 0900 | POD on S farm. (next over package) |
| 0925 | Plan is to move into S Farm |
| 1000 | work package is in review. no work until package is released |
| 1100 | Lunch |
| 1130 | Standby for work package |
| 1530 | End shift |
| | NA |

**OPERATOR/LICENSE:** Amos/1224
*ES SUPPORT* Weakley
*NCO:* Sharp, Ruben
*HPT:* Young, Mittus
*FWS:* Davis/Clark

**WEATHER:** 69 F, partly cloudy with winds from the west at <10 mph.

**DOWNTIME:** 8 hr. work Package

**DISCARDED ITEMS:** NA

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Olin Amos
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Olin Amos

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 5/10/11

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** To do probe push and Sample push / mobilize **DATE:** 05-10-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:**11076292 **REPORT #:** 04

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:**11-005 Rev. 0

**SAMPLING SUMMARY** **SITE/EQUIPMENT INSPECTION:** *Yes* *No* *HHU CASE#1* *HHU CAT #2* *HHUXL#3*

*Sample #'s* *Interval* *%*

1.
2.
3.
4.

N/A

**BOREHOLE SUMMARY**

*Borehole #* — *Tubing (* *) @* *to* *ft bgs; S.U.* ____

*Borehole #* — *Tubing (* *) @* *to* *ft bgs; S.U.* ____

*Borehole #* — *Tubing (* *) @* *to* *ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1.
2.
3.

N/A

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Horseplay. |
| 0615 | Standby for work package |
| 1100 | Lunch |
| 1130 | Standby for work package |
| 1530 | End shift |

N/A

**OPERATOR/LICENSE:** Amos/1224
*ES SUPPORT Weakley, Repko*
*NCO:* sharp,
*HPT:* young, wittus
*FWS:* Davis/Clark

**WEATHER:** 75 F, mostly sunny with winds from the southwest at 5-10 mph.

**DOWNTIME:** 9 hrs. work package

**DISCARDED ITEMS:** N/A

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Olin Amos
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Olin Amos

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E Skoglie **DATE:** 5/11/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Standby for work package to be released. **DATE:** 05-11-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 05

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY** **SITE/EQUIPMENT INSPECTION:** Yes (No) (HHU CASE#1) HHU CAT #2 HHUXL#3

| Sample #'s | Interval | % |
|---|---|---|
| 1. | N/A | |
| 2. | | |
| 3. | | |
| 4. | | |

**BOREHOLE SUMMARY**

Borehole # CB403 Tubing (2.5") @ 6.5 to N/A ft bgs: S.U. N/A

Borehole # N/A Tubing ( ) @ to ft bgs: S.U. ____

Borehole # N/A Tubing ( ) @ to ft bgs: S.U. ____

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | N/A | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Take Safety With You On Vacation.** |
| 0630 | Standby for work package to be released. |
| 1100 | Lunch |
| 1130 | Standby for work package to be released. |
| 1500 | Complete paperwork and timecard. |
| 1530 | End of shift. |

N/A

**OPERATOR/LICENSE:** Walkup/3005
*ES SUPPORT N/A*
*NCO:*
*HPT:*
*FWS: Davis/Clark*

**WEATHER:** 79 F, partly cloudy with winds from the south at 5-10 mph.

**DOWNTIME:** 9 HRS. FOR WORK PACKAGE.

**DISCARDED ITEMS:** N/A

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Mike Walkup
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** D.E. Skoglie for

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 5/12/11

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE: Standby for work package to be released.** | **DATE: 05-12-11**

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186 **U-DIG: #11076292** | **REPORT #: 06**

**START CARD NO. SE09635** | **DECOMMISSION NO. AE12960** | **RWP: CO-645, Rev. 01** **JHA**-11-005 Rev. 0

**SAMPLING SUMMARY**

*Sample #'s* *Interval* *%*

*1. N/A*

*2. N/A*

*3 .N/A*

*4 N/A.*

**SITE/EQUIPMENT INSPECTION:** *Yes* *No*

*HHU CASE#1* *HHU CAT #2* *HHUXL#3*

**BOREHOLE SUMMARY**

*Borehole #* CB4-03 *Tubing* (2.5") *@* 65 *to* N/A *ft bgs; S.U.* N/A

*Borehole #* N/A *Tubing ( ) @ to ft bgs; S.U.* ____

*Borehole #* N/A *Tubing ( ) @ to ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

*1. N/A*

*2. N/A*

*3. N/A*

| TIME | WORK SUMMARY |
|---|---|
| **0600** | **Safety meeting at office. Topic: Driving Safely In Deer Country.** |
| 0630 | Standby for work package to be released. |
| 1100 | Lunch. |
| 1130 | Standby for work package to be released. |
| 1500 | Complete paperwork and timecard. |
| 1530 | End of shift. |

N/A

**OPERATOR/LICENSE: Walkup/3005**
*ES SUPPORT: N/A*
*NCO: Sharp, Rivera*
*HPT: Young, Widdis*
*FWS: Clark/Davis*

**WEATHER: 77 F, mostly sunny. Winds from the southwest at 5-15 mph.**

**DOWNTIME: 9 Hrs. for work package.**

**DISCARDED ITEMS:**
N/A

**REFERENCE/CONTRACT INFORMATION: TFC-WO-11-1935 FSWO-DOW- ECN-11-000563**

**REPORT BY:** MIKE WALKUP
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Mike Walkup

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** Dan Eskoglie **DATE:** 5/12/11

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Standby for work package to be released. **DATE:** 05-16-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 07

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes (No)

*HHU CASE#1* (*HHU CAT #2*) *HHUXL#3*

**BOREHOLE SUMMARY**

Borehole # N/A Tubing ( ) @ to ft bgs; S.U.

Borehole # N/A Tubing ( ) @ to ft bgs; S.U.

Borehole # N/A Tubing ( ) @ to ft bgs; S.U.

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Driving In Bad Weather. |
| 0630 | Stand-by for work package release |
| 1130 | Lunch |
| 1200 | continue stand-by for work package |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Repko/3011
*ES SUPPORT* Olson
*NCO:* Sharp, Rivera
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 64 F, partly cloudy with winds from the southwest at 10-20 mph.

**DOWNTIME:** 9 hr for work package

**DISCARDED ITEMS:** NA

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E Skoglie **DATE:** 5/17/11

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Standby for work package to be released. **DATE:** 05-17-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 08

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** ~~CO-645~~, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes (No)

(HHU CASE#1) HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # NA Tubing ( ) @ to ft bgs; S.U.

Borehole # NA Tubing ( ) @ to ft bgs; S.U.

Borehole # NA Tubing ( ) @ to ft bgs; S.U.

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Complacency. |
| 0630 | Stand-by for work package |
| 1130 | Lunch |
| 1200 | continue stand-by for work package |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/
*ES SUPPORT* Passey
*NCO:* Sharp, Rivera
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 66 F, partly cloudy with a chance of showers. Winds from the southwest at 5-10 mph.

**DOWNTIME:** 9 hr for package

**DISCARDED ITEMS:** NA

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 5/18/11

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Standby. No ESGG personnel available. **DATE:** 05-18-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 09

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No

(HHU CASE#1) HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # NA Tubing ( ) @ to ft bgs; S.U.

Borehole # NA Tubing ( ) @ to ft bgs; S.U.

Borehole # NA Tubing ( ) @ to ft bgs; S.U.

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Being Mentally Prepared For Emergencies. |
| 0630 | Stand-by for no ESGG personnel, pick up generator for logging activity at Energy N.W. Transport to 'S' farm, work on strobe installation on case HHU #1, inventory equipment for 'S' farm. |
| 11:30 | Lunch |
| 12:00 | Continue stand-by for no ESGG support, help support 'C' farm activities while standing by, pick up Ford F-150 at Pasco |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/
*ES SUPPORT* Passey
*NCO:* Sharp
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 72 F, partly cloudy with winds from the northwest at 5-10 mph.

**DOWNTIME:** 9 hr for no E

**DISCARDED ITEMS:** NA

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 5/19/11

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Mobilize CASE HHU into farm and set-up on 1st probe hole. - C-8403 | **DATE:** 05-19-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford | **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 | **REPORT #:** 10

**START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No | HHU (CASE#1) HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8403 Tubing (2 1/2") @ 0' to 40' ft bgs: S.U. 2.3'

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs: S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs: S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Bloodborne Pathogens. |
| 0630 | Travel to 'C' Farm, Ace in, Travel to 'S' farm, locate equipment |
| 0730 | Pre-job |
| 0800 | Gether equipment for entry into farm, move rig and |
| \ | equipment in, Pick up fork lift at Evaporator, move drill pipe into |
| \ | farm, set up Rig and zone at C-8403, inspect rig, stage pipe |
| \ | at other locations with fork lift, Drive 2 1/2" pipe from 0' to |
| \ | 28' at C8403, clean-up and survey out. |
| 1200 | Lunch |
| 1230 | Dress into whites, enter farm, continue driving C8403 |
| | from 28' to 40' survey out of farm, (Head became |
| | hot during driving and required cooling interval) (Hard driving) |
| 1420 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/
*ES SUPPORT Passey, Steffler*
*NCO:* ~~Wid~~ Sharp, Rivera
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 79 F, mostly sunny with winds from the north at 5-15 mph. Gusts in the afternoon of 20 mph or greater.

**DOWNTIME:** N/A

**DISCARDED ITEMS:** 1 large Pin

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 5/20/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue driving probe hole #C8403 to T.D. at ~~200~~ 150.0' bgs. **DATE:** 05-20-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 11

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No

HHU (CASE#1) HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8403 Tubing (2 1/2") @ 40' to 47' ft bgs: S.U. 3.3'

Borehole # NA Tubing ( ) @ to ft bgs: S.U.

Borehole # NA Tubing ( ) @ to ft bgs: S.U.

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Attitude And Behavior. |
| 0615 | Travel to 'S' farm |
| 0645 | Stand-by for RCT's, Ace in |
| 0830 | Pre-job |
| 0900 | Dress into whites, inspect rig, Drive 2 1/2" tubing from 40' |
| | to 44', extremely hard driving, letting head cool periodicaly, |
| | survey out. |
| 1100 | Lunch |
| 1130 | Dress into whites, resume driving 2 1/2" tubing at C-8403, |
| | Drove from 44' to 47', continue hard driving, letting head |
| | cool, |
| 1320 | Survey out of farm, clean-up |
| 1330 | Travel to office, paperwork and time cards |
| 1430 | End of shift. |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT Passey, Repko*
*NCO:* Sharp, Rivera
*HPT:* Clayton, Joey
*FWS: Clark*

**WEATHER:** 79 F, partly cloudy with winds from the north at 5-10 mph.

**DOWNTIME:** 1.75 hr for RCTS

**DISCARDED ITEMS:** 2 Lynch pins

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 5/23/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

PURPOSE: Continue driving probe hole #C8403 to T.D. at ~150.0' bgs. DATE: 05-23-11

LOCATION: "S" Tank Farm, 200 West Area, Hanford EXCAVATION: DAN-11-0186 U-DIG #:11076292 REPORT #: 12

START CARD NO. SE09635 DECOMMISSION NO. AE12960 RWP: CO-645, Rev. 1 AHA:11-005 Rev. 0

SAMPLING SUMMARY

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

SITE/EQUIPMENT INSPECTION: (Yes) No

(HHU CASE#1) HHU CAT #2 HHUXL#3

BOREHOLE SUMMARY

Borehole # C-8403 Tubing ( 2½" ) @ 47' to 59' ft bgs: S.U. 3.3'

Borehole # N/A Tubing ( N/A ) @ \ to \ ft bgs: S.U. \

Borehole # N/A Tubing ( N/A ) @ \ to \ ft bgs: S.U. \

GEOPHYSICAL LOGGING

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Heat Stress Prevention. , Quarterly safety meeting (topic= heat stress) |
| 0730 | Travel to 'C' farm, Ace in, Travel to 200 west |
| 0800 | Re-assessment for surgical insicions at CSC medical, stand-by for ESGG support (Key). |
| 1000 | Pre-job |
| 1015 | Stand-by for Key to farm, no Key available, enter with other group |
| 1045 | Dress into whites, enter farm, inspect rig, Tagged inside 2½" tubing, 2' of Dust accumulation above tip, Drove from 47' to 52' survey out. |
| 1200 | Lunch |
| 1230 | stand-by for farm Key |
| 1245 | Dress into whites, Drive from 52' to 56' (hard driving) |
| 1330 | let head cool |
| 1400 | Drive from 56' to 59' survey out of farm |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

OPERATOR/LICENSE: Olson/1217
ES SUPPORT Repko, Weekley
NCO: Sharp, Rivera
HPT: Widdus, Young
FWS: Clark

WEATHER: 69 F, mostly cloudy with winds from the southwest at 5-15 mph.

DOWNTIME: ~~2 hr for ESGG support~~ DCL ~~.75~~ 3.0 hr for farm Key

DISCARDED ITEMS: N/A

REFERENCE/CONTRACT INFORMATION: FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

REPORT BY: Kelly Olson
TITLE: ES TECHNICAL PREPARER
SIGNATURE: Kelly Olson

REVIEWED BY: D.E. Skoglie
TITLE: ES TECHNICAL REVIEWER
SIGNATURE: David E. Skoglie DATE: 5/24/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue driving probe hole #C8403 to T.D. at ~150.0' bgs. **DATE:** 05-24-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 13

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No

(HHU CASE#1) HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8403 Tubing (2½") @ 59' to 152.3' ft bgs: S.U. 2'

Borehole # N/A Tubing ( ) @ to ft bgs: S.U.

Borehole # N/A Tubing ( ) @ to ft bgs: S.U.

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Cuts And Burns. |
| 0630 | Travel to 's' farm, |
| 0715 | Arrive at 's' farm, Pre-job, Ace in |
| 0730 | Operator picking up farm Key |
| 0745 | Dress into whites, Enter farm, inspect and fuel rig, |
| – | Drive 2½" tubing from 59' bgs to 76' bgs (formation became softer |
| – | at 62') |
| 0900 | Let head cool |
| 0930 | Drove from 76 to 106', letting head cool again (1000 -1030) |
| – | survey out |
| 1130 | lunch |
| 1200 | Dress into whites, Enter farm, Resume driving C8403 from |
| – | 106' to 152.3', letting head cool twice at ½ hr intervals, |
| – | tagged inside tubing ~~148'~~ 150.0' at 152.4 T.O.C. = 2.1' of fill, |
| | (154.3' total string. |
| 1400 | Clean-up and survey out of zone |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko, Passey
*NCO:* Sharp, Rivera
*HPT:* Widdus, Yoons
*FWS:* Clark

**WEATHER:** 72 F, partly cloudy with a chance of showers in the morning. Winds from the southwest at 5-10 mph.

**DOWNTIME:** .25 hr for Key

**DISCARDED ITEMS:** N/A

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D. E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 5/24/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Begin driving probe hole #C8393 to T.D. at ~150.0' bgs. **DATE:** 05-25-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 14

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No (HHU CASE#1) HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8393 Tubing (2½") @ 0' to 56 ft bgs; S.U. 2.3

Borehole # N/A Tubing ( ) @ to ft bgs; S.U.

Borehole # N/A Tubing ( ) @ to ft bgs; S.U.

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Safety For Mechanics. |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, stand-by for personel for pre-job |
| 0845 | Pre-job |
| 0915 | Dress into whites, enter farm, inspect rig, move fork-lift into farm, Move Rig and equipment to C8393, set up Rig and zone, RCT's checked new location. |
| 1015 | Begin driving 2½" tubing at C8393, drove from 0' to 44' bgs survey out and go through P.C.M. at upper 'S' farm |
| 1130 | Lunch |
| 1200 | Stand-by for Key to farm and NCO |
| 1245 | Dress into whites, enter farm, continue driving C8393 from 44' to 56' letting head cool periodicaly, survey out. |
| 1415 | Travel to office, paperwork, time cards |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko, Steffler
*NCO:* Eckstrom, Villaro
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 71 F, partly cloudy with winds from the northwest at 5-10 mph.

**DOWNTIME:** 1.75 hr for support (NCO's) .75 hr for farm Key

**DISCARDED ITEMS:** 3 Lynch pins

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 5/20/11

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue driving probe hole #C8393 to T.D. at ~150.0' bgs. **DATE:** 05-26-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 15

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No

(HHU CASE#1) HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8393 Tubing ( 2 1/2" ) @ 56' to \ ft bgs: S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs: S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs: S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Dress The Part. |
| 0630 | Travel to 200 west, travel to Aces station, ace in |
| 0700 | stand-by for RST coverage |
| 0800 | stand-by for windy conditions |
| 1130 | Lunch |
| 1200 | Continue stand-by for windy conditions |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko, Steffler
*NCO:* Sharp, Rivera
*HPT:* Clayton, Joey?
*FWS:* Clark

**WEATHER:** 66 F, mostly cloudy with a chance of showers. Winds from the southwest at 20-30 mph.

**DOWNTIME:** 9 hr for wind

**DISCARDED ITEMS:** N/A

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler **DATE:** 5-31-11

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue driving probe hole #C8393 to T.D. at ~150.0' bgs. **DATE:** 05-31-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 16

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes (No)

(HHU CASE#1) HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8393 Tubing (2.5") @ ~~59~~ 56' to RZS ft bgs: S.U. \

Borehole # NA Tubing ( \ ) @ \ to \ ft bgs: S.U. \

Borehole # NA Tubing ( \ ) @ \ to \ ft bgs: S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Safety Habits. |
| 0630 | Travel to 200 west |
| 0700 | Re-evaluate work restriction at medical station, stand-by for ES&G support |
| 1130 | Lunch |
| 1200 | Continue stand-by for ES&G personel |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko
*NCO:* Sharp Rivera
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 72 F, mostly cloudy with showers likely. Winds from the south at 5-10 mph.

**DOWNTIME:** 9 hr for ES&G personel

**DISCARDED ITEMS:** NA

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** RZ Steffler **DATE:** 6-1-11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

PURPOSE: Continue driving probe hole #C8393 to T.D. at ~150.0' bgs. DATE: 06-01-11

LOCATION: "S" Tank Farm. 200 West Area. Hanford | EXCAVATION: DAN-11-0186 U-DIG #:11076292 | REPORT #: 17

START CARD NO. SE09635 | DECOMMISSION NO. AE12960 | RWP: CO-645, Rev. 1 AHA:11-005 Rev. 0

SAMPLING SUMMARY | SITE/EQUIPMENT INSPECTION: (Yes) No | (HHU CASE#1) HHU CAT #2 HHUXL#3

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

BOREHOLE SUMMARY

Borehole # C8393 Tubing (2.5") @ ~~59'~~ 56' to 66 ft bgs: S.U. 2.3

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs: S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs: S.U. \

GEOPHYSICAL LOGGING

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: GFCI's At Work And Home. |
| 0615 | Travel to 'S' farm |
| 0645 | Arrive at 'S' farm, Pre-job - stand-by |
| 0800 | Pre-job |
| 0815 | Stand-by for phone for communication and weather |
| 0915 | Dress into whites, Enter farm, inspect rig, Drive 2 1/2" tubing at C8393 from 56' to 66' letting head cool twice (hard driving), survey out. |
| 1115 | Lunch |
| 1130 | Stand-by for support |
| 1230 | Dress into whites |
| 1245 | stand-by for AOP014, Lightening, Travel to office, paperwork, time cards |
| 1530 | End of shift |

NA

OPERATOR/LICENSE: Olson/1217
ES SUPPORT Repko, Ehrgott and Passey
NCO: Sharp, Rivera
HPT: Young, Widdus
FWS: Clark

WEATHER: 73 F, mostly cloudy with showers likely. Winds from the southwest at 10-15 mph.

DOWNTIME: 1.25 hr for pre-job
1 hr for phone and rain
1 hr for support
2 hr for AOP014 (Lightening)

DISCARDED ITEMS:
1 Lynch pin

REFERENCE/CONTRACT INFORMATION: FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

REPORT BY: Kelly Olson
TITLE: ES TECHNICAL PREPARER
SIGNATURE: Kelly Olson

REVIEWED BY: RZ Steffler
TITLE: ES TECHNICAL REVIEWER
SIGNATURE: R.Z. Steffler
DATE: 6-2-11

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**DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD**

**PURPOSE:** Continue driving probe hole #C8393 to T.D. at ~150.0' bgs. **DATE:** 06-02-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 18

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes (No)

HHU (CASE#1) HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8393 Tubing (2.5") @ 66' to \ ft bgs: S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs: S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs: S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: E. Coli: Food Safety Precautions. |
| 0620 | Travel to 'S' Farm |
| 0700 | Arrive at 'S' Farm, Stand-by for windy conditions |
| 1130 | Lunch |
| 1200 | Continue stand-by for windy conditions |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko, Passey
*NCO:* Eckstrom
*HPT:* widdus, Young
*FWS:* Clark

**WEATHER:** 68 F, mostly cloudy with showers likely. Winds from the southwest at 20-30 mph. Gusts in excess of 40 mph

**DOWNTIME:** 9 hr for wind

**DISCARDED ITEMS:** N/A

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler **DATE:** 6-2-11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue driving probe hole #C8393 to T.D. at ~150.0' bgs. **DATE:** 06-03-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 19

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No (HHU CASE#1) HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8393 Tubing (2.5") @ 66' to 91' ft bgs: S.U. 3.3'

Borehole # NA Tubing ( \ ) @ \ to \ ft bgs: S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs: S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Give New Co-Workers Your Support! |
| 0630 | Travel to 'Smerf' bldg., ace in, travel to 'S' farm |
| 0715 | Stand-by for pre-job |
| 0730 | Pre-job |
| 0800 | Dress into whites, inspect rig, fuel rig, drive 2.5" tubing from |
| \ | 66' to 78' letting head cool periodicaly. survey out. |
| 1030 | Lunch |
| 1100 | Stand-by for Operator |
| 1115 | Dress into whites, resume driving C8393 from 78' to 91' |
| \ | allowing head to cool when needed (hard driving) secure site |
| \ | and survey out equipment. |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko, Passey
*NCO:* Ecstrom
*HPT:* Broyles, Egsan
*FWS:* Clark

**WEATHER:** 77 F, partly cloudy turning to sunny in the afternoon. Winds from the southwest at 5-10 mph.

**DOWNTIME:** .25 hr for pre-job
.25 hr for operator

**DISCARDED ITEMS:** 4 Lynch pins.

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 6/06/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue driving probe hole #C8393 to T.D. at ~150.0' bgs. **DATE:** 06-06-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 20

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes No

HHU CASE#1 HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8393 Tubing (2.5") @ 91' to 124' ft bgs; S.U. 2.3

Borehole # N/A Tubing ( ) @ to ft bgs; S.U.

Borehole # NA Tubing ( ) @ to ft bgs; S.U.

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: How Loud Is Loud? |
| 0620 | Travel to 200 east, Ace in, travel to 200 west, re-evaluate |
| | surgical incisions (Kelly) for work restriction, Restriction lifted |
| 0845 | Arrive at 'S' Farm, stand-by for pre-job |
| 0900 | Pre-job |
| 0915 | Dress into whites, enter farm, inspect rig, test warning |
| | strobe, drive 2½" tubing at C8393 from 91' to 104' letting |
| | head cool periodicaly, survey out |
| 1130 | Lunch |
| 1200 | stand-by for RCTs |
| 1245 | Enter farm, drive C8393 from 104 to 124' |
| | letting head cool when needed, secure site and |
| | survey out |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko
*NCO:* Rivera, Sharp
*HPT:* Youngs, Widdus
*FWS:* Clark

**WEATHER:** 81 F, partly cloudy with a chance of showers. Winds from the northwest at 5-10 mph.

**DOWNTIME:** 1.25 hr for pre-job
.25 hr for RCTs

**DISCARDED ITEMS:**
2 nylatrol washers
1 large pin
3 Lynch pins

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E Skoglie **DATE:** 6/7/11

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue driving probe hole #C8393 to T.D. at ~150.0' bgs. **DATE:** 06-07-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 21

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

*Sample #'s Interval %*

1. NA
2.
3.
4.

**SITE/EQUIPMENT INSPECTION:** (Yes) No

*HHU (CASE#1) HHU CAT #2 HHUXL#3*

**BOREHOLE SUMMARY**

*Borehole #* C8393 *Tubing (* 2.5" *) @* 124' *to* 152.3' *ft bgs; S.U.* 2'

*Borehole #* N/A *Tubing (* \ *) @* \ *to* \ *ft bgs; S.U.* \

*Borehole #* NA *Tubing (* \ *) @* \ *to* \ *ft bgs; S.U.* \

**GEOPHYSICAL LOGGING**

*Boring # Interval Type*

1. NA
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Fueling Operations & Static Electricity. |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, stand-by for pre-job |
| 0945 | Pre-job |
| 1000 | Dress into whites, enter farm, inspect rig, drive C8393 |
| | from 124' to 152.3' letting head cool as needed, tagged |
| | hole, found 1.8' fill inside of pipe so total depth open |
| | B.G.S. = 150.5', secure site and survey out |
| 1130 | Lunch |
| 1200 | Stand-by to evaluate next hole location for infrastructure |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko
*NCO:* Sharp, Rivera
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 76 F, partly cloudy and breezy. Winds from the southwest ar 15-25 mph, gusting to 35 mph.

**DOWNTIME:** 2.75 hr for pre-job
2.5 hr to evaluate next location

**DISCARDED ITEMS:** N/A

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 6/08/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Begin driving probe hole #C8405 to T.D. at ~150.0' bgs. **DATE:** 06-08-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 22

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No

(HHU CASE#1) HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8405 Tubing (2.5") @ 0 to 94' ft bgs; S.U. .3

Borehole # N/A Tubing ( ) @ to ft bgs; S.U.

Borehole # N/A Tubing ( ) @ to ft bgs; S.U.

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Basic Rad-Con Practices and the use of MSDS sheets for anything going onsite or to ENW. |
| 0630 | Travel to 'C' farm, Acc in, travel to 'S' farm |
| 0715 | Arrive at 'S' farm, pre-job. |
| 0745 | Dress into whites, enter farm, inspect rig, fuel rig, |
| | move rig and equipment from C8393 to C8405, set up |
| | rig and equipment, test warning strobe. |
| 0900 | Begin driving 2½" tubing at C8405, drove from 0' |
| | to 72' letting head cool as needed., survey out. |
| 1130 | Lunch |
| 1200 | Stand-by for Key |
| 1215 | Enter farm, drive C8405 from 72' to 94' letting |
| | head cool periodically, secure site and survey out |
| 1430 | Travel to office / paperwork, time cards. |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko
*NCO:* Eckstrom
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 71 F, partly cloudy with a chance of showers. Winds from the southwest at 5-15 mph.

**DOWNTIME:** .25 hr for Key

**DISCARDED ITEMS:** 5 Lynch pins

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 6/9/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue driving probe hole #C8405 to T.D. at ~150.0' bgs. **DATE:** 06-09-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 23

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

NA

**SITE/EQUIPMENT INSPECTION:** Yes No **HHU CASE#1** HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8405 Tubing ( 2 1/2" ) @ 94' to 152.3' ft bgs; S.U. 2'

Borehole # N/A Tubing ( ) @ to ft bgs; S.U.

Borehole # N/A Tubing ( ) @ to ft bgs; S.U.

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |

NA

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Welding Screens---Protection From Ultraviolet Rays. |
| 0620 | Travel to S' farm |
| 0700 | Stand-by for pre-job |
| 0705 | Pre-job |
| 0730 | Dress into whites, enter farm, inspect rig, drive C8405 |
| | from 94' to 152.3' letting head cool as needed, secure site |
| | and survey out. |
| 1130 | Lunch |
| 1200 | Return to office, pick up lift gate truck, Pick up |
| | generator for logging and transport it to 'S' farm while |
| | waiting for verification of off-set location for C8395 |
| | (due to proximity to dry well) return truck to office. |
| | paperwork, time cards |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko
*NCO:* Eckstrom
*HPT:* Widdus, Yoong
*FWS:* Clark

**WEATHER:** 79 F, partly cloudy with winds from the southwest at 5-10 mph.

**DOWNTIME:** 2.5 hr for hole location

**DISCARDED ITEMS:** 3 Lynch pins

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 6/13/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Begin driving probe hole #C8395 to T.D. at ~150.0' bgs. **DATE:** 06-13-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 24

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes No

HHU CASE#1 HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8395 Tubing ( 2.5" ) @ 0 to 68' ft bgs; S.U. 2.3'

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Allergies, Antihistamines & Drowsiness. |
| 0620 | Travel to 'C' farm, acc in, travel to 'S' farm |
| 0715 | Arrive at 'S' farm, stand-by for pre-job |
| 0830 | Pre-job |
| 0900 | stand-by for farm Key |
| 0910 | Dress into whites, enter farm, inspect rig and fuel up, |
| \ | move rig and equipment to C8395 and set up rig |
| \ | and zone. (Tagged C8405, no fill in pipe, open to 152.3' bgs). |
| \ | survey out. |
| 1030 | stand-by for windy conditions |
| 1100 | Lunch |
| 1130 | Enter farm, dress into whites, drive C8395 from 0' to 68' |
| \ | letting head cool as needed |
| 1420 | Travel to office, paperwork, time cards |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko
*NCO:* Roberts
*HPT:* Widdos, Young
*FWS:* Clark

**WEATHER:** 81 F, partly cloudy with winds from the southwest at 10-15 mph, gusting 15-25 mph.

**DOWNTIME:** 1.25 hr for pre-job
.5 hr for windy conditions

**DISCARDED ITEMS:** 2 Lynch pins

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 6/14/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue driving probe hole #C8395 to T.D. at ~150.0' bgs. **DATE:** 06-14-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 25

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes No

HHU CASE#1 HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8395 Tubing (2.5") @ 68 to 152.3' ft bgs: S.U. 2'

Borehole # N/A Tubing ( ) @ to ft bgs: S.U.

Borehole # N/A Tubing ( ) @ to ft bgs: S.U.

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Training And Experience. |
| 0630 | Travel to 'S' farm |
| 0700 | Pre-job |
| 0730 | Move in generators for logging, Dress into whites, enter farm, inspect rig, move Rods to location with gator |
| 0800 | Begin driving C8395 from 68' to 120' letting head cool as needed |
| 12:15 | survey out, Lunch |
| 12:45 | Dress into whites, enter farm, resume driving 2.5" tubing at C8395 from 120' to 152.3' letting head cool periodically. Secure site, survey out |
| 1430 | Travel to office, paperwork, time cards. |
| 1530 | End of shift. |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko
*NCO:* Roberts
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 81 F, mostly sunny with winds from the south-southwest at 5-10 mph.

**DOWNTIME:** N/A

**DISCARDED ITEMS:** N/A

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 6/15/11

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| PURPOSE: Begin driving probe hole #C8397 to T.D. at ~150.0' bgs. | | DATE: 06-15-11 |
| LOCATION: "S" Tank Farm, 200 West Area, Hanford | EXCAVATION: DAN-11-0186 U-DIG #:11076292 | REPORT #: 26 |
| START CARD NO. SE09635 | DECOMMISSION NO. AE12960 | RWP: CO-645, Rev. 1 AHA:11-005 Rev. 0 |
| SAMPLING SUMMARY | SITE/EQUIPMENT INSPECTION: (Yes) No | (HHU CASE#1) HHU CAT #2 HHUXL#3 |

SAMPLING SUMMARY

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

BOREHOLE SUMMARY

Borehole # C8397 Tubing (2.5") @ 0' to ft bgs: S.U. NA

Borehole # Tubing ( ) @ to ft bgs: S.U.

Borehole # Tubing ( ) @ to ft bgs: S.U.

GEOPHYSICAL LOGGING

| Boring # | Interval | Type |
|---|---|---|
| 1. C-8393 | 150-66' | Gamma |
| 2. C8403 | 105-0' | Gama |
| 3. NA | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Electricity Basics. |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, stand-by for pre-job |
| 0715 | Pre-job |
| 0745 | No drilling operations due to wind, P.N.G. begin logging activity and staged material and set up zone at C8397 |
| 0900 | Stand-by for wind, P.N.G logging activity continues. |
| 1130 | Lunch |
| 1200 | Continue logging activity, continue stand-by for wind (drilling) |
| 1530 | End of shift |
| | NOTE: A double shift was worked supporting Logging |
| | NA |

| | | |
|---|---|---|
| OPERATOR/LICENSE: Olson/1217<br>ES SUPPORT Repko – Stelfler (logging)<br>NCO: Roberts<br>HPT: Widdus, Young<br>FWS: Clark | WEATHER: 77 F, mostly sunny with winds from the southwest at 10-20 mph.<br>DOWNTIME: Drilling one for wind. | DISCARDED ITEMS:<br>N/A |

REFERENCE/CONTRACT INFORMATION: FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

| | |
|---|---|
| REPORT BY: Kelly Olson | REVIEWED BY: D.E. Skoglie |
| TITLE: ES TECHNICAL PREPARER | TITLE: ES TECHNICAL REVIEWER |
| SIGNATURE: Kelly Olson | SIGNATURE: David E. Skoglie DATE: 6/16/11 |

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Begin driving probe hole #C8397 to T.D. at ~150.0' bgs and continue logging activities. **DATE:** 06-16-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 27

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No

(HHU CASE#1) HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8397 Tubing (2.5") @ 0' to 20' ft bgs; S.U. 2.3'

Borehole # NA Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. C8393 | 66'-0 | Gamma |
| 2. C8905 | 152.5-50 | Gamma |
| C8903 | 150-0 | Moist. |
| 3. C8393 | 150-56.5 | moist. |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Courtesy And Safe Driving. |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, stand-by for pre-job |
| 0715 | Pre-job |
| 0745 | Stand-by for drill and forklift (drilling) and logging activity |
| 1015 | End of drill, dress into whites, Enter farm, inspect rig, |
| \ | P.N.G. begin logging activity, move remaining rods left in farm |
| \ | to C8397, set up rig and zone at C8397 and drive from |
| \ | 0-20' bgs, secure site, survey out. |
| 1200 | Lunch |
| 1230 | Stand-by for forklift to move pipe into farm (drilling), |
| | P.N.G. continues logging activity |
| 1530 | End of shift |
| | NOTE: A double shift was worked supporting logging. |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko, Steffler
*NCO:* Roberts
*HPT:* Widdus, Young
*FWS:* Clark *PNG---Price*

**WEATHER:** 75 F, mostly sunny with winds from the southwest at 5-10 mph.

**DOWNTIME:** .25 hr for pre-job
2.5 hr for take cover drill
2 hr for forklift

**DISCARDED ITEMS:** NA

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 6/17/11

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue driving probe hole #C8397 to T.D. at ~150.0' bgs and continue logging activities. **DATE:** 06-17-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 28

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes (No) (HHU CASE#1) HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8397 Tubing (2.5") @ 20' to \ ft bgs: S.U. \

Borehole # \ Tubing ( \ ) @ \ to \ ft bgs: S.U. \

Borehole # \ Tubing ( \ ) @ \ to \ ft bgs: S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. C8395 | 151'-1' | Moist |
| 2. C8405 | 50'-0' | Gamma |
| 3. NA | \ | \ |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Office Safety. |
| 0620 | Stand-by for forklift to move drive rods into farm, P.N.G. |
| \ | continues logging operations |
| 1100 | Lunch |
| 1130 | Continue logging activity, moisture logged C8395 |
| \ | from 151' to 1', gamma logged C8405 from 50' to 0'; |
| \ | continue stand-by for forklift (drilling). |
| 1430 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko, Steffler
*NCO:* Rivera
*HPT:* Widdus, Salizer
*FWS:* Clark *PNG---Price*

**WEATHER:** 82 F, mostly sunny with winds from the southwest at 5-10 mph.

**DOWNTIME:** 8 hr for forklift (drilling)

**DISCARDED ITEMS:** NA

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 6/20/11

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue driving probe hole #C8397 to T.D. at ~150.0' bgs and continue logging activities. **DATE:** 06-20-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 29

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes No

HHU CASE#1 HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8397 Tubing (2.5") @ 20' to 64' ft bgs: S.U. 2.3'

Borehole # N/A Tubing ( ) @ to ft bgs: S.U.

Borehole # N/A Tubing ( ) @ to ft bgs: S.U.

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. C8393 | 57-1 | moist. |
| 2. C8405 | 152-30' | moist. |
| 3. C8395 | 152-70' | Gamma |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Stop Fires. |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, stand-by for pre-job |
| 0815 | Pre-job |
| 0830 | Pick up fork-lift at evaporator, stage pipe in RBA |
| 0900 | Move pipe into farm, inspect rig, P.N.G begins logging activity |
| 0930 | Drive from 20' to 40', survey out |
| 1100 | Lunch |
| 1130 | stand-by for key |
| 1195 | Dress into whites, enter farm, test emergency warning strobe, strobe not working, removed strobe from farm for repair, brought in Mark Repko with head-set, program head-set to phone. |
| 1330 | Drive C8397 from 40' to 64', letting head cool as needed, secure site and survey out, Found faulty switch in warning strobe. |
| 1430 | Travel to office, paperwork, time cards. |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Passey
*NCO:* Sharp, Rivera, Roberts
*HPT:* Widdus, Young
*FWS:* Clark *PNG---Price*

**WEATHER:** 83 F, mostly sunny with winds from the southwest at 5-15 mph.

**DOWNTIME:** 1.25 hr for pre-job
.25 hr for key
1.75 hr for warning device

**DISCARDED ITEMS:** 1 Lynch pin

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 6/21/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue driving probe hole #C8397 to T.D. at ~150.0' bgs and continue logging activities. **DATE:** 06-21-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 30

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes No **HHU** CASE#1 **BHU** CAT #2 **HHUXL**#3

**BOREHOLE SUMMARY**

Borehole # C8397 Tubing (2.5") @ 64' to 124' ft bgs: S.U. 2.3

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs: S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs: S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. C8405 | 30-1' | Moist. |
| 2. NA | \ | \ |
| 3. NA | \ | \ |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Control of individual PPE. |
| 0620 | Travel to 'S' farm |
| 0700 | Pre-job |
| 0715 | Gather equipment, Dress into whites, enter farm, inspect |
| \ | rig, test strobe, P.N.G. begin logging activity, drive |
| \ | 2½" tubing at C8397 from 64' to 107' letting head cool as needed. |
| \ | P.N.G. surveyed out logging equipment for 'C' farm work, |
| \ | survey out. |
| 1145 | Lunch |
| 1215 | No logging activity in P.M., dress into whites, drive |
| \ | C8397 from 107' to 124', letting head cool as needed, |
| \ | Replaced broken drive head at 116', survey out and |
| \ | secure site |
| 1415 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Passey
*NCO:* Roberts, Sharp
*HPT:* Widdup, Young
*FWS:* Clark *PNG---Price*

**WEATHER:** 88 F, mostly sunny with winds from the southwest at 5-10 mph.

**DOWNTIME:** N/A

**DISCARDED ITEMS:** 6 lynch pins, 1 2½" drive head

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 6/22/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE: Standby, ESGG crew is in training.** **DATE: 06-22-11**

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:11076292** **REPORT #: 31**

**START CARD NO. SE09635** **DECOMMISSION NO. AE12960** **RWP: CO-645, Rev. 1** **AHA:**11-005 Rev. 0

**SAMPLING SUMMARY**

*Sample #'s* *Interval* *%*

1.
2. N/A
3.
4.

**SITE/EQUIPMENT INSPECTION:** *Yes* *No* (No circled)

*HHU CASE#1* (circled) *HHU CAT #2* *HHUXL#3*

**BOREHOLE SUMMARY**

*Borehole #* C8397 *Tubing* 2.5" *) @* 24' *to* N/A *ft bgs: S.U.* 2.3'

*Borehole #* N/A *Tubing ( ) @ to ft bgs: S.U.* ____

*Borehole #* N/A *Tubing ( ) @ to ft bgs: S.U.* ____

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1. N/A
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| **0600** | **Safety meeting at office. Topic: Falls From Equipment.** |
| 0620 | Travel to site. |
| 0645 | Standby, ESGG crew is in training. |
| 1100 | Lunch. |
| 1130 | Standby, ESGG crew is in training. |
| 1400 | Travel to office. Complete timecard and paperwork. |
| 1530 | End of shift. |

N/A

**OPERATOR/LICENSE: Walkup/3005**
*ES SUPPORT N/A:*
*NCO: Sharp, Roberts*
*HPT: Young, Widdis*
*FWS: Simons*

**WEATHER: 94 F, mostly sunny with winds from the southwest at 5-10 mph.**

**DOWNTIME: 9 Hrs.---ESGG crew in training.**

**DISCARDED ITEMS:** N/A

**REFERENCE/CONTRACT INFORMATION: FSWO-DOW- TFC-WO-11-1935 ECN-11-000563**

**REPORT BY:** M. W. Walkup
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Mike Walkup

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 6/27/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

PURPOSE: Continue driving probe hole #C8397 to T.D. at ~150.0' bgs. DATE: 06-23-11

LOCATION: "S" Tank Farm. 200 West Area. Hanford EXCAVATION: DAN-11-0186 U-DIG #:11076292 REPORT #: 32

START CARD NO. SE09635 DECOMMISSION NO. AE12960 RWP: CO-645, Rev. 1 AHA:11-005 Rev. 0

SAMPLING SUMMARY SITE/EQUIPMENT INSPECTION: Yes No HHU CASE#1 HHU CAT #2 HHUXL#3

Sample #'s Interval %

1. NA
2.
3.
4.

BOREHOLE SUMMARY

Borehole # C8397 Tubing ( ~~124~~ 2.5" 5.0 ) @ 124' to 152.3 ft bgs: S.U. 2'

Borehole # N/A Tubing ( NA ) @ \ to \ ft bgs: S.U. \

Borehole # N/A Tubing ( NA ) @ \ to \ ft bgs: S.U. \

GEOPHYSICAL LOGGING

Boring # Interval Type

1. NA
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Modesty Clothing and Orex vs. Cotton SWP's. |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, stand-by for pre-job |
| 0715 | Pre-job |
| 0730 | Dress into whites, enter farm, inspect rig, drive |
| \ | 2½" tubing from 124' to 152.3 bgs at C8397, secure site, |
| \ | survey out |
| 0900 | stand-by for windy conditions |
| 1130 | Lunch |
| 1200 | continue stand-by for wind, gather materials for |
| | probe installation while standing by for wind |
| 1530 | End of shift |

NA

OPERATOR/LICENSE: Olson/1217
ES SUPPORT Passey
NCO: Roberts, Sharp
HPT: Widdus, Salizer
FWS: Simons

WEATHER: 78 F, mostly sunny with winds from the southwest at 10-20 mph, gusting 30-40 mph.

DOWNTIME: .25 hr for pre-job
6 hr for wind

DISCARDED ITEMS: NA

REFERENCE/CONTRACT INFORMATION: FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

REPORT BY: Kelly Olson
TITLE : ES TECHNICAL PREPARER
SIGNATURE: Kelly Olson

REVIEWED BY: D.E. Skoglie
TITLE: ES TECHNICAL REVIEWER
SIGNATURE: David E Skoglie DATE: 6/27/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Begin multilevel probe installation in #C8393 and continue logging activities. **DATE:** 06-27-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:**11076292 **REPORT #:** 33

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:**11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes No

HHU CASE#1 HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8393 Tubing (2½") @ 152 to 0' ft bgs; S.U. ___

Borehole # NA Tubing ( ) @ 0' to 54' ft bgs; S.U. 2.3

Borehole # N/A Tubing ( ) @ ___ to ___ ft bgs; S.U. ___

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. C-8395 | 70' - 0' | Gamma |
| 2. C-8397 | 152' - 1' | mois |
| 3. NA | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Danger Under Booms |
| 0620 | Travel to 'C' farm, ace in, Pick up materials for probe |
| | installation at chem storage, travel to 'S' farm |
| 0730 | Arive at 'S' farm, stand-by for pre-job |
| 0800 | Pre-job |
| 0830 | Move probe completion materials into farm, dress into whites, P.N.G begins, |
| | enter farm, inspect rig, tag C-8397 (no fill detected), move |
| | and set up rig and zone at C-8393, clamp switch failed |
| | in control box, survey out, P.N.G continues logging |
| 1000 | Work on control box, repair switch |
| 1045 | Dress into whites, re-hook control box, Back-pull from 152' to |
| | 150' attempt to clear fill from pipe, no success, begin back-pulling |
| | 2½" tubing to Re-drive, pulled from 150' to 90' Bgs, survey out. |
| 1145 | Lunch |
| 1215 | Stand-by for RCT's |
| 1300 | Enter farm, Pull 2½" tubing at C8393 from 90' to 0', |
| | remove fill from bottom assembly, install new tip and |
| | re-drive to 54' bgs, survey out |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT Passey*
*NCO:* Eckstrom, Sharp
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 88 F, partly cloudy with light and variable winds.

**DOWNTIME:** 5 hr for pre-job
.75 hr for repairs
.75 hr for RCTs

**DISCARDED ITEMS:** 1 expendable tip

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 6/28/11

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| PURPOSE: Continue multilevel probe installation in #C8393 and continue logging activities. | | DATE: 06-28-11 |
| LOCATION: "S" Tank Farm, 200 West Area, Hanford | EXCAVATION: DAN-11-0186 U-DIG #:11076292 | REPORT #: 34 |
| START CARD NO. SE09635 | DECOMMISSION NO. AE12960 | RWP: CO-645, Rev. 1 AHA:11-005 Rev. 0 |
| SAMPLING SUMMARY | SITE/EQUIPMENT INSPECTION: Yes No | HHU CASE#1 HHU CAT #2 HHUXL#3 |

SAMPLING SUMMARY

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

BOREHOLE SUMMARY

Borehole # C8393 Tubing (2.5") @ 54' to 152.3 ft bgs; S.U. 2'

Borehole # C8393 Tubing (2.5") @ 152.3' to 149 ft bgs; S.U. 1.3'

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

GEOPHYSICAL LOGGING

| Boring # | Interval | Type |
|---|---|---|
| 1. C8397 | 152-65' | Gamma |
| 2. NA | \ | \ |
| 3. NA | \ | \ |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Ladder Defects. |
| 0620 | Travel to 'S' farm |
| 0700 | Pre job at 'S' farm, Ace in |
| 0730 | Dress into whites, enter farm, inspect rig, P.N.G begin |
| \ | logging activity, begin Re-driving C8393 drove from 54' |
| \ | to 136' letting head cool periodically as needed (hard driving) |
| 1145 | Lunch |
| 1215 | Dress into whites, enter farm drive C8393 from 136' |
| \ | to 152.3' letting head cool as needed, P.N.G continues logging |
| 1330 | Back pull 2½" casing from 152.3' to 149' B.G.S., attempt |
| \ | to drive out expendable tip with Knocker bar (tagged .3 |
| \ | tenths fill inside pipe) no success. |
| 1400 | Gather inner rod to Knock out tip. survey out, |
| \ | P.N.G. surveyed out equipment |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

| | | |
|---|---|---|
| OPERATOR/LICENSE: Olson/1217<br>ES SUPPORT Passey<br>NCO: Sharp<br>HPT: Widdus, Young<br>FWS: Clark PNG---Price | WEATHER: 89 F, partly cloudy with winds from the southwest at 5-10 mph, gusting 15-20 mph.<br>DOWNTIME: N/A | DISCARDED ITEMS:<br>8 Lynch pins<br>2½" drive head<br>1 large Pin |

REFERENCE/CONTRACT INFORMATION: FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

| | |
|---|---|
| REPORT BY: Kelly Olson | REVIEWED BY: D.E. Skoglie |
| TITLE: ES TECHNICAL PREPARER | TITLE: ES TECHNICAL REVIEWER |
| SIGNATURE: Kelly Olson | SIGNATURE: David E. Skoglie DATE: 6/29/11 |

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue multilevel probe installation in #C8393 and continue logging activities. **DATE:** 06-29-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 35

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | NA | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes No

HHU CASE#1 HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8393 Tubing (2.5") @ 149' to 124' ft bgs; S.U. 2.3

Borehole # NA Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # NA Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. C8397 | 65-1 | Gamma |
| 2. NA | \ | \ |
| 3. N/A | \ | \ |

**WORK SUMMARY**

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Falling Objects. |
| 0620 | Travel to 'S' farm |
| 0645 | Arrive at 'S' farm, stand-by for pre-job |
| 0700 | Pre-job |
| 0715 | Gather materials and fuel, Dress into whites P.N.G begins logging activity, Enter farm, inspect rig, install inner rod to 149', Knock out expendable tip with HHU, Pull inner rod, clean inner rod joints and stage, W.R.P.S. took pictures for probe installation article |
| 0930 | Begin Probe installation, back-pull 2½" casing of C-8393 from 149' to 145', set multi-level probe at 150' BGS (bottom unit) added materials and water (see attached sheet), back-pull casing to 124' BGS installed 2nd probe 129' to 131', added materials and 1 gal H2O via tremie, all probes installed with 6" of diatomite above and below probes, 1' of sand above and below diatomite, and hydrated with 1 gal H2O via tremie and granular bentonite between probe intervals, P.N.G continues logging, survey out. |
| 1200 | Lunch |
| 1230 | Stand-by for windy conditions, Travel to office, paperwork, time cards, P.N.G. surveyed out logging equipment. |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko
*NCO:* Sharp
*HPT:* Widdus, Young
*FWS:* Clark *PNG---Price*

**WEATHER:** 85 F, mostly sunny with winds from the southwest at 15-25 mph.

**DOWNTIME:** .25 hr for pre-job
2 hr for wind

**DISCARDED ITEMS:**
1 - 160' multi-level probe
1 - 2½" expendable tip
1 - sack sand
1 - " of diatomite
2 sacks Bentonite
1 - 10' joint ½" PVC

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 6/30/11

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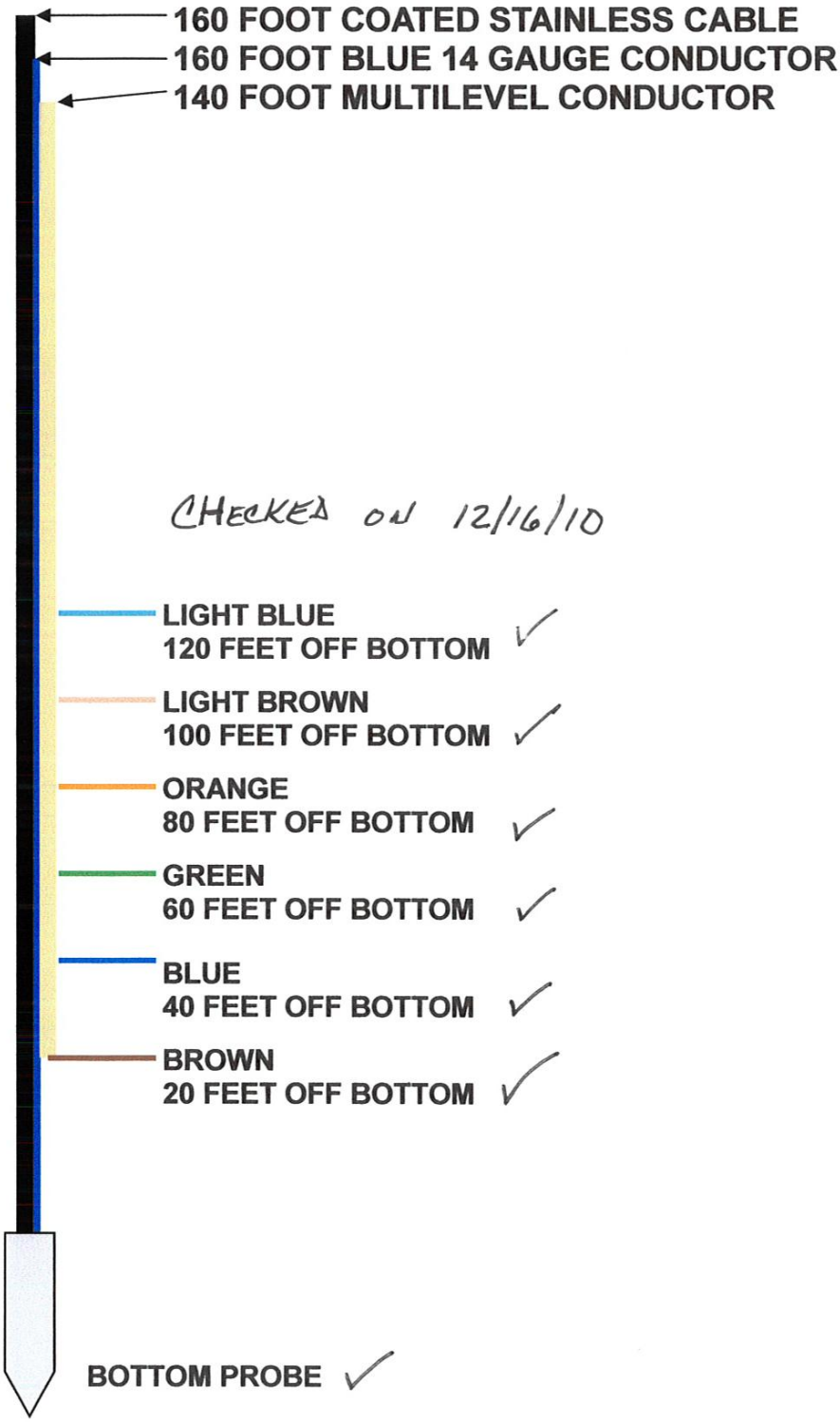
200 FT MULTI LEVEL RESISTIVITY PROBE WORK SHEET BOREHOLE NO: C8393

| DIMENSIONS | PRELIMINARY AS-BUILT | CONSTRUCTION MATERIAL/TAG | |
|---|---|---|---|
| PLANNED | ACTUAL | MATERIAL | TAG |
| 0 ft | | SURFACE PROTECTION @ 1 FT BGS | |
| - 20 ft - | - ft - | Bentonite from ____ to ____<br>Sand from ____ to ____<br>D.E. from ____ to ____<br>Sand from ____ to ____ | |
| - 40 ft - | - ft - | Bentonite from ____ to ____<br>Sand from ____ to ____<br>D.E. from ____ to ____<br>Sand from ____ to ____ | |
| - 60 ft - | 29' - 31' ft - | Bentonite from 1' to 27.5'<br>Sand from 27.5 to 28.5<br>D.E. from 28.5 to 31.5<br>Sand from 31.5 to 32.5 | ✓<br>✓ |
| - 80 ft - | 49' - 51' ft - | Bentonite from 32.5 to 47.5<br>Sand from 47.5 to 48.5<br>D.E. from 48.5 to 51.5<br>Sand from 51.5 to 52.5 | ✓<br>✓ |
| - 100 ft - | 69' - 71' ft - | Bentonite from ____ to 67.5<br>Sand from 67.5 to 68.5<br>D.E. from 68.5 to 71.5<br>Sand from 71.5 to 72.5 | ✓<br>✓<br>✓ |
| - 120 ft - | 89' - 91' ft - | Bentonite from ____ to 87.5<br>Sand from 87.5 to 88.5<br>D.E. from 88.5 to 91.5<br>Sand from 91.5 to 92.5 | ✓<br>✓<br>✓ |
| - 140 ft - | 109' - 111' ft - | Bentonite from 92.5 to 107.5<br>Sand from 107.5 to 108.5<br>D.E. from 108.5 to 111.5<br>Sand from 111.5 to 112.5 | ✓<br>✓ |
| - 160 ft - | 129' - 131' ft - | Bentonite from 112.5 to 127.5<br>Sand from 127.5 to 128.5<br>D.E. from 128.5 to 131.5<br>Sand from 131.5 to 132.5 | ✓<br>✓<br>✓ |
| - 180 ft - | 148.5' - 150' ft - | Bentonite from 132.5 to 147<br>Sand from 147 to 148<br>D.E. from 148 to 150.5<br>Sand from 150.5 to 151.5 | ✓<br>✓ |

C8393

## 160 FOOT MULTILEVEL PROBE



ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue multilevel probe installation in #C8393. **DATE:** 06-30-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:**11076292 **REPORT #:** 36

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:**11-005 Rev. 0

**SAMPLING SUMMARY** **SITE/EQUIPMENT INSPECTION** Yes No *HHU* CASE#1 *HHU CAT #2* *HHUXL#3*

*Sample #'s* *Interval* *%*

1. NA
2.
3.
4.

**BOREHOLE SUMMARY**

*Borehole #* C8393 *Tubing* (2.5") @ 124' *to* 0' *ft bgs; S.U.* /

*Borehole #* N/A *Tubing* ( \ ) @ \ *to* \ *ft bgs; S.U.* \

*Borehole #* N/A *Tubing* ( \ ) @ \ *to* \ *ft bgs; S.U.* \

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1. NA
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Right & Left Turns. |
| 0620 | Travel to 'C' farm, ace in |
| 0715 | Arrive at 'S' farm, Pre-job |
| 0730 | Gather equipment, dress into whites, enter farm, fuel |
| \ | and inspect rig |
| 0800 | Begin Probe installation again at C8393, Back pull casing from |
| \ | 124' to 104', install 3rd probe 109-111', install sand, diatomite pack, |
| \ | hydrate via tremie, back-pull casing to 84', install fourth probe |
| \ | 89' to 91' in same manner, Back pull casing to 64' install |
| \ | fifth eletrode 69-71', Back pull to 44', install 6th electrode |
| \ | 49' to 51', Pull back to 24' install 7th electrode at 29' to 31', |
| \ | Pull remaining rods and install bentonite to surface, clean up |
| \ | and survey out. |
| 1200 | Lunch |
| 1230 | Move and set up on sample hole C8394, move sample |
| \ | rod and equipment, survey out. |
| 1400 | Gather tools and equipment for sampling |
| 1415 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT Repko and Hoopes*
*NCO:* Sharp, Rivera
*HPT:* Widdus, Young
*FWS: Clark*

**WEATHER:** 79 F, mostly sunny with winds from the southwest at 15-25 mph, gusting to 35 mph.

**DOWNTIME:** N/A

**DISCARDED ITEMS:**
1 sack sand
6 sacks ~~Diatomil~~ Kio Bentonite
1 2 5/8" drive head

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 6/30/11

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Begin sampling activities at #C8394. **DATE:** 07-01-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 37

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No

HHU (CASE#1) HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8394 Tubing (2 5/8") @ 0' to 43' ft bgs; S.U. 3.3

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Construction Work Zones. |
| 0615 | Travel to 'C' farm, gee in, travel to 'S' farm |
| 0715 | Arrive at 'S' farm, stand-by for RCTs |
| 0800 | pre-job |
| 0830 | Dress into whites, inspect rig, test strobe, drive |
| \ | 2 5/8 sample pipe at C8394 from 0' to 43' (sample depth). |
| \ | survey out and clean up. |
| 1100 | Lunch |
| 1130 | Stand-by for samplers, travel to office, paperwork, time |
| 1430 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Passey
*NCO:* Sharp, Rivera
*HPT:* Clayton, Morrissa
*FWS:* Clark

**WEATHER:** F, 82° sunny

**DOWNTIME:** .75 hr for pre-job
2 hr for samplers

**DISCARDED ITEMS:** N/A

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** Daniel E. Skoglie **DATE:** 7/1/11

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue sampling activities at #C8394. **DATE:** 07-05-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 38

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes No

HHU CASE#1 HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8394 Tubing ( 2 5/8" ) @ 43' to \ ft bgs; S.U. \

Borehole # C8403 N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Drive Defensively. |
| 0620 | Travel to 'C' farm, Acc in, travel to 'S' farm |
| 0715 | Arrive at 'S' farm, stand-by for lack of sampling support. |
| 1130 | Lunch |
| 1200 | Continue stand-by for sampling support |
| 1310 | Pre-job - Re-Acc |
| 1330 | Enter farm, inspect rig, move and set up rig and zone at C8403 while standing by for Labs and sampling support, (Probe installation in meantime), survey out. |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Hoopes
*NCO:* Rivera, Sharp
*HPT:* Young
*FWS:* Clark

**WEATHER:** F, 90° sunny

**DOWNTIME:** 6 hr for sampling support

**DISCARDED ITEMS:** NA

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D. E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 7/6/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Begin probe installation at #C8403. **DATE:** 07-06-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 39

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No

(HHU CASE#1) HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8403 Tubing ( 2½" ) @ 152' to 0 ft bgs; S.U. \
Re-drive
Borehole # C8403 Tubing (2½") @ 0' to 152' ft bgs; S.U. 2.3'
Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: The Public. |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, Pre-job |
| 0730 | Dress into whites, inspect rig, back-pull casing from 152' |
| \ | to 149' attempt to clear 2' of fill from rod, no success, |
| \ | back-pull 2½" casing from 149' to 0'. |
| 0930 | Fold up rig and tighten loose hydraulic fitting, move completion |
| – | materials into farm, survey out |
| 10:00 | 50/50 heat regiment, break for heat |
| 10:30 | Press into whites, re-set over hole, installed |
| \ | new tip, re-drove 2½" casing to 60' |
| 11:45 | Lunch |
| 12:15 | Dress into whites, enter farm, Re-drive C8403 from |
| \ | 60' to 120', surveyed out. |
| 1310 | Exit for 50/50 heat regiment rest. |
| 1340 | Dress into whites, Re-drive C8403 from 120' to 152'; |
| \ | survey out |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Weakley and Hoopes.
*NCO:* Sharp, Rivera
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 94 F, mostly sunny with winds from the west at 5-10 mph.

**DOWNTIME:** 1 hr for Heat Regiment
.5 hr for repairs

**DISCARDED ITEMS:** 1 - expendable tip

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** Daniel Skoglie **DATE:** 7/7/11

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue probe installation at #C8403. **DATE:** 07-07-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 40

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION** Yes No

HHU CASE#1 HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8403 Tubing ( 2½" ) @ 152' to 85' ft bgs; S.U. 1.3'

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Driver Quiz. |
| 0620 | Travel to 'S' farm |
| 0700 | Pre-job |
| 0730 | Dress into whites, enter farm, fuel and inspect rig, |
| \ | back-pull 2½" casing from 152' to 145', Knock out expendable |
| \ | tip and set bottom electrode from 148.5 to 150', install sand/ |
| \ | diatomite pack, Hydrate via tremie (see specifics on attached |
| \ | sheet), back-pull casing to 125'. set 2nd electrode |
| \ | 129' to 131', install sand/diatomite pack, hydrate via tremie. (granular |
| \ | bentonite seal placed between probe intervals). Back-pull casing from |
| \ | 125' to 105' set 3rd electrode, sand/diatomite pack and hydrated |
| \ | via tremie, 25% grout, 75% work regiment at 10:30, 3rd probe set |
| \ | at 109' to 111', 50-50 heat regiment at 11:15, survey out |
| 1130 | Lunch |
| 1200 | stand-by for I.H Tech |
| 1245 | Enter farm, Back pull casing to 85', set 4th electrode |
| \ | 89'-91', install sand-diatomite pack, hydrate via tremie |
| 1330 | exit for 50/50 heat Regiment. |
| \ | stand-by for heat regiment |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Hoopes
*NCO:* Rivera, Sharp
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 94 F, mostly sunny with winds from the southwest at 5-15 mph.

**DOWNTIME:** .75 for I.H. Tech
1 hr for heat regiment

**DISCARDED ITEMS:**
1 160' multi-level probe
1 expendable tip
1 sack diatomite
1 sack sand
3 sacks bentonite

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 7/11/11

10/06/09 Rev 1

200 FT MULTI LEVEL RESISTIVITY PROBE WORK SHEET BOREHOLE NO: C8403

| DIMENSIONS | PRELIMINARY AS-BUILT | CONSTRUCTION MATERIAL/TAG | |
|---|---|---|---|
| PLANNED | ACTUAL | MATERIAL | TAG |
| 0 ft | | SURFACE PROTECTION at 1 FT BGS | |
| | | Bentonite from ____ to ____<br>Sand from ____ to ____<br>D.E. from ____ to ____<br>Sand from ____ to ____ | |
| - 20 ft - | - ft - | | |
| | | Bentonite from ____ to ____<br>Sand from ____ to ____<br>D.E. from ____ to ____<br>Sand from ____ to ____ | |
| - 40 ft - | - ft - | | |
| | | Bentonite from 1' to 27.5'<br>Sand from 27.5 to 28.5<br>D.E. from 28.5 to 31.5<br>Sand from 31.5 to 32.5 | ✓ |
| - 60 ft - | 29' - 31' ft - | | ✓ |
| | | Bentonite from 32.5 to 47.5<br>Sand from 47.5 to 48.5<br>D.E. from 48.5 to 51.5<br>Sand from 51.5 to 52.5 | ✓ |
| - 80 ft - | 49' - 51' ft - | | ✓ |
| | | Bentonite from ____ to 67.5<br>Sand from 67.5 to 68.5<br>D.E. from 68.5 to 71.5<br>Sand from 71.5 to 72.5 | ✓ |
| - 100 ft - | 69' - 71' ft - | | ✓ |
| | | Bentonite from ____ to 87.5<br>Sand from 87.5 to 88.5<br>D.E. from 88.5 to 91.5<br>Sand from 91.5 to 92.5 | ✓ |
| - 120 ft - | 89' - 91' ft - | | ✓ |
| | | Bentonite from 92.5 to 107.5<br>Sand from 107.5 to 108.5<br>D.E. from 108.5 to 111.5<br>Sand from 111.5 to 112.5 | ✓ |
| - 140 ft - | 109' - 111' ft - | | ✓ |
| - 160 ft - | 129' - 131' ft - | Bentonite from 112.5 to 127.5<br>Sand from 127.5 to 128.5<br>D.E. from 128.5 to 131.5<br>Sand from 131.5 to 132.5 | ✓ |
| | | Bentonite from 132.5 to 147<br>Sand from 147 to 148<br>D.E. from 148 to 150.5<br>Sand from 150.5 to 151.5 | ✓ |
| - 180 ft - | 148.5' - 150 ft - | | ✓ |

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Complete probe installation at #C8403. **DATE:** 07-11-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 41

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY** — SITE/EQUIPMENT INSPECTION: Yes No — HHU CASE#1 HHU CAT #2 HHUXL#3

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**BOREHOLE SUMMARY**

Borehole # C8403 Tubing (2½") @ 85' to 0' ft bgs; S.U. \

Borehole # C8405 Tubing (2½") @ 152' to 151' ft bgs; S.U. 3.3

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Heat Stress and Wet Bulb Presentation by ESGG Safety Staff. |
| 0700 | Travel to Energy N.W. Pick up equipment for accumulator repair, travel |
| \ | to 'C' Farm, Acc. in, travel to 'S' farm |
| 0830 | Arrive at 'S' farm, pre-job |
| 0845 | Dress into whites, enter farm, inspect rig, install electrodes |
| \ | 69-71', 49'-51' and 29' to 31', installing sand pack/Bentonite |
| \ | pack as specified in previous report, hydrating each unit via tremie, |
| \ | Back-pull casing from 85' to 0', survey out. |
| 1130 | Lunch |
| 1200 | Enter farm, move rig and equipment to C8405, set up |
| \ | rig and zone, back-pull casing from 152' to 151', Knock-out |
| \ | expendable tip. 50/50 Heat regiment at 1330, survey out gather |
| 1400 | Exit farm for Heat Regiment, gather probe and materials. |
| 1430 | Travel to office, Time cards, paperwork |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Repko and Hoopes
*NCO:* Sharp-Rivera
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 87 F, partly cloudy with winds from the southwest at 5-15 mph.

**DOWNTIME:** .5 hr for 50/50 Heat regiment.

**DISCARDED ITEMS:**
4 bags bentonite
1 bag sand
1 expendable tip

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler **DATE:** 7-12-11

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Continue probe installation at #C8405. | | **DATE:** 07-12-11 |
| **LOCATION:** "S" Tank Farm, 200 West Area, Hanford | **EXCAVATION:** DAN-11-0186 **U-DIG #:**11076292 | **REPORT #:** 42 |
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 1 **AHA:**11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** Yes No | HHU CASE#1 HHU CAT #2 HHUXL#3 |

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | | |
| 2. | NA | |
| 3. | | |
| 4. | | |

**BOREHOLE SUMMARY**

Borehole # C8405 Tubing ( 2½" ) @ 151' to 45' ft bgs; S.U. 1.3

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | | |
| 2. | NA | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Lifting Heavy Bags. |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, stand-by for pre-job |
| 0715 | Pre-job |
| 0730 | Ace in, gather equipment, enter farm, fuel and inspect |
| \ | rig, Back-pull casing from 151' to 145, set bottom probe at |
| \ | 148.5' to 150, installed sand/diatomite pack, hydrated via tremie, |
| \ | (see attached sheet for specifics) back-pull casing to 125', set |
| \ | 2nd probe 129' to 131', install sand/diatomite, hydrate via tremie, install |
| \ | granular bentonite seal between probe intervals. Back-pull casing |
| \ | to 105', set 3rd probe 109' to 111', install diatomite/sand and |
| \ | hydrate., back-pull casing to 85', set 4th electrode 89' to 91', |
| \ | install sand/diatomite, hydrate via tremie, survey out |
| 1130 | Lunch |
| 1200 | Stand-by for NCO |
| 1230 | NCO on site, dress into whites, back-pull casing at C8405 to 65' |
| | set 5th electrode 69' to 71', install sand/diatomite, hydrate via tremie, |
| | back pull to 45' set 6th electrode 49' to 51', install sand and Diatomite |
| | and hydrate. |
| 1345 | Stand-by for windy conditions |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | \ Na \ |

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Olson/1217<br>*ES SUPPORT: Repko and Hoopes*<br>*NCO:* Widdus Rivera<br>*HPT:* Widdus, Young<br>*FWS: Clark* | **WEATHER:** 85 F, mostly cloudy with winds from the southwest at 5-15 mph.<br>**DOWNTIME:** .5 hr for NCO<br>.25 hr for Pre-job<br>.75 hr for windy conditions | **DISCARDED ITEMS:**<br>1 sack diatomite<br>1 160' multi-level probe<br>1 sack sand<br>4 sacks granular bentonite |

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

| | |
|---|---|
| **REPORT BY:** Kelly Olson | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Kelly Olson | **SIGNATURE:** RZ Steffler **DATE:** 7-14-11 |

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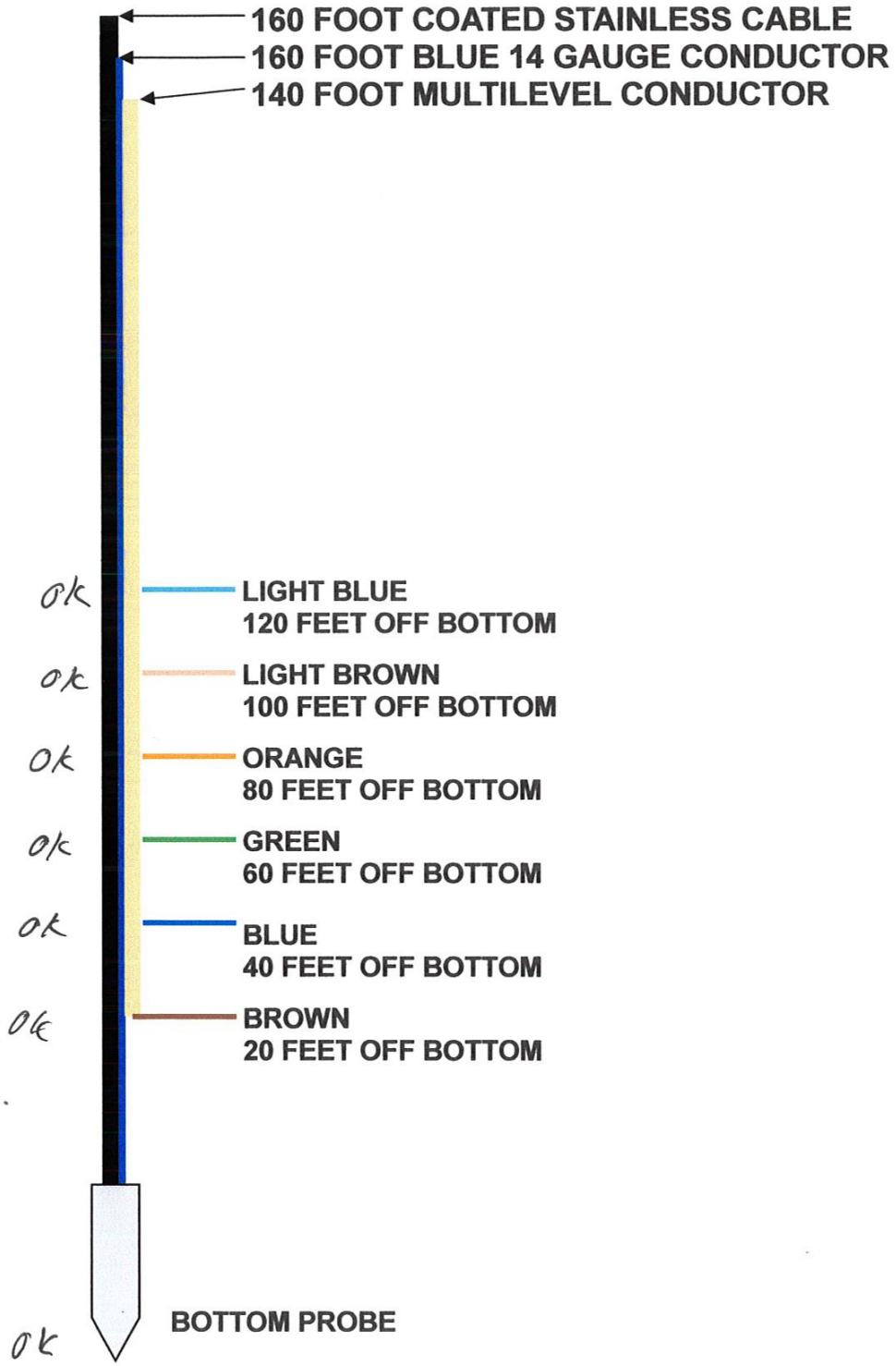
200 FT MULTI-WAVE RESISTIVITY PROBE WORK SHEET — BOREHOLE NO. C8405

| DIMENSIONS | PRELIMINARY AS-BUILT | CONSTRUCTION MATERIAL/TAG | |
|---|---|---|---|
| PLANNED | ACTUAL | MATERIAL | TAG |
| 0 ft | | SURFACE PROTECTION (IF USED) | |
| - 20 ft - | - ft - | Bentonite from: ____ to ____<br>Sand from: ____ to ____<br>D.E. from: ____ to ____<br>Sand from: ____ to ____<br>Bentonite from: ____ to ____<br>Sand from: ____ to ____<br>D.E. from: ____ to ____<br>Sand from: ____ to ____ | ☐<br>☐<br>☐<br>☐ |
| - 40 ft - | - ft - | | |
| - 60 ft - | 29' - 31' ft - | Bentonite from: 1' to 27.5'<br>Sand from: 27.5 to 28.5<br>D.E. from: 28.5 to 31.5<br>Sand from: 31.5 to 32.5 | ✓<br>✓ |
| - 80 ft - | 49' - 51' ft - | Bentonite from: 32.5 to 47.5<br>Sand from: 47.5 to 48.5<br>D.E. from: 48.5 to 51.5<br>Sand from: 51.5 to 52.5 | ✓<br>✓ |
| - 100 ft - | 69' - 71' ft - | Bentonite from: ____ to 67.5<br>Sand from: 67.5 to 68.5<br>D.E. from: 68.5 to 71.5<br>Sand from: 71.5 to 72.5 | ✓<br>✓ |
| - 120 ft - | 89' - 91' ft - | Bentonite from: ____ to 87.5<br>Sand from: 87.5 to 88.5<br>D.E. from: 88.5 to 91.5<br>Sand from: 91.5 to 92.5 | ✓<br>✓<br>✓ |
| - 140 ft - | 109' - 111' ft - | Bentonite from: 92.5 to 107.5<br>Sand from: 107.5 to 108.5<br>D.E. from: 108.5 to 111.5<br>Sand from: 111.5 to 112.5 | ✓<br>✓ |
| - 160 ft - | 129' - 131' ft - | Bentonite from: 112.5 to 127.5<br>Sand from: 127.5 to 128.5<br>D.E. from: 128.5 to 131.5<br>Sand from: 131.5 to 132.5<br>Bentonite from: 132.5 to 147<br>Sand from: 147 to 148 | ✓<br>✓<br>✓ |
| - 180 ft - | 148.5' - 150 ft - | D.E. from: 148 to 150.5<br>Sand from: 150.5 to 151.5 | ✓ |

C845

## 160 FOOT MULTILEVEL PROBE



ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue probe installation at #C8405. (Standby, no ESGG crew available.) **DATE:** 07-13-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 43

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

*Sample #'s Interval %*

1. N A
2.
3.
4.

**SITE/EQUIPMENT INSPECTION:** *Yes No* *HHU CASE#1 HHU CAT #2 HHUXL#3*

**BOREHOLE SUMMARY**

*Borehole #* C8405 *Tubing (* 2½" *) @* 45' *to* *ft bgs; S.U.* ____

*Borehole #* ____ *Tubing (* *) @* *to* *ft bgs; S.U.* ____

*Borehole #* ____ *Tubing (* *) @* *to* *ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

*Boring # Interval Type*

1. N A
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Use of Good Rad. Practices. |
| 0630 | Travel TO C-Farm |
| 0700 | Pickup Sand, Bentonite, Dyt, & water for S-Farm work |
| 0800 | P.O.D. S-Farm NO Back Pulling. (Lack of Suport). |
| 0820 | on Stand by |
| 1130 | lunch |
| 1200 | on Stand by |
| 1415 | Travel To Office |
| 1530 | end of shift |

N A

**OPERATOR/LICENSE:** Walkup/3005
*ES SUPPORT:* Passey
*NCO:* Rivera
*HPT:* Wildus, Young
*FWS:* Clark

**WEATHER:** 82 F, mostly cloudy with winds from the southwest at 10-20 mph.

**DOWNTIME:** 7 ½ hrs No suport

**DISCARDED ITEMS:** N A

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Mike Passey
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** M Passey

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler **DATE:** 7-14-11

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Complete probe installation at #C8405. (Standby, no ESGG crew available.) **DATE:** 07-14-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 44

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | | |
| 2. | N | |
| 3. | A | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes (No)

*HHU CASE#1* *HHU CAT #2* *HHUXL#3*

**BOREHOLE SUMMARY**

Borehole #C8405 Tubing (2½) @ 45' to — ft bgs; S.U. 1.3

Borehole # N/A Tubing ( — )@ — to — ft bgs; S.U. —

Borehole # N/A Tubing ( — )@ — to — ft bgs; S.U. —

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | | |
| 2. | N | |
| 3. | A | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Dermatitis. |
| 0630 | Travel to C-Farm |
| 0700 | ACe in. and Stand by for P.O.D. |
| 0745 | P.O.D. |
| 0800 | on Stand by. |
| 0900 | Check Gen's C-Farm #2 and #3 Need New Battorys (Cracked open) |
| 1130 | Launch |
| 1200 | on Stand by |
| 1430 | Travel To office |
| 1530 | End of Shift |

**OPERATOR/LICENSE:** Walkup/3005
*ES SUPPORT:* Passey
*NCO:*
*HPT:*
*FWS:* Clark

**WEATHER:** 83 F, partly cloudy with winds from the southwest at 5-15 mph.

**DOWNTIME:** 9 hrs

**DISCARDED ITEMS:** N A

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Mike Passey
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** [signature]

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler
**DATE:** 7-15-11

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Complete probe installation at #C8405, continue sampling at #C8394 and complete logging at #C8399.

**DATE:** 07-15-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford

**EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292

**REPORT #:** 45

**START CARD NO.** SE09635

**DECOMMISSION NO.** AE12960

**RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes No

HHU CASE#1 HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8405 Tubing (2 1/2") @ 45' to 0' ft bgs; S.U. \

Borehole # C8394 Tubing (2 5/8") @ 68' to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. C8399 | 152-0.5 | Moist. |
| 2. N/A | \ | \ |
| 3. N/A | \ | \ |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Safety Habits. |
| 0620 | Travel to 'S' farm |
| 0700 | Pre-job - Ace in |
| 0715 | Dress into whites, enter farm, inspect rig, Move XL Rig from |
| \ | C8394 to outside farm for hydraulic repair, inspect case |
| \ | rig #1, Back pull 2 1/2" casing from 45' to 25', set 7th |
| \ | electrode from 29' to 31', set sand/dictonite pack, hydrated via tremie, |
| \ | pulled remaining casing from 25' to 0', installed granular bentonite to |
| \ | surface, Move case Rig #1 to hole C8394 and set up rig |
| \ | and zone to resume sampling., survey XL rig out of farm |
| \ | for transport for repairs ES66 continues moisture logging at C-8399 |
| | Clean-up |
| 1100 | Lunch |
| 1130 | stand by for support, Travel to office, paperwork |
| \ | time cards |
| 1430 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Passey, Steffler
*NCO:* Sharp, Rivera
*HPT:* Young, Clough
*FWS:* Clark

**WEATHER:** 84 F, mostly sunny with winds from the southwest at 5-10 mph.

**DOWNTIME:** 2 hr for support

**DISCARDED ITEMS:** 3 sacks bentonite

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler
**DATE:** 7-18-11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| PURPOSE: Continue sampling at #C8394. | | DATE: 07-18-11 |
| LOCATION: "S" Tank Farm, 200 West Area, Hanford | EXCAVATION: DAN-11-0186 U-DIG #:11076292 | REPORT #: 46 |
| START CARD NO. SE09635 | DECOMMISSION NO. AE12960 | RWP: CO-645, Rev. 1 AHA:11-005 Rev. 0 |
| SAMPLING SUMMARY | SITE/EQUIPMENT INSPECTION: Yes No | HHU CASE#1 HHU CAT #2 HHUXL#3 |

SAMPLING SUMMARY

| Sample #'s | Interval | % |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

BOREHOLE SUMMARY

Borehole # C8394 Tubing ( 2 5/8" ) @ 68' to 88 ft bgs; S.U. 2.3'

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

GEOPHYSICAL LOGGING

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Heat Stress and Wet Bulb Presentation by ESGG Safety Staff. |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, stand-by for pre-job |
| 0795 | Pre-job |
| 0800 | Ace in, dress into whites, enter farm, fuel and inspect |
| \ | rig, drive 2 5/8" tubing from 68' to 88'' (sample depth) letting |
| \ | head cool once, pull dummy tip, secure site, survey out. |
| 1045 | stand-by for sampler support. |
| 1130 | Lunch |
| 1200 | continue stand-by for sample support |
| 1530 | End of shift |

NA

| | | |
|---|---|---|
| OPERATOR/LICENSE: Olson/1217<br>ES SUPPORT: Weakley<br>NCO: Sharp, Rivera<br>HPT: Widdos, Young<br>FWS: Clark | WEATHER: 89 F, mostly sunny with winds from the southwest at 5-10 mph.<br>DOWNTIME: 3.25 hr for sample support | DISCARDED ITEMS:<br>NA |

REFERENCE/CONTRACT INFORMATION: FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

| | |
|---|---|
| REPORT BY: Kelly Olson | REVIEWED BY: D.E. Skoglie |
| TITLE: ES TECHNICAL PREPARER | TITLE: ES TECHNICAL REVIEWER |
| SIGNATURE: Kelly Olson | SIGNATURE: Dan E Skoglie DATE: 7/20/11 |

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue sampling at #C8394. **DATE:** 07-19-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 47

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SITE/EQUIPMENT INSPECTION:** (Yes) No (HHU CASE#1) HHU CAT #2 HHUXL#3

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. B2D433 | 88-90 | 100% |
| 2. (See below for detail) | | |
| 3. NA | | |
| 4. NA | | |

**BOREHOLE SUMMARY**

Borehole # C8394 Tubing (2 5/8") @ 88' to 126 ft bgs; S.U. ____

Borehole # ____ Tubing ( ) @ to ft bgs; S.U. ____

Borehole # ____ Tubing ( ) @ to ft bgs; S.U. ____

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

**WORK SUMMARY**

| TIME | |
|---|---|
| 0600 | Safety meeting at office. Topic: Hand Tool Safety. |
| 0620 | Travel to 'S' farm |
| 0700 | stand-by for Pre-job |
| 0745 | Pre-job |
| 0800 | Acc in, inspect rig, install sampler to 88', drive sample |
| " | B2D433 at 0850 from 88' to 90' at C8394, recovery as follows |
| " | shoe = 100%, Liner A B2D434 = 100%, Liner B B2D435 = 100%, Liner C |
| " | B2D436 = 100%, Pull and process sampler and install dummy tip |
| | survey out |
| 1030 | stand-by for NCO |
| 1100 | Lunch |
| 1130 | Enter farm, Drive 2 5/8" dual wall from 90' to 126' letting |
| " | head cool as needed, survey out, secure site |
| 1400 | Stand-by for windy conditions |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Weakley
*NCO:* ~~Widdos~~, Eckstrom, Harris
*HPT:* Widdos, Young
*FWS:* Clark

**WEATHER:** 85 F, mostly sunny with winds from the southwest at 5-15 mph. Gusts 20-30 mph in the afternoon.

**DOWNTIME:** .75 hr for pre-job
.5 hr for NCO
.5 hr for windy conditions

**DISCARDED ITEMS:**
1 2 5/8 Drive head
3 sample liners
6 sample caps
3 O' rings

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** D.E. Skoglie **DATE:** 7/20/11

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8394 I002 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** ORIGINAL | | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |
| **SAMPLES COLLECTED** | | | |
| **TOTAL NUMBER OF BOTTLES** 4 | **TOTAL NUMBER OF CHAINS** 2 | **COLLECTOR** | |

**222-S** **V11-006-014**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS | |
|---|---|---|---|---|---|
| B2D433 | 1 / 500mL / G | 100% | Cool~6C | Generic Testing; | SHOE |

**222-S** **V11-006-015**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS | |
|---|---|---|---|---|---|
| B2D434 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); | LINER "A" |
| B2D435 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); | " "B" |
| B2D436 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); | " "C" |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Complete sampling at #C8394 and begin decommissioning. **DATE:** 07-20-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 48

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. B2D437 | 126-128' | 100% |
| 2. see-below | | |
| 3. NA | \ | \ |
| 4. N/A | \ | \ |

**SITE/EQUIPMENT INSPECTION:** Yes No

HHU CASE#1 HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8394 Tubing ( 2 5/8" ) @ 126' to 128' ft bgs; S.U. .3

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Load Securement by ESGG Safety Staff. |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, Pre-job |
| 0715 | Ace in, Dress into whites, Enter farm, inspect rig, Back-pull |
| \ | inner string, found broken joint at 60' BGS, Exit farm |
| \ | for arrival of fishing tool from 'C' farm, |
| 0830 | Dress into whites, re-enter farm install fishing socket to 60', |
| \ | Grab broken rod, pull dummy tip install sampler to |
| \ | 126', drive sampler from 126' to 128' at 0951, back-pull sampler |
| \ | to surface, process sampler, see below for specifics |
| \ | shoe = 100%, Liner A B2D438 = 100%, Liner B B2D439 = 100%, |
| \ | Liner C B2D440 = 100%, survey out. |
| 1100 | Lunch |
| 1130 | Stand-by for N.C.O., clean-up, secure site |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Weakley
*NCO:* Rivera, Eckstrom
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 83 F, mostly sunny with winds from the southwest at 5-10 mph.

**DOWNTIME:** 3 hr for NCO

**DISCARDED ITEMS:**
2 inner Rods 1 1/4" x 4'
3 sample liners
6 sample caps
4 8' rings
1 - 1 1/4" over shot
2 - Dummy Tips

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler **DATE:** 7-21-11

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8394 I003 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** ORIGINAL | | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |
| **SAMPLES COLLECTED** | | | |
| **TOTAL NUMBER OF BOTTLES** 4 | **TOTAL NUMBER OF CHAINS** 2 | **COLLECTOR** | |

**222-S** **V11-006-016**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2D437 | 1 / 500mL / G | 100% | Cool~6C | Generic Testing; |

**222-S** **V11-006-017**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2D438 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); |
| B2D439 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); |
| B2D440 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE: Begin decommissioning #C8394.** , Begin sampling activity at C8404

**DATE: 07-21-11**

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford

**EXCAVATION:** DAN-11-0186 **U-DIG #:11076292**

**REPORT #: 49**

**START CARD NO. SE09635**

**DECOMMISSION NO. AE12960**

**RWP: CO-645, Rev. 1** **AHA:**11-005 Rev. 0

**SAMPLING SUMMARY**

*Sample #'s* *Interval* *%*

1.
2. NA
3.
4.

**SITE/EQUIPMENT INSPECTION:** (Yes) *No*

*HHU* (CASE#1) *HHU CAT #2* *HHUXL#3*

**BOREHOLE SUMMARY**

*Borehole #* C8394 *Tubing (*2 5/8"*) @* 128' *to* 0' *ft bgs; S.U.* \

*Borehole #* C8404 *Tubing (*2 5/8"*) @* 0' *to* 40' *ft bgs; S.U.* 2.3'

*Borehole #* N/A *Tubing (* \ *) @* \ *to* \ *ft bgs; S.U.* \

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1. NA
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: PPE Protection.** |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, pre-job |
| 0715 | Ace in, dress into whites, stage materials, enter farm, fuel |
| \ | and inspect rig, Back-pull 2 5/8" casing from 128' to 0' installing |
| \ | bentonite crumbles in borehole. |
| 0900 | Move and set-up rig at C8404, set up zone and equip. |
| \ | Drive 2 5/8" dual wall from 0' to 24', survey out. |
| 1145 | Lunch |
| 1215 | Dress into whites, drive 2 5/8" dual wall from 24' to |
| \ | 40', letting head cool as needed, secure site and |
| \ | survey out |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE: Olson/1217**
*ES SUPPORT :Weakley*
*NCO:* Rivera, Eckstrom
*HPT:* Widdos, Young
*FWS: Clark*

**WEATHER: 82 F, partly cloudy with winds from the southwest at 10-15 mph in the morning, increasing to 15-25 mph.**

**DOWNTIME:** N/A

**DISCARDED ITEMS:**
8 Sacks bentonite
1 2 5/8" tip holder
1 2 5/8" Box x Box x 2' sub
2 Lynch Pins
4 'O' rings

**REFERENCE/CONTRACT INFORMATION: FSWO-DOW- TFC-WO-11-1935 ECN-11-000563**

**REPORT BY:** Kelly Olson
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 7/25/11

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Begin sampling activities at #C8404. **DATE:** 07-25-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 50

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION** Yes No

HHU CASE#1 HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8404 Tubing (2 5/8") @ 40' to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: New JHA review by ESGG Safety Staff. |
| 0715 | Travel to 'C' farm, Ace in, travel to 'S' farm |
| 0830 | Arrive at 'S' farm, Pre-job |
| \ | stand-by for lightening AOP-14 and high winds |
| 1130 | Lunch |
| 1200 | Continue stand-by for weather, (wind, lightening). |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Weakley
*NCO:* Rivera, Eckstrom
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 89 F, partly cloudy with winds from the southwest at 10-15 mph in the morning, increasing to 20 mph.

**DOWNTIME:** 9 hr for wind + lightening

**DISCARDED ITEMS:** N/A

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D. E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** Dan'l Skoglie **DATE:** 7/25/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Begin sampling activities at #C8404. **DATE:** 07-26-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 51

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes No

HHU CASE#1 HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8404-A Tubing (2 5/8) @ 40' to 42.5' ft bgs; S.U. 3.8

Borehole # C8404-A Tubing (2 5/8) @ 42.5' to 0' ft bgs; S.U. \

Borehole # C8404 Tubing (2 5/8) @ 0' to 16' ft bgs; S.U. 2.3'

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Proper Lifting. |
| 0620 | Travel to "S" farm |
| 0645 | Arrive at 'S' farm, Pre-job |
| 0715 | Gather equipment, dress into whites, enter farm fuel and |
| \ | inspect rig, drive from 40' to 42.5' letting head cool |
| \ | as needed (extremely hard driving). Refusal at 42.5' |
| \ | Back pull casing and decommission to surface with granular |
| \ | bentonite., survey out. |
| 1200 | Lunch |
| 1230 | Dress into whites, Enter zone, move rig 2' east |
| \ | of C8404-A, set-up and drive 2 5/8" dual wall at |
| \ | C8404 from 0' to 16', secure site and survey out. |
| 1330 | Stand-by for W.R.P.S. managers meeting, travel to |
| \ | office, paperwork, time cards. |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Weakley
*NCO:* Rivera
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 84 F, mostly sunny with winds from the southwest at 10-15 mph.

**DOWNTIME:** 1 hr for managers meeting

**DISCARDED ITEMS:** 3 sacks bentonite, 3 Lynch pins

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** Dan E Skoglie **DATE:** 7/27/11

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

PURPOSE: Begin sampling activities at #C8404., decommission C8404, move to C-8406 | DATE: 07-27-11

LOCATION: "S" Tank Farm, 200 West Area, Hanford | EXCAVATION: DAN-11-0186 U-DIG #:11076292 | REPORT #: 52

START CARD NO. SE09635 | DECOMMISSION NO. AE12960 | RWP: CO-645, Rev. 1 AHA:11-005 Rev. 0

SAMPLING SUMMARY | SITE/EQUIPMENT INSPECTION: (Yes) No | (HHU CASE#1) HHU CAT #2 HHUXL#3

| Sample #'s | Interval | % |
|---|---|---|
| 1. | | |
| 2. | NA | |
| 3. | | |
| 4. | | |

BOREHOLE SUMMARY

Borehole # C8404 Tubing (2 5/8") @ 16' to 41 ft bgs; S.U. 1.3'

Borehole # C8404 Tubing (2 5/8") @ 41' to 0' ft bgs; S.U. 1

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

GEOPHYSICAL LOGGING

| Boring # | Interval | Type |
|---|---|---|
| 1. | | |
| 2. | NA | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Flammable Liquids. |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, Pre-job |
| 0715 | Dress into whites, enter farm, inspect rig, drive 2 5/8" |
| " | dual wall from 16' to 41' letting head cool as needed, |
| " | refusal at 41', survey out. |
| 1115 | Lunch |
| 1145 | Pick up bentonite at chem storage, gather equip. |
| 1215 | Dress into whites, back pull inner rod, back-pull |
| " | outer rod and decommission C8404 boring, Move rig |
| " | and equipment to C 8406 and set up 3' south of |
| " | C-8405, set up zone, secure site and survey out |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |

NA

OPERATOR/LICENSE: Olson/1217
ES SUPPORT: Weakley
NCO: Rivera
HPT: Widdus, Young
FWS: Clark

WEATHER: 85 F, mostly sunny with winds from the southwest at 5-15 mph.

DOWNTIME: N/A

DISCARDED ITEMS:
1 36" Hook jaw
1 Lynch pin
3 sacks bentonite
1 2 5/8" x 4' Rod

REFERENCE/CONTRACT INFORMATION: FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

REPORT BY: Kelly Olson
TITLE: ES TECHNICAL PREPARER
SIGNATURE: Kelly Olson

REVIEWED BY: D.E. Skoglie
TITLE: ES TECHNICAL REVIEWER
SIGNATURE: David E. Skoglie DATE: 7/28/11

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Begin sampling activities at #C8406. **DATE:** 07-28-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 53

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes No

HHU CASE#1 HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8406 Tubing ( 2 5/8" ) @ 0' to 52' ft bgs; S.U. 2.3

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Climbing Stairs. |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, Pre-job |
| 0730 | Gather equipment, enter farm, fuel and inspect rig, |
| \ | Pick up fork-lift at 'SY' farm, move 2 7/8 rod to C8406 |
| \ | and C-8396, Drove 2 5/8" tubing at C8406 from 0' to |
| \ | 52' b.g.s., survey out. (sample depth) |
| 1030 | stand-by for W.R.P.S. employee meeting |
| 1130 | Lunch |
| 1200 | continue stand-by for W.R.P.S employee meeting |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Weakley
*NCO:* Rivera, Roberts
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 88 F, sunny and warm with winds from the west at 5-10 mph.

**DOWNTIME:** 3.5 hr for all employee meeting

**DISCARDED ITEMS:** 4 'O' rings

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 7/29/11

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue sampling activities at #C8406. **DATE:** 07-29-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 54

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. B2FXL3 | 52'-54' | 100% |
| 2. N/A | | |
| 3. N/A | | |
| 4. N/A | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No

(HHU CASE#1) HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C-8406 Tubing (2 5/8) @ 52' to 54' ft bgs; S.U. 4.3'

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ____

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ____

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | N/A | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Heat Illness Prevention. |
| 0615 | Drive out to site and ACE in. |
| 0650 | Arrive at S-Farm, standby for pre-job. |
| 0750 | Pre-job with crew: Pull dummy tip, add sampler to #C-8406 Take sample, |
| — | survey Case #1 out of Farm for maintenance. |
| 0810 | Dress in whites, rig inspection. |
| 0820 | Pull dummy tip @ 52', run sampler in at 52' bgs. |
| 0917 | Drive sample start time @ 52' bgs - 54' bgs. |
| 0927 | pull sampler from 54' bgs |
| 0950 | Sampler out of hole - Recovery = 100%, move Case #1 to RBA to |
| — | be surveyed out for maintenance. |
| 1030 | Stay in zone help Olin spot the HHUXXL on #C-8406 |
| 1130 | Rig setup XXL - Exit farm out of whites |
| 1200 | Lunch |
| 1201 | Standby, no Hpt support due to; they haven't had lunch. |
| 1231 | Drive to ESFS. |
| 1300 | Arrive at ESFS, paperwork, Timecard. |
| 1430 | End of shift. |

N/A

**OPERATOR/LICENSE:** Repko/3012
*ES SUPPORT:* Weakley
*NCO:* Roberts,
*HPT:*
*FWS:* Clark

**WEATHER:** 95 F, sunny and warm with winds from the southwest at 5-15 mph.

**DOWNTIME:** 2 hrs. No support Hpt's didn't have lunch.

**DISCARDED ITEMS:**
6 - caps for samplers
3 - sample Liners
3 - O-rings

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Mark A. Repko
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Mark A Repko

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E Skoglie **DATE:** 8/01/11

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# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8406 I001 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** ORIGINAL | | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 5 **TOTAL NUMBER OF CHAINS** 3 **COLLECTOR**

**222-S** **V11-006-039**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS | |
|---|---|---|---|---|---|
| B2FXL3 | 1 / 500mL / G | | Cool~6C | Generic Testing; | |

**222-S** **V11-006-040**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS | |
|---|---|---|---|---|---|
| B2FXL6 | 1 / 160g / Liner | | Cool~6C | Bulk Density - D2937 (TF); | |
| B2FXL7 | 1 / 160g / Liner | | Cool~6C | Bulk Density - D2937 (TF); | |
| B2FXL8 | 1 / 160g / Liner | | Cool~6C | Bulk Density - D2937 (TF); | |

**222-S** **V11-006-045**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FXK4 | 1 / 60mL / G/P | | None | Rad Screen; |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Complete repairs to crossover sub. **DATE:** 08-01-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 55

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

N A

**SITE/EQUIPMENT INSPECTION:** Yes No

HHU CASE#1 HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ____

Borehole # ____ Tubing ( ) @ to ft bgs; S.U. ____

Borehole # ____ Tubing ( ) @ to ft bgs; S.U. ____

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |

N A

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Presentation by ESGG Safety Staff. |
| 0630 | Travel To E.N.W. for Tools To work on Case at S-Farm |
| 0715 | Called To NOT bring Tools out To S-Farm. Truck ordered To Take Case To Shop at E.N.W. |
| 0830 | Clear of shop To prep for work on Case. (To be picked up Tomorrow AM. To be delevered To E.N.W. |
| 0900 | Travel To S-Farm on Stand by. |
| 1100 | Lunch |
| 1130 | Stand by |
| 1400 | Travel To office |
| 1530 | end of shift |
| | NOTE: The drive head needs to be changed. The use of a torch will be required. |

N A

**OPERATOR/LICENSE:** Walkup/3005
*ES SUPPORT :Passey and Hoopesy*
*NCO:* Roberts, Ruben
*HPT:* Wilkins, Young
*FWS:* Clark

**WEATHER:** 91 F, sunny and warm with winds from the southwest at 5 mph.

**DOWNTIME:** 9 hrs for Transportation

**DISCARDED ITEMS:** N A

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Mike Passey
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** [signature]

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 8/02/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Transport CASE HHU to ENW to complete maintenance and transport CAT HHU to "S" Tank Farm from "C" Tank Farm to begin probe installations.

**DATE:** 08-02-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford

**EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292

**REPORT #:** 56

**START CARD NO.** SE09635

**DECOMMISSION NO.** AE12960

**RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

*Sample #'s* *Interval* *%*

1. NA
2.
3.
4.

**SITE/EQUIPMENT INSPECTION:** *Yes* *No*

*HHU CASE#1* *HHU CAT #2* *HHUXL#3*

**BOREHOLE SUMMARY**

*Borehole #* N/A *Tubing* ( \ ) @ \ *to* \ *ft bgs; S.U.* \

*Borehole #* N/A *Tubing* ( \ ) @ \ *to* \ *ft bgs; S.U.* \

*Borehole #* N/A *Tubing* ( \ ) @ \ *to* \ *ft bgs; S.U.* \

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1. NA
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Heart Attacks. |
| 0630 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, stand-by, for Powers truck to transport |
| \ | Case rig #1 to En. N.W. for repairs. |
| 0815 | Pick up Case rig with Powers truck and transport |
| \ | to Energy N.W., Un-load rig, Heat and break large |
| \ | cross-over sub, Travel to 'C' farm, Pick up Cat |
| \ | Rig #2 and road rig to 'S' farm, Park rig on |
| \ | plastic. |
| 1145 | Lunch |
| 1215 | Have well tags made at Rigging loft, travel to |
| | Energy N.W. and assist with repairs on Case, Rig #1 |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Passey and Hoopes
*NCO:* Roberts, Rivera
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 92 F, sunny and warm with winds from the southwest at 5-15 mph.

**DOWNTIME:** 1.25 for Truck to haul Case Rig #1

**DISCARDED ITEMS:**
1-cross-over sub
2 Baker-lock kits
1 - 2 5/8" Tip holder + tip

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler
**DATE:** 8-3-11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Move CAT HHU into farm and begin sampling activities at #C8396. **DATE:** 08-03-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** ~~52~~ K.D 06

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No

*HHU CASE#1* (*HHU CAT #2*) *HHUXL#3*

**BOREHOLE SUMMARY**

Borehole # C8396 Tubing (2 5/8") @ 0' to 55 ft bgs; S.U. 3.3'

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Shop Safety Checklist. |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, Pre-job, Acc in |
| 0715 | Gather materials, travel to 'C' farm |
| 0745 | Pre-job at 'C' farm, |
| 0800 | Move materials into farm, dress into whites, enter farm, |
| \ | install surface protection at C-8103, survey out |
| 0915 | Go through P.C.M. at lower 'C' farm, pick up surveyed materials |
| \ | Travel to 'S' farm |
| 0930 | Dress into whites, move Cat Rig # 2 into farm, set |
| | up rig and zone at C8396, move pipe in, survey out. |
| 1145 | Lunch |
| 1215 | Enter farm, drive 2 5/8" tubing to 55', (sample |
| \ | depth) secure site and survey out |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Hoopes
*NCO:* Rivera, Roberts, Snook
*HPT:* Widdos, Yorns, Templeton, Barnard
*FWS:* Clark

**WEATHER:** 91 F, sunny and warm with winds from the southwest at 5-10 mph.

**DOWNTIME:** N/A

**DISCARDED ITEMS:**
1 sack sackcrete (concrete mix)
1 monument (surface protection)
1 4" adjustment Allen Bolt + nut
3 Lynch pins

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** RZ Stoffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Stoffler **DATE:** 8-4-11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue sampling activities at #C8396. **DATE:** 08-04-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 07

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. B2FYT4 | 55-57 | 100% |
| 2. NA | \ | \ |
| 3. NA | \ | \ |
| 4. NA | \ | \ |

**SITE/EQUIPMENT INSPECTION** Yes No

*HHU CASE#1* *HHU CAT #2* *HHUXL#3*

**BOREHOLE SUMMARY**

Borehole # C8396 Tubing (2 5/8") @ 55' to 80 ft bgs; S.U. 2.3'

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Drum Handling. |
| 0615 | Travel to 'S' farm |
| 0645 | arrive at 'S' farm, standby for RCTs |
| 0700 | Pre-job |
| 0715 | Stand-by for N.C.O |
| 0745 | Dress into whites, enter farm, inspect rig, Pull inner |
| \ | rod, install sampler, drive sample at 0900 from |
| \ | 55' to 57' Pulled and processed sampler, recovery as follows, |
| \ | B2FYT4 (shoe) = 100%, B2FYT5 (Liner A) = 100%, B2FYT6 (Liner B) = |
| \ | 100%, B2FYT7 = 100% (Liner C), all liners were wet., install |
| \ | inner rod, Drive 2 5/8" tubing from 55' to 68', survey out. |
| 1130 | Lunch |
| 1200 | Dress into whites drive from 68' to 80' letting |
| \ | head cool as needed (Hard driving). |
| 1400 | Survey out equipment, secure site, (Head hot) |
| 1415 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Hoopes
*NCO:* Snook, Villareal, Roberts
*HPT:* Widdus, Templeton, Barnard
*FWS:* Clark/Paulsell

**WEATHER:** 94 F, sunny and warm with winds from the northwest at 5-10 mph.

**DOWNTIME:** .25 hr for RCTs
.5 hr for N.C.O.

**DISCARDED ITEMS:**
3 sample liners
6 sample caps
4-10" rings
2-18" Hook jaws
2-18" Heel jaws
1-2 5/8 tip holder + tip
8 Lynch pins

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler **DATE:** 8-8-11

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8396 I001 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** ORIGINAL | | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |
| **SAMPLES COLLECTED** | | | |
| **TOTAL NUMBER OF BOTTLES** 5 | **TOTAL NUMBER OF CHAINS** 3 | **COLLECTOR** | |

**222-S** **V11-006-061**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FYT3 | 1 / 60mL / G/P | | None | Rad Screen; |

**222-S** **V11-006-062**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS | |
|---|---|---|---|---|---|
| B2FYT4 | 1 / 500mL / G | 100% Wet | Cool~6C | Generic Testing; | SHOE |

**222-S** **V11-006-063**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS | |
|---|---|---|---|---|---|
| B2FYT5 A | 1 / 160g / Liner | 100% Wet | Cool~6C | Bulk Density - D2937 (TF); | LINER A |
| B2FYT6 B | 1 / 160g / Liner | 100% Wet | Cool~6C | Bulk Density - D2937 (TF); | " B |
| B2FYT7 C | 1 / 160g / Liner | 100% More Wet | Cool~6C | Bulk Density - D2937 (TF); | " C |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue sampling activities at #C8396. **DATE:** 08-08-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 08

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. B2FY19 | 103-105 | 100% |
| 2. (see - below for specifics) | | |
| 3. NA | | |
| 4. N/A | | |

**SITE/EQUIPMENT INSPECTION:** Yes No

*HHU CASE#1* *HHU CAT #2* *HHUXL#3*

**BOREHOLE SUMMARY**

Borehole # C-8396 Tubing (2 5/8) @ 80' to 105' ft bgs; S.U. 1.3

Borehole # N/A Tubing ( ) @ to ft bgs; S.U.

Borehole # N/A Tubing ( ) @ to ft bgs; S.U.

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. NA | | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Presentation by ESGG Safety Staff. |
| 0700 | Travel to 'S' farm, Acc in at 'C' farm |
| 0745 | Arrive at 'S' farm, Pre-job |
| 0800 | Dress into whites, enter farm, inspect and fuel rig, |
| " | drive 2 5/8" tubing from 80' to 103' letting head cool periodically, |
| " | Survey out |
| 1130 | Lunch |
| 1200 | Enter farm, Pull dummy tip, install sample, drive sample |
| " | at 1317 From 103' to 105', Pull and process sample, |
| " | recovery as follows, Shoe B2FY19 = 100%, Liner A, B2FY20 = 100%, |
| " | Liner B - B2FY21 = 100%, Liner C B2FY22 = 100%, install |
| " | dummy tip and set up to resume driving, secure site |
| " | and survey out. |
| 1420 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko
*NCO:* Villareal, Rivera, Snook, Roberts
*HPT:* Templeton, Widdus, Bernard, Minces
*FWS:* Clark/Paulsell

**WEATHER:** 89 F, sunny and warm with winds from the southwest at 5-10 mph.

**DOWNTIME:** N/A

**DISCARDED ITEMS:**
1 inner rod pulling head
3 sample liners
6 sample caps
4 'O' rings 6 Lynch pins

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler **DATE:** 8-9-11

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8396 I002 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** ORIGINAL | | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |
| **SAMPLES COLLECTED** | | | |
| **TOTAL NUMBER OF BOTTLES** 5 | **TOTAL NUMBER OF CHAINS** 3 | **COLLECTOR** | |

**222-S** **V11-006-064**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS | |
|---|---|---|---|---|---|
| B2FYT8 | 1 / 60mL / G/P | | None | Rad Screen; | |

**222-S** **V11-006-065**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS | |
|---|---|---|---|---|---|
| B2FYT9 | 1 / 500mL / G | 100% | Cool~6C | Generic Testing; | SHOE |

**222-S** **V11-006-066**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS | |
|---|---|---|---|---|---|
| B2FYV0 A | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); | LINER A |
| B2FYV1 B | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); | " B |
| B2FYV2 C | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); | " C |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE: Continue sampling activities at #C8396.** | | **DATE: 08-~~08~~ 09-11** |
| **LOCATION:** "S" Tank Farm, 200 West Area, Hanford | **EXCAVATION:** DAN-11-0186 **U-DIG #:11076292** | **REPORT #: 09** |
| **START CARD NO. SE09635** | **DECOMMISSION NO. AE12960** | **RWP: CO-645, Rev. 1 AHA:**11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** *Yes* *No* | *HHU CASE#1* *HHU CAT #2* *HHUXL#3* |

| *Sample #'s* | *Interval* | *%* |
|---|---|---|
| *1.B2FYV4* | *117'-119'* | *100%* |
| *2.N/A* | | |
| *3.N/A* | | |
| *4.N/A* | | |

**BOREHOLE SUMMARY**

*Borehole #* C8396 *Tubing* 2 5/8" *@* 105' *to* 119' *ft bgs; S.U.* 3.3'

*Borehole #* N/A *Tubing ( ) @ to ft bgs; S.U.* ____

*Borehole #* N/A *Tubing ( ) @ to ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

| *Boring #* | *Interval* | *Type* |
|---|---|---|
| *1.* | N/A | |
| *2.* | | |
| *3.* | | |

| TIME | WORK SUMMARY |
|---|---|
| **0600** | **Safety meeting at office. Topic: PPE---Storage, Maintenance and Care.** |
| 0620 | Travel from office. |
| 0650 | Arrive at "S" Farm, pre-job, ace in. |
| 0715 | Dress into whites, enter farm, inspect rig, drive 2 5/8" tubing from 105' to 117' letting head cool as needed. Outer rod broke at that |
| ----- | point,, pulled inner string, installed sampler and drove sample at 1113 hrs. from 117' to 119'. Pulled and processed sample. Recovery |
| ----- | as follows: shoe-B2FYV4=100%, liner A=B2FYV5, liner B=B2FYV6, liner C=B2FYV7. A,B, and C all 100% recovery. Survey |
| ----- | out of farm. |
| 1200 | Lunch. |
| 1230 | Gathered probe and supplies for probe installation in #C8395. |
| 1430 | Travel to office. Completed paperwork and timecard. |
| 1530 | End of shift. |

N/A

| | | |
|---|---|---|
| **OPERATOR/LICENSE: Olson/1217**<br>*ES SUPPORT Repko*<br>*NCO :Villarreal, Snook*<br>*HPT Widdis, Mincey, Templeton, Barnard:*<br>*FWS: Clark/Paulsell* | **WEATHER: 88 F, sunny and warm with winds from the southwest at 5-15 mph.**<br>**DOWNTIME: N/A** | **DISCARDED ITEMS:**<br>(1) 2 5/8" Drive Head (1) Drive Head Retainer Pin. (3) Sample Liners. (6) Liner Caps. (6) "O" Rings. (1) Outer String Point Holder. (1) Dummy Tip. |

**REFERENCE/CONTRACT INFORMATION: FSWO-DOW- TFC-WO-11-1935 ECN-11-000563**

| | |
|---|---|
| **REPORT BY:** Kelly Olson | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Kelly Olson | **SIGNATURE:** R.Z. Steffler DATE: 8-10-11 |

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8396 I003 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** ORIGINAL | | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |
| **SAMPLES COLLECTED** | | | |
| **TOTAL NUMBER OF BOTTLES** 5 | **TOTAL NUMBER OF CHAINS** 3 | **COLLECTOR** | |

**222-S** **V11-006-067**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FYV3 | 1 / 60mL / G/P | | None | Rad Screen; |

**222-S** **V11-006-068**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FYV4 | 1 / 500mL / G | 100% Dry | Cool~6C | Generic Testing; |

**222-S** **V11-006-069**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FYV5 A | 1 / 160g / Liner | 100% Dry | Cool~6C | Bulk Density - D2937 (TF); |
| B2FYV6 B | 1 / 160g / Liner | 100% Dry | Cool~6C | Bulk Density - D2937 (TF); |
| B2FYV7 C | 1 / 160g / Liner | 100% Dry | Cool~6C | Bulk Density - D2937 (TF); |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Decommission #C8396 and begin probe installation in #C8395. **DATE:** 08-10-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 10

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY** — *Sample #'s* *Interval* *%*

1. NA
2.
3.
4.

**SITE/EQUIPMENT INSPECTION:** *Yes* *No* — *HHU CASE#1* *HHU CAT #2* *HHUXL#3*

**BOREHOLE SUMMARY**

*Borehole #* C8396 *Tubing (* 2 5/8" *)* @ 119' *to* 0' *ft bgs; S.U.* \

*Borehole #* C8395 *Tubing (* 2 1/2" *)* @ 152' *to* 45 *ft bgs; S.U.* 1.3'

*Borehole #* NA *Tubing (* \ *)* @ \ *to* \ *ft bgs; S.U.* \

**GEOPHYSICAL LOGGING** — *Boring #* *Interval* *Type*

1. NA
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Individual Quality Makes The Difference. |
| 0615 | Travel to 'S' farm |
| 0645 | Arrive at 'S' farm, Pre-job |
| 0715 | Gather equipment, Dress into whites, enter farm, fuel and |
| \ | inspect rig, Back pull 2 5/8", Break at 12th joint, 17 joints |
| \ | and one bottom assembly left in hole, Bottom of string = 119' |
| \ | top of string = 48.7' bgs., move and set up on C8395 |
| 0945 | Back-pull 2 1/2" casing from 152' to 145', set bottom probe |
| \ | at 150' bgs, installed sand & diatomite pack, hydrated |
| \ | via tremie, survey out |
| 1145 | Lunch |
| 1215 | Dress into whites back pull casing in 20' intervals stopping |
| \ | at 125', 105', 85', 65', and 45', install electrodes at 131, 111, |
| \ | 91, 71', and 51', install sand/diatomite packs and hydrated |
| \ | via tremie, see specifics on attached sheet, secure site |
| \ | and survey out |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT* Repko
*NCO:* Snook, Villareal
*HPT:* Widdus, Minney, Templeton Barnard
*FWS:* Clark/Paulsell

**WEATHER:** 88 F, sunny and warm with winds from the southwest at 5-15 mph with gusts to 20 mph in the afternoon.

**DOWNTIME:** N/A

**DISCARDED ITEMS:**
18 joints 2 5/8" x 4' casing
1 2 5/8" Bottom assembly
1 - expendable tip
1 - 160 multi level probe
1 sack diatomite 1 sack sand
11 sacks bentonite

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler **DATE:** 8-11-11

10/06/09 Rev 1

200 FT MULTI LEVEL RESISTIVITY PROBE WORK SHEET BOREHOLE NO: C839J

| DIMENSIONS | PRELIMINARY AS-BUILT | CONSTRUCTION MATERIAL/TAG |
|---|---|---|
| PLANNED | ACTUAL | MATERIAL / TAG |
| 0 ft | | SURFACE PROTECTION @ 1 FT BGS |
| - 20 ft - | - ft - | Bentonite from ___ to ___<br>Sand from ___ to ___<br>D.E. from ___ to ___<br>Sand from ___ to ___ |
| - 40 ft - | - ft - | Bentonite from ___ to ___<br>Sand from ___ to ___<br>D.E. from ___ to ___<br>Sand from ___ to ___ |
| - 60 ft - | 29' - 31' ft - | Bentonite from 1' to 27.5<br>Sand from 27.5 to 28.5<br>D.E. from 28.5 to 31.5<br>Sand from 31.5 to 32.5 |
| - 80 ft - | 49' - 51' ft - | Bentonite from 32.5 to 47.5<br>Sand from 47.5 to 48.5<br>D.E. from 48.5 to 51.5<br>Sand from 51.5 to 52.5 |
| - 100 ft - | 69' - 71' ft - | Bentonite from 52.5 to 67.5<br>Sand from 67.5 to 68.5<br>D.E. from 68.5 to 71.5<br>Sand from 71.5 to 72.5 |
| - 120 ft - | 89' - 91' ft - | Bentonite from 72.5 to 87.5<br>Sand from 87.5 to 88.5<br>D.E. from 88.5 to 91.5<br>Sand from 91.5 to 92.5 |
| - 140 ft - | 109 - 111 ft - | Bentonite from 92.5 to 107.5<br>Sand from 107.5 to 108.5<br>D.E. from 108.5 to 111.5<br>Sand from 111.5 to 112.5 |
| - 160 ft - | 129 - 131 ft - | Bentonite from 112.5 to 127.5<br>Sand from 127.5 to 128.5<br>D.E. from 128.5 to 131.5<br>Sand from 131.5 to 132.5 |
| - 180 ft - | 148.5 - 150 ft - | Bentonite from 132.5 to 147<br>Sand from 147 to 148<br>D.E. from 148 to 150.5<br>Sand from 150.5 to 151.5 |

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Complete probe installation in #C8395 and begin monument installations. | | **DATE:** 08-11-11 |
| **LOCATION:** "S" Tank Farm, 200 West Area, Hanford | **EXCAVATION:** DAN-11-0186 **U-DIG #:**11076292 | **REPORT #:** 11 |
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 1 **AHA:**11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** Yes No | HHU ~~CASE#1~~ HHU CAT #2 HHUXL#3 |

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**BOREHOLE SUMMARY**

Borehole # C8395 Tubing ( 2 5/8" ) @ 45' to 0' ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Avoiding Electrical Shocks. |
| 0620 | Travel to 'S' farm |
| 0700 | Pre-job |
| 0715 | Gather materials and equip. |
| 0745 | Dress into whites, enter farm, inspect rig, back-pull 2 1/2" |
| \ | casing from 45' to 0', install electrodes at 51' and 31', installed |
| \ | sand, diatomite packs, hydrated via tremie, clean-up and secure site. |
| 0900 | Move in equipment, install monuments at C8403, C8405, C8393, |
| \ | C8395, C8397, clean up and survey out. |
| 1130 | Lunch |
| 1200 | clean and prep equipment |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |

NA

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Olson/1217<br>*ES SUPPORT Repko*<br>*NCO:* Rivera, Snook, Villareal<br>*HPT:* Templeton, Widdus, Mincey, Clayton<br>*FWS: Clark/Paulsell* | **WEATHER:** 88 F, sunny and warm with winds from the southwest at 5-10 mph.<br>**DOWNTIME:** N/A | **DISCARDED ITEMS:**<br>5 Flush mount monuments<br>3 sacks bentonite<br>5 sacks concrete mix<br>1 sack sand |

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

| | |
|---|---|
| **REPORT BY:** Kelly Olson | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Kelly Olson | **SIGNATURE:** R.Z. Steffler **DATE:** 8-12-11 |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| PURPOSE: Standby for new push locations. | | DATE: 08-12-11 |
| LOCATION: "S" Tank Farm, 200 West Area, Hanford | EXCAVATION: DAN-11-0186 U-DIG #:11076292 | REPORT #: 12 |
| START CARD NO. SE09635 | DECOMMISSION NO. AE12960 | RWP: CO-645, Rev. 1 AHA:11-005 Rev. 0 |
| SAMPLING SUMMARY | SITE/EQUIPMENT INSPECTION: Yes (No) | HHU CASE#1 (HHU CAT #2) HHUXL#3 |

SAMPLING SUMMARY

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

BOREHOLE SUMMARY

Borehole # NA Tubing ( ) @ to ft bgs; S.U.
Borehole # NA Tubing ( ) @ to ft bgs; S.U.
Borehole # N/A Tubing ( ) @ to ft bgs; S.U.

GEOPHYSICAL LOGGING

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: General Safety---Controlling Stress. |
| | Stand-by for locations |
| 1430 | End of shift |
| | NA |

| | | |
|---|---|---|
| OPERATOR/LICENSE: Olson/1217<br>ES SUPPORT Repko<br>NCO: N/A<br>HPT: N/A<br>FWS: Clark/Paulsell | WEATHER: 91 F, sunny and warm with winds from the southwest at 5-10 mph.<br>DOWNTIME: 8 hr for locations | DISCARDED ITEMS: N/A |

REFERENCE/CONTRACT INFORMATION: FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

| | |
|---|---|
| REPORT BY: Kelly Olson | REVIEWED BY: RZ Steffler |
| TITLE : ES TECHNICAL PREPARER | TITLE: ES TECHNICAL REVIEWER |
| SIGNATURE: Kelly Olson | SIGNATURE: R.Z. Steffler DATE: 8-15-11 |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue sampling activities at #C8400. **DATE:** 08-15-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 13

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. B2FYP8 | 93'-95 | 100% |
| 2. N/A | | |
| 3. N/A | | |
| 4. N/A | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No

HHU CASE#1 (HHU CAT #2) HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8400 Tubing (5 1/8") @ 76' to 95' ft bgs; S.U. 3.3'

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ____

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ____

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | N/A | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Presentation by ESGG Safety Staff. |
| 0610 | Meeting with staff Safety: Selective awareness |
| 628 | Drive to S-tank farm |
| 0700 | Arrive at S-tank Farm, Standby for pre-job |
| 0728 | Pre-job with crew: Move HHU XXL out of farm, move HHU #2 CAT on hole #C-8400 |
| 0745 | Dress in whites, move CAT #2 on hole #C-8400. |
| 0822 | Start drilling at 76' bgs. |
| 0854 | Broke drive head sub, replace sub, let head cool. |
| 0923 | Drove to 82.6' bgs, let head cool. Take break |
| 1002 | Start driving at 82.6' bgs |
| 1025 | Drove to 89' bgs let head cool. |
| 1045 | Start driving at 89' bgs |
| 1055 | Drove to sample depth 93' bgs. Go out for Lunch, Dress out |
| 1200 | Dress in whites, pull dummy tip at 93' bgs |
| 1309 | Dummy tip out of hole @ 93' bgs, Trip in sampler to 93' bgs. |
| 1320 | Driving sample start time @ 93' bgs. |
| 1323 | Sampler drove from 93' bgs - 95' bgs, pull sampler @ 95' bgs |
| 1344 | Sampler out of hole = Recovery = 100%. Sample # B2FYP8 |
| 1347 | Run dummy tip back to bottom @ 95' bgs, clean up site, exit |
| — | Zone out of whites. |
| 1410 | Exited farm, water break drive to ESFS. |
| 1500 | Arrive at ESFS, paperwork, Time card, |
| 1530 | End of shift. |

N/A

**OPERATOR/LICENSE:** Repko/3012
ES SUPPORT Ehrgott, Hoopes
NCO: Swoik, Rivera, Extrom
HPT: Widdis, Young, Templeton
FWS: Clark/Paulsell

**WEATHER:** 80 F, partly cloudy with winds from the southwest at 5-15 mph.

**DOWNTIME:** .5 for pre-job

**DISCARDED ITEMS:**
1-2 5/8 drive head
3-Sample liners
6 sample caps
2-O rings

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Mark A. Repko
**TITLE:** ES TECHNICAL PREPARER
**SIGNATURE:** Mark A. Repko

**REVIEWED BY:** RZ Steffler
**TITLE:** ES TECHNICAL REVIEWER
**SIGNATURE:** R.Z. Steffler
**DATE:** 8-16-11

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8400 I002 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** ORIGINAL | | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 5 **TOTAL NUMBER OF CHAINS** 3 **COLLECTOR**

**222-S** **V11-006-054**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FYP7 | 1 / 60mL / G/P | | None | Rad Screen; |

**222-S** **V11-006-055**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FYP8 | 1 / 500mL / G | 100% damp | Cool~6C | Generic Testing; |

**222-S** **V11-006-056**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FYP9 A | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); |
| B2FYR0 B | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); |
| B2FYR1 C | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); |

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# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | |
|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | **PAGE** 2 **OF** 2 |
| | **DATE/TIME** |
| **SAF NO.(S)** V11-006 | |
| **LOCATION** C8400 I002 | **LOGBOOK NO./PAGE** |
| **WELL NAME** ORIGINAL | **WELL ID** / **ACTUAL DEPTH** ☐ ft ☐ m |
| **BOTTOM OF CASING (bgs)** ☐ ft ☐ m | **BOTTOM OF BOREHOLE (bgs)** ☐ ft ☐ m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 5 **TOTAL NUMBER OF CHAINS** 3 **COLLECTOR**

**FIELD INFORMATION**

**WHERE ARE SAMPLES LOCATED AT THIS TIME?** ☐ WSCF ☐ 222-S ☐ MO-413 ☐ MO-745 ☐ 6269 ☐ OTHER

**CONTAINER/DRUM/TOTE/BOX**

**SAMPLE MATRIX DESCRIPTION** ☐ SOIL ☐ SLUDGE ☐ RESIN ☐ GAC ☐ FILTER PAPER ☐ OTHER

**FURTHER SAMPLE MATRIX EXPLANATION/DESCRIPTION [NOTE ANY ODOR, COLOR, TEXTURE (E.G., SLIMY, OILY, GRANULAR, ETC.)]**

**FIELD OBSERVATIONS**

**WEATHER**

**FIELD COMMENTS**

**SUPPORT PERSONNEL**

**SAMPLES SURVEYED BY RCT** ☐ YES ☐ NO

**IS A BLUE CARD REQUIRED** ☐ YES ☐ NO **BLUE CARD NO** _____

**IS SRS PROVIDED AND COMPLETE** ☐ YES ☐ NO

| | PRINT NAME | SIGN NAME | DATE |
|---|---|---|---|
| **RECORDED BY** | | | |
| **INDEPENDENT REVIEW** | | | |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue sampling activities at #C8400. **DATE:** 08-16-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:**11076292 **REPORT #:** 14

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:**11-005 Rev. 0

**SAMPLING SUMMARY** **SITE/EQUIPMENT INSPECTION:** Yes No *HHU CASE#1* *HHU CAT #2* *HHUXL#3*

*Sample #'s* *Interval* *%*

1. N/A
2.
3.
4.

**BOREHOLE SUMMARY**

*Borehole #* C-8400 *Tubing* (2 5/8) @ 95' to 120.5 *ft bgs; S.U.* 1.8"

*Borehole #* N/A *Tubing* ( ) @ to *ft bgs; S.U.* ____

*Borehole #* N/A *Tubing* ( ) @ to *ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1. N/A
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Water Safety---On & Off The Job. |
| 0620 | Drive to S-Tank Farm. |
| 0658 | Arrive at S-Tank Farm. Pre-job with crew: Continue driving to 126' bgs. |
| 0715 | Dress in whites, start drilling @ 95' bgs. after rig inspection, fuel rig. |
| 0830 | Drove to 102' bgs, Let head cool. |
| 0900 | Start drilling at 102' bgs. |
| 0920 | Drove to 107' bgs, Let head cool. Go out of farm water break. |
| 1000 | Dress in whites, Drill @ 107' bgs |
| 1039 | Drove to 113' Let head cool. |
| 1115 | Drove to 120.5' bgs., Inner string not tightening up, We think inner |
| — | string broke, Exit farm for Lunch |
| 1130 | Lunch. |
| 1201 | Gather tools for fishing 1½ inner string. |
| 1220 | Dress in whites, backpull casing to break. |
| 1258 | Casing was broke at 94' bgs, run overshot in to retrieve |
| — | remaining casing and dummy tip. |
| 1320 | Pushed overshot on 1½ casing, gave ¼ turn and retrieved |
| — | remaining casing. |
| 1400 | Retrieved remaining casing. Clean up site, Dress out of whites |
| 1415 | Drive to ESFS. |
| 1445 | Arrive at ESFS, paperwork, Timecard. |
| 1530 | End of shift. |
| | N/A |

**OPERATOR/LICENSE:** Repko/3012
*ES SUPPORT Ehrgott, Hoopes*
*NCO:* Rivera, Snook, Villareal, Extrom
*HPT:* Widdis, Young, Templeton
*FWS:* Clark/Paulsell

**WEATHER:** 88 F, mostly sunny and warm with winds from the northwest at 5-10 mph.

**DOWNTIME:** N/A

**DISCARDED ITEMS:**
2-o-rings 2-lynch pins
1-1½ inner rod
2-Nylatrol Donuts
1-3½" set screw

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Mark A. Repko
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** [signature]

**REVIEWED BY:** RZ Stiffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** [signature] **DATE:** 8-17-11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Complete sampling activities at #C8400. **DATE:** 08-17-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 15

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | N/A | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No (HHU CASE#1) (HHU CAT #2) HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C-8400 Tubing (2 5/8) @ 120.5 to 126' ft bgs; S.U. 2-3'

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ____

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ____

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | N/A | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Safe Attitudes. |
| 0620 | Drive to S-Farm |
| 0700 | Arrive at S-Farm, ACE in, Pre-job with crew: Continue drilling to |
| — | next and last sample interval 126' bgs. |
| 0745 | Dress in whites rig inspection. Fuel rig, Trip dummy tip to 120.5' bgs. |
| 0800 | Hydraulic oil leak out of hydraulic control panel, pull rig out |
| — | of farm. Bring CASE #1 into farm setup on #C-8400. |
| 0950 | Run dummy tip to 120.5' bgs, start driving to 126' bgs. |
| 1100 | Drove to 126' bgs last sample interval. Dress out of farm for lunch. |
| 1130 | Lunch - (Standby for Hpt's) |
| 1255 | Dressing whites, pull dummy tip @ 126' bgs, Install sampler |
| — | to 126' bgs, cleanup site, Exit farm out of whites |
| 1430 | Drive to ESFS |
| 1500 | Arrive at ESFS, paperwork, Timecard. |
| 1530 | End of shift. |
| | |
| Notes: | After T.D. - @ 126', we noticed the inner rod was not |
| — | right, we broke a inner rod 1½" @ 16' below grade, we |
| — | were successful fishing out broken rod and pulled |
| — | dummy tip and placed sampler @ 126' bgs for the last |
| — | sample tomorrow - CAT #2 was moved by Powers today |
| — | to be worked on. |
| | N/A |

**OPERATOR/LICENSE:** Repko/3012
*ES SUPPORT* Ehrgott, Hoopes
*NCO:* Snook, Rivera, Villareal, Eotrom
*HPT:* Widdis, Clayton, Mincey
*FWS:* Clark

**WEATHER:** 90 F, mostly sunny and warm with winds from the west at 5-15 mph.

**DOWNTIME:** 1 hr. Hpt's went to building for lunch

**DISCARDED ITEMS:**
1 - 1½ inner rod
2 - 18" Heel jaw & Hooks.

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Mark A Repko
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Mark A Repko

**REVIEWED BY:** D. E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David Skoglie **DATE:** 8/18/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Complete sampling activities at #C8400 and begin decommissioning. **DATE:** 08-18-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:** 11076292 **REPORT #:** 16

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:** 11-005 Rev. 0

**SAMPLING SUMMARY** **SITE/EQUIPMENT INSPECTION:** (Yes) No (HHU CASE#1) HHU CAT #2 HHUXL#3

| Sample #'s | Interval | % |
|---|---|---|
| 1. B2FYR2 | 126-128 | 100% |
| 2. N/A | | |
| 3. N/A | | |
| 4. N/A | | |

**BOREHOLE SUMMARY**

Borehole # C-8400 Tubing (2 5/8) @ 126' to 128' ft bgs; S.U. N/A (128 - 0)

Borehole # C-8401 Tubing (2 5/8) @ 78' to 82 ft bgs; S.U. 4.3'

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ____

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. N/A | | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: General Safety---It's Your Decision. |
| 0615 | Drive to S-Tank Farm. |
| 0700 | Arrive at S-Tank Farm. |
| 0701 | Pre-job with crew: Take last sample @ 126' bgs. Decommission hole. |
| 0715 | Dress in whites, Rig inspection, fuel rig |
| 0733 | Start driving Sampler @ 126-128' bgs = Recovery = 100 % |
| 0741 | Pull sampler from hole @ 128' bgs. Sampler Recovery = 100 % |
| 0841 | Start backpulling 2 5/8 and decommissioning. |
| — | Backpulled rods continuous using granular bentonite to surface. |
| 1105 | Backpulled casing to G.S. Dress out of whites. |
| 1115 | Lunch - Dress out of whites. |
| 1146 | Dress in whites, Beretta blew a hose, exiting the farm to get |
| — | worked on. Aguila and I are setting up the CASE on the same |
| — | hole = C-8401 casing @ 78' bgs when we started. |
| 1230 | Drove to 79' Left Head cool. Very hard drilling. |
| 1300 | Start drilling @ 79' bgs. |
| 1330 | Drove to 81' bgs Left head cool. |
| 1350 | Drove to 82' bgs - Cleanup work area, secure site, exit farm. |
| — | Out of whites. |
| 1430 | Drive to ESFS. |
| 1500 | Arrive at ESFS, paperwork, Timecard. 1530 End of shift. |
| | N/A |

**OPERATOR/LICENSE:** Repko/3012
*ES SUPPORT* Hoopes
*NCO:* Swank, Villneal, Extram, Rivera
*HPT:* Widdis, Minney
*FWS:* Clark

**WEATHER:** 88 F, mostly sunny and warm with winds from the west at 5-10 mph.

**DOWNTIME:** N/A

**DISCARDED ITEMS:** 3-Sample liners 6-Caps (sample)

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Mark A. Repko
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Mark A. Repko

**REVIEWED BY:** ____
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** ____ **DATE:** ____

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# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8400 I003 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** | **ORIGINAL** | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** | ☐ft ☐m | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 5 **TOTAL NUMBER OF CHAINS** 3 **COLLECTOR**

**222-S** **V11-006-057**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FYR2 | 1 / 60mL / G/P | | None | Rad Screen; |

**222-S** **V11-006-058**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FYR3 | 1 / 500mL / G | 100% | Cool~6C | Generic Testing; |

**222-S** **V11-006-059**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FYR4 A | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); |
| B2FYR5 B | 1 / 160g / Liner | 100% ~~Wet~~ Dry | Cool~6C | Bulk Density - D2937 (TF); |
| B2FYR6 C | 1 / 160g / Liner | 90% Wet | Cool~6C | Bulk Density - D2937 (TF); |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue driving probe hole #C8401. **DATE:** 08-22-11

**LOCATION:** "S" Tank Farm, 200 West Area, Hanford **EXCAVATION:** DAN-11-0186 **U-DIG #:**11076292 **REPORT #:** 17

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 1 **AHA:**11-005 Rev. 0

**SAMPLING SUMMARY**

*Sample #'s* *Interval* *%*

1.
2. N/A
3.
4.

**SITE/EQUIPMENT INSPECTION:** ~~Yes~~ No

HHU CASE#1 HHU CAT #2 HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C-8401 Tubing (2 1/2) @ 82' to 92' ft bgs; S.U. 2.3'

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ___

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ___

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1. N/A
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Safety Eye Wear---For Sun & Shade. |
| 0630 | Drive to ACES, change out dosemetry, drive to S-Tank Farm. |
| 0700 | Pre-job with crew; continue driving on #C-8401. |
| 0730 | Dress in whites, rig inspection start drilling at 82' bgs |
| 0815 | Drove to 84' bgs Let head cool. |
| 0834 | START Drilling at 84' bgs. |
| 0845 | Drove to 85.6' bgs Let head cool. |
| 0910 | START drilling @ 85.6' bgs. |
| 0919 | Drove to 88' bgs, Let head cool. |
| 0937 | Start drilling at 88' bgs. |
| 0952 | Drove to 92' bgs, Let head cool. Allen bolt in head leaking |
| — | alot, call Walkup. Walkup says pull #1 CASE out of farm |
| — | Exit farm to take break, Talk to Hpt's and FWS. |
| 1045 | Dress in Whites, move CASE out of farm on plastic, To be moved |
| — | to ENW tomorrow. |
| 1115 | CASE #1 out of Farm Hpt's surveyed. Dress out of whites. |
| 1130 | Drive to ENW, work at shop. |
| 1400 | Drive to ESFS, paperwork, Timecard. |
| 1530 | End of shift |

N/A

**OPERATOR/LICENSE:** Repko/3012
*ES SUPPORT* Hoopes
*NCO:* Rivera, snook, ullareal
*HPT:* Widdis, Young Clayton, Templeton
*FWS:* Clark

**WEATHER:** 95 F, mostly sunny and warm with winds from the southwest at 10-15 mph.

~~**DOWNTIME:**~~ N/A

**DISCARDED ITEMS:** 6 lynch pins

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

**REPORT BY:** Mark A. Repko
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** [signature]

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** [signature] DATE: 8-23-11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Transport CASE HHU to ENW and begin repairs. | | **DATE:** 08-23-11 |
| **LOCATION:** "S" Tank Farm, 200 West Area, Hanford | **EXCAVATION:** DAN-11-0186 **U-DIG #:**11076292 | **REPORT #:** 18 |
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 1 **AHA:**11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** *Yes* (No) | (HHU CASE#1) *HHU CAT #2* *HHUXL#3* |

*Sample #'s* *Interval* *%*

1.
2.
3.
4.

N/A

**BOREHOLE SUMMARY**

*Borehole #* _____ *Tubing (* *)@* *to* *ft bgs; S.U.* ____

*Borehole #* _____ *Tubing (* *)@* *to* *ft bgs; S.U.* ____

*Borehole #* _____ *Tubing (* *)@* *to* *ft bgs; S.U.* ____

N/A

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1.
2.
3.

N/A

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Don't Get Sore At Your Computer!** |
| 0700 | Drive to ENW, Worked at shop, Powers picked up HHUXXL. |
| 0810 | Drive to S-Tank farm, pickup #1 CASE with Powers, after dropping |
| — | The HHUXXL off at S-tank. |
| 0900 | Case #1 Loaded, drive to ENW to offload and work on. |
| 0940 | Work on CASE #1 at shop. Take hoses off to get to rotation |
| — | gears, Take Gear motors out. clean gear motors, remove |
| — | old grease in reservoir, clean reservoir of old grease, |
| — | Called Glen from TEA to get information on |
| — | blowby plug and on information on Hydraulic |
| — | Hammer, Glen to Call Passey back with information. |
| — | Cleanup shop, put equipment in safe configuration |
| 1350 | Drive to ESPS. |
| 1410 | Arrive at ESPS. Paperwork, Timecard. |
| 1530 | End of shift. |

N/A

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Repko/3012<br>*ES SUPPORT* Hoopes<br>*NCO:* N/A<br>*HPT:* N/A<br>*FWS:* Clark | **WEATHER:** 92 F, mostly sunny and warm with winds from the southwest at 5-10 mph.<br>**DOWNTIME:** N/A | **DISCARDED ITEMS:**<br>1-Big Pin (Drive head) |

**REFERENCE/CONTRACT INFORMATION:** FSWO-DOW- TFC-WO-11-1935 ECN-11-000563

| | |
|---|---|
| **REPORT BY:** Mark A. Repko | **REVIEWED BY:** D.E. Skoglie |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Mark A. Repko | **SIGNATURE:** Daniel E. Skoglie **DATE:** 8/24/11 |

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Mobilize HHUXL into farm, set-up and begin driving probe hole #C8399. **DATE:** 07-07-11

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. **EXCAVATION:** DAN-11-0186 **U-DIG:** #11076292 **REPORT #:** 01

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 01 **JHA-**11-005 Rev. 0

**SAMPLING SUMMARY** — Sample #'s / Interval / %: N/A

**SITE/EQUIPMENT INSPECTION:** Yes No — *HHU CASE#1* *HHU CAT #2* *HHUXL#3*

**BOREHOLE SUMMARY**

Borehole #C-8399 Tubing (2½) @ G.S. to 52 ft bgs; S.U. 2.3'

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ___

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ___

**GEOPHYSICAL LOGGING** — Boring # / Interval / Type: N/A

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Driver Quiz. |
| 0615 | Drive to S-Farm, |
| 0700 | Arrive at S-farm, standby for pre-job. |
| 0715 | Pre-job with crew: To setup XXL on #C-8399 |
| 0735 | Pre-job ended, standby for route map for XXL. |
| 0815 | move HHU XXL into S farm, route map approved, per Clark. |
| — | Setup on #C-8399 |
| 0921 | Done setup rig on hole #C-8399. Dress out of whites, standby for |
| — | Rope barrier and stantions, from C-farm. |
| 1000 | Equipment brought + S-farm, stantions and rope, operators to set |
| — | up boundary around rig. |
| 1050 | Start drilling @ G.S. on #C-8399. 50/50 started at 11:15 (work regiment) |
| 1130 | Drove to 48' bgs, Dress out of whites for lunch |
| 1145 | Lunch. |
| 1250 | Dress in whites, Told per FWS we are on 50/50 work for ½ hr. |
| 1300 | Start driving at 48' bgs. |
| 1330 | Drove to 52' bgs, suspected accumulator failure on XXL. Exit farm. |
| 1348 | Drive to ESFS, paperwork and Timecard. |
| 1530 | End of shift |

N/A

**OPERATOR/LICENSE:** Repko/3012
*ES SUPPORT:* Weakley
*NCO:* Sharp, Rivera
*HPT:* Widdis, Young
*FWS:* Clark

**WEATHER:** 94 F, mostly sunny with winds from the southwest at 5-15 mph.

**DOWNTIME:** 2-hrs. Total
- .5 - Route map XXL
- .5 for rope barrier
- 1hr - Heat Stress

**DISCARDED ITEMS:** 1-Lynch pin

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** Mark A. Repko
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Mark A. Repko

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** Daniel E. Skoglie **DATE:** 7/11/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Check accumulators and continue driving probe hole #C8399. | | **DATE:** 07-11-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 02 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** Yes No | *HHU CASE#1* *HHU CAT #2* *HHUXL#3* |

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | NA | |
| 4. | | |

**BOREHOLE SUMMARY**

Borehole # C8399 Tubing (2.5) @ 52' to 84 ft bgs; S.U. 2.3

Borehole # — Tubing ( ) @ to ft bgs; S.U. ___

Borehole # — Tubing ( ) @ to ft bgs; S.U. ___

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | | |
| 2. | NA | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Heat Stress and Wet Bulb Presentation by ESGG Safety Staff. |
| 0700 | Head to S-Farm, need to Ace in, also need |
| | To swing by the yard to grap gauges and Tools to |
| | change out Accumulators. |
| 0815 | AT S Farm |
| 0825 | POD - Topic's: change accumulators on the XL, watch the |
| | heat, |
| 0835 | ~~End~~ Enter S Farm To check accumulators on The XL. |
| 0910 | All Accumulators are good. Begin pushing pipe. |
| | Head does not seem to be hitting as hard as usual. |
| 1035 | 2.5" rods are binding up and is going very hard |
| | Seems to be a problem down the hole. Exit Farm |
| | For lunch. We will run a tagger down the hole |
| | After lunch to see if maybe the pipe is broke. |
| 1045 | lunch, and Locate camera |
| 1115 | waiting on RCT to run camera in hole |
| 1240 | RCT's back, run camera in hole. |
| 1305 | No apparent breaks in the rods continue driving |
| | Pipe |
| 1420 | AT 84 Feet and going slow but gaining. Exit Zone |
| 1438 | Head to office. |
| 1506 | AT office, do paper work |
| 1530 | End shift |

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Amos/1224<br>*ES SUPPORT:* Weakley<br>*NCO:* Sharp, Ruben,<br>*HPT:* Bernard, Wittus, Young<br>*FWS:* Clark | **WEATHER:** 87 F, partly cloudy with winds from the southwest at 5-15 mph.<br>**DOWNTIME:** 1hr: RCT's | **DISCARDED ITEMS:** — |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** Lo Amos | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Lyle O. Amos | **SIGNATURE:** R.Z. Steffler DATE: 7-12-11 |

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Continue driving probe hole #C8399. | | **DATE:** 07-12-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 03 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** (Yes) No | *HHU CASE#1 HHU CAT #2* (HHUXL#3) |

**SAMPLING SUMMARY**

| *Sample #'s* | *Interval* | *%* |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | N/A | |
| 4. | | |

**BOREHOLE SUMMARY**

*Borehole #* C8399 *Tubing (* 2.5 *) @* 84 *to* 152.3 *ft bgs; S.U.* 2

*Borehole #* — *Tubing (  ) @  to  ft bgs; S.U.* ___

*Borehole #* — *Tubing (  ) @  to  ft bgs; S.U.* ___

**GEOPHYSICAL LOGGING**

| *Boring #* | *Interval* | *Type* |
|---|---|---|
| 1. | N/A | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Lifting Heavy Bags.** |
| 0615 | Head to S-Farm |
| 0645 | waiting for POD |
| 0720 | POD. Topics: Case - install probes, XL continue pushing. Heat, |
| 0800 | Dress into S-Farm, and Begin pushing rods. Rig inspection 515.5 hrs. on rig. |
| 0815 | Begin pushing rods |
| 1100 | AT 126' with rods, Dress out for lunch |
| 1130 | Dress into zone (Farm) and continue to drive |
| 1340 | AT Total depth of 152.3. move XL TO C8394 to Sample. Hole tagged at 154.3 from Top of casing (no fill) |
| 1415 | Rig on site. Support equipment ready to move over in the morning. |
| 1440 | Head to office |
| 1530 | End Shift NOTE: C8399 Tagged at 154.3 (no fill) |
| | N/A |

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Amos/1224<br>*ES SUPPORT:* Weakley<br>*NCO:* Ruben, willy<br>*HPT:* Young, wittig<br>*FWS:* Clark | **WEATHER:** 85 F, mostly cloudy with winds from the southwest at 5-15 mph.<br>**DOWNTIME:** | **DISCARDED ITEMS:** 0 |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** LO Amos | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Lo O. Amos | **SIGNATURE:** R.Z. Steffler **DATE:** 7-14-11 |

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Begin sampling activities at #C8394. Begin logging activities at #C8399.

**DATE:** 07-13-11

**LOCATION:** "S" Tank Farm 200 West Area, Hanford.

**EXCAVATION:** DAN-11-0186
**U-DIG:** #11076292

**REPORT #:** 04

**START CARD NO.** SE09635

**DECOMMISSION NO.** AE12960

**RWP:** CO-645, Rev. 01 **JHA-**11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. B20430 | 43-45 | 100% |
| 2. B20431 | | 100% |
| 3. B20432 | | 100% |
| 4. B20380 | | Rad screen |

**SITE/EQUIPMENT INSPECTION:** Yes No

*HHU CASE#1* *HHU CAT #2* *HHUXL#3*

**BOREHOLE SUMMARY**

Borehole # C8394 Tubing (2 5/8) @ 43 to 53.3 ft bgs; S.U. 6

Borehole # ____ Tubing ( ) @ to ft bgs; S.U. ____

Borehole # ____ Tubing ( ) @ to ft bgs; S.U. ____

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. C8399 | 153-96 | Gamma |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Use of Good Rad. Practices. |
| 0615 | Head to S Farm |
| 0645 | AT S Farm, waiting for Support to have POD |
| 0806 | POD: Topics: Gamma Logging, Sampling on C8394 with XL. Aquila and Rory will be logging on C8399 |
| 0815 | Dress into S-Farm to set up rig, Rig inspection 518.4 hrs. on Rig, move support equipment |
| 0930 | Rig set up and ready to pull inner rods + run in Sampler |
| 0945 | Pull inner |
| 0951 | Run in Sampler |
| 1004 | Drive Sampler from 43' to 45' and pull out. |
| 1039 | Sample 100%, ok to drive to next sample point |
| 1045 | Run in dummy and begin driving |
| 1142 | Exit Farm: AT 51 feet |
| 1200 | Lunch |
| 1230 | waiting on NCO to open change trailer |
| 1245 | NCO on site enter Farm and drive pipe |
| 1337 | 2 5/8" pipe is not advancing, we will let the head cool and try again. clean up site and tools |
| 1410 | Exit Farm |
| 1435 | Head to office |
| 1505 | Paper work |
| 1530 | End shift |

**OPERATOR/LICENSE:** Amos/1224
*ES SUPPORT:* Weakley, Steffler and Hoopes
*NCO:* Willy, Bob,
*HPT:* Young, Witt's
*FWS:* Clark

**WEATHER:** 82 F, mostly cloudy with winds from the southwest at 10-20 mph.

**DOWNTIME:** 1.5 hrs. waiting on NCO Support

**DISCARDED ITEMS:**
4 - Lynch Pins
3 - Liners
6 - Liner Caps

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** LO Amos
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Lo A. Amos

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler
**DATE:** 7-14-11

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8394 I001 | **LOGBOOK NO./PAGE** | | |
| **WELL NAME** ORIGINAL | **WELL ID** | **ACTUAL DEPTH** | ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | **BOTTOM OF BOREHOLE (bgs)** | | ☐ft ☐m |
| **SAMPLES COLLECTED** | | | |
| **TOTAL NUMBER OF BOTTLES** 4 | **TOTAL NUMBER OF CHAINS** 2 | **COLLECTOR** | |

**222-S** **V11-006-012**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| ~~B2D429~~ | 1 / 500mL / G | 60% | Cool~6C | Generic Testing; SHOE |

**222-S** **V11-006-013**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2D430 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); LINER "A" |
| B2D431 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); " "B" |
| B2D432 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); " "C" |

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# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 1 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8394 Rad Screen | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** ORIGINAL | | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 1 **TOTAL NUMBER OF CHAINS** 1 **COLLECTOR**

**222-S** **V11-006-008**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2D3P0 | 1 / 60mL / G/P | | None | Rad Screen; |

**FIELD INFORMATION**

**WHERE ARE SAMPLES LOCATED AT THIS TIME?** ☐ WSCF ☐ 222-S ☐ MO-413 ☐ MO-745 ☐ 6269 ☐ OTHER

**CONTAINER/DRUM/TOTE/BOX**

**SAMPLE MATRIX DESCRIPTION** ☐ SOIL ☐ SLUDGE ☐ RESIN ☐ GAC ☐ FILTER PAPER ☐ OTHER

**FURTHER SAMPLE MATRIX EXPLANATION/DESCRIPTION [NOTE ANY ODOR, COLOR, TEXTURE (E.G., SLIMY, OILY, GRANULAR, ETC.)]**

**FIELD OBSERVATIONS**

**WEATHER**

**FIELD COMMENTS**

**SUPPORT PERSONNEL**

**SAMPLES SURVEYED BY RCT** ☐ YES ☐ NO

**IS A BLUE CARD REQUIRED** ☐ YES ☐ NO **BLUE CARD NO** _____

**IS SRS PROVIDED AND COMPLETE** ☐ YES ☐ NO

**RECORDED BY** PRINT NAME _____ SIGN NAME _____ DATE _____

**INDEPENDENT REVIEW** PRINT NAME _____ SIGN NAME _____ DATE _____

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE: Continue sampling activities at #C8394. Continue logging activities at #C8399.** | **DATE: 07-14-11**

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186 **U-DIG: #11076292** | **REPORT #: 05**

**START CARD NO. SE09635** | **DECOMMISSION NO. AE12960** | **RWP: CO-645, Rev. 01** **JHA-11-005 Rev. 0**

**SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** (Yes) No | *HHU CASE#1* *HHU CAT #2* (HHUXL#3)

| Sample #'s | Interval | % |
|---|---|---|
| 1. | | |
| 2. | NA | |
| 3. | | |
| 4. | | |

**BOREHOLE SUMMARY**

Borehole #C8394 Tubing (2 3/8) @ 53.3 to 68 ft bgs; S.U. 2.3

Borehole # — Tubing ( ) @ to ft bgs; S.U. ___

Borehole # — Tubing ( ) @ to ft bgs; S.U. ___

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. C8399 | 96'-0' | SG |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Dermatitis. |
| 0615 | Head to S Farm, Rory and Aquila will be logging |
| 0656 | POD: Topic: Logging on C8399, Sampling on C8394 |
| 0715 | Dress into Farm |
| 0735 | Rig inspection 520.8 hrs. |
| 0745 | Begin Driving Going very hard |
| 0850 | Head Hot let cool |
| 0920 | Back Driving pipe |
| 1030 | Exit Farm at 64' still going slow |
| 1045 | Lunch |
| 1115 | waiting for key to change trailer to dress out |
| 1145 | Enter Farm and begin pushing pipe |
| 1250 | Exit Farm, Head is Hot |
| 1325 | Back in Farm driving pipe |
| 1410 | Exit Farm |
| 1430 | Head to Office, XL Seems to have a problem with the Hydralics. Talk with walkup and let him know whats happening. |
| 1500 | Paper work, call Glenn and discuss problem with XL |
| 1530 | End SHIFT |
| | NA |

**OPERATOR/LICENSE:** Amos/1224
*ES SUPPORT: Weakley, Steffler and Hoopes*
*NCO:* Sharp, Reban
*HPT:* Young, Wittis
*FWS: Clark*

**WEATHER: 83 F, partly cloudy with winds from the southwest at 5-15 mph.**

**DOWNTIME:** .5 - Support NCO

**DISCARDED ITEMS:** 5 - Lynch Pins

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** LO Amos
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Lo A. Amos

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler **DATE:** 7-15-11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Demobilize HHUXL to ENW for repairs to hydraulic system. **DATE:** 07-15-11

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. **EXCAVATION:** DAN-11-0186 **U-DIG:** #11076292 **REPORT #:** 06

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

N/A

**SITE/EQUIPMENT INSPECTION:** Yes (No) *HHU CASE#1* *HHU CAT #2* (*HHUXL#3*)

**BOREHOLE SUMMARY**

Borehole # — Tubing ( ) @ to ft bgs; S.U. ____

Borehole # — Tubing ( ) @ to ft bgs; S.U. ____

Borehole # — Tubing ( ) @ to ft bgs; S.U. ____

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |

N/A

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Safety Habits. |
| 0615 | Travel to S-Farm |
| 0700 | POD: Topics: move XL out of S-Farm for repair |
| 0710 | Enter farm and fold over XL and get surveyed out of farm. |
| 0925 | Rig has been surveyed and cleared by Young (RCT) and is ready to load on lowboy to take to shop. waiting for lowboy |
| 1130 | Lowboy on site, load up and head to shop |
| 1230 | AT shop with XL unload and park in shop |
| 1250 | Head to office |
| 1315 | AT office do paper-work |
| 1430 | End shift. we will begin repairs to XL Monday |

N/A

**OPERATOR/LICENSE:** Amos/1224
*ES SUPPORT:* Walkup
*NCO:* Sharp, ruben
*HPT:* Young
*FWS:* Clark

**WEATHER:** 84 F, mostly sunny with winds from the southwest at 5-10 mph.

**DOWNTIME:** 0

**DISCARDED ITEMS:** 0

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** LO AMOS
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** [signature]

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** [signature] **DATE:** 7-18-11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE: Begin repairs to HHUXL at ENW.** | | **DATE: 07-18-11** |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG: #11076292** | **REPORT #: 07** |

| | | |
|---|---|---|
| **START CARD NO. SE09635** | **DECOMMISSION NO. AE12960** | **RWP: CO-645, Rev. 01 JHA-11-005 Rev. 0** |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** *Yes* (*No*) | ***HHU CASE#1 HHU CAT #2 (HHUXL#3)*** |

**SAMPLING SUMMARY**

| *Sample #'s* | *Interval* | *%* |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | N/A | |
| 4. | | |

**BOREHOLE SUMMARY**

*Borehole #* _____ *Tubing (  ) @  to  ft bgs; S.U.* ____

*Borehole #* _____ *Tubing (  ) @  to  ft bgs; S.U.* ____

*Borehole #* _____ *Tubing (  ) @  to  ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

| *Boring #* | *Interval* | *Type* |
|---|---|---|
| 1. | | |
| 2. | N/A | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Heat Stress and Wet Bulb Presentation by ESGG Safety Staff.** |
| 0630 | Head to shop to pull Hyd. Filter out of XL |
| 0700 | AT shop pull Hyd. Filter and get numbers: |
| | Made in Italy: IKRON HHC-11000 another # 04E0139 |
| 0800 | reinstall Hyd. Filter until a new one is tracked down for |
| | replacement. Trouble shoot rig and try to find the |
| | problem. The Hydralic filter is just a mesh strainer. |
| 1100 | Lunch |
| 1130 | adjust tracks so they track together check pressures |
| | of the two pumps. No luck finding the problem |
| 1530 | End shift |
| | N/A |

| | | |
|---|---|---|
| **OPERATOR/LICENSE: Amos/1224**<br>*ES SUPPORT: Passey*<br>*NCO:* —<br>*HPT:* —<br>*FWS: Clark* | **WEATHER: 89 F, mostly sunny with winds from the southwest at 5-10 mph.**<br>**DOWNTIME:** — | **DISCARDED ITEMS:** — |

**REFERENCE/CONTRACT INFORMATION: TFC-WO-11-1935 FSWO-DOW- ECN-11-000563**

| | |
|---|---|
| **REPORT BY:** Olin Amos | **REVIEWED BY:** D.E. Skoglie |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Olin Amos | **SIGNATURE:** Dal E Skoglie **DATE:** 7/20/11 |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE: Continue repairs to HHUXL at ENW.** | **DATE: 07-19-11**

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186 **U-DIG: #11076292** | **REPORT #: 08**

**START CARD NO. SE09635** | **DECOMMISSION NO. AE12960** | **RWP: CO-645, Rev. 01** JHA-11-005 Rev. 0

**SAMPLING SUMMARY**

*Sample #'s* *Interval* *%*

1.
2.
3.
4.

N/A

**SITE/EQUIPMENT INSPECTION:** *Yes* (No) | *HHU CASE#1* *HHU CAT #2* (*HHUXL#3*)

**BOREHOLE SUMMARY**

*Borehole #* ____ *Tubing (* *)@* *to* *ft bgs; S.U.* ____

*Borehole #* ____ *Tubing (* *)@* *to* *ft bgs; S.U.* ____

*Borehole #* ____ *Tubing (* *)@* *to* *ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1.
2.
3.

N/A

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Hand Tool Safety.** |
| 0630 | Head to shop to work on the XL, Go by way of 200 west to pickup Gauges and bottles to check Accumulators. |
| 0830 | AT shop check and repair 65 bar diaphram on |
| 0 | XL Head, change Hoses on pilot valves to try and elliminate causes for the problem. |
| 1130 | Lunch |
| 1200 | Head is still not working properly. |
| | ITEMS checked: Pilot valves, motor pressures, Hoses, Hyd Filter, oil, |
| | Called Glenn with TEI and he said that it could be in the valve bank. Talked to Mike Walkup about the problem, Sounds like Glenn may come and check it out. |
| 1530 | End shift |

N/A

**OPERATOR/LICENSE:** Amos/1224
*ES SUPPORT:* Passey
*NCO:* —
*HPT:* —
*FWS:* Clark —

**WEATHER:** 85 F, mostly sunny with winds from the southwest at 5-15 mph. Gusts 20-30 mph in the afternoon.

**DOWNTIME:** —

**DISCARDED ITEMS:** 1x Diaphram 65 Bar

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** Olin Amos
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Olin Amos

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** D.E. Skoglie **DATE:** 7/20/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Continue repairs to HHUXL at ENW. | | **DATE:** 07-20-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 09 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** *Yes No* | *HHU CASE#1 HHU CAT #2 HHUXL#3* |

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | N/A | |
| 2. | | |
| 3. | | |
| 4. | | |

**BOREHOLE SUMMARY**

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ____

Borehole # ____ Tubing ( ) @ to ft bgs; S.U. ____

Borehole # ____ Tubing ( ) @ to ft bgs; S.U. ____

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | N/A | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Load Securement by ESGG Safety Staff. |
| 0700 | Travel to E.N.W. |
| 0730 | Arive E.N.W to work on XXL. Continuing System Checks on the different hydraulic systems that are being affected. Reassemble all systems to original ~~original~~ orientation. No obvious cause for the problem is found. The XXL is ready for Glenn the mechanical engineer from T.E.I. to diagnose and repair the hydraulic system. |
| 12:00 | Lunch |
| 12:30 | Continue preparations on the XXL. |
| 15:30 | end of Shift |

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Walkup/3005<br>*ES SUPPORT: Passey*<br>*NCO: N/A*<br>*HPT: N/A*<br>*FWS: N/A* | **WEATHER:** 83 F, mostly sunny with winds from the southwest at 5-10 mph.<br>**DOWNTIME:** | **DISCARDED ITEMS:** N/A |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** Mike Passey | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** [signature] | **SIGNATURE:** R.Z. Steffler DATE: 7-21-11 |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Standby for TEI to troubleshoot HHUXL at ENW. **DATE:** 07-21-11

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. **EXCAVATION:** DAN-11-0186 **U-DIG:** #11076292 **REPORT #:** 10

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 01 **JHA-**11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | N/A | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** Yes (No)

*HHU CASE#1 HHU CAT #2* (HHUXL#3)

**BOREHOLE SUMMARY**

Borehole # — Tubing ( ) @ to ft bgs; S.U. ____

Borehole # — Tubing ( ) @ to ft bgs; S.U. ____

Borehole # — Tubing ( ) @ to ft bgs; S.U. ____

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | N/A | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: PPE Protection. |
| 0630 | Head to Energy northwest yard |
| 0700 | Round up a drum for TEI on monday, Get Hydralic Oil, check other flows on valves. Do air on chev. |
| 1100 | Lunch |
| 1130 | waiting on TEI |
| 1530 | End shift |

N/A

**OPERATOR/LICENSE:** Amos/1224
*ES SUPPORT:* Passey
*NCO:* N/A
*HPT:* N/A
*FWS:* N/A

**WEATHER:** 82 F, partly cloudy with winds from the southwest at 10-15 mph in the morning, increasing to 15-25 mph.

**DOWNTIME:** —

**DISCARDED ITEMS:**

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** Olin Ames
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Olin Ames

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 7/25/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE: Standby for TEI to troubleshoot HHUXL at ENW on Tuesday 07-26-11.** | **DATE: 07-25-11**

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186 **U-DIG: #11076292** | **REPORT #: 11**

**START CARD NO. SE09635** | **DECOMMISSION NO. AE12960** | **RWP: CO-645, Rev. 01** **JHA**-11-005 Rev. 0

**SAMPLING SUMMARY**

*Sample #'s* *Interval* *%*

1.
2. N
3. A
4.

**SITE/EQUIPMENT INSPECTION:** *Yes No* | *HHU CASE#1 HHU CAT #2 HHUXL#3*

**BOREHOLE SUMMARY**

*Borehole #* N/A *Tubing ( ) @ to ft bgs; S.U.* ____

*Borehole #* ____ *Tubing ( ) @ to ft bgs; S.U.* ____

*Borehole #* ____ *Tubing ( ) @ to ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1. N
2. A
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: New JHA review by ESGG Safety Staff.** |
| 0830 | Travel To E.N.W. |
| 0900 | Work on XXL move oil Barral to Shop. Deliver oil, Floor Dry + ESD. to Shop. Clean and prep for |
| 1130 | lunch |
| 1200 | Clean + Invertory |
| 1530 | end of Shift |

N A

**OPERATOR/LICENSE: Walkup/3005**
*ES SUPPORT: Passey*
*NCO: N/A*
*HPT: N/A*
*FWS: N/A*

**WEATHER: 89 F, partly cloudy with winds from the southwest at 10-15 mph in the morning, increasing to 20 mph.**

**DOWNTIME:**

**DISCARDED ITEMS:** N A

**REFERENCE/CONTRACT INFORMATION: TFC-WO-11-1935 FSWO-DOW- ECN-11-000563**

**REPORT BY:** Mike Passey
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** _____

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 7/25/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Repair HHUXL at ENW with factory rep. | | **DATE:** 07-26-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 12 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** Yes No | *HHU CASE#1 HHU CAT #2 HHUXL#3* |

*Sample #'s Interval %*

1.
2.
3. NA
4.

**BOREHOLE SUMMARY**

*Borehole #* ___ *Tubing (* *) @* *to* *ft bgs; S.U.* ___
*Borehole #* ___ *Tubing (* *) @* *to* *ft bgs; S.U.* ___
*Borehole #* ___ *Tubing (* *) @* *to* *ft bgs; S.U.* ___

**GEOPHYSICAL LOGGING**

*Boring # Interval Type*

1.
2. NA
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Proper Lifting. |
| 0615 | Head To shop at ENW |
| 0635 | AT shop, get things ready for Glenn from TEI |
| 0800 | Glenn is on site and trouble shooting The XL. |
| 1000 | Found a stuck Spool in the Left - Rear valve bank. |
| | Also found a little piece of metal in The Acturator |
| | on pump #2. |
| 1130 | lunch |
| 1200 | Remove all gauges on XL and put plugs and caps |
| | on hoses. Continue Maintance |
| 1530 | End shift |

NA

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Amos/1224<br>*ES SUPPORT: Passey, Walkup*<br>*NCO: N/A*<br>*HPT: N/A*<br>*FWS: N/A* | **WEATHER:** 84 F, mostly sunny with winds from the southwest at 10-15 mph.<br>**DOWNTIME:** 0 | **DISCARDED ITEMS:** NA |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** LOAMOS | **REVIEWED BY:** D.E. Skoglie |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** [signature] | **SIGNATURE:** [signature] DATE: 7/27/11 |

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE: Complete repairs and pressure wash HHUXL.** | | **DATE: 07-27-11** |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG: #11076292** | **REPORT #: 13** |

| | | |
|---|---|---|
| **START CARD NO. SE09635** | **DECOMMISSION NO. AE12960** | **RWP: CO-645, Rev. 01 JHA-11-005 Rev. 0** |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** *Yes* (*No*) | *HHU CASE#1 HHU CAT #2* (*HHUXL#3*) |

**SAMPLING SUMMARY**

| *Sample #'s* | *Interval* | *%* |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

N/A

**BOREHOLE SUMMARY**

*Borehole #* ____ *Tubing (* *)@* *to* *ft bgs; S.U.* ____

*Borehole #* ____ *Tubing (* *)@* *to* *ft bgs; S.U.* ____

*Borehole #* ____ *Tubing (* *)@* *to* *ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

| *Boring #* | *Interval* | *Type* |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | 526.6 | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Flammable Liquids.** |
| 0630 | Head to shop to work on XL |
| 0700 | AT shop, change out Hydralic oil and filters (526.6 hrs) |
| 1100 | Lunch |
| 1130 | Finish putting in oil, replace bolt in wrenches, continue maintainace, |
| 1530 | End shift |

N/A

| | | |
|---|---|---|
| **OPERATOR/LICENSE: Amos/1224**<br>*ES SUPPORT: Passey, Walkup*<br>*NCO: N/A*<br>*HPT: N/A*<br>*FWS: N/A* | **WEATHER: 85 F, mostly sunny with winds from the southwest at 5-15 mph.**<br>**DOWNTIME:** 0 | **DISCARDED ITEMS:** N/A |

**REFERENCE/CONTRACT INFORMATION: TFC-WO-11-1935 FSWO-DOW- ECN-11-000563**

| | |
|---|---|
| **REPORT BY:** LO Amos | **REVIEWED BY:** D. E. Skoglie |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** L. A. Amos | **SIGNATURE:** Daniel E Skoglie **DATE:** 7/28/11 |

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE: Complete repairs and pressure wash HHUXL.** | **DATE: 07-28-11**

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186 **U-DIG: #11076292** | **REPORT #: 14**

**START CARD NO. SE09635** | **DECOMMISSION NO. AE12960** | **RWP: CO-645, Rev. 01** JHA-11-005 Rev. 0

**SAMPLING SUMMARY**

*Sample #'s* *Interval* *%*

1. N/A
2.
3.
4.

**SITE/EQUIPMENT INSPECTION:** *Yes* / *No*

*HHU CASE#1* *HHU CAT #2* *HHUXL#3*

**BOREHOLE SUMMARY**

*Borehole #* ___ *Tubing (* *)* *@* *to* *ft bgs; S.U.* ___

*Borehole #* ___ *Tubing (* *)* *@* *to* *ft bgs; S.U.* ___

*Borehole #* ___ *Tubing (* *)* *@* *to* *ft bgs; S.U.* ___

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1. N/A
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Climbing Stairs** |
| 0630 | Head to shop to add oil to XL and get it ready to roll to S Farm |
| 1100 | Lunch |
| 1130 | Put all covers and guards back on XL ~~for safety~~ Steam clean rig, lube and do final inspection before transporting to S Farm. |
| 1530 | End shift |

N/A

**OPERATOR/LICENSE: Amos/1224**
*ES SUPPORT: Passey, Walkup*
*NCO: N/A*
*HPT: N/A*
*FWS: N/A*

**WEATHER: 88 F, sunny and warm with winds from the west at 5-10 mph.**

**DOWNTIME:** 0

**DISCARDED ITEMS:** N/A

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** LO Amos
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** L O Amos

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 7/29/11

10/06/09 Rev 1

ENERGYSOLUTIONS

**FIELD CLEANING AND/OR DECONTAMINATION**

Page 1 of 1

PROJECT: "S" Tank Farm 200 west

LOCATION OF CLEANING/DECONTAMINATION: ES Shop

THE FOLLOWING EQUIPMENT HAS BEEN CLEANED AND/OR DECONTAMINATED

LIST TYPE OF DETERGENT: ☐ Non-phosphate ☐ Other

| | EQUIPMENT | ID NUMBER |
|---|---|---|
| ☑ | XL-HHU | Rig #3 |
| ☐ | | |
| ☐ | | |
| ☐ | | |

CLEANING ☑ YES ☐ NO

DECONTAMINATION ☐ YES ☑ NO

| | DOWNHOLE EQUIPMENT | | | SIZE | DATE |
|---|---|---|---|---|---|
| ☐ | | | Ea | | |
| ☐ | | | Ea | | |
| ☐ | | | Ea | | |
| ☐ | | | Ea | | |
| ☐ | | | Ea | | |
| ☐ | | | Ea | | |
| ☐ | | | Ea | | |
| ☐ | | | Ea | | |
| ☐ | | | Ea | | |
| ☐ | | | Ea | | |
| ☐ | | | Ea | | |

REMARKS/OBSERVATIONS:

cleaned with high pressure and 180° water

LO Amos / [illegible] 7-28-11

Person Conducting Cleaning and/or Decontamination Date

D.E. Skoglie 7/28/11

Reviewed by Date

100609 Rev. 0

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Transport HHUXL from ENW to "S" Tank Farm and set-up on sample boring #C8406. | | **DATE:** 07-29-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 15 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** Yes No | *HHU CASE#1 HHU CAT #2 HHUXL#3* |

*Sample #'s Interval %*

1. 
2. 
3. N/A
4.

**BOREHOLE SUMMARY**

*Borehole #* C8406 *Tubing (* 2 5/8 *) @* 54 *to* – *ft bgs; S.U.* ____

*Borehole #* — *Tubing ( ) @ to ft bgs; S.U.* ____

*Borehole #* — *Tubing ( ) @ to ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

*Boring # Interval Type*

1. 
2. 0
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Heat Illness Prevention. |
| 0615 | Head to ES shop get XL and cat ready for pickup by Jason. |
| 0645 | work on XL, Grease slides and head |
| 0830 | Loaded XL, waiting on Jason To load cat |
| 1000 | Cat is loaded, head to S-Farm with XL |
| 1030 | AT S-Farm, waiting on XL's arrival |
| 1045 | XL on site, unload and move into site. |
| 1135 | XL on site and setup. lunch |
| 1205 | No RCT This afternoon for drilling. |
| ~~1430~~ 200 | |
| 1430 | End shift |

N/A

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Amos/1224<br>*ES SUPPORT: Weakley*<br>*NCO:* Ruben<br>*HPT:*<br>*FWS: Clark* | **WEATHER:** 95 F, sunny and warm with winds from the southwest at 5-15 mph.<br>**DOWNTIME:** ~~0~~ 2.5 hrs. RZS RCT support | **DISCARDED ITEMS:** N/A |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** LO Amos | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** [signature] | **SIGNATURE:** [signature] DATE: 8-3-11 |

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue sampling activities at #C8406.

**DATE:** 08-01-11

**LOCATION:** "S" Tank Farm 200 West Area, Hanford.

**EXCAVATION:** DAN-11-0186
**U-DIG:** #11076292

**REPORT #:** ~~16~~ ~~58~~ ~~18~~ 16 DEA

**START CARD NO.** SE09635

**DECOMMISSION NO.** AE12960

**RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0

**SITE/EQUIPMENT INSPECTION:** Yes No

HHU CASE#1 HHU CAT #2 HHUXL#3

**SAMPLING SUMMARY**

| | Sample #'s | Interval | % |
|---|---|---|---|
| 1. | B2FXL4 | 98-100 | 100% |
| 2. | (see-below for specifics) | | |
| 3. | N/A | | |
| 4. | N/A | | |

**BOREHOLE SUMMARY**

Borehole # C8406 Tubing (2 5/8") @ 54' to 100' ft bgs; S.U. 2.3'

Borehole # N/A Tubing ( ) @ to ft bgs; S.U.

Borehole # N/A Tubing ( ) @ to ft bgs; S.U.

**GEOPHYSICAL LOGGING**

| | Boring # | Interval | Type |
|---|---|---|---|
| 1. | NA | | |
| 2. | | | |
| 3. | | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Presentation by ESGG Safety Staff. |
| 0640 | Travel to 'S' farm |
| 0715 | Arrive at 'S' farm, Pre-job |
| 0730 | Ace in, gather equipment, dress into whites, enter farm, inspect |
| | rig, fire extinguishers, Drive 2 5/8 dual wall at C8406 from 54' to |
| | 89" letting head cool as needed, survey out |
| 1045 | Lunch |
| 1115 | Enter zone, drive from 89' to 98', sample depth |
| 1145 | stand-by for RCT |
| 1215 | Pulled inner rod, install sampler, drive sample at |
| | 1250 From 98" to 100', pulled and processed samples |
| | recovery: B2FXL4 shoe = 100% B2FXL9 - A Liner = 100%, |
| | B2FXM0, Liner B = 100%, B2FXM1, Liner C = 100% |
| | install inner rod. survey out, clean-up |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Weakley
*NCO:* Roberts, Rivera
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 91 F, sunny and warm with winds from the southwest at 5 mph.

**DOWNTIME:** .5 hr for RCT

**DISCARDED ITEMS:**
3 sampler liners
6 sample caps
3 'O' Rings
6 Lynch pins

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** Dan E Skoglie **DATE:** 8/02/11

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8406 I002 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** ORIGINAL | | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 5 **TOTAL NUMBER OF CHAINS** 3 **COLLECTOR**

**222-S** **V11-006-041**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS | |
|---|---|---|---|---|---|
| B2FXL4 | 1 / 500mL / G | 100% | Cool~6C | Generic Testing; | SHOE |

**222-S** **V11-006-042**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS | |
|---|---|---|---|---|---|
| B2FXL9 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); | LINER "A" |
| B2FXM0 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); | " "B" |
| B2FXM1 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); | " "C" |

**222-S** **V11-006-046**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FXK5 | 1 / 60mL / G/P | | None | Rad Screen; |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue sampling activities at #C8406.

**DATE:** 08-02-11

**LOCATION:** "S" Tank Farm 200 West Area, Hanford.

**EXCAVATION:** DAN-11-0186
**U-DIG:** #11076292

**REPORT #:** ~~17~~ 16 17

**START CARD NO.** SE09635

**DECOMMISSION NO.** AE12960

**RWP:** CO-645, Rev. 01 **JHA-**11-005 Rev. 0

**SITE/EQUIPMENT INSPECTION:** (Yes) No

*HHU CASE#1* *HHU CAT #2* (*HHUXL#3*)

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. B2FXLS | Drivehead | 100% |
| 2. B2FXM2 | A | 95% |
| 3. B2FXM3 | B | 105% |
| 4. B2FXM4 | C | 100% |

**BOREHOLE SUMMARY**

Borehole # C8406 Tubing (2 5/8) @ 100' to 132 ft bgs; S.U. —
Borehole # C8406 Tubing (2 5/8) @ 132' to 0 ft bgs; S.U. —
Borehole # — Tubing ( ) @ to ft bgs; S.U. ___

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | | |
| 2. | NA | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Heart Attacks. |
| 0615 | Head to S-Farm |
| 0645 | AT S-Farm waiting for POD |
| 0655 | POD: weather, Push to 130' for sample depth |
| 0830 | AT Sample depth at 130 Feet, Exit Farm for water break |
| 0840 | Dress into Farm, gear up to pull inner rods and run in Sampler. |
| 0950 | Sampler in hole |
| ~~1050~~ 1951 | Drive Sample (very soft) (0950 Drive) Pull sampler out, clean rods and wait for recovery of sample before proceeding |
| 1030 | Go to chem storage for Bentonite |
| 1100 | Back to S-Farm (Lunch |
| 1130 | waiting on Support |
| 1215 | Enter Farm and decomission hole |
| 1400 | Hole has been decomissioned, Rig is ready to move. Exit Farm. |
| 1430 | Head to office |
| 1530 | End shift |

NA

**OPERATOR/LICENSE:** Amos/1224
*ES SUPPORT:* Weakley
*NCO:* Roberts, Ruben
*HPT:* Young & Wittas
*FWS:* Clark

**WEATHER:** 92 F, sunny and warm with winds from the southwest at 5-15 mph.

**DOWNTIME:** 1 hr. support

**DISCARDED ITEMS:**
1- Drive head 2 5/8"
3-liners, 6-CAPS
8-Bags Bentonite
1-2 5/8 Backpull head

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** LO Amos
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Lo A. Amos

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.J. Steffler **DATE:** 8-3-11

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8406 I003 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** | **ORIGINAL** | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** | ☐ft ☐m | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 5 **TOTAL NUMBER OF CHAINS** 3 **COLLECTOR**

**222-S** **V11-006-043**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FXL5 500mL | 1 / 500mL / G | 100% | Cool~6C | Generic Testing; |

**222-S** **V11-006-044**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FXM2 A | 1 / 160g / Liner | 95% | Cool~6C | Bulk Density - D2937 (TF); |
| B2FXM3 B | 1 / 160g / Liner | 105% | Cool~6C | Bulk Density - D2937 (TF); |
| B2FXM4 C | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); |

**222-S** **V11-006-047**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FXK6 | 1 / 60mL / G/P | | None | Rad Screen; |

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# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | |
|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | **PAGE** 2 **OF** 2 |
| | **DATE/TIME** |
| **SAF NO.(S)** V11-006 | |
| **LOCATION** C8406 I003 | **LOGBOOK NO./PAGE** |
| **WELL NAME** ORIGINAL | **WELL ID** / **ACTUAL DEPTH** ☐ ft ☐ m |
| **BOTTOM OF CASING (bgs)** ☐ ft ☐ m | **BOTTOM OF BOREHOLE (bgs)** ☐ ft ☐ m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 5 **TOTAL NUMBER OF CHAINS** 3 **COLLECTOR**

**FIELD INFORMATION**

**WHERE ARE SAMPLES LOCATED AT THIS TIME?** ☐ WSCF ☐ 222-S ☐ MO-413 ☐ MO-745 ☐ 6269 ☐ OTHER

**CONTAINER/DRUM/TOTE/BOX**

**SAMPLE MATRIX DESCRIPTION** ☐ SOIL ☐ SLUDGE ☐ RESIN ☐ GAC ☐ FILTER PAPER ☐ OTHER

**FURTHER SAMPLE MATRIX EXPLANATION/DESCRIPTION [NOTE ANY ODOR, COLOR, TEXTURE (E.G., SLIMY, OILY, GRANULAR, ETC.)]**

**FIELD OBSERVATIONS**

**WEATHER**

**FIELD COMMENTS**

**SUPPORT PERSONNEL**

**SAMPLES SURVEYED BY RCT** ☐ YES ☐ NO

**IS A BLUE CARD REQUIRED** ☐ YES ☐ NO **BLUE CARD NO** _____

**IS SRS PROVIDED AND COMPLETE** ☐ YES ☐ NO

| | PRINT NAME | SIGN NAME | DATE |
|---|---|---|---|
| **RECORDED BY** | | | |
| **INDEPENDENT REVIEW** | | | |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

PURPOSE: Move to #C8404 and begin sampling activities.

DATE: 08-03-11

LOCATION: "S" Tank Farm 200 West Area, Hanford.

EXCAVATION: DAN-11-0186
U-DIG: #11076292

REPORT #: 18

START CARD NO. SE09635

DECOMMISSION NO. AE12960

RWP: CO-645, Rev. 01 JHA-11-005 Rev. 0

SAMPLING SUMMARY

Sample #'s Interval %

1.
2.
3.
4.

SITE/EQUIPMENT INSPECTION: (Yes) No

HHU CASE#1 HHU CAT #2 (HHUXL#3)

BOREHOLE SUMMARY

Borehole # C8404 Tubing (2 5/8) @ 0 to 43 ft bgs; S.U. 0

Borehole # C8404 Tubing (2 5/8) @ 43 to 0 ft bgs; S.U. 0

Hole was decomissioned

Borehole # 0 Tubing ( ) @ to ft bgs; S.U.

GEOPHYSICAL LOGGING

Boring # Interval Type

1.
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Shop Safety Checklist. |
| 0615 | Head to S Farm |
| 0645 | at S Farm waiting for POD |
| 0700 | POD: move rig to C 8404 |
| ~~0840~~ | 0 |
| 0730 | Enter Farm and move equipment to C8404 |
| 0839 | Begin driving 2 5/8" |
| 0945 | Head is hot, Exit Farm and let it cool down (at 34 feet |
| 1015 | Back in zone driving pipe |
| 1050 | Exit Farm for lunch at 41 feet (head is Hot) |
| 1100 | Lunch |
| 1130 | Dress into zone to try driving from 41' to 47' |
| 1235 | Exit S-Farm, we hit refusal at 43 feet, The 2 5/8 |
| | broke trying to extract the ~~2 5/8"~~ Rods. |
| 1250 | Waiting for RCTS |
| 1300 | Enter Farm and pull inner and outter rods (decomission) |
| 1400 | Rods are out, The 2 5/8 all came out, There was no |
| | break in the rods. The Tip holder Twisted off The 2' |
| | Take up joint. The 2 5/8 Take up joint was twisted and buldged |
| | The inner rod take up joint was bent, Exit Farm |
| 1430 | Head to office: C8404 has been decomissioned. |
| 1530 | End Shift |
| | ~~NA~~ |
| | ~~NA~~ |

OPERATOR/LICENSE: Amos/1224
ES SUPPORT: Weakley
NCO: Roberts, snook
HPT: Young, wittas
FWS: Clark

WEATHER: 91 F, sunny and warm with winds from the southwest at 5-10 mph.

DOWNTIME: 0

DISCARDED ITEMS:
3 - Bags Bentonite
1 - Tip holder
1 - 2' x 2 5/8 Take up joint
6 - Lynch pins
2 - O-Rings 12' inner rod take up joint

REFERENCE/CONTRACT INFORMATION: TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

REPORT BY: LO Amos
TITLE: ES TECHNICAL PREPARER
SIGNATURE: Lyle O. Amos

REVIEWED BY: RZ Steffler
TITLE: ES TECHNICAL REVIEWER
SIGNATURE: R.Z. Steffler
DATE: 8-4-11

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Move to #C8398 and begin sampling activities. | | **DATE:** 08-04-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 19 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** (Yes) No | *HHU CASE#1 HHU CAT #2* (HHUXL#3) |

**SAMPLING SUMMARY**

| *Sample #'s* | *Interval* | *%* |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | N/A | |
| 4. | | |

**BOREHOLE SUMMARY**

*Borehole #* C8398 *Tubing (* 2 5/8 *@* 0 *to* 46 *ft bgs; S.U.* 2.3

*Borehole #* ~~0~~ *Tubing (  ) @  to  ft bgs; S.U.* ___

*Borehole #* ~~0~~ *Tubing (  ) @  to  ft bgs; S.U.* ___

**GEOPHYSICAL LOGGING**

| *Boring #* | *Interval* | *Type* |
|---|---|---|
| 1. | | |
| 2. | N/A | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Drum Handling.** Head to ES Yard to pickup (Take up subs) |
| 0700 | POD: Move XL to C8398, Heat stress, |
| 0716 | Enter Farm and move rig over to C8398, There's a |
| | man lift fixing lights on the pole at our Location. |
| 0745 | XL is by The site, waiting on electricians to finish |
| | The lights and move out of The way |
| 1000 | Electricians are out, move rig on hole and setup |
| 1100 | Ready to drive pipe. Exit Farm for Lunch |
| 1110 | Lunch |
| 1140 | Go in and push pipe to 46 Feet (Sample depth) |
| 1305 | AT Sample depth (46 feet) clean up site. no Sampling |
| | This Afternoon due to NCO support. |
| 1530 | End shift |
| | N/A |

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Amos/1224<br>*ES SUPPORT:* Weakley<br>*NCO:* Izzy, Snook, Robberts<br>*HPT:* Wittas, Templeton, Bernard<br>*FWS:* Clark/Paulsell | **WEATHER:** 94 F, sunny and warm with winds from the northwest at 5-10 mph.<br>**DOWNTIME:**<br>2 hrs. NCO's<br>1 hr. electricians | **DISCARDED ITEMS:**<br>2 - O-Rings<br>3 - Lynch Pin<br>2 - Keeper Pins (Drive head)<br>1 - Drive head |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** LO Amos | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Lyle O. Amos | **SIGNATURE:** R.Z. Steffler **DATE:** 8-8-11 |

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 2

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue sampling activities at #C8398. **DATE:** 08-08-11

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. **EXCAVATION:** DAN-11-0186 **U-DIG:** #11076292 **REPORT #:** 20

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 01 **JHA-**11-005 Rev. 0

**SAMPLING SUMMARY**

Sample #'s Interval %

1. SEE PAGE 2
2. FOR SAMPLE#'S
3. AND INFO.
4.

**SITE/EQUIPMENT INSPECTION:** Yes No

*HHU CASE#1 HHU CAT #2 HHUXL#3*

**BOREHOLE SUMMARY**

Borehole # C8398 Tubing (2 5/8) @ 46 to 68' ft bgs; S.U. 2'

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ___

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ___

**GEOPHYSICAL LOGGING**

Boring # Interval Type

1. N/A
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Presentation by ESGG Safety Staff. |
| 0710 | TRAVEL TO S-FARM, SMURF Bldg. TO ACE-IN |
| 0800 | PLAN OF THE DAY BY B. CLARK. |
| 0815 | DRESS AND ENTER FARM. |
| 0850 | TRIP OUT DUMMY TIP & TRIP-IN SAMPLER |
| 0905 | DRIVE SAMPLER FROM 46' TO 48', 100% RECOVERY |
| 0920 | TRIP-IN DUMMY TIP, READY TO DRIVE FROM 48' bgs |
| 0940 | EXIT FARM FOR BREAK |
| 1000 | DRESS & ENTER FARM |
| 1016 | RESUME DRIVING FROM 48' |
| 1100 | STOP TO LET HEAD COOL, DROVE TO 67' bgs |
| 1115 | LUNCH |
| 1200 | DRESS AND ENTER FARM |
| 1216 | RESUME DRIVING FROM 67' bgs |
| 1220 | HAVE LEAK ON HYDRAULIC LINE, SHUT DOWN SECURE |
| — | WORK AREA STANDBY FOR REPAIR/REPLACEMENT OF HOSE. |
| 1250 | EXIT FARM. |
| 1315 | ENTER FARM WITH REPLACEMENT HOSE |
| — | ~~DROVE~~ REPLACE HOSE AND DROVE 2 5/8 FROM 67' TO |
| — | 68' bgs. NO SIGN OF HYDRAULIC LEAK |
| 1410 | SECURE WORK AREA AND EXIT FARM |
| 1420 | LEAVE SITE FOR E.S. OFFICE |
| — | SEE PAGE 2 FOR SAMPLE RESULTS |
| 1530 | END OF SHIFT |

**OPERATOR/LICENSE:** Ehrgott/3115
*ES SUPPORT:* Weakley
*NCO:* REVERA
*HPT:* BARNARD, WIDDIS
*FWS:* Clark/Paulsell

**WEATHER:** 89 F, sunny and warm with winds from the southwest at 5-10 mph.

**DOWNTIME:** 1½ HR FOR Hydraulic HOSE LEAK

**DISCARDED ITEMS:**
1- LYNCH PIN
1- 5' HYDRAULIC HOSE
3- SS LINERS
6- PLASTIC CAPS

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** MIKE EHRGOTT
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Mike Ehrgott

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler **DATE:** 8-9-11

10/06/09 Rev 1

ENERGYSOLUTIONS

**DAILY WORK RECORD – CONTINUATION PAGE**

Page 2 of 2

| Date | Boring # | Continuation of Report No. |
|---|---|---|
| 8/8/11 | C8398 | 20 |

| TIME | WORK SUMMARY |
|---|---|
| — | SAMPLE RESULTS @ 46' TO 48' bgs C8398 |
| — | 100% RECOVERY |
| — | SAMPLE #'S |
| — | # B2FDH6 — SHOE |
| | B2FDH7 — LINER A |
| | B2FDH8 — LINER B |
| | B2FDH9 — LINER C |
| | B2FDL6 — RAD SCREEN |
| — | SOIL SAMPLE'S WERE 100% WET PER NCO. |
| | N/A |

| | | | | | |
|---|---|---|---|---|---|
| Report By | MIKE ABBOTT | Reviewed By | RZ Steffler | | |
| Title | ES Technical Preparer | Title | ES Technical Reviewer | Date | 8-9-11 |
| Signature | Mike Abbott | Signature | R.Z. Steffler | | 100609 Rev 1 |

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8398 I001 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** ORIGINAL | | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |
| **SAMPLES COLLECTED** | | | |
| **TOTAL NUMBER OF BOTTLES** 4 | **TOTAL NUMBER OF CHAINS** 2 | **COLLECTOR** | |

**222-S** **V11-006-021**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS | |
|---|---|---|---|---|---|
| B2FDH6 | 1 / 500mL / G | 100% wet. | Cool~6C | Generic Testing; | SHOE |

**222-S** **V11-006-022**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS | |
|---|---|---|---|---|---|
| B2FDH7 A | 1 / 160g / Liner | 100% Wet | Cool~6C | Bulk Density - D2937 (TF); | LINER A |
| B2FDH8 B | 1 / 160g / Liner | 100% Wet | Cool~6C | Bulk Density - D2937 (TF); | " B |
| B2FDH9 C | 1 / 160g / Liner | 100% wet. | Cool~6C | Bulk Density - D2937 (TF); | " C |

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# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| PROJECT(S) Direct Push Samples for S Tank Farm - Interim Barrier | | PAGE 1 OF 1 | |
| | | DATE/TIME | |
| SAF NO.(S) V11-006 | | | |
| LOCATION C8398 Radscreen | | LOGBOOK NO./PAGE | |
| WELL NAME ORIGINAL | | WELL ID | ACTUAL DEPTH ☐ft ☐m |
| BOTTOM OF CASING (bgs) ☐ft ☐m | | BOTTOM OF BOREHOLE (bgs) | ☐ft ☐m |
| SAMPLES COLLECTED | | | |
| TOTAL NUMBER OF BOTTLES 1 | TOTAL NUMBER OF CHAINS 1 | COLLECTOR | |

222-S V11-006-033

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FDL6 | 1 / 60mL / G/P | | None | Rad Screen; |

## FIELD INFORMATION

WHERE ARE SAMPLES LOCATED AT THIS TIME? ☐ WSCF ☐ 222-S ☐ MO-413 ☐ MO-745 ☐ 6269 ☐ OTHER

CONTAINER/DRUM/TOTE/BOX

SAMPLE MATRIX DESCRIPTION ☐ SOIL ☐ SLUDGE ☐ RESIN ☐ GAC ☐ FILTER PAPER ☐ OTHER

FURTHER SAMPLE MATRIX EXPLANATION/DESCRIPTION [NOTE ANY ODOR, COLOR, TEXTURE (E.G., SLIMY, OILY, GRANULAR, ETC.)]

## FIELD OBSERVATIONS

WEATHER

FIELD COMMENTS

SUPPORT PERSONNEL

SAMPLES SURVEYED BY RCT ☐ YES ☐ NO

IS A BLUE CARD REQUIRED ☐ YES ☐ NO BLUE CARD NO _____

IS SRS PROVIDED AND COMPLETE ☐ YES ☐ NO

RECORDED BY _____ PRINT NAME _____ SIGN NAME _____ DATE

INDEPENDENT REVIEW _____ PRINT NAME _____ SIGN NAME _____ DATE

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue sampling activities at #C8398.

**DATE:** ~~08-08-11~~ 09-08-11

**LOCATION:** "S" Tank Farm 200 West Area, Hanford.

**EXCAVATION:** DAN-11-0186
**U-DIG:** #11076292

**REPORT #:** 21

**START CARD NO.** SE09635

**DECOMMISSION NO.** AE12960

**RWP:** CO-645, Rev. 01 **JHA-**11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1 B2FD50 | 86-88 | 100% |
| 2 B2FD51 (A) | " | " |
| 3 B2FD52 (B) | " | " |
| B2FD53 (C) | " | " |
| 4 B2H086 | " | Rad Screen |

**SITE/EQUIPMENT INSPECTION:** (Yes) No

*HHU CASE#1 HHU CAT #2* (*HHUXL#3*)

**BOREHOLE SUMMARY**

Borehole # C8398 Tubing (2-5/8) @ 68 to 131 ft bgs; S.U. 1.3
Borehole # ____ Tubing ( ) @ to ft bgs; S.U. ____
Borehole # ____ Tubing ( ) @ to ft bgs; S.U. ____

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: PPE---Storage, Maintenance and Care. |
| 0615 | Leave office and travel To S-Farm |
| 0645 | AT S-Farm, waiting for POD |
| 0700 | POD: Drink water; Drive To Sample point |
| 0715 | Hrs. 537.4 hrs. on rig, ~~inside S-Farm~~ Dress into S-Farm |
| 0730 | Fuel up and do rig inspection, push to sample depth (86') |
| 0825 | AT Sample depth, pull inner rod (86 Feet) |
| 0840 | Put on Sampler and run in hole |
| 0852 | Drive Sample 86-88 Feet |
| 0907 | Sample is out of the hole, waiting on recovery. |
| 0923 | Dummy tip is at depth, ready to push to next interval |
| 0945 | Sample was 100% |
| 1000 | Begin pushing Rod to 131 Feet Sample depth |
| 1035 | Head is hot, let cool. AT 100 Feet |
| 1050 | Head Hot Again 109 Feet, Exit Farm |
| 1110 | Lunch |
| 1140 | Drive pipe To 131 Feet (Sample point) |
| 1300 | AT Sample depth 131 Feet, no RCTs |
| 1330 | RCT on site trip out inner Rod & install Sampler |
| 1409 | Sampler in hole, ~~Ex~~ no pushing until Tomorrow. |
| 1430 | ~~End shi~~ Exit Farm |
| 1440 | Head to office |
| | NA |

**OPERATOR/LICENSE:** Amos/1224
*ES SUPPORT:* Weakley
*NCO:* Izzy, Snook
*HPT:* Mitts
*FWS:* Clark/Paulsell

**WEATHER:** 88 F, sunny and warm with winds from the southwest at 5-15 mph.

**DOWNTIME:** .5 RCT

**DISCARDED ITEMS:**
8-Lynch Pin
2-orings
3-liners
6-CAPS

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** Olin Amos
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Olin Amos

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler
**DATE:** 8-10-11

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8398 I002 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** ORIGINAL | | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |
| **SAMPLES COLLECTED** | | | |
| **TOTAL NUMBER OF BOTTLES** 4 | **TOTAL NUMBER OF CHAINS** 2 | **COLLECTOR** | |

**222-S** **V11-006-023**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FDJ0 | 1 / 500mL / G | 100% | Cool~6C | Generic Testing; SHOE |

**222-S** **V11-006-024**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FDJ1 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); LINER A |
| B2FDJ2 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); " B |
| B2FDJ3 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); " C |

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# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | |
|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | **PAGE** 1 **OF** 1 |
| | **DATE/TIME** |
| **SAF NO.(S)** V11-006 | |
| **LOCATION** C8398 I002 | **LOGBOOK NO./PAGE** |
| **WELL NAME** ORIGINAL | **WELL ID** / **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | **BOTTOM OF BOREHOLE (bgs)** ☐ft ☐m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 1 **TOTAL NUMBER OF CHAINS** 1 **COLLECTOR**

**WSCF** **V11-006-071**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2H086 | 1 / 60mL / G/P | | None | Rad Screen; |

**FIELD INFORMATION**

**WHERE ARE SAMPLES LOCATED AT THIS TIME?** ☐ WSCF ☐ 222-S ☐ MO-413 ☐ MO-745 ☐ 6269 ☐ OTHER

**CONTAINER/DRUM/TOTE/BOX**

**SAMPLE MATRIX DESCRIPTION** ☐ SOIL ☐ SLUDGE ☐ RESIN ☐ GAC ☐ FILTER PAPER ☐ OTHER

**FURTHER SAMPLE MATRIX EXPLANATION/DESCRIPTION [NOTE ANY ODOR, COLOR, TEXTURE (E.G., SLIMY, OILY, GRANULAR, ETC.)]**

**FIELD OBSERVATIONS**

**WEATHER**

**FIELD COMMENTS**

**SUPPORT PERSONNEL**

**SAMPLES SURVEYED BY RCT** ☐ YES ☐ NO

**IS A BLUE CARD REQUIRED** ☐ YES ☐ NO **BLUE CARD NO** _____

**IS SRS PROVIDED AND COMPLETE** ☐ YES ☐ NO

**RECORDED BY** PRINT NAME SIGN NAME DATE

**INDEPENDENT REVIEW** PRINT NAME SIGN NAME DATE

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Complete sampling activities at #C8398 and decommission. **DATE:** 08-10-11

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. **EXCAVATION:** DAN-11-0186 **U-DIG:** #11076292 **REPORT #:** 22

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 01 **JHA-**11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. B2F034 | 131-133 | 100% |
| 2. B2F035 | " | " |
| 3. B2F036 | " | " |
| B2F037 | " | " |
| 4. B24087 | " | Redscreen |

**SITE/EQUIPMENT INSPECTION:** Yes No **HHU CASE#1** **HHU CAT #2** **HHUXL#3**

**BOREHOLE SUMMARY**

Borehole # C8398 Tubing (2 5/8) @ 131 to 133 ft bgs; S.U. —

Borehole # C8398 Tubing (2 5/8) @ 133 to 0 ft bgs; S.U. —

Borehole # C8397 Tubing (2 1/2) @ 150 to 0 ft bgs; S.U. —

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Individual Quality Makes The Difference. |
| 0615 | Travel to S-Farm |
| 0645 | AT S-Farm, waiting for POD |
| 0700 | POD; Take Sample at 131 and move to C8397 To set probe |
| 0715 | Enter Farm TO drive Sampler. |
| 0746 | Drive Sample from 131 To 133. |
| 0815 | Sample out, waiting on bentonite for ~~decommissioning~~ decomissioning. (Sample was 100%) |
| 0830 | Begin decomissioning hole. |
| 1010 | C8398 has be completed and decomissioned and righas been moved to C8397 and will besin placeing probe after Lunch |
| 1015 | Exit farm and have lunch |
| 1030 | Lunch |
| 1100 | Enter farm to set probe in C8397 and pull rods. |
| 1315 | Water Break |
| 1330 | Finish setting probe (probe was set at 150 Foot see attached |
| 1425 | C8397 has been Completed. Exit farm |
| 1440 | Head to office |
| 1510 | AT office to do paper work |
| 1530 | End shift |
| | Discarded ITEMS: 2.5" Tip, |
| | 1-Bag Sand, 1-Bag Diatomaceous, 1-160' Probe (multi), 1-36" Hook |
| | Jaw, 3-liners, and 6-Caps |

**OPERATOR/LICENSE:** Amos/1224
*ES SUPPORT:* Weakley, Hoopes
*NCO:* Snook, izey
*HPT:* Wittis, muaset, Jeff
*FWS:* Clark/Paulsell

**WEATHER:** 88 F, sunny and warm with winds from the southwest at 5-15 mph with gusts to 20 mph in the afternoon.

**DOWNTIME:** 0

**DISCARDED ITEMS:**
C8398
9-Bags Bentonite
C8397
6-Bags Bentonite
(See daily work Summary)

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** LO Amos
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Olin Amos

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler
**DATE:** 8-11-11

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8398 I003 | **LOGBOOK NO./PAGE** | | |
| **WELL NAME** ORIGINAL | **WELL ID** | **ACTUAL DEPTH** | ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | **BOTTOM OF BOREHOLE (bgs)** | | ☐ft ☐m |
| **SAMPLES COLLECTED** | | | |
| **TOTAL NUMBER OF BOTTLES** 4 | **TOTAL NUMBER OF CHAINS** 2 | **COLLECTOR** | |

**222-S** **V11-006-025**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FDJ4 | 1 / 500mL / G | 100% | Cool~6C | Generic Testing; |

**222-S** **V11-006-026**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FDJ5 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); |
| B2FDJ6 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); |
| B2FDJ7 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); |

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# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | |
|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | **PAGE** 1 **OF** 1 |
| | **DATE/TIME** |
| **SAF NO.(S)** V11-006 | |
| **LOCATION** C8398 I003 | **LOGBOOK NO./PAGE** |
| **WELL NAME** ORIGINAL | **WELL ID** / **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | **BOTTOM OF BOREHOLE (bgs)** ☐ft ☐m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 1 **TOTAL NUMBER OF CHAINS** 1 **COLLECTOR**

WSCF V11-006-072

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2H087 | 1 / 60mL / G/P | | None | Rad Screen; |

**FIELD INFORMATION**

**WHERE ARE SAMPLES LOCATED AT THIS TIME?** ☐ WSCF ☐ 222-S ☐ MO-413 ☐ MO-745 ☐ 6269 ☐ OTHER

**CONTAINER/DRUM/TOTE/BOX**

**SAMPLE MATRIX DESCRIPTION** ☐ SOIL ☐ SLUDGE ☐ RESIN ☐ GAC ☐ FILTER PAPER ☐ OTHER

**FURTHER SAMPLE MATRIX EXPLANATION/DESCRIPTION [NOTE ANY ODOR, COLOR, TEXTURE (E.G., SLIMY, OILY, GRANULAR, ETC.)]**

**FIELD OBSERVATIONS**

**WEATHER**

**FIELD COMMENTS**

**SUPPORT PERSONNEL**

**SAMPLES SURVEYED BY RCT** ☐ YES ☐ NO

**IS A BLUE CARD REQUIRED** ☐ YES ☐ NO **BLUE CARD NO** _____

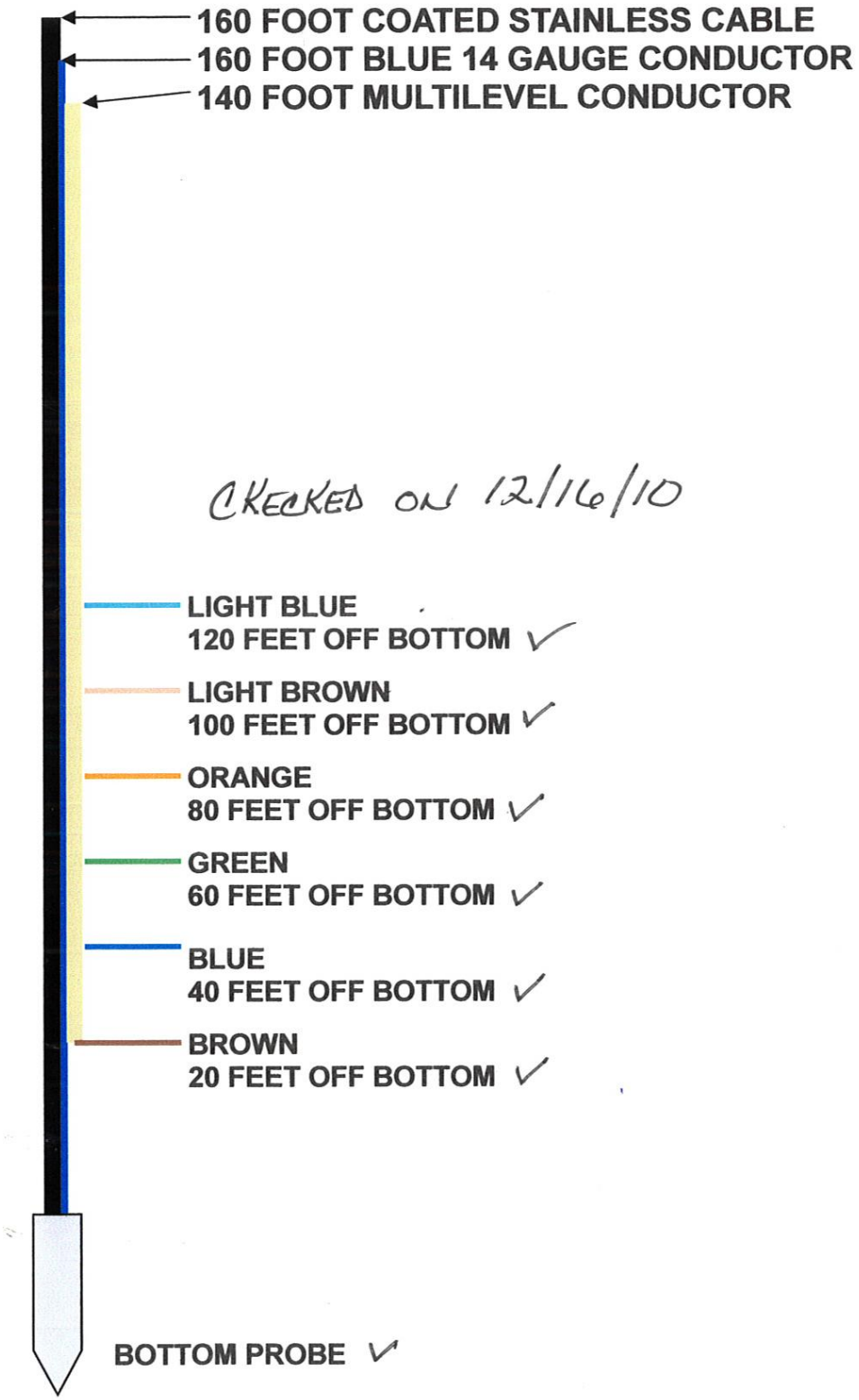
**IS SRS PROVIDED AND COMPLETE** ☐ YES ☐ NO

**RECORDED BY** PRINT NAME / SIGN NAME / DATE

**INDEPENDENT REVIEW** PRINT NAME / SIGN NAME / DATE

PRINTED BY PCBERLIN ON 8/4/2011 2:06:17 PM A-6004-701 (REV 2)

# 160 FOOT MULTILEVEL PROBE



200 FT MULTI LEVEL RESISTIVITY PROBE WORK SHEET BOREHOLE NO: C8397

| DIMENSIONS | PRELIMINARY AS-BUILT | CONSTRUCTION MATERIAL/TAG | | |
|---|---|---|---|---|
| PLANNED | ACTUAL | MATERIAL | | TAG |
| 0 ft | | SURFACE PROTECTION (at 1 FT BGS) | | |
| - 20 ft - | - ft - | | Bentonite from ___ to ___<br>Sand from ___ to ___<br>D.E. from ___ to ___<br>Sand from ___ to ___ | ✓<br>✓<br>✓ |
| - 40 ft - | - ft - | | Bentonite from ___ to ___<br>Sand from ___ to ___<br>D.E. from ___ to ___<br>Sand from ___ to ___ | ✓ |
| - 60 ft - | 29' - 31' ft - | 2' | X Bentonite from 0' to 27.5'<br>Sand from 27.5 to 28.5<br>D.E. from 28.5 to 31.5<br>Sand from 31.5 to 32.5 | ✓<br>✓ |
| - 80 ft - | 49' - 51' ft - | 18'<br>2' | X Bentonite from 32.5 to 47.5<br>Sand from 47.5 to 48.5<br>D.E. from 48.5 to 51.5<br>Sand from 51.5 to 52.5 | ✓<br>✓ |
| - 100 ft - | 69' - 71' ft - | 18'<br>2' | X Bentonite from 52.5 to 67.5<br>Sand from 67.5 to 68.5<br>D.E. from 68.5 to 71.5<br>Sand from 71.5 to 72.5 | ✓<br>✓ |
| - 120 ft - | 89' - 91' ft - | 18'<br>2' | X Bentonite from 72.5 to 87.5<br>Sand from 87.5 to 88.5<br>D.E. from 88.5 to 91.5<br>Sand from 91.5 to 92.5 | ✓<br>✓<br>✓ |
| - 140 ft - | 109' - 111' ft - | 18'<br>2' | X Bentonite from 92.5 to 107.5<br>Sand from 107.5 to 108.5<br>D.E. from 108.5 to 111.5<br>Sand from 111.5 to 112.5 | ✓✓<br>✓✓ |
| - 160 ft - | 129' - 131' ft - | 18'<br>2' | X Bentonite from 112.5 to 127.5<br>Sand from 127.5 to 128.5<br>D.E. from 128.5 to 131.5<br>Sand from 131.5 to 132.5 | ✓✓<br>✓✓ |
| - 180 ft - | 148.5' - 150 ft - | 17.5<br>1.5 | X Bentonite from 132.5 to 147<br>Sand from 147 to 148<br>D.E. from 148 to 150.5<br>Sand from 150.5 to 151.5 | ✓✓<br>✓✓ |

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Begin probe installation at #C8399. **DATE:** 08-11-11

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. **EXCAVATION:** DAN-11-0186 **U-DIG:** #11076292 **REPORT #:** 23

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 01 **JHA**-11-005, Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No

*HHU CASE#1 HHU CAT #2* (HHUXL#3)

**BOREHOLE SUMMARY**

Borehole # C8399 Tubing (2.5) @ 152 to 0 ft bgs; S.U. ____

Borehole # C8400 Tubing (2 5/8) @ 0 to 24 ft bgs; S.U. 2.3

Borehole # _____ Tubing ( ) @ to ft bgs; S.U. ____

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

543 n/g

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Avoiding Electrical Shocks. Head to Yard to pickup probes |
| 0650 | At S-Farm waiting for POD and personnel |
| 0700 | At S Farm POD: Lock + Tag, Alarms, moving rig |
| 0715 | Enter farm and move equipment to C-8399 |
| 0800 | Move rig to C-8399 + set up |
| 0845 | Knock out Tip and begin setting probe, ~~Probe~~ |
| 0110 | Exit Farm for Lunch, Decomissiond from 150 to 20 Feet and placed Sand and bentonite (see attached) |
| 1130 | Lunch |
| 1200 | Enter farm to complete probe installation on C8399 |
| 1315 | Move Rig South 2 Feet and setup (C8400). Begin pushing on C-8400 |
| 1415 | At 24 feet on C-8400, Exit Farm |
| 1430 | Head to office |
| 1500 | Paper work |
| 1530 | End shift |

NA

**OPERATOR/LICENSE:** Amos/1224
*ES SUPPORT:* Weakley, Hoopes
*NCO:* Snook, Ruben
*HPT:* Willis, Jeff, Paul
*FWS:* Clark/Paulsell

**WEATHER:** 88 F, sunny and warm with winds from the southwest at 5-10 mph.

**DOWNTIME:** 0

**DISCARDED ITEMS:**
7-Bags Bentonite
1-Bag D.E.
1-Bag Sand
1-Knock out Tip
1-Probe 2-ORings

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** Loanc S
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Zu O. Amos

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler
**DATE:** 8-12-11

10/06/09 Rev 1

200 FT MULTI LEVEL RESISTIVITY PROBE WORK SHEET

BOREHOLE NO: C8399

| DIMENSIONS | PRELIMINARY AS-BUILT | CONSTRUCTION MATERIAL/TAG | |
|---|---|---|---|
| PLANNED | ACTUAL | MATERIAL | TAG |
| 0 ft | | SURFACE PROTECTION @ 1 FT BGS | |
| - 20 ft - | - ft - | Bentonite from ____ to ____<br>Sand from ____ to ____<br>D.E. from ____ to ____<br>Sand from ____ to ____ | |
| - 40 ft - | - ft - | Bentonite from ____ to ____<br>Sand from ____ to ____<br>D.E. from ____ to ____<br>Sand from ____ to ____ | |
| - 60 ft - | 29' - 31' ft - | Bentonite from OX' to 27.5'<br>Sand from 27.5 to 28.5<br>D.E. from 28.5 to 31.5<br>Sand from 31.5 to 32.5 | ✓<br>✓ |
| - 80 ft - | 49' - 51' ft - | Bentonite from 32.5 to 47.5<br>Sand from 47.5 to 48.5<br>D.E. from 48.5 to 51.5<br>Sand from 51.5 to 52.5 | ✓<br>✓ |
| - 100 ft - | 69' - 71' ft - | Bentonite from 52.5 to 67.5<br>Sand from 67.5 to 68.5<br>D.E. from 68.5 to 71.5<br>Sand from 71.5 to 72.5 | ✓<br>✓ |
| - 120 ft - | 89' - 91' ft - | Bentonite from 72.5 to 87.5<br>Sand from 87.5 to 88.5<br>D.E. from 88.5 to 91.5<br>Sand from 91.5 to 92.5 | ✓<br>✓<br>✓ |
| - 140 ft - | 109' - 111' ft - | Bentonite from 92.5 to 107.5<br>Sand from 107.5 to 108.5<br>D.E. from 108.5 to 111.5<br>Sand from 111.5 to 112.5 | ✓<br>✓ |
| - 160 ft - | 129' - 131' ft - | Bentonite from 112.5 to 127.5<br>Sand from 127.5 to 128.5<br>D.E. from 128.5 to 131.5<br>Sand from 131.5 to 132.5 | ✓<br>✓ |
| - 180 ft - | 148.5' - 150 ft - | Bentonite from 132.5 to 147<br>Sand from 147 to 148<br>D.E. from 148 to 150.5<br>Sand from 150.5 to 151.5 | ✓<br>✓ |

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE: Begin sampling activities at #C8400** | | **DATE: 08-12-11** |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG: #11076292** | **REPORT #: 24** |

| | | |
|---|---|---|
| **START CARD NO. SE09635** | **DECOMMISSION NO. AE12960** | **RWP: CO-645, Rev. 01 JHA-11-005 Rev. 0** |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** (Yes) No | *HHU CASE#1 HHU CAT #2* (HHUXL#3) |

**SAMPLING SUMMARY**

| Sample #'s | Interval | % Radscreen |
|---|---|---|
| 1. B2FYP2 | 54-56 | |
| 2. B2FYP3 | " | 100% |
| 3. B2FYP4 | " | " |
| B2FYP5 | " | " |
| 4. B2FYP6 | " | " |

**BOREHOLE SUMMARY**

Borehole # C-8400 Tubing (2 5/8) @ 24 to 76 ft bgs; S.U. 2.3

Borehole # — Tubing ( ) @ to ft bgs; S.U. ___

Borehole # — Tubing ( ) @ to ft bgs; S.U. ___

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | N/A | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: General Safety---Controlling Stress.** |
| 0615 | Head to S-Farm |
| 0645 | AT S-Farm waiting for POD |
| 0715 | POD: Heat, Taking sample |
| 0730 | Enter Farm and continue driving to 54' sample depth |
| | Grease rig and inspect |
| 0755 | Begin driving 2 5/8 to next sample point |
| 0858 | AT sample depth AT 54 Feet, Trip out inner rod |
| 0906 | Dummy Tip out, put on Sampler |
| 0915 | Drive Sample from 54 TO 56 Feet |
| 0922 | Trip out sample |
| 0930 | Sample out / waiting on recovery Percentage |
| 1000 | 100% on sample, continue driving to 93' (sample depth) |
| 1050 | Exit Farm for lunch |
| 1100 | lunch |
| 1130 | Push pipe |
| 1200 | AT 76 feet, Spindle sub adaptor cracked, will need |
| | To get XL out of Farm to replace. Exit Farm |
| 1245 | Head to office, no support to move rig out |
| 1430 | End shift |
| | N/A |

| | | |
|---|---|---|
| **OPERATOR/LICENSE: Amos/1224**<br>*ES SUPPORT: Weakley, Hoopes*<br>*NCO:*<br>*HPT:*<br>*FWS: Clark/Paulsell* | **WEATHER: 91 F, sunny and warm with winds from the southwest at 5-10 mph.**<br>**DOWNTIME:** .5 POD<br>.5 Support | **DISCARDED ITEMS:**<br>2 - Lynch<br>1 - Nylatron washer<br>3 - O-Rings 1 - spindle crossover<br>3 - liners, 6 - CAPS |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** LO Ames | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** L O Ames | **SIGNATURE:** R.Z. Steffler DATE: 8-15-11 |

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8400 I001 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** | **ORIGINAL** | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** | ☐ft ☐m | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 5 **TOTAL NUMBER OF CHAINS** 3 **COLLECTOR**

**222-S** **V11-006-051**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FYP2 | 1 / 60mL / G/P | | None | Rad Screen; |

**222-S** **V11-006-052**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FYP3 | 1 / 500mL / G | 100% Dry | Cool~6C | Generic Testing; |

**222-S** **V11-006-053**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FYP4 | 1 / 160g / Liner | 100% Dry | Cool~6C | Bulk Density - D2937 (TF); |
| B2FYP5 | 1 / 160g / Liner | 100% Dry | Cool~6C | Bulk Density - D2937 (TF); |
| B2FYP6 | 1 / 160g / Liner | 100% Dry | Cool~6C | Bulk Density - D2937 (TF); |

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# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | |
|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | **PAGE** 2 **OF** 2 |
| | **DATE/TIME** |
| **SAF NO.(S)** V11-006 | |
| **LOCATION** C8400 I001 | **LOGBOOK NO./PAGE** |
| **WELL NAME** ORIGINAL | **WELL ID** / **ACTUAL DEPTH** ☐ ft ☐ m |
| **BOTTOM OF CASING (bgs)** ☐ ft ☐ m | **BOTTOM OF BOREHOLE (bgs)** ☐ ft ☐ m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 5 **TOTAL NUMBER OF CHAINS** 3 **COLLECTOR**

**FIELD INFORMATION**

**WHERE ARE SAMPLES LOCATED AT THIS TIME?** ☐ WSCF ☐ 222-S ☐ MO-413 ☐ MO-745 ☐ 6269 ☐ OTHER

**CONTAINER/DRUM/TOTE/BOX**

**SAMPLE MATRIX DESCRIPTION** ☐ SOIL ☐ SLUDGE ☐ RESIN ☐ GAC ☐ FILTER PAPER ☐ OTHER

**FURTHER SAMPLE MATRIX EXPLANATION/DESCRIPTION [NOTE ANY ODOR, COLOR, TEXTURE (E.G., SLIMY, OILY, GRANULAR, ETC.)]**

**FIELD OBSERVATIONS**

**WEATHER**

**FIELD COMMENTS**

**SUPPORT PERSONNEL**

**SAMPLES SURVEYED BY RCT** ☐ YES ☐ NO

**IS A BLUE CARD REQUIRED** ☐ YES ☐ NO **BLUE CARD NO** _____

**IS SRS PROVIDED AND COMPLETE** ☐ YES ☐ NO

| | PRINT NAME | SIGN NAME | DATE |
|---|---|---|---|
| **RECORDED BY** | | | |
| **INDEPENDENT REVIEW** | | | |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Have HHUXL surveyed out of farm and transport to ENW for repairs. **DATE:** 08-15-11

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. **EXCAVATION:** DAN-11-0186 **U-DIG:** #11076292 **REPORT #:** 25

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 01 **JHA-**11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

NA

**SITE/EQUIPMENT INSPECTION:** Yes No

*HHU CASE#1 HHU CAT #2 HHUXL#3*

**BOREHOLE SUMMARY**

Borehole # ___ Tubing ( ) @ to ft bgs; S.U. ___

Borehole # ___ Tubing ( ) @ to ft bgs; S.U. ___

Borehole # ___ Tubing ( ) @ to ft bgs; S.U. ___

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |

NA

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Presentation by ESGG Safety Staff. |
| 0630 | Head to S Farm |
| 0700 | At S-Farm, waiting for POD |
| 0730 | POD: Getting XL out of farm, move cat on hole |
| 0740 | Enter farm and move XL out for repair |
| 0930 | XL has been surveyed out of S-Farm by Paul Templeton, Bill Bernard, + Matt Young. Waiting for Low boy to haul XL down to ES shop. |
| 1100 | Lunch |
| 1130 | Waiting for truck and Low boy |
| 1330 | Got a call from the truck driver, He had mechanical problems and won't be here until first thing ~~Mon~~ Tomorrow morning. |
| 1400 | Head to office |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Amos/1224
*ES SUPPORT:* Weakley, Walkup
*NCO:* Snook, Ruben
*HPT:* Young, Templeton, Bernard
*FWS:* Clark/Paulsell

**WEATHER:** 80 F, partly cloudy with winds from the southwest at 5-15 mph.

**DOWNTIME:** 6 hrs. Lowboy

**DISCARDED ITEMS:**

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** LO Amos
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** LO Amos

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** RZ Steffler **DATE:** 8-16-11

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE: Transport HHUXL to ENW and begin repairs.** | | **DATE: 08-16-11** |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG: #11076292** | **REPORT #: 26** |

| | | |
|---|---|---|
| **START CARD NO. SE09635** | **DECOMMISSION NO. AE12960** | **RWP: CO-645, Rev. 01 JHA-11-005 Rev. 0** |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** (Yes) No | *HHU CASE#1 HHU CAT #2* (HHUXL#3) |

*Sample #'s Interval %*

1. N/A
2.
3.
4.

**BOREHOLE SUMMARY**

*Borehole #* — *Tubing ( ) @ to ft bgs; S.U.* ____

*Borehole #* — *Tubing ( ) @ to ft bgs; S.U.* ____

*Borehole #* — *Tubing ( ) @ to ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

*Boring # Interval Type*

1. N/A
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Water Safety---On And Off The Job.** |
| 0615 | Head to S-Farm |
| 0645 | AT S Farm waiting for POD |
| 0700 | POD's waiting on truck to move XL |
| 0800 | Lowboy on site, Load XL and take to yard. |
| 0845 | AT Yard with XL. unload and change out crossover sub. fix winch and maintance rig. |
| 1100 | lunch |
| 1130 | Continue work on XL. Lowboy will pickup XL Tomorrow |
| 1530 | End shift |

| | | |
|---|---|---|
| **OPERATOR/LICENSE: Amos/1224**<br>*ES SUPPORT: Weakley, Walkup*<br>*NCO:* —<br>*HPT:* —<br>*FWS: Clark/Paulsell* | **WEATHER: 88 F, mostly sunny and warm with winds from the northwest at 5-10 mph.**<br>**DOWNTIME:** 9 - working on rig | **DISCARDED ITEMS:** 1-65 Bar Diaphram |

**REFERENCE/CONTRACT INFORMATION: TFC-WO-11-1935 FSWO-DOW- ECN-11-000563**

| | |
|---|---|
| **REPORT BY:** LO Amos | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** L O. Amos | **SIGNATURE:** R.Z. Steffler **DATE:** 8-17-11 |

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Transport HHUXL to farm and set-up on #C8401 | | **DATE:** 08-17-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 27 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 **JHA**-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** (Yes) No | *HHU CASE#1* *HHU CAT #2* (HHUXL#3) |

**SAMPLING SUMMARY**

| *Sample #'s* | *Interval* | *%* |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**BOREHOLE SUMMARY**

*Borehole #* C8401 *Tubing (* 2.5 *) @* 0 *to* 44 *ft bgs; S.U.* 6.3

*Borehole #* ___ *Tubing (* ) *@* *to* *ft bgs; S.U.* ___

*Borehole #* ___ *Tubing (* ) *@* *to* *ft bgs; S.U.* ___

**GEOPHYSICAL LOGGING**

| *Boring #* | *Interval* | *Type* |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Safe Attitudes.** |
| 0700 | Head to ES Yard to clean XL |
| 0730 | clean XL, waiting for truck to move XL to 200 west |
| 1030 | Truck on site, Load XL |
| 1050 | Head to 200 west (S farm) with XL |
| 1126 | AT 200 west, S-farm, unload XL |
| 1230 | Rig set up on C8401, waiting for forklift to move pipe, lunch |
| 1300 | Enter farm and finish setting up boundaries then begin driving pipe 2.5" |
| 1410 | AT 44' with 2.5" Rods, #12 rod is on. Exit Farm |
| 1435 | Head to office |
| 1530 | End shift |
| | NA |

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Amos/1224<br>*ES SUPPORT:* Weakley, Walkup<br>*NCO:* Snook, Auben<br>*HPT:* Willis, Templeton, Bernard<br>*FWS:* Clark | **WEATHER:** 90 F, mostly sunny and warm with winds from the west at 5-15 mph.<br>**DOWNTIME:** — | **DISCARDED ITEMS:**<br>3-Lynch Pins |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** LO Amos | **REVIEWED BY:** D.E. Skoglie |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Lyle O. Amos | **SIGNATURE:** David E. Skoglie **DATE:** 8/18/11 |

10/06/09 Rev 1

ENERGYSOLUTIONS

**FIELD CLEANING AND/OR DECONTAMINATION**

Page 1 of 1

PROJECT: "S" TANK FARM

LOCATION OF CLEANING/DECONTAMINATION: ENW - ENERGY SOLUTIONS SHOP AREA

THE FOLLOWING EQUIPMENT HAS BEEN CLEANED AND/OR DECONTAMINATED

LIST TYPE OF DETERGENT: ☐ Non-phosphate ☐ Other N/A

| EQUIPMENT | ID NUMBER | | | |
|---|---|---|---|---|
| ☒ HMUXL | #3 | CLEANING | ☒ YES | ☐ NO |
| ☐ | | DECONTAMINATION | ☐ YES | ☐ NO |
| ☐ | | | | |
| ☐ | | | | |

| DOWNHOLE EQUIPMENT | | | SIZE | DATE |
|---|---|---|---|---|
| ☐ N/A | | Ea | | |
| ☐ | | Ea | | |
| ☐ | | Ea | | |
| ☐ | | Ea | | |
| ☐ | | Ea | | |
| ☐ | | Ea | | |
| ☐ | | Ea | | |
| ☐ | | Ea | | |
| ☐ | | Ea | | |
| ☐ | | Ea | | |
| ☐ | | Ea | | |

REMARKS/OBSERVATIONS: HMUXL WAS PRESSURE\STEAM CLEANED WITH 180° TEMP. WATER AFTERS MAINTENANCE WAS PERFORMED.

[signature] 8-17-11
Person Conducting Cleaning and/or Decontamination Date

D.E. Silvaglie 8/18/11
Reviewed by Date

100609 Rev. 0

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Continue driving probe hole #C8401 | | **DATE:** 08-18-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 28 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 **JHA**-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** (Yes) No | (HHU CASE#1) HHU CAT #2 (HHUXL#3) |

| Sample #'s | Interval | % |
|---|---|---|
| 1. | N/A | |
| 2. | | |
| 3. | | |
| 4. | | |

**BOREHOLE SUMMARY**

Borehole # C8401 Tubing (~~4½~~ 2.5") @ 44' to 82' ft bgs; S.U. ~~6.3~~ 4.3'

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ____

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ____

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | N/A | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: General Safety---It's your decision. |
| 0625 | TRAVEL TO S-FARM |
| 0650 | ARRIVED ON SITE, STAND BY FOR PRE-JOB |
| 0700 | PRE-JOB BY B. CLARK |
| 0715 | DRESS AND ENTER FARM |
| 0730 | RESUME DRIVING 2.5" FROM 44' TO 66' bgs, STOPPING |
| — | TWICE TO LET HEAD COOL, SUPPORTED SAMPLING ES |
| — | CREW CLEAN PIPE WHILE WAITING TO LET HEAD COOL |
| 0915 | EXIT FARM FOR WATER BREAK, WHILE HEAD COOLS. |
| 0945 | DRESS & ENTER FARM. |
| 0955 | RESUME DRIVING FROM 66' bgs |
| — | STOP TWICE TO LET HEAD COOL |
| 1055 | STOPPED DRIVING AT 78' bgs WITH 4.3 STICKUP |
| — | BLOWN HYDRAULIC HOSE (SUPPLY TO HAMMER) |
| 1110 | EXIT FARM - NOTIFIED M. WAKUP, M. GARDNER OF |
| — | HYDRAULIC HOSE ISSUE. PLAN IS TO MOVE XL |
| — | BACK TO ENW FOR REPAIR, AND MOVE CASE#1 RIG TO |
| — | C8401. ES CREW REAKO, HOOPES - RESUME DRIVING FROM 78' bgs |
| 1140 | DRESS AN ENTER FARM. MOVE XL RIG #3 OFF OF |
| — | C8401 AND TRACK TO RBA. RCT SURVEY & RELEASED |
| — | XL FROM FARM. |
| — | HHU RIG #1 SET UP & DROVE C8401 FROM 78' TO 82' bgs |
| 1400 | ES CREW EXIT FARM (HEAD HOT) & TRAVEL TO OFFICE |
| 1530 | END OF SHIFT. |

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Ehrgott/3115<br>*ES SUPPORT:* Weakley<br>*NCO:* RIVERLEY, VILLEGAL, SNOOK<br>*HPT:* WIDDIS, MINCY<br>*FWS:* Clark | **WEATHER:** 88 F, mostly sunny and warm with winds from the west at 5-10 mph.<br>**DOWNTIME:** 4 HRS BLOWN HYDRAULIC HOSE XL RIG #3 | **DISCARDED ITEMS:**<br>12- LYNCH PIN<br>1- DRIVE HEAD PIN<br>1- 4' x 2.5" ROD (BAD PIN) |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** MIKE EHRGOTT | **REVIEWED BY:** D.E. Skoglie |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Mike Ehrgott | **SIGNATURE:** Dan E Skoglie **DATE:** 8/22/11 |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE: Move HHUXL from "S" Tank Farm to ENW and repair.** | | **DATE: 08-22-11** |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG: #11076292** | **REPORT #: 29** |

| | | |
|---|---|---|
| **START CARD NO. SE09635** | **DECOMMISSION NO. AE12960** | **RWP: CO-645, Rev. 01 JHA-11-005 Rev. 0** |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** Yes No | *HHU CASE#1 HHU CAT #2 HHUXL#3* |

| *Sample #'s* | *Interval* | *%* |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | NA | |
| 4. | | |

**BOREHOLE SUMMARY**

*Borehole #* ___ *Tubing (* *)@* *to* *ft bgs; S.U.* ___

*Borehole #* ___ *Tubing (* *)@* *to* *ft bgs; S.U.* ___

*Borehole #* ___ *Tubing (* *)@* *to* *ft bgs; S.U.* ___

**GEOPHYSICAL LOGGING**

| *Boring #* | *Interval* | *Type* |
|---|---|---|
| 1. | | |
| 2. | NA | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Safety Eye Wear---For Sun & Shade.** |
| 0615 | Head to 200 west, S farm |
| 0645 | At S Farm, waiting for POD |
| 0725 | POD, waiting on truck to haul XL to shop |
| 0830 | Truck on site, load XL and take to shop |
| 0945 | At yard unload ~~case~~ XL and take off hose (Hydualic hose |
| | That needs repaired. |
| 1050 | Head to J+L to get the hose repaired |
| 1200 | Back at office with repaired hose, have lunch |
| 1230 | Head to ES yard to put hose on rig, and inspect |
| 1430 | Head to office to do paper work |
| 1530 | End shift. |

NA

| | | |
|---|---|---|
| **OPERATOR/LICENSE: Amos/1224**<br>*ES SUPPORT: Weakley*<br>*NCO:* —<br>*HPT:* —<br>*FWS: Clark* | **WEATHER: 95 F, mostly sunny and warm with winds from the southwest at 10-15 mph.**<br>**DOWNTIME:** 0 | **DISCARDED ITEMS:** |

**REFERENCE/CONTRACT INFORMATION: TFC-WO-11-1935 FSWO-DOW- ECN-11-000563**

| | |
|---|---|
| **REPORT BY:** Olin Amos | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Olin Amos | **SIGNATURE:** R.Z. Steffler **DATE:** 8-23-11 |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Move HHUXL from ENW and continue driving probe hole #C8401.

**DATE:** 08-23-11

**LOCATION:** "S" Tank Farm 200 West Area, Hanford.

**EXCAVATION:** DAN-11-0186
**U-DIG:** #11076292

**REPORT #:** 30

**START CARD NO.** SE09635

**DECOMMISSION NO.** AE12960

**RWP:** CO-645, Rev. 01 **JHA-**11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | NA | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** (Yes) No

*HHU CASE#1* *HHU CAT #2* (*HHUXL#3*)

**BOREHOLE SUMMARY**

Borehole # C8401 Tubing (2½) @ 92 to 152.3 ft bgs; S.U. 2'
Borehole # — Tubing ( ) @ to ft bgs; S.U. ___
Borehole # — Tubing ( ) @ to ft bgs; S.U. ___

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | | |
| 2. | NA | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Don't Get Sore At Your Computer. |
| 0700 | Head to ES yard And wait for truck to Load XL |
| 0750 | Truck on site load XL and move to S Farm |
| 0845 | AT S-Farm unload XL and move into RMA. POD |
| 0900 | Enter Farm and setup, and drive pipe |
| ~~1100~~ | Tried adjusting The flow to The hammer. Did not seem to change anything. |
| 1100 | Exit Farm for Lunch |
| 1115 | Lunch |
| 1145 | Enter Farm and continue pushing |
| 1416 | Exit Farm, AT Total depth of 152.3 |
| 1435 | Head to office |
| 1530 | End shift |
| | NA |

**OPERATOR/LICENSE:** Amos/1224
*ES SUPPORT:* Weakley
*NCO:* Sharp, Ruben
*HPT:* Templeton, Wittis, Youngs, Bernard
*FWS:* Clark

**WEATHER:** 92 F, mostly sunny and warm with winds from the southwest at 5-10 mph.

**DOWNTIME:** 0

**DISCARDED ITEMS:**
12 - Lynch pins
1 - Drive head 2.5"

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** Olin Amos
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Olin Amos

**REVIEWED BY:** D.E.S Koglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** Daniel E Skoglie
**DATE:** 8/24/11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

PURPOSE: Push pipe on C8407

DATE: 8-24-11

LOCATION: S-Farm

EXCAVATION: DAN-11-0186 U-DIG #: 11076292

REPORT #: ~~30~~ 31 OEK

START CARD NO. SE09635

DECOMMISSION NO. AE12960

RWP: CO-645, RIAHA-11-005 Rev 0

SAMPLING SUMMARY

| Sample #'s | Interval | % |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

NA

SITE/EQUIPMENT INSPECTION: (Yes) No

HHU CASE#1 HHU CAT #2 (HHUXL#3)

BOREHOLE SUMMARY

Borehole # C8407 Tubing (2.5) @ 0 to 100' ft bgs: S.U. 7.3

Borehole # — Tubing ( ) @ to ft bgs: S.U.

Borehole # — Tubing ( ) @ to ft bgs: S.U.

GEOPHYSICAL LOGGING

| Boring # | Interval | Type |
|---|---|---|
| 1. C8401 | 152'-125' | SG |
| 2. | | |
| 3. | | |

NA

| TIME | WORK SUMMARY |
|---|---|
| 0600 | AT office, Safety Meeting |
| 0615 | Head to S-Farm |
| 0645 | AT S-Farm, wait for POD/Randy Logging C8401 Today |
| 0715 | POD move to C8407 and begin driving |
| 0720 | Go in Farm and move rig and begin driving 2.5" |
| 1030 | Exit Farm for lunch, at 62 feet |
| 1045 | Lunch |
| 1115 | Dress into Farm to continue driving pipe. |
| 1430 | AT 100', Exit Farm |
| 1440 | Head to office to turn in paper work. |
| 1530 | End shift |
| | NOTE: Moved XL to C8407 and pushed to 100 Feet. Head would heat up and we would have to let it cool ~~and~~ off and on throughout the day. |
| | Logging on C8401 was done by Randy from 152 to 125 Feet. |

NA

OPERATOR/LICENSE: Amos/1224
ES SUPPORT: Weakley, Auila
NCO: Snook, Sharp, Ruben, Izzy
HPT: Templeton, Jeff, Bernard, Young
FWS: Clark

WEATHER: 99°F Slight Breeses

DOWNTIME: -0-

DISCARDED ITEMS:
2 - Lynch Pins
1 - Drive head pin

REFERENCE/CONTRACT INFORMATION: TFC-WO-11-1935, FSWO-DOW- ECN-11-000563

REPORT BY: LO Amos
TITLE: ES TECHNICAL PREPARER
SIGNATURE: Zlu O. Amos

REVIEWED BY: D.E. Skoglie
TITLE: ES TECHNICAL REVIEWER
SIGNATURE: Daniel E Skoglie DATE: 8/25/11

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Complete pushing probe hole #C8407. PNG continue logging activities at #C8401. | | **DATE:** 08-25-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 32 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** Yes No | *HHU CASE#1 HHU CAT #2 HHUXL#3* |

*Sample #'s Interval %*

1.
2.
3. N/A
4.

**BOREHOLE SUMMARY**

*Borehole #* C8407 *Tubing (* 2.5 *) @* 100 *to* 1523 *ft bgs; S.U.* 2

*Borehole #* — *Tubing ( ) @ to ft bgs; S.U.* ___

*Borehole #* — *Tubing ( ) @ to ft bgs; S.U.* ___

**GEOPHYSICAL LOGGING**

| *Boring #* | *Interval* | *Type* |
|---|---|---|
| 1. C8401 | 125' - 0' | S.G. |
| 2. C8407 | 151.13 - 0' | m |
| 3. C8407 | 152' - 60' | S.G. |

SWING SHIFT

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Ladder Defects.** |
| 0615 | Travel to S-Farm |
| 0645 | AT S-Farm, POD, Randy Logging on C8401 and C8407 |
| 0707 | Dress into farm and continue pushing 2.5". |
| 0915 | AT Total depth of 152.3 feet. Remove XL off hole so Randy can log it |
| 0930 | Exit S-Farm and wait for logging to be done |
| 1100 | lunch |
| 1130 | Standby, waiting for logging to be completed |
| 1530 | End shift |

N/A

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Amos/1224<br>*ES SUPPORT: Weakley, Hoopes*<br>*NCO:* Snook, Izzy,<br>*HPT:* Young, Bernwald, Witts<br>*FWS: Clark* *PNG: Price* | **WEATHER:** 93 F, partly cloudy and hot. Winds from the west at <10 mph.<br>**DOWNTIME:** S.S - waiting on Logging | **DISCARDED ITEMS:** 1 - Lynch Pin. |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** Olin Amos | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Olin Amos | **SIGNATURE:** R.Z. Steffler DATE: 8-26-11 |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** PNG continue logging activities at ~~C8407~~ C8407 | | **DATE:** 8-26-11 |
| **LOCATION:** "S" Tank Farm 200West Area, Hanford | **EXCAVATION: DAN-11-0186 U-DIG: #11076292** | **REPORT #:** 33 |
| **START CARD NO.SE09635** | **DECOMMISSION NO.AE12960** | **RWP: CO-645,Rev.01, JHA-11-005 Rev.0** |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** *Yes* (No) | ***HHU CASE#1 HHU CAT #2 HHUXL#3*** |

| *Sample #'s* | *Interval* | *%* |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**BOREHOLE SUMMARY**

*Borehole #* N/A *Tubing (  )@  to  ft bgs; S.U.*

*Borehole #* N/A *Tubing (  ) @  to  ft bgs; S.U.*

*Borehole #* N/A *Tubing (  ) @  to  ft bgs; S.U.*

**GEOPHYSICAL LOGGING**

| *Boring #* | *Interval* | *Type* |
|---|---|---|
| 1. C8407 | 60'-0 | SG |
| 2. N/A | | |
| 3. N/A | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Common sense and Accident Prevention. |
| 0630 | Travel to 'S' farm |
| 0710 | Arrive at 'S' farm, Pre-job |
| 0730 | P.N.L. Enters farm and begins logging activity, No H.H.U. activity (pending logging completion). |
| 11:30 | Lunch |
| 12:00 | Complete spectra-gamma logging at C8407, survey logging equipment out of farm. |
| 1300 | Travel to office, paperwork, time cards |
| 1430 | End of shift |

NA

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Olson /1224<br>*ES SUPPORT:* Repko, Hoopes<br>*NCO:* Sharp, Rivera<br>*HPT:* Clayton, Orem<br>*FWS:* Clark | **WEATHER:** 97 F, Sunny and Hot<br>Wind 5 to 10mph<br>**DOWNTIME:** N/A | **DISCARDED ITEMS:** N/A |

**REFERENCE/CONTRACT INFORMATION: TFO-WO-11-1935 FSWO-DOW- ECN-11-000563**

| | |
|---|---|
| **REPORT BY:** ~~Mike Ehrgott~~ Kelly Olson | **REVIEWED BY:** D.E. Skoglie |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Kelly Olson | **SIGNATURE:** David E. Skoglie **DATE:** 8/29/11 |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Begin probe installation at #C8407. | | **DATE:** 08-29-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 34 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** Yes No | *HHU CASE#1 HHU CAT #2 HHUXL#3* |

| Sample #'s | Interval | % |
|---|---|---|
| 1. | | |
| 2. | N/A | |
| 3. | | |
| 4. | | |

**BOREHOLE SUMMARY**

Borehole #C-8407 Tubing (2 1/2) @152 to 64 ft bgs; S.U. 2.3'

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ____

Borehole # N/A Tubing ( ) @ to ft bgs; S.U. ____

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | N/A | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Motion Injuries.** |
| 0745 | Drive to S-Tank farm (Safety Meeting at Sterlings today.) |
| 0815 | Arrive at S-Tank Farm. Standby for P.O.D. |
| 0830 | Pre-job with crew: work on probe installation on #C-8407. |
| 0850 | Dress in whites rig inspection. |
| 0921 | Reposition HHUxxL on hole #C-8407. (See ATTachment) |
| – | We pulled one joint knocked the tip out and followed the |
| – | probe installation guide attached. |
| 1024 | We set the first iteration probe is set at 150.0 put rig |
| – | in safe configuration for lunch |
| 1115 | Dress out of farm for lunch. |
| 1130 | Lunch |
| 1201 | Standby for support. DEL |
| 1230 | Dress in whites, Work on probe installation - See attachment |
| 1415 | We worked back up to 67.5' bgs with ~~sand and added 1gal~~ Bentonite |
| – | ~~of water~~ The casing is at 64' bgs with 2.3' stick up. |
| – | Put rig in safe configuration, dress out of whites. |
| 1430 | Drive to ESFS. |
| 1500 | Arrive at ESFS, paperwork, Timecard. |
| 1530 | End of shift. |
| | N/A |

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Amos/1224<br>*ES SUPPORT:* Weakley, Hoopes<br>*NCO:* Snook, Sharp, Villareal<br>*HPT:* Widdis, Young, Clayton<br>*FWS:* Clark | **WEATHER:** 92 F, mostly sunny and breezy. Winds from the southwest at 10-15 mph with higher gusts.<br>**DOWNTIME:** 1/2 for support after lunch | **DISCARDED ITEMS:**<br>4 - rivets<br>160' probe<br>3 - Bags Bentonite<br>1 - expendable drive tip |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** Mark A. Repko | **REVIEWED BY:** D.E. Skoglie |
| **TITLE:** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Mark A. Repko | **SIGNATURE:** Dan E. Skoglie **DATE:** 8/30/11 |

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200 FT MULTI-LEVEL RESISTIVITY PROBE WORK SHEET BOREHOLE NO. C-8407

| DIMENSIONS | PRELIMINARY AS-BUILT | CONSTRUCTION MATERIAL/TAG | |
|---|---|---|---|
| PLANNED | ACTUAL | MATERIAL | TAG |
| 0 ft | | SURFACE PROTECTION @ 1 FT BGS | |
| - 20 ft - | - ft - | Bentonite from ___ to ___<br>Sand from ___ to ___<br>D.E. from ___ to ___<br>Sand from ___ to ___ | |
| - 40 ft - | - ft - | Bentonite from ___ to ___<br>Sand from ___ to ___<br>D.E. from ___ to ___<br>Sand from ___ to ___ | |
| - 60 ft - | 29' - 31' ft - | Bentonite from 1' to 27.5'<br>Sand from 27.5 to 28.5<br>D.E. from 28.5 to 31.5<br>Sand from 31.5 to 32.5 | ✓<br>✓ |
| - 80 ft - | 49' - 51' ft - | Bentonite from 32.5 to 47.5<br>X Sand from 47.5 to 48.5<br>D.E. from 48.5 to 51.5<br>Sand from 51.5 to 52.5 | ✓<br>X |
| - 100 ft - | 69' - 71' ft - | Bentonite from ___ to 67.5<br>Sand from 67.5 to 68.5<br>D.E. from 68.5 to 71.5<br>Sand from 71.5 to 72.5 | X<br>X |
| - 120 ft - | 89' - 91' ft - | Bentonite from ___ to 87.5<br>Sand from 87.5 to 88.5<br>D.E. from 88.5 to 91.5<br>Sand from 91.5 to 92.5 | X<br>X<br>X |
| - 140 ft - | 109' - 111' ft - | Bentonite from 92.5 to 107.5<br>Sand from 107.5 to 108.5<br>D.E. from 108.5 to 111.5<br>Sand from 111.5 to 112.5 | X<br>X |
| - 160 ft - | 129' - 131' ft - | Bentonite from 112.5 to 127.5<br>Sand from 127.5 to 128.5<br>D.E. from 128.5 to 131.5<br>Sand from 131.5 to 132.5 | X<br>X |
| - 180 ft - | 148.5' - 150 ft - | Bentonite from 132.5 to 147<br>Sand from 147 to 148<br>D.E. from 148 to 150.5<br>Sand from 150.5 to 151.5 | X<br>X |

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Complete probe installation at #C8407 and begin driving sample hole #C8408. | | **DATE:** 08-30-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 35 |
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 **JHA**-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** (Yes) No | *HHU CASE#1* *HHU CAT #2* (HHUXL#3) |

**SAMPLING SUMMARY**

| *Sample #'s* | *Interval* | *%* |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**BOREHOLE SUMMARY**

*Borehole #* ~~C8408~~ C8407 *Tubing* (2 1/2") @ 64' *to* 0' *ft bgs; S.U.* 1

*Borehole #* C8408 *Tubing* (2 5/8") @ 0' *to* 40' *ft bgs; S.U.* 2.3

*Borehole #* N/A *Tubing* ( \ ) @ \ *to* \ *ft bgs; S.U.* \

**GEOPHYSICAL LOGGING**

| *Boring #* | *Interval* | *Type* |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Emergency Eye Wash & Deluge Showers. |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, Pre-job, Gather materials |
| 0730 | Press into whites, Enter farm, inspect and fuel rig, finish |
| \ | probe installation at C8407, Last two electrodes set at |
| \ | 51' to 49', and 31' to 29', install sand/Diatomite packs as specified |
| \ | on attached sheet to report #34, hydrated sand/diatomite via tremie |
| \ | (1gal H20 per unit), Pulled 2 1/2" casing from 64' to 0' |
| 1000 | Move and setup on C8408, move 2 5/8" rod to site, |
| \ | set up and drive 2 5/8" rod from 0' to 40', secure site |
| \ | and survey out. |
| 1200 | Lunch |
| 1230 | Prep for sampling Thurs. A.M., clean-up, Travel to |
| \ | office, paperwork, time cards. |
| 1530 | End of shift |
| | NA |

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Olson/1217<br>*ES SUPPORT: Hoopes, Repko, Steffler*<br>*NCO:* Sharp, Snook, Rivera<br>*HPT:* Widdus, Young<br>*FWS: Clark* | **WEATHER:** 85 F, mostly sunny and breezy. Winds from the southwest at 10-15 mph with higher gusts.<br>**DOWNTIME:** NA | **DISCARDED ITEMS:**<br>4 sacks granular bentonite<br>1 sack sand<br>1 sack diatomite<br>2 'O' rings |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** Kelly Olson | **REVIEWED BY:** D.E. Skoglie |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Kelly Olson | **SIGNATURE:** D.E. Skoglie **DATE:** 8/31/11 |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Continue prep. work for sampling activities at #C8408.

**DATE:** 08-31-11

**LOCATION:** "S" Tank Farm 200 West Area, Hanford.

**EXCAVATION:** DAN-11-0186
**U-DIG:** #11076292

**REPORT #:** 36

**START CARD NO.** SE09635

**DECOMMISSION NO.** AE12960

**RWP:** CO-645, Rev. 01 **JHA**-11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**SITE/EQUIPMENT INSPECTION:** *Yes* (No)

*HHU CASE#1* *HHU CAT #2* (*HHUXL#3*)

**BOREHOLE SUMMARY**

*Borehole #* C8408 *Tubing (* 2 5/8 *) @* 40' *to* \ *ft bgs; S.U.* \

*Borehole #* N/A *Tubing (* \ *) @* \ *to* \ *ft bgs; S.U.* \

*Borehole #* N/A *Tubing (* \ *) @* \ *to* \ *ft bgs; S.U.* \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Cuts & Burns. |
| 0620 | Continue prep work for sampling activities at #C8408, |
| \ | calibrate depth meter for logging activities. |
| 1130 | Lunch |
| 1200 | Continue sampling activity prep work |
| 1530 | End of shift |

NA

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Hoopes, Repko
*NCO:* Sharp, Rivera
*HPT:* Widdus Young
*FWS:* Clark

**WEATHER:** 79 F, partly cloudy with winds from the southwest at 10-20 mph.

**DOWNTIME:** NA

**DISCARDED ITEMS:** NA

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Ol

**REVIEWED BY:** D. E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** Dan E Skoglie **DATE:** 8/31/11

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Begin sampling activities at #C8408. | | **DATE:** 09-01-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 37 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** Yes No | *HHU CASE#1 HHU CAT #2 HHUXL#3* |

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. B2H0Y0 | 47-49' | 100% |
| 2. N/A | \ | \ |
| 3. N/A | \ | \ |
| 4. N/A | \ | \ |

**BOREHOLE SUMMARY**

Borehole # C8408 Tubing (2 5/8") @ 40' to 94' ft bgs; S.U. .3

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Develop & "Sell" Your Safety Solutions.** |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, Pre-job |
| 0730 | Dress into whites, enter farm, fuel and inspect rig, move rods |
| \ | to location, Drive 2 5/8" tubing from 40' to 47'. |
| 0815 | Tag out rig when changing heads, Pull dummy tip, install sampler, |
| \ | drive sample at 0836, pull and process sample, recovery as |
| \ | follows shoe #B2H0Y0 = 100% A Liner #B2H0Y2 = 100%, B Liner #B2H0Y3 = 100%, |
| \ | C Liner #B2H0Y4 = 100%, install dummy tip. |
| 0915 | Resume driving 2 5/8" tubing at C8408 from 49' to 80' letting head |
| \ | cool as needed, survey out. |
| 1200 | Lunch |
| 1230 | Dress into whites, enter farm, drive from 80' to 94' letting head |
| \ | cool as needed, survey out (94' bgs = sample point) |
| 1330 | Prep for sampling, clean-up |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Olson/1217<br>*ES SUPPORT: Hoopes, Repko*<br>*NCO:* Sharp, Rivera<br>*HPT:* Widdus, Barnard<br>*FWS: Clark* | **WEATHER:** 81 F, mostly sunny with winds from the southwest at 5-15 mph.<br>**DOWNTIME:** N/A | **DISCARDED ITEMS:** 2 Lunch bin<br>3 sample lines<br>6 sample caps<br>4 O' rings<br>1 2 5/8" Drive head<br>1 4" Allen Bolt |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** Kelly Olson | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Kelly Olson | **SIGNATURE:** R.Z. Steffler **DATE:** 9-6-11 |

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# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8408 I001 | **LOGBOOK NO./PAGE** | | |
| **WELL NAME** ORIGINAL | **WELL ID** | **ACTUAL DEPTH** | ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | **BOTTOM OF BOREHOLE (bgs)** | | ☐ft ☐m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 5 **TOTAL NUMBER OF CHAINS** 3 **COLLECTOR**

**WSCF** **V11-006-075**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2H0Y0 | 1 / 60mL / G/P | | None | Rad Screen; |

**222-S** **V11-006-076**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2H0Y1 | 1 / 500mL / G | 100% Dry Sand | Cool~6C | Generic Testing; |

**222-S** **V11-006-077**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2H0Y2 | 1 / 160g / Liner | 100% Dry Sand | Cool~6C | Bulk Density - D2937 (TF); |
| B2H0Y3 | 1 / 160g / Liner | 100% Dry | Cool~6C | Bulk Density - D2937 (TF); |
| B2H0Y4 | 1 / 160g / Liner | 100% Dry | Cool~6C | Bulk Density - D2937 (TF); |

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# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | |
|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | **PAGE** 2 **OF** 2 |
| | **DATE/TIME** |
| **SAF NO.(S)** V11-006 | |
| **LOCATION** C8408 I001 | **LOGBOOK NO./PAGE** |
| **WELL NAME** ORIGINAL | **WELL ID** / **ACTUAL DEPTH** ☐ ft ☐ m |
| **BOTTOM OF CASING (bgs)** ☐ ft ☐ m | **BOTTOM OF BOREHOLE (bgs)** ☐ ft ☐ m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 5 **TOTAL NUMBER OF CHAINS** 3 **COLLECTOR**

**FIELD INFORMATION**

**WHERE ARE SAMPLES LOCATED AT THIS TIME?** ☐ WSCF ☐ 222-S ☐ MO-413 ☐ MO-745 ☐ 6269 ☐ OTHER

**CONTAINER/DRUM/TOTE/BOX**

**SAMPLE MATRIX DESCRIPTION** ☐ SOIL ☐ SLUDGE ☐ RESIN ☐ GAC ☐ FILTER PAPER ☐ OTHER

**FURTHER SAMPLE MATRIX EXPLANATION/DESCRIPTION [NOTE ANY ODOR, COLOR, TEXTURE (E.G., SLIMY, OILY, GRANULAR, ETC.)]**

**FIELD OBSERVATIONS**

**WEATHER**

**FIELD COMMENTS**

**SUPPORT PERSONNEL**

**SAMPLES SURVEYED BY RCT** ☐ YES ☐ NO

**IS A BLUE CARD REQUIRED** ☐ YES ☐ NO **BLUE CARD NO** _____

**IS SRS PROVIDED AND COMPLETE** ☐ YES ☐ NO

| | PRINT NAME | SIGN NAME | DATE |
|---|---|---|---|
| **RECORDED BY** | | | |
| **INDEPENDENT REVIEW** | | | |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Continue sampling activities at #C8408. | | **DATE:** 09-06-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 38 |
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** (Yes) No | *HHU CASE#1 HHU CAT #2* (HHUXL#3) |

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. B2H0Y5 | 94'-96' | 100% |
| 2. N/A | \ | \ |
| 3. N/A | \ | \ |
| 4. N/A | \ | \ |

**BOREHOLE SUMMARY**

Borehole # C8408 Tubing (2 5/8") @ 94' to 129' ft bgs; S.U. 1.3'

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Presentation by ESGG Safety Staff---Safety Scenarios. |
| 0635 | Travel to 'S' farm |
| 0710 | Arrive at 'S' farm, stand-by for pre-Job |
| 0740 | Pre-job |
| 0800 | Ace in, dress into whites, enter farm, fuel and inspect rig, |
| \ | pull dummy tip, install sampler, drive sample at 0910 from |
| \ | 94' to 96', recovery as follows, shoe #B2H0Y6 = 100%, A-Liner |
| \ | B2H0Y7 = 100%, B-liner B2H0Y8 = 100%, C-liner B2H0Y9 = 100%, |
| \ | After pulling and processing sample, installed dummy tip. |
| 0945 | Resume driving 2 5/8" tubing from 96' to 129' letting head cool |
| \ | as needed, survey out. |
| 1130 | Lunch |
| 1200 | Dress into whites, enter farm, Pull dummy tip, install |
| \ | sampler and prepare to sample in A.M., survey out. |
| 1300 | Stand-by for insufficient time to sample, |
| \ | travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Olson/1217<br>*ES SUPPORT:* Hoopes, Repko<br>*NCO:* Sharp, Rivera<br>*HPT:* widdus, Young<br>*FWS:* Clark | **WEATHER:** 92 F, sunny and hot with winds from the northwest at 5-10 mph.<br>**DOWNTIME:** .5 hr for pre-Job<br>1.5 hr for insufficient time to sample | **DISCARDED ITEMS:**<br>3 sample liners<br>6 sample caps<br>4 O' rings |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** Kelly Olson | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Kelly Olson | **SIGNATURE:** RZ Steffler DATE: 9-7-11 |

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8408 I002 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** | **ORIGINAL** | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** | ☐ft ☐m | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 5 **TOTAL NUMBER OF CHAINS** 3 **COLLECTOR**

**WSCF** **V11-006-078**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2H0Y5 | 1 / 60mL / G/P | | None | Rad Screen; |

**222-S** **V11-006-079**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2H0Y6 | 1 / 500mL / G | 100% Dry | Cool~6C | Generic Testing; |

**222-S** **V11-006-080**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2H0Y7 | 1 / 160g / Liner | 100% Dry | Cool~6C | Bulk Density - D2937 (TF); |
| B2H0Y8 | 1 / 160g / Liner | 100% Dry | Cool~6C | Bulk Density - D2937 (TF); |
| B2H0Y9 | 1 / 160g / Liner | 100% Dry | Cool~6C | Bulk Density - D2937 (TF); |

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# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | |
|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | **PAGE** 2 **OF** 2 |
| | **DATE/TIME** |
| **SAF NO.(S)** V11-006 | |
| **LOCATION** C8408 I002 | **LOGBOOK NO./PAGE** |
| **WELL NAME** ORIGINAL | **WELL ID** / **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | **BOTTOM OF BOREHOLE (bgs)** ☐ft ☐m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 5 **TOTAL NUMBER OF CHAINS** 3 **COLLECTOR**

**FIELD INFORMATION**

**WHERE ARE SAMPLES LOCATED AT THIS TIME?** ☐ WSCF ☐ 222-S ☐ MO-413 ☐ MO-745 ☐ 6269 ☐ OTHER

**CONTAINER/DRUM/TOTE/BOX**

**SAMPLE MATRIX DESCRIPTION** ☐ SOIL ☐ SLUDGE ☐ RESIN ☐ GAC ☐ FILTER PAPER ☐ OTHER

**FURTHER SAMPLE MATRIX EXPLANATION/DESCRIPTION [NOTE ANY ODOR, COLOR, TEXTURE (E.G., SLIMY, OILY, GRANULAR, ETC.)]**

**FIELD OBSERVATIONS**

**WEATHER**

**FIELD COMMENTS**

**SUPPORT PERSONNEL**

**SAMPLES SURVEYED BY RCT** ☐ YES ☐ NO

**IS A BLUE CARD REQUIRED** ☐ YES ☐ NO **BLUE CARD NO** _____

**IS SRS PROVIDED AND COMPLETE** ☐ YES ☐ NO

| | PRINT NAME | SIGN NAME | DATE |
|---|---|---|---|
| **RECORDED BY** | | | |
| **INDEPENDENT REVIEW** | | | |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Decommission #C8408 and begin sampling activities at #C8402.

**DATE:** 09-07-11

**LOCATION:** "S" Tank Farm 200 West Area, Hanford.

**EXCAVATION:** DAN-11-0186
**U-DIG:** #11076292

**REPORT #:** 39

**START CARD NO.** SE09635

**DECOMMISSION NO.** AE12960

**RWP:** CO-645, Rev. 01 **JHA**-11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. B2H100 | 129'-131' | 100% |
| 2. N/A | " | " |
| 3. N/A | " | " |
| 4. N/A | " | " |

**SITE/EQUIPMENT INSPECTION:** (Yes) No

*HHU CASE#1* *HHU CAT #2* (HHUXL#3)

**BOREHOLE SUMMARY**

*Borehole #* C8408 *Tubing (2 5/8")* @ 129' *to* 131' *ft bgs; S.U.* 1.3'

*Borehole #* C8408 *Tubing (2 5/8")* @ 131' *to* 0' *ft bgs; S.U.* /

*Borehole #* C8402 *Tubing (2 5/8")* @ 0' *to* 47' *ft bgs; S.U.* 3.3'

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Review of C-203 JHA by ESGG Safety Staff. |
| 0640 | Travel to 'S' farm |
| 0715 | Arrive at 'S' farm Pre-job |
| 0730 | Dress into whites, fuel and inspect rig, Drive sampler |
| " | at 0755 from 129' to 131' at C8408, pull and process sample, |
| " | recovery as follows, shoe # B2H101 = 100%, A-liner B2H102 = 100%, B-liner |
| " | B2H103 = 100% and C-liner B2H104 = 100%. Clean inner rod |
| 0845 | Back Pull 2 5/8" outer rod at C8408 from 131' to 0', back filled |
| " | borehole with granular bentonite to surface. clean rods and |
| " | survey out. |
| 1100 | Lunch |
| 1130 | Dress into whites, move rig and equipment to C8402, |
| " | set up rig, zone, move 2 5/8" pipe to site. |
| " | Drive 2 5/8" tubing from 0' to 47' (sample depth), survey out |
| 1400 | Exit farm, clean-up, travel to office, paperwork, |
| " | time cards |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Hoopes, Repko, Passey, Weakley
*NCO:* Sharp, Rivera
*HPT:* Widdus, Yovas
*FWS:* Clark

**WEATHER:** 95 F, sunny and hot with winds from the north at 5-10 mph.

**DOWNTIME:** N/A

**DISCARDED ITEMS:**
3 sample liners, 4 'O' rings
6 sample caps
9 sacks granular bentonite
1 2 5/8" Tipholder + tip
1 2 5/8" Drive head

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE:** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** Daniel E. Skoglie **DATE:** 9/8/11

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8408 I003 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** ORIGINAL | | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 5 **TOTAL NUMBER OF CHAINS** 3 **COLLECTOR**

**WSCF** **V11-006-081**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2H100 | 1 / 60mL / G/P | | None | Rad Screen; |

**222-S** **V11-006-082**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2H101 | 1 / 500mL / G | 100% Clay | Cool~6C | Generic Testing; |

**222-S** **V11-006-083**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2H102 | 1 / 160g / Liner | 100% Gooey Clay | Cool~6C | Bulk Density - D2937 (TF); |
| B2H103 | 1 / 160g / Liner | 100% Clay | Cool~6C | Bulk Density - D2937 (TF); |
| B2H104 | 1 / 160g / Liner | 100% Clay | Cool~6C | Bulk Density - D2937 (TF); |

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# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | |
|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | **PAGE** 2 **OF** 2 |
| | **DATE/TIME** |
| **SAF NO.(S)** V11-006 | |
| **LOCATION** C8408 I003 | **LOGBOOK NO./PAGE** |
| **WELL NAME** ORIGINAL | **WELL ID** / **ACTUAL DEPTH** ☐ ft ☐ m |
| **BOTTOM OF CASING (bgs)** ☐ ft ☐ m | **BOTTOM OF BOREHOLE (bgs)** ☐ ft ☐ m |

**SAMPLES COLLECTED**

**TOTAL NUMBER OF BOTTLES** 5 **TOTAL NUMBER OF CHAINS** 3 **COLLECTOR**

**FIELD INFORMATION**

**WHERE ARE SAMPLES LOCATED AT THIS TIME?** ☐ WSCF ☐ 222-S ☐ MO-413 ☐ MO-745 ☐ 6269 ☐ OTHER

**CONTAINER/DRUM/TOTE/BOX**

**SAMPLE MATRIX DESCRIPTION** ☐ SOIL ☐ SLUDGE ☐ RESIN ☐ GAC ☐ FILTER PAPER ☐ OTHER

**FURTHER SAMPLE MATRIX EXPLANATION/DESCRIPTION [NOTE ANY ODOR, COLOR, TEXTURE (E.G., SLIMY, OILY, GRANULAR, ETC.)]**

**FIELD OBSERVATIONS**

**WEATHER**

**FIELD COMMENTS**

**SUPPORT PERSONNEL**

**SAMPLES SURVEYED BY RCT** ☐ YES ☐ NO

**IS A BLUE CARD REQUIRED** ☐ YES ☐ NO **BLUE CARD NO** _____

**IS SRS PROVIDED AND COMPLETE** ☐ YES ☐ NO

| | PRINT NAME | SIGN NAME | DATE |
|---|---|---|---|
| **RECORDED BY** | | | |
| **INDEPENDENT REVIEW** | | | |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Begin sampling activities at #C8402. **DATE:** 09-08-11

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. **EXCAVATION:** DAN-11-0186 **U-DIG:** #11076292 **REPORT #:** 40

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 01 **JHA-**11-005 Rev. 0

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. B2FDK1 | 47-49 | 100% |
| 2. \ | \ | \ |
| 3. \ | \ | \ |
| 4. \ | \ | \ |

**SITE/EQUIPMENT INSPECTION:** Yes No

*HHU CASE#1 HHU CAT #2* HHUXL#3

**BOREHOLE SUMMARY**

Borehole # C8402 Tubing (2 5/8") @ 47' to 63' ft bgs; S.U. 3.3'

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: School Bus Safety. |
| 0630 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, stand-by for pre-job |
| 0745 | Pre-job |
| 0800 | stand-by for N.C.O. and approval to drive sample |
| 0845 | Dress into whites, enter farm, inspect rig and fuel, |
| \ | move 2 5/8 rod to location, drive sample at 0945, |
| \ | pull and process sample, recovery = shoe B2FDK1 = 100%, |
| \ | A liner B2FDK2 = 100%, B liner B2FDK3 = 100%, C-liner B2FDK4 = 100%. |
| 1000 | Found leaking hydraulic hose, tracing hose, checking |
| \ | for caps and plugs |
| 1100 | Lunch |
| 1130 | Stand-by for parts to repair hydraulic leak |
| 1230 | Enter farm, trace hydraulic leak to pressure gauge on |
| | #2 pump, cap line, clean-up. |
| 1300 | Drive 2 5/8" casing from 49' to 63', Head became hot |
| \ | at 63', clean-up and survey out. |
| 1415 | Put away equipment, travel to office, paperwork, time cards. |
| 1530 | End of shift |
| \ | |
| \ | NA |
| \ | |
| \ | |
| \ | |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Repko, Passey
*NCO:* Sharp, Rivera
*HPT:* Young, Clayton
*FWS:* Clark

**WEATHER:** 97 F, sunny and hot with winds from the north at 5-10 mph.

**DOWNTIME:** .75 hr for pre-job
.75 hr for N.C.O coverage.
2.5 hr for hydraulic repair

**DISCARDED ITEMS:**
3 sample liners
6 sample caps
4 'O' rings

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** Kelly Olson
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 9/9/11

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8402 I001 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** ORIGINAL | | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |
| **SAMPLES COLLECTED** | | | |
| **TOTAL NUMBER OF BOTTLES** 4 | **TOTAL NUMBER OF CHAINS** 2 | **COLLECTOR** | |

**222-S** **V11-006-027**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS | |
|---|---|---|---|---|---|
| B2FDK1 | 1 / 500mL / G | | Cool~6C | Generic Testing; | 100 % |

**222-S** **V11-006-028**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS | |
|---|---|---|---|---|---|
| B2FDK2 | 1 / 160g / Liner | | Cool~6C | Bulk Density - D2937 (TF); | 100% |
| B2FDK3 | 1 / 160g / Liner | | Cool~6C | Bulk Density - D2937 (TF); | 100% |
| B2FDK4 | 1 / 160g / Liner | | Cool~6C | Bulk Density - D2937 (TF); | 100% |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE: Continue sampling activities at #C8402.** | | **DATE: 09-09-11** |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG: #11076292** | **REPORT #: 41** |

| | | |
|---|---|---|
| **START CARD NO. SE09635** | **DECOMMISSION NO. AE12960** | **RWP: CO-645, Rev. 01 JHA-11-005 Rev. 0** |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** (Yes) No | *HHU CASE#1 HHU CAT #2* (HHUXL#3) |

**SAMPLING SUMMARY**

| *Sample #'s* | *Interval* | *%* |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**BOREHOLE SUMMARY**

*Borehole #* C8402 *Tubing (* 2 5/8" *)* @ 63' *to* 84 *ft bgs; S.U.* 2.3

*Borehole #* N/A *Tubing (* \ *)* @ \ *to* \ *ft bgs; S.U.* \

*Borehole #* N/A *Tubing (* \ *)* @ \ *to* \ *ft bgs; S.U.* \

**GEOPHYSICAL LOGGING**

| *Boring #* | *Interval* | *Type* |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Fan Safety.** |
| 0630 | Travel to Richland to attend all hands meeting with V. Christensen. |
| ~ | All hands meeting with V. Christensen. |
| 0830 | Travel to 'S' farm, Ace in at 200 East |
| 0945 | Pre-job |
| 1000 | Dress into whites enter farm, inspect rig, Drive |
| ~ | 2 5/8" casing from 63" to 80' letting head cool when |
| | needed (hard driving) |
| 1215 | Lunch |
| 1245 | Dress into whites, enter farm, ~~resume~~ driving 2 5/8" |
| | tubing at C8402 from 80' to 84', Head became hot |
| | replace insert and holder in clamps, survey out' |
| 1330 | Travel to office, paperwork, time cards |
| 1430 | End of shift |
| | NA |

| | | |
|---|---|---|
| **OPERATOR/LICENSE: Olson/1217**<br>*ES SUPPORT: Passey*<br>*NCO:* Sharp, Rivera<br>*HPT:* Clayton, Mincey<br>*FWS: Clark* | **WEATHER: 98 F, sunny and hot with winds from the north at <10 mph.**<br>**DOWNTIME:** 2 hr for ESGG All heads meeting | **DISCARDED ITEMS:**<br>1 Jaw insert + holder<br>6 Lynch Pins |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** Kelly Olson | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Kelly Olson | **SIGNATURE:** RZ Steffler DATE: 9-12-11 |

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE: Continue sampling activities at #C8402.** **DATE: 09-12-11**

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. **EXCAVATION:** DAN-11-0186 **U-DIG: #11076292** **REPORT #: 42**

**START CARD NO. SE09635** **DECOMMISSION NO. AE12960** **RWP: CO-645, Rev. 01** **JHA-11-005 Rev. 0**

**SAMPLING SUMMARY** **SITE/EQUIPMENT INSPECTION:** (Yes) No **HHU CASE#1** **HHU CAT #2** (HHUXL#3)

| Sample #'s | Interval | % |
|---|---|---|
| 1. B2FDK5 | 107-109' | 100% |
| 2. N/A | \ | \ |
| 3. N/A | \ | \ |
| 4. N/A | \ | \ |

**BOREHOLE SUMMARY**

Borehole # C8402 Tubing (2 5/8") @ 84' to 117' ft bgs; S.U. 1.3'

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: The Right Boot. |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, stand-by for pre-job |
| 0730 | Pre-job |
| 0800 | Dress into whites, enter farm, fuel and inspect rig, drive 2 5/8" tubing from 84' to 107' letting head cool as needed. |
| 1015 | Pull inner rod (dummy tip) - install sampler, set up to drive sample |
| 1100 | Lunch |
| 1130 | Stand-by for RCTs and Vapor issues in 'SY' farm |
| 1230 | Enter farm, move rods to location with gator, drive sample from 107' to 109' at 1250, recovery as follows shoe # B2FDK5 = 100%, A liner # B2FDK6 = 100%, B liner # B2FDK7 = 100%, C liner B2FDK8 = 100%, Process sample, install dummy tip |
| 1345 | Resume driving C8402, drive 2 5/8" dual tubing from 109' bgs to 117', head became hot, survey out. |
| 1420 | Travel to office, paperwork, time cards, |
| 1530 | End of shift |
| | NA |

**OPERATOR/LICENSE:** Olson/1217
*ES SUPPORT:* Passey, Repko
*NCO:* Rivera, Robberts, Sharp
*HPT:* Widdus, Young
*FWS:* Clark

**WEATHER:** 94 F, sunny and warm with winds from the southwest at 5-10 mph.

**DOWNTIME:** .5 hr for pre-job
1 hr for RCT coverage + vapor issues

**DISCARDED ITEMS:**
2 nylatrol washers
1-2 5/8" Drive head
5- Lynch pins
3- sample liners
6- sample caps
4- 'O' rings

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** K. Olson
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Kelly Olson

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler
**DATE:** 9-13-11

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8402 I002 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** ORIGINAL | | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |
| **SAMPLES COLLECTED** | | | |
| **TOTAL NUMBER OF BOTTLES** 4 | **TOTAL NUMBER OF CHAINS** 2 | **COLLECTOR** | |

**222-S** **V11-006-029**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FDK5 | 1 / 500mL / G | 100% Dry | Cool~6C | Generic Testing; |

**222-S** **V11-006-030**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FDK6 | 1 / 160g / Liner | 100% Dry | Cool~6C | Bulk Density - D2937 (TF); |
| B2FDK7 | 1 / 160g / Liner | 100% Dry | Cool~6C | Bulk Density - D2937 (TF); |
| B2FDK8 | 1 / 160g / Liner | 100% Dry | Cool~6C | Bulk Density - D2937 (TF); |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Complete sampling activities at #C8402. | | **DATE:** 09-13-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 43 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** (Yes) No | *HHU CASE#1 HHU CAT #2* (HHUXL#3) |

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. B2FDK9 | 126'-128' | 100 |
| 2. N/A | \ | \ |
| 3. N/A | \ | \ |
| 4. N/A | \ | \ |

**BOREHOLE SUMMARY**

Borehole # C8402 Tubing (2 5/8") @ 117' to 128 ft bgs; S.U. .3'

Borehole # C8402 Tubing (2 5/8") @ 128' to 48' ft bgs; S.U. 2.3

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Why Wear Hard Hats. |
| 0620 | Travel to 'S' Farm |
| 0700 | Arrive at 'S' farm, Pre-job |
| 0715 | Acc in, stand-by for equipment blank |
| 0745 | Samplers on site, dress into whites, fuel and inspect rig, |
| \ | Drive 2 5/8" tubing from 117' to 126', (sample depth) |
| 0830 | Pull dummy tip, survey out |
| 0845 | Stand by for sampler |
| 0930 | stand by for Key |
| 0950 | Enter farm, install sampler to sample depth - 126' |
| 1015 | Drive sample from 126' to 128' at 1015, Pulled and |
| — | processed sample, . Sample recovery = 100% (See Attachment) |
| 1040 | Begin, decommissioning hole #C8402, decommissed casing |
| — | to 108 bgs exit farm for lunch. |
| 1130 | Lunch |
| 1200 | Standby for support, luncheon at blue building today. |
| 1315 | Dress in whites begin backpulling @ 108' bgs. |
| 1400 | Back pulled casing to 48' bgs, bentonite is at 51' bgs |
| — | Dress out of whites, exit farm. |
| 1430 | Drive to pick Kelly up at C Farm, drive to ES FS. |
| 1510 | Arrive at ES FS, paperwork, Timecard. |
| 1530 | End of shift. |
| | N/A |

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Repko/3012<br>*ES SUPPORT:* Passey<br>*NCO:* Widdus, Young<br>*HPT:* Sharp, Roberts, Rivera<br>*FWS:* Clark | **WEATHER:** 93 F, sunny and warm with winds from the southwest at 5-15 mph.<br>**DOWNTIME:** 1.25 hr for equipment blank & sampler<br>.25 hr for Key<br>.25 hr for support | **DISCARDED ITEMS:**<br>3-sample liners<br>6-sample caps<br>4-O' rings<br>5 sacks bentonite |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** Kelly Olson | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Kelly Olson | **SIGNATURE:** RZ Steffler DATE: 9-14-11 |

10/06/09 Rev 1

# FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

| | | | |
|---|---|---|---|
| **PROJECT(S)** Direct Push Samples for S Tank Farm - Interim Barrier | | **PAGE** 1 **OF** 2 | |
| | | **DATE/TIME** | |
| **SAF NO.(S)** V11-006 | | | |
| **LOCATION** C8402 I003 | | **LOGBOOK NO./PAGE** | |
| **WELL NAME** ORIGINAL | | **WELL ID** | **ACTUAL DEPTH** ☐ft ☐m |
| **BOTTOM OF CASING (bgs)** ☐ft ☐m | | **BOTTOM OF BOREHOLE (bgs)** | ☐ft ☐m |
| **SAMPLES COLLECTED** | | | |
| **TOTAL NUMBER OF BOTTLES** 4 | **TOTAL NUMBER OF CHAINS** 2 | **COLLECTOR** | |

**222-S** **V11-006-031**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FDK9 | 1 / 500mL / G | 100% Damp Clay | Cool~6C | Generic Testing; |

**222-S** **V11-006-032**

| SAMPLE NO. | BOTTLE QTY/SIZE/TYPE | LOT NO. | PRESERVATION | ANALYSIS |
|---|---|---|---|---|
| B2FDL0 | 1 / 160g / Liner | 100% dries Clay | Cool~6C | Bulk Density - D2937 (TF); |
| B2FDL1 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); |
| B2FDL2 | 1 / 160g / Liner | 100% | Cool~6C | Bulk Density - D2937 (TF); |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Complete decommissioning activities at #C8402 and begin probe installation at #C8401. | | **DATE:** 09-14-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 44 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** (Yes) No | *HHU CASE#1* *HHU CAT #2* (HHUXL#3) |

*Sample #'s* *Interval* *%*

1. NA
2.
3.
4.

**BOREHOLE SUMMARY**

*Borehole #* C8402 *Tubing (*2 5/8"*) @* 48' *to* 0' *ft bgs; S.U.* \

*Borehole #* C8401 *Tubing (*2 1/2"*) @* 152' *to* 140' *ft bgs; S.U.* 2.3

*Borehole #* N/A *Tubing (* \ *) @* \ *to* \ *ft bgs; S.U.* \

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1. NA
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Electrical Rules. |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, Pre-job |
| 0730 | Ace in, gather materials |
| 0745 | Dress into whites, enter farm, inspect and fuel rig, |
| \ | Decommission boring C-8402 from 48' to 0' back-filling with |
| \ | granular bentonite, survey out generator and transport to 'C' farm, |
| \ | set up on C-8401, Ran inner string in and Knocked out |
| \ | expendable tip, pull inner rod, back-pull from 152' to 145' |
| \ | set 1st electrode at 150' install sand/diatomite pack and one |
| \ | gal H20 via tremie, survey out. Mike Passey reported to medical |
| \ | station for back pain. |
| 1145 | Lunch |
| 1215 | Stand-by for RCTS |
| 1245 | Dress into whites, Enter farm, Pull tremie pipe, |
| \ | Back-pull from 145' to 140', clean-up |
| 1330 | Secure site and pick-up materials, travel to office |
| \ | paperwork, time cards |
| 1530 | End of shift |
| | NA |

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Repko/3012<br>*ES SUPPORT:* Passey, Olson<br>*NCO:* Sharp, Rivera<br>*HPT:* Widdus, Young<br>*FWS:* Clark | **WEATHER:** 86 F, sunny and warm with winds from the southwest at 5-10 mph.<br>**DOWNTIME:** N/A | **DISCARDED ITEMS:**<br>1 expendable tip<br>1 160' multi-level probe<br>1 sack diatomite<br>sacks bentonite<br>1 sack sand |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** Kelly Olson | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Kelly Olson | **SIGNATURE:** RZ Steffler **DATE:** 9-15-11 |

10/06/09 Rev 1

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Complete probe installation at #C8401. | | **DATE:** 09-15-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 45 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** Yes No | *HHU CASE#1 HHU CAT #2 HHUXL#3* |

**SAMPLING SUMMARY**

| Sample #'s | Interval | % |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |
| 4. | | |

**BOREHOLE SUMMARY**

Borehole # C8401 Tubing ( 2½" ) @ 140' to 0' ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

Borehole # N/A Tubing ( \ ) @ \ to \ ft bgs; S.U. \

**GEOPHYSICAL LOGGING**

| Boring # | Interval | Type |
|---|---|---|
| 1. | NA | |
| 2. | | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Caught In The Middle.** |
| 0620 | Travel to 'S' farm |
| 0700 | Arrive at 'S' farm, set remaining electrodes on |
| \ | multi-level probe at 131', 111', 91', 71', 51', and 31', |
| \ | installed sand/diatomite packs around each unit and hydrated via |
| \ | tremie, installed granular bentonite between each electrode set, |
| \ | (see attached sheet for specifics). Back-pulled 2½" tubing at |
| \ | C-8401 from 140' to 0'. MSA on site and located sample |
| \ | locations with GPS. Fold up rig and survey out. |
| 1100 | Lunch |
| 1130 | Dress into whites, clean pipe, move rig and equipment |
| \ | to West side of 'S' Farm to be surveyed out. |
| 1400 | Turn in Dosemitry, Fuel truck, put away equipment |
| 1430 | Travel to office, paperwork, time cards |
| 1530 | End of shift |
| | NA |

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Repko/3012<br>*ES SUPPORT:* Olson<br>*NCO:* Widdus, Young<br>*HPT:* Sharp, Rivera<br>*FWS:* Clark | **WEATHER:** 81 F, partly cloudy with winds from the southwest at 10-20 mph.<br>**DOWNTIME:** N/A | **DISCARDED ITEMS:**<br>5 sacks bentonite<br>1 sack sand |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** Kelly Olson | **REVIEWED BY:** RZ Steffler |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Kelly Olson | **SIGNATURE:** R.Z. Steffler **DATE:** 9-15-11 |

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200 FT MULTI-LEVEL RESISTIVITY PROBE WORK SHEET BOREHOLE NO. C-8401

| DIMENSIONS | PRELIMINARY AS-BUILT | CONSTRUCTION MATERIAL/TAG | |
|---|---|---|---|
| PLANNED | ACTUAL | MATERIAL | TAG |
| 0 ft | | SURFACE PROTECTION @ 1 FT BGS | |
| - 20 ft - | - ft - | Bentonite from ___ to ___<br>Sand from ___ to ___<br>D.E. from ___ to ___<br>Sand from ___ to ___ | |
| - 40 ft - | - ft - | Bentonite from ___ to ___<br>Sand from ___ to ___<br>D.E. from ___ to ___<br>Sand from ___ to ___ | |
| - 60 ft - | 29' - 31' ft - | Bentonite from 1' to 27.5'<br>Sand from 27.5 to 28.5<br>D.E. from 28.5 to 31.5<br>Sand from 31.5 to 32.5 | ✓<br>✓ |
| - 80 ft - | 49' - 51' ft - | Bentonite from 32.5 to 47.5<br>Sand from 47.5 to 48.5<br>D.E. from 48.5 to 51.5<br>Sand from 51.5 to 52.5 | ✓<br>✓ |
| - 100 ft - | 69' - 71' ft - | Bentonite from ___ to 67.5<br>Sand from 67.5 to 68.5<br>D.E. from 68.5 to 71.5<br>Sand from 71.5 to 72.5 | ✓<br>✓ |
| - 120 ft - | 89' - 91' ft - | Bentonite from ___ to 87.5<br>Sand from 87.5 to 88.5<br>D.E. from 88.5 to 91.5<br>Sand from 91.5 to 92.5 | ✓<br>✓<br>✓ |
| - 140 ft - | 109' - 111' ft - | Bentonite from 92.5 to 107.5<br>Sand from 107.5 to 108.5<br>D.E. from 108.5 to 111.5<br>Sand from 111.5 to 112.5 | ✓<br>✓ |
| - 160 ft - | 129' - 131' ft - | Bentonite from 112.5 to 127.5<br>Sand from 127.5 to 128.5<br>D.E. from 128.5 to 131.5<br>Sand from 131.5 to 132.5 | ✓<br>✓ |
| - 180 ft - | 148.5' - 150 ft - | Bentonite from 132.5 to 147<br>Sand from 147 to 148<br>D.E. from 148 to 150.5<br>Sand from 150.5 to 151.5 | ✓<br>✓ |

ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE: Begin demobilization and pipe cleaning.** | **DATE: 09-19-11**

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186 **U-DIG: #11076292** | **REPORT #: 46**

**START CARD NO. SE09635** | **DECOMMISSION NO. AE12960** | **RWP: CO-645, Rev. 01** **JHA-**11-005 Rev. 0

**SAMPLING SUMMARY**

*Sample #'s* *Interval* *%*

1.
2.
3. N/A
4.

**SITE/EQUIPMENT INSPECTION:** *Yes* *No*

*HHU CASE#1* *HHU CAT #2* *HHUXL#3*

**BOREHOLE SUMMARY**

*Borehole #* _____ *Tubing (* *) @* *to* *ft bgs; S.U.* ____

*Borehole #* N/A *Tubing (* *) @* *to* *ft bgs; S.U.* ____

*Borehole #* _____ *Tubing (* *) @* *to* *ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1.
2. N/A
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Presentation by ESGG Safety Staff. #8, Speed of Trust.** |
| 0635 | Head to S-Farm |
| 0710 | At S-Farm waiting on POD |
| 0745 | POD. Get XL out of Farm and survey material out |
| 0830 | moved rig to RBA for Survey |
| 0940 | Rig has been surveyed and we are waiting for the wind to die down to open the Farm gate. |
| 1045 | move XL out of Farm and set on plastic. |
| 1109 | Lunch |
| 1145 | Head to office due to wind. |
| 1530 | End shift |

N/A

**OPERATOR/LICENSE: Amos/1224**
*ES SUPPORT: Weakley, Passey*
*NCO: Sharp; Ruben*
*HPT: Young, Mitris*
*FWS: Clark*

**WEATHER: 80 F, mostly sunny with winds from the southwest at 5-15 mph.**

**DOWNTIME:** 5 hrs. wind

**DISCARDED ITEMS:** N/A

**REFERENCE/CONTRACT INFORMATION:** **TFC-WO-11-1935** **FSWO-DOW-** **ECN-11-000563**

**REPORT BY:** Olin Amos
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Olin Amos

**REVIEWED BY:** RZ Steffler
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** R.Z. Steffler **DATE:** 9-20-11

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Possibly begin pipe cleaning. | | **DATE:** 09-20-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 47 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** Yes No | *HHU CASE#1 HHU CAT #2 HHUXL#3* |

**SAMPLING SUMMARY**

| *Sample #'s* | *Interval* | *%* |
|---|---|---|
| 1. | | |
| 2. | N/A | |
| 3. | | |
| 4. | | |

**BOREHOLE SUMMARY**

*Borehole #* N/A *Tubing ( ) @ to ft bgs; S.U.* ____

*Borehole #* N/A *Tubing ( ) @ to ft bgs; S.U.* ____

*Borehole #* N/A *Tubing ( ) @ to ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

| *Boring #* | *Interval* | *Type* |
|---|---|---|
| 1. | | |
| 2. | N/A | |
| 3. | | |

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Electrical Shock. |
| 0630 | TRAVEL TO S-FARM FOR PRE-JOB |
| 0700 | ARRIVED AT MO 636 STAND BY FOR PRE-JOB |
| 0800 | PRE-JOB BY BILL CLARK |
| 0815 | DRESS AND ENTER FARM. DIG OUT PLACE AND POUR |
| — | CONCRETE AROUND COMPLITION CAPS C8399, C8401, C8467. |
| — | FINISH MOVING SUPPORT EQUIPMENT TO FARM GATE TO |
| — | BE SURVEYED OUT BY RCT'S |
| 1100 | EXIT FARM |
| 1115 | LUNCH |
| 1145 | STAND BY FOR FORKLIFT & NCO SUPPORT TO MOVE |
| — | DRILL PIPE TO INSPECTION & CLEANING WORK AREA. |
| 1230 | NO FORKLIFT SUPPORT IN THE AFTERNOON |
| — | CONTINUE TO STAND-BY FOR FORKLIFT & NCO SUPPORT |
| — | TRAVEL TO C-FARM UNLOAD BENTONITE PALLETS IN TO |
| — | CARGO TRAILER TRAVEL TO E.S. OFFICE COMPLETE |
| — | PAPER WORK |
| 1530 | END OF SHIFT |
| | N/A |

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Ehrgott/3115<br>*ES SUPPORT:* Passey<br>*NCO:* Reuter,<br>*HPT:* YOUNG, WIDDIS<br>*FWS:* Clark | **WEATHER:** 81 F, mostly sunny with winds from the north at 5-15 mph.<br>**DOWNTIME:** 1 HR PRE-JOB<br>3 HR STAND-BY FOR FORKLIFT | **DISCARDED ITEMS:**<br>2 - DRIVE HEAD PINS<br>1 - 2 5/8" TIP HOLDER<br>1 - 2 5/8 ADAPTER COUPLER<br>3 - COMPLITION CAPS |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** MIKE EHRGOTT | **REVIEWED BY:** D.E. Skoglie |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Mike Ehrgott | **SIGNATURE:** David E. Skoglie **DATE:** 9/21/11 |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE: Possibly begin pipe cleaning if support is available.** | **DATE: 09-21-11**

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186 **U-DIG: #11076292** | **REPORT #: 48**

**START CARD NO. SE09635** | **DECOMMISSION NO. AE12960** | **RWP: CO-645, Rev. 01** **JHA-**11-005 Rev. 0

**SAMPLING SUMMARY**

*Sample #'s* *Interval* *%*

1.
2.
3.
4.

N A

**SITE/EQUIPMENT INSPECTION:** *Yes No* N/A

*HHU CASE#1* *HHU CAT #2* *HHUXL#3*

**BOREHOLE SUMMARY**

*Borehole #* — *Tubing (* *)* *@* *to* *ft bgs; S.U.* —

*Borehole #* *Tubing (* *)* *@* *to* *ft bgs; S.U.*

*Borehole #* *Tubing (* *)* *@* *to* *ft bgs; S.U.*

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1.
2.
3.

N A

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Striking Hand Tools.** |
| 0630 | Travel To S-Farm |
| 0705 | at S-Farm |
| 0730 | P.O.D. |
| 0740 | start loading Truck To move To E.N.W. |
| 1045 | Take load To E.N.W. |
| 1140 | Travel back to S. Farm |
| 1210 | Lunch |
| 1240 | Check and Clean Tools |
| 1320 | Stand by for NCO's To move Racks of Pipe. |
| 1415 | Bill said No more work today |
| 1420 | Travel To Office |
| 1530 | end of shift |

N A

**OPERATOR/LICENSE: Ehrgott/3115**
*ES SUPPORT: Passey, Weakley*
*NCO:* Rivera, Sharp
*HPT:* Widdos, Young
*FWS: Clark*

**WEATHER: 84 F, mostly sunny with light and variable winds.**

**DOWNTIME:** 2.5 hrs. stand by for NCO's

**DISCARDED ITEMS:**

N A

**REFERENCE/CONTRACT INFORMATION: TFC-WO-11-1935 FSWO-DOW- ECN-11-000563**

**REPORT BY:** Mike Passey
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:**

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** Daniel E. Skoglie **DATE:** 9/22/11

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

**PURPOSE:** Possibly begin pipe cleaning if support is available. **DATE:** 09-22-11

**LOCATION:** "S" Tank Farm 200 West Area, Hanford. **EXCAVATION:** DAN-11-0186 **U-DIG:** #11076292 **REPORT #:** 49

**START CARD NO.** SE09635 **DECOMMISSION NO.** AE12960 **RWP:** CO-645, Rev. 01 **JHA-**11-005 Rev. 0

**SAMPLING SUMMARY**

*Sample #'s* *Interval* *%*

1.
2. N/A
3.
4.

**SITE/EQUIPMENT INSPECTION:** (Yes) No

*HHU CASE#1* N/A *HHU CAT #2* *HHUXL#3*

**BOREHOLE SUMMARY**

*Borehole #* N/A *Tubing (* *) @* *to* *ft bgs; S.U.* ____

*Borehole #* N/A *Tubing (* *) @* *to* *ft bgs; S.U.* ____

*Borehole #* N/A *Tubing (* *) @* *to* *ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1.
2. N/A
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: "Skyjack" Cherry Picker Recall. |
| 0630 | TRAVEL TO S-FARM |
| 0700 | ARRIVE @ M.O. 6316 STAND-BY FOR PRE-JOB |
| — | PRE-JOB BY BILL CLARK, CLEANING PIPE |
| 0730 | ~~DRESS & ENTER FARM~~ N/E. WAITING FOR FORKLIFT |
| — | DRIVER (NCO) WENT TO PICK UP PARTS, MATERIALS |
| 0735 | STAND-BY FOR CRAFT SUPPORT. |
| 0900 | NCO BACK ON SITE STAND BY TO DRESS & ENTER FARM |
| 0915 | FORKLIFT INSIDE FARM MOVING RACKS OF 2.5" AND 2 5/8 |
| — | NEXT TO FARM GATE TO BE INSPECTED, SORTED, CLEANED |
| — | SURVEYED ~47 JOINTS OF 2 5/8, ~65 JOINTS OF 2.5" |
| 1145 | LUNCH |
| 1215 | STAND-BY FOR RCT SUPPORT |
| 1300 | RCT'S BACK ON SITE |
| 1320 | DRESS AND ENTER FARM, CONTINUE WITH CLEANING |
| — | 2 5/8" RODS |
| 1410 | EXIT FARM. A TOTAL OF 65 JOINTS OF 2.5" AND |
| — | 67 JOINTS OF 2 5/8" CLEANED AND SURVEYED AND PLACED IN |
| — | RMA. |
| — | * NOTE: ITEMS DISCARDED TODAY 93 INNER ROD x 4', 20 2 5/8" x 4' |
| — | ROD. ITEMS WHICH MAY HAVE BEEN DISCARDED ON EARLIER |
| — | FAR 8 INNER ROD, 3-2 5/8 x 4' 1-SAMPLE SHOE 2 TAKE UP JOINTS |
| 1420 | LEAVING S-FARM FOR ES OFFICE COMPLETE PAPER WORK |
| 1530 | END OF SHIFT. |

**OPERATOR/LICENSE:** Ehrgott/3115
*ES SUPPORT:* Passey, Weakley, Amos
*NCO:* SHARP, ~~FIEVIRA~~
*HPT:* YOUNG, WIDDIS
*FWS:* Clark

**WEATHER:** 89 F, partly cloudy with winds from the southwest at 5-15 mph.

**DOWNTIME:** 30 MIN: P.O.D. 1½ HRS 2nd 15 MIN WAITING FOR CRAFT SUPPORT

**DISCARDED ITEMS:** SEE NOTE

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

**REPORT BY:** MIKE EHRGOTT
**TITLE :** *ES TECHNICAL PREPARER*
**SIGNATURE:** Mike Ehrgott

**REVIEWED BY:** D.E. Skoglie
**TITLE:** *ES TECHNICAL REVIEWER*
**SIGNATURE:** David E. Skoglie **DATE:** 9/23/11

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Complete pipe cleaning and demobilization | | **DATE:** 09-23-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 50 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 **JHA**-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** (Yes) No | *HHU CASE#1 HHU CAT #2 HHUXL#3* |

**SAMPLING SUMMARY**

| *Sample #'s* | *Interval* | *%* |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

N/A

**BOREHOLE SUMMARY**

| | | | | | |
|---|---|---|---|---|---|
| *Borehole #* N/N | *Tubing (* | *)@* | *to* | *ft bgs; S.U.* N/A | |
| *Borehole #* | *Tubing (* | *)@* | *to* | *ft bgs; S.U.* | |
| *Borehole #* | *Tubing (* | *)@* | *to* | *ft bgs; S.U.* | |

**GEOPHYSICAL LOGGING**

| *Boring #* | *Interval* | *Type* |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |

N/A

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Everyone is Responsible for Safety.** |
| 0620 | Travel To S-Farm |
| 0650 | Arrived at S-Farm (on standby) for PoD and waiting for HPT's |
| 0810 | PoD |
| 0820 | Enter S-Farm To Prepare for cleaning of Drill Rod. |
| | Cleaned 140-4'X2½" Rod and 2-2'X2½" Box by Box rod and 2-2'X2½" Box by Pen |
| | Cleaning method run cleaning brush Through center of Rod To remove any |
| | remaining Bentonite inside of rod. Out side of rod cleaned with |
| | water and Simple green Mixture wipe down threads and outside of rod. |
| | Remove Rod from Farm after being surveyed by HPT's. Put Rod |
| | in link Bags on racks 63 rods on each rack with 2-2' Rods (placed in RBA). |
| | Two Full and Part of another. Removed from service 53 Rod. Put on |
| | pallets in Farm whetting for NCO's To Box and ship. |
| 1130 | Lunch |
| 1200 | on standby, NO Support From HPT's and NCO's |
| 1210 | Travel To office To Complete paper work and start preparations for |
| | equipment repair and maintenance. |
| 1430 | Do Time card and end shift |

N/A

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Ehrgott/3115<br>*ES SUPPORT: Passey, Weakley, Hoopes*<br>*NCO:* Rivera, Sharp<br>*HPT:* Jeff, Jake<br>*FWS: Clark* | **WEATHER:** 92 F, mostly sunny and very warm with winds from the southwest at 5-15 mph.<br>**DOWNTIME:** 1hr. HPTS for Pod<br>2½ Hrs HPTS and NCOS | **DISCARDED ITEMS:**<br>53-4'X2½" Rods due to excessive wear |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** Mike Passey | **REVIEWED BY:** D.E. Skoglie |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** | **SIGNATURE:** David E. Skoglie **DATE:** 9/26/11 |

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# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE: Complete demobilization.** | | **DATE: 09-26-11** |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG: #11076292** | **REPORT #: 51** |

| | | |
|---|---|---|
| **START CARD NO. SE09635** | **DECOMMISSION NO. AE12960** | **RWP: CO-645, Rev. 01 JHA-11-005 Rev. 0** |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION: Yes No** | ***HHU CASE#1 HHU CAT #2 HHUXL#3*** N/A |

*Sample #'s Interval %*

1.
2. N/A
3.
4.

**BOREHOLE SUMMARY**

*Borehole #* N/A *Tubing ( ) @ to ft bgs; S.U.* ____
*Borehole #* N/A *Tubing ( ) @ to ft bgs; S.U.* ____
*Borehole #* N/A *Tubing ( ) @ to ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

*Boring # Interval Type*

1. N/A
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | **Safety meeting at office. Topic: Presentation by ESGG Safety Staff. Speed of Trust #3.** |
| 0640 | TRAVEL TO S-FARM M.O. 636 |
| 0715 | ARRIVE AT MO 636 STAND-BY FOR PRE-JOB. |
| 0800 | PRE-JOB BY BILL CLARK. |
| 0830 | RCT ACE-IN PERSONEL |
| 0845 | RCT'S SURVEYING ITEMS IN BLACK PLASTIC CONTAINER |
| — | USED AS SUPPORT EQUIPMENT WITH HHU'S. |
| 1045 | RCT'S SURVEYED OUT 4 SAW HORSE'S |
| — | ALL SUPPORT EQUIPMENT IS NOW BEEN SURVEYED |
| — | OUT. |
| 1130 | LUNCH |
| 1200 | STAND-BY FOR WELL I.D. TAGS AND INSTALLATION. |
| 1300 | LEAVING SITE FOR E.S. OFFICE, COMPLETE PAPER WORK |
| 1530 | END OF SHIFT |

N/A

| | | |
|---|---|---|
| **OPERATOR/LICENSE: Ehrgott/3115**<br>*ES SUPPORT: Passey, Walkup*<br>*NCO:* SHARP, REVERLIN<br>*HPT:* YOUNG, WIDDIS<br>*FWS: Clark* | **WEATHER: 70 F, mostly cloudy with a chance of showers. Winds from the southwest at 5-10 mph.**<br>**DOWNTIME:** 45 MIN. PRE-JOB | **DISCARDED ITEMS:**<br>NONE |

**REFERENCE/CONTRACT INFORMATION: TFC-WO-11-1935 FSWO-DOW- ECN-11-000563**

| | |
|---|---|
| **REPORT BY:** MIKE EHRGOTT | **REVIEWED BY:** D.E. SKOGLIE |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Mike Ehrgott | **SIGNATURE:** David E. Skoglie **DATE:** 9/27/11 |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

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## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Standby for brass tags to be made at riggers loft. | | **DATE:** 09-27-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 52 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 **JHA-**11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** *Yes* (No) | *HHU CASE#1* N/A *HHU CAT #2* *HHUXL#3* |

*Sample #'s* *Interval* *%*

1.
2. N/A
3.
4.

**BOREHOLE SUMMARY**

*Borehole #* N/A *Tubing (* *) @* *to* *ft bgs; S.U.* ____
*Borehole #* N/A *Tubing (* *) @* *to* *ft bgs; S.U.* ____
*Borehole #* N/A *Tubing (* *) @* *to* *ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1.
2. N/A
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: Spiders, Bugs and Hidden Hazards, OH My! |
| 0630 | TRAVEL TO S-FARM, STAND-BY FOR BRASS TAGS TO BE MADE |
| — | AT RIGGERS LOFT. |
| — | LOAD OUT MISC. SUPPORT EQUIPMENT AND TAKE TO |
| — | ENW FOR STORAGE. |
| 1100 | LUNCH |
| 1130 | TRAVEL TO RIGGERS LOFT PICK UP BRASS TAGS |
| — | LOAD OUT MISC. SUPPORT EQUIPMENT AND TAKE TO ENW. |
| — | WILL INSTALL BRASS TAGS AT LATER DATE. |
| 1430 | TRAVEL TO ME ~~SURVEY~~ ES OFFICE COMPLETE PAPER WORK |
| 1530 | END OF SHIFT |

N/A

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Ehrgott/3115<br>*ES SUPPORT:* Passey, Walkup<br>*NCO:* SHARP, RIVERA<br>*HPT:* YOUNG, WADDIS<br>*FWS:* Clark | **WEATHER:** 75 F, partly cloudy with a chance of showers. Winds from the southwest at 5-15 mph.<br>**DOWNTIME:** — | **DISCARDED ITEMS:** NONE |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** MIKE EHRGOTT | **REVIEWED BY:** D.E. Skoglie |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Mike Ehrgott | **SIGNATURE:** David E. Skoglie **DATE:** 9/28/11 |

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ENERGYSOLUTIONS

# ENERGY SOLUTIONS, WESTERN OPERATIONS

Page 1 of 1

## DRILLING AND SAMPLING (PERCUSSION) DAILY WORK RECORD

| | | |
|---|---|---|
| **PURPOSE:** Install brass tags on probe holes. End of project. | | **DATE:** 09-28-11 |
| **LOCATION:** "S" Tank Farm 200 West Area, Hanford. | **EXCAVATION:** DAN-11-0186<br>**U-DIG:** #11076292 | **REPORT #:** 53 |

| | | |
|---|---|---|
| **START CARD NO.** SE09635 | **DECOMMISSION NO.** AE12960 | **RWP:** CO-645, Rev. 01 JHA-11-005 Rev. 0 |
| **SAMPLING SUMMARY** | **SITE/EQUIPMENT INSPECTION:** (Yes) No | *HHU CASE#1* N/A *HHU CAT #2* *HHUXL#3* |

*Sample #'s* *Interval* *%*

1.
2. N/A
3.
4.

**BOREHOLE SUMMARY**

*Borehole #* N/A *Tubing (* *) @* *to* *ft bgs; S.U.* ____

*Borehole #* N/A *Tubing (* *) @* *to* *ft bgs; S.U.* ____

*Borehole #* N/A *Tubing (* *) @* *to* *ft bgs; S.U.* ____

**GEOPHYSICAL LOGGING**

*Boring #* *Interval* *Type*

1. N/A
2.
3.

| TIME | WORK SUMMARY |
|---|---|
| 0600 | Safety meeting at office. Topic: When You Least Expect It…Lessons Learned! |
| 0630 | TRAVEL TO |
| 0700 | ARRIVE ON SITE AT M.O. 636 STAND BY FOR PRE-JOB |
| 0715 | PRE-JOB BY BILL CLARK (FWS) INSTALLATION OF |
| — | WELL ID BRASS TAGS |
| 0745 | DRESS AND ENTER FARM... INSTALL WELL I.D. BRASS |
| — | TAGS AT EIGHT LOCATIONS S-FARM |
| 0915 | EXIT FARM |
| — | LOAD UP PIPE RACKS AND HAUL TO ENW. |
| 1100 | LUNCH |
| 1130 | CLEAN SHOP UNLOAD PIPE RACKS |
| 1400 | TRAVEL TO E.S. OFFICE COMPLETE PAPER WORK |
| 1530 | END OF SHIFT |

N/A

| | | |
|---|---|---|
| **OPERATOR/LICENSE:** Ehrgott/3115<br>*ES SUPPORT:* Passey, Walkup<br>*NCO:* SHARP, RIVERA<br>*HPT:* WIDDIS, YOUNG<br>*FWS:* Clark | **WEATHER:** 77 F, mostly sunny. Winds from the north at 5-10 mph.<br>**DOWNTIME:** N/A | **DISCARDED ITEMS:** N/A |

**REFERENCE/CONTRACT INFORMATION:** TFC-WO-11-1935 FSWO-DOW- ECN-11-000563

| | |
|---|---|
| **REPORT BY:** MIKE EHRGOTT | **REVIEWED BY:** D.E. Skoglie |
| **TITLE :** *ES TECHNICAL PREPARER* | **TITLE:** *ES TECHNICAL REVIEWER* |
| **SIGNATURE:** Mike Ehrgott | **SIGNATURE:** Dwl E Skoglie **DATE:** 10/29/11 |

10/06/09 Rev 1

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# APPENDIX D

SMALL DIAMETER GEOPHYSICAL LOGGING IN DIRECT PUSH PROBEHOLDS FOR 241 S FARM CHARACTERIZATION

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RPP-RPT-51294, Rev. 0

# SMALL DIAMETER GEOPHYSICAL LOGGING IN DIRECT PUSH PROBEHOLES FOR 241 S FARM CHARACTERIZATION

by

Russel Randall, PhD and Randall Price

to

Energy*Solutions* Federal Services, Inc.
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August 2011

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West Richland, Washington 99353

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## TERMS

| | |
|---|---|
| BGO | Bismuth Germinate |
| KUT | potassium, uranium and thorium |
| PNG | Pacific Northwest Geophysics |

# SMALL DIAMETER GEOPHYSICAL LOGGING IN DIRECT PUSH PROBEHOLES FOR 241 S FARM CHARACTERIZATION

## 1 PROBEHOLE SURVEYS

Pacific Northwest Geophysics (PNG) and Three Rivers Scientific provided small diameter logging in eight direct-push probeholes installed for characterization of the 241-S Tank Farm. This report contains two types small diameter geophysical measurements, they are: (1) bismuth germinate oxide (BGO) spectral gamma scintillation detector survey, and (2) neutron-neutron moisture probe survey.

The survey results for each probehole are presented in Appendix A . Detector calibration certificates for the BGO and neutron-moisture instruments are presented at the end of Section 2, "Gamma and Moisture Surveys."

Figure 1 shows a plan-view map of the probehole locations relative to the underground storage tanks within the investigation site.

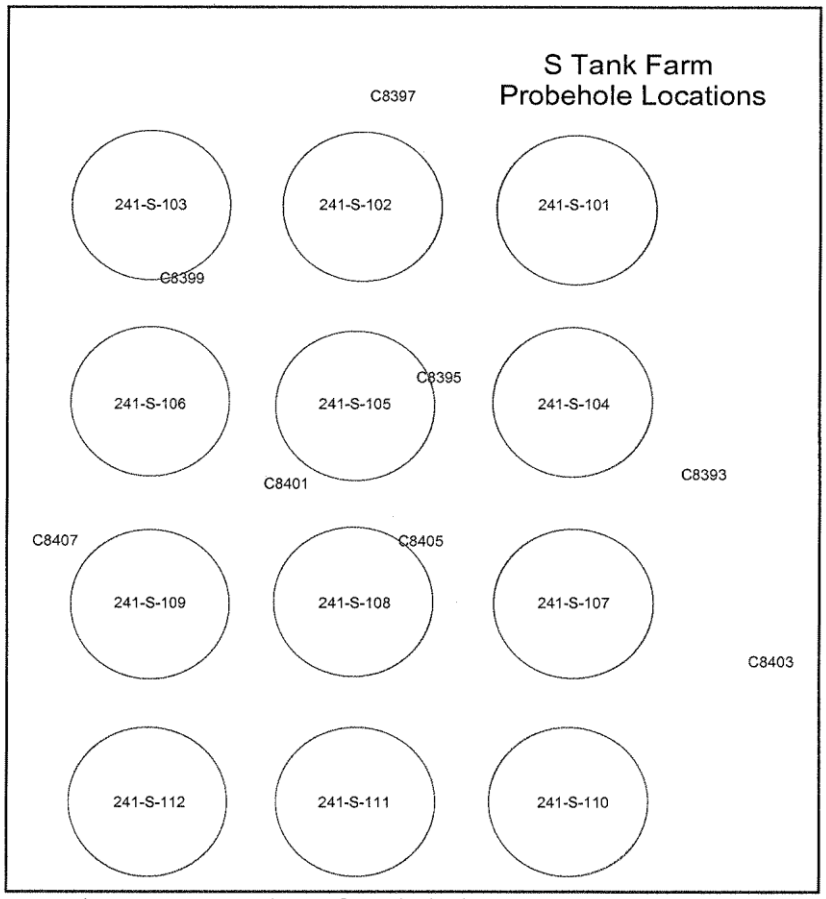



Figure 1. Location of Probeholes at 241-S Tank Farm

# 2 GAMMA AND MOISTURE SURVEYS

The gamma and moisture logs were collected according to approved procedures (PNG 2010). The surveys were recorded from the bottom of the probehole to the ground surface. Zero depth reference is at the ground surface. A repeat measurement was acquired daily to verify instrument repeatability. The main log and repeat intervals are presented on the same plot. The computed results of the main and repeat intervals were reviewed and the results agree within the operational specifications for all log responses. The operational specifications are: (1) 2 times the predicted counting statistics for the gross gamma (equivalent radium-226), (2) predicted counting statistics for the spectral components of the BGO survey, and (3) predicted counting statistics for the moisture.

The survey results for each probehole are presented as a depth versus concentration plot in Appendix A. The appendix also contains a table summarizing data for each probehole: probehole depth, maximum concentration of Cs-137 in pCi/g, and maximum depth of Cs-137.

## 2.1 GAMMA CALIBRATION AND SURVEYS

The spectral gamma surveys were logged at 100 seconds per 0.5 ft. Each spectrum file was subsequently processed to quantify the concentration of the naturally occurring radionuclides (K, U, & Th) and quantify Cs-137 when present above the minimum detection threshold. The nominal minimum detection level (MDL) for Cs-137 is 1 pCi/g.

All spectral calibrations were performed for the probehole conditions of the investigation site. The gross gamma was calibrated to the industry standard of equivalent radium-226 (Eq.Ra) in pCi/g. The calibration certificate is shown in Figure 2. Lantern mantles containing Th-232 are used as a field verifier at the beginning and ending of each day's logging activities to check detector resolution (detector integrity) and energy calibration (amplifier gain).

## 2.2 NEUTRON MOISTURE CALIBRATION AND SURVEYS

The moisture surveys were logged at 15 seconds per 0.25 ft. Pre- and post-job verifications were run each day with the source in the carrying vessel to check detector integrity. Processing of the logging measurements converts the detector gross count rate to a volume of moisture in percent.

The moisture calibration was performed in borehole conditions different from the logging conditions onsite. Two conditions are different: borehole size and casing thickness. Moisture calibration was performed on six and eight inch casings; the calibration certificate is shown in Figure 3. The push tubing for this project has an outside diameter of 2.5 inches. The calibration was extrapolated to this smaller diameter push tubing. Figure 4 shows the moisture calibration certificate for the 6.35cm (2.5 in) hole size. A referenced (Meisner et al. 1996) casing thickness correction is performed during data processing for moisture volume. The casing correction factor for the push tubing thickness is 1.045 times the observed count rate.

# 3 REFERENCES

Meisner, James, Randall Price, and Russel Randall, 1996, *Radionuclide Logging System In Situ Vadose Zone Moisture Measurement Calibration*, WHC-SD-EN-TI-306, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

PNG, 2010, *Procedures: Calibration, Logging, Quality Assurance and Data Management*, Pacific Northwest Geophysics, Kennewick, Washington.

Randall, R. and D. Stromswold, 1995, *Procedures for Calibrating Scintillation Gamma-Ray Well Logging Tools Using Hanford Formation Models*, WHC-SD-EN-TI-293, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

# Certificate of Calibration
## SDGR.BGO.2
Nov 1, 2010

Data were taken at the Hanford KUT models on November 1, 2010. SDGR.BGO.2 is the designated Scintillator tool. Four models were used for Spectral KUT calibration. Ten spectra were recorded for each model in order to perform statistical analysis. The observed statistical deviations were seen to be within the theoretically predicted variation, refer to the files compressed: Stats.XLS for this analysis. The instrument was covered with 0.37 inch wall thickness probe tubing.

The algorithm described in the document WHC-SD-EN-TI-293, Rev. 0, determines the coefficient analysis. Three energy windows are used for each potassium, uranium and thorium (K U & T), and these are:

**K: 1320-1575 keV** **U: 1650-2390 keV** **T: 2475-2765 keV**

The concentration for each of the three elements is a linear combination of the count rates in the three windows. The resulting coefficients for each of the three elements are:

| | | | |
|---|---|---|---|
| **Concentration-K =** | **4.745*K** | **-4.204*U** | **3.815*T** |
| **Concentration-U =** | **0.0*K** | **1.445*U** | **-2.839*T** |
| **Concentration-T =** | **0.0*K** | **-0.049*U** | **1.988*T** |

Where K U & T are the count rates (c/s) in the listed energy windows and the resulting concentration values are in pCi/g.

Digital files condensed as Cal_SD-GR-2_2010-v0.zip. This compressed file contains:

- Calibration raw data
- MathCad data analysis files
- Spreadsheet data formatting

The undersigned certifies that the data archived in the file "Cal_SD-GR-2_2010-v0.zip" were collected and evaluated in accordance with procedures WHC-SD-EN-TI-293, "Procedures for Calibrating Scintillation Gamma-Ray Well Logging Tools Using Hanford Formation Models" and that the above stated calibration coefficients are correct and applicable for the tool SDGR.BGO.2 effective Nov 1, 2010.

Signature: Date: November 9, 2010

Company: Three Rivers Scientific

Figure 2. BGO Calibration Certificate.

***Certificate of Calibration for***
**Instrument SD-Moist2.792**

June 16, 2011

Data were taken in the Moisture models on June 16, 2011 for SD-Moist2.792 neutron-neutron moisture tool. The neutron source from DOE moisture tool # H370608792 was used with the passive neutron detector probe from PNG.

Six models were used for moisture calibration, 3 for 6"casing and 3 for 8" casing. Repeated spectra were recorded for each model in order to perform statistical analysis. The observed statistical variation agreed with the theoretically predicted variations; refer to the file "stats.xlsx" for this analysis.

The coefficient generation is determined by the algorithm described in the document WHC-SD-EN-TI-306, Rev. 0. The regression function used is a power law form and defined by:

$$V = a \cdot CR^{\alpha}$$

Where V is the formation moisture content in volume fraction water in vf units. One vf unit is 1% by volume water. The coefficients a and $\alpha$ are fit coefficients, and CR is the deadtime corrected observed total count rate, (c/s).

| **6" casing** | **8" casing** |
|---|---|
| **a = .0001732** | **a = .00007726** |
| **$\alpha$ = 2.21** | **$\alpha$ = 2.516** |

The undersigned certifies that the data archived in data file "SD-Moist2.792_2011.zip" were collected and evaluated in accordance with procedures WHC-SD-EN-TI-306, "Radionuclide Logging System In Situ Vadose Zone Moisture Measurement Calibration" and that the above stated calibration coefficients are correct and applicable for tool SD-Moist2.792, effective June 16, 2011.

Signature: Date:

June 19, 2011

Russel Randall, PhD
Three Rivers Scientific

Figure 3. Moisture Calibration Certificate, 15.2 cm (6-in.) and 20.3 cm (8-in.) Hole.

***Moisture Calibration Extrapolation to 2.5 Inch Borehole***
**Instrument SD-Moist2.792**

June 16, 2011

Moisture calibration was performed in the Hanford physical models. These standards have 6 and 8 inch ID casings. The Tank Farm Direct Push borehole is cased with a 2.5 inch OD iron casing. The calibration for the moisture response is a function of borehole diameter.

The coefficient generation is determined by the algorithm described in the document WHC-SD-EN-TI-306, Rev. 0. The regression function used is a power law form and defined by:

$$V = a \cdot CR^{\alpha}$$

Where V is the formation moisture content in volume fraction water in vf units. One vf unit is 1% by volume water. The coefficients a and α are fit coefficients, and CR is the deadtime corrected observed total count rate, (c/s). A linear extrapolation was applied to determine the 2.5 inch borehole diameter.

**2.51" borehole**
**a = .0002619**
**α = 1.971**

The undersigned certifies that the analysis files are archived in the file "SD-Moist2.792_2011.zip" was evaluated in accordance with Energy Solutions procedures and that the above stated calibration coefficients are correct and applicable for tool SD-Moist2.792, effective June 16, 2011.

Signature: Date:

June 19, 2011

Russel Randall, PhD
Three Rivers Scientific

Figure 4. Moisture Calibration Certificate, 6.35 cm (2.5-in.) Hole.

# APPENDIX A
# SPECTRAL GAMMA AND MOISTURE SURVEY RESULTS

Survey plots follow for the eight probeholes installed for characterization at the 241-S Tank Farm. Each log plot is preceded by a header information page that shows the probehole coordinates, repeat/overlap intervals, isotopes analyzed, observations, and logging probe calibration dates. The log plots show a maximum of 100 feet per page with a 10 ft overlap between page breaks.

The spectral gamma survey data were processed to quantify the naturally occurring radionuclides (K, U, & Th), and the man-made radionuclide of Cs-137 (blue solid line). The spectra were processed both as individual spectra for each survey depth and as a moving sum of three spectra (i.e. sum of the individual survey depth and the two adjacent spectra, above and below the current depth position). Both results are presented on the results plot. The results for the 3-spectra sum are plotted as a wide line. Also the gross gamma was calibrated to the industry standard of equivalent radium-226 (Eq.Ra) in scale of 2 to 6 pCi/g (brown line).

The neutron-neutron moisture survey data are shown with a blue line. The moisture plot scale is 0-40 (% vf).

Table A1 below contains a summary of the survey results for each probehole: maximum log depth, maximum detection level for Cs-137, maximum depth of Cs-137 detection, and special observations by the analyst to flag the detection of other isotopes in additions to the natural radionuclides and Cs-137.

Table A1. Probehole Survey Summary.

| Probehole ID. | Hole Depth (meters) | Hole Depth (feet) | Cs-137 (pCi/g) Max Detection | Cs-137 Max Detected Depth | Flag Isotopes Other Than Naturals and Cs-137 |
|---|---|---|---|---|---|
| C8393 | 44.7 | 150 | 14 pCi/g at 0.7ft | 2 ft | None |
| C8395 | 46.3 | 152 | 23 pCi/g at 32ft | 32 ft | None |
| C8397 | 46.3 | 152 | None | n/a | None |
| C8399 | 46.3 | 152 | 42 pCi/g at 0.7ft | 1 ft | None |
| C8401 | 46.0 | 151 | 1.3 pCi/g at 2.5ft | 3 ft | None |
| C8403 | 45.7 | 150 | 12 pCi/g at 0.7ft | 2 ft | None |
| C8405 | 46.3 | 152 | 2.5 pCi/g at 0.7ft | 1 ft | None |
| C8407 | 46.0 | 151 | 1.8 pCi/g at 0.2ft | 1 ft | None |

# S-Farm C8393 Header Information

## Small Diameter – Spectral Gamma & Moisture Survey

| | | | | |
|---|---|---|---|---|
| Probehole: | C8393 | Northing: | 134461.10m | Depth Ref: |
| Log Date: | June 2011 | Easting: | 566854.52m | Ground Surface |
| Project: | S Farm | Elevation: | 203.81m | |

### Repeat/Overlap Intervals

| | | | |
|---|---|---|---|
| Spectral: | 150-145 | Moisture: | 150-145 |
| | 68-66 | | 60-56 |
| | 66-64 | | 60-57 |

### Isotopes Analyzed

| Elements: | Energies Used (keV) |
|---|---|
| K-40 | 1462 |
| Natural Uranium | 1650-2390 |
| Natural Thorium | 2614 |
| Cs-137 | 661 |

### Observations

Spectral:

Cs-137 was observed near the surface (0.7ft), with a maximum of 14 pCi/g. The plotted gross uses an energy threshold of 1000keV, and does not respond to Cs-137.

Moisture:

Moisture values range from 3-34%. There are several thin zones of higher moisture laminated between dry zones from 125ft to 150ft. There is both correlation and anti-correlation with gamma response (mostly U changes).

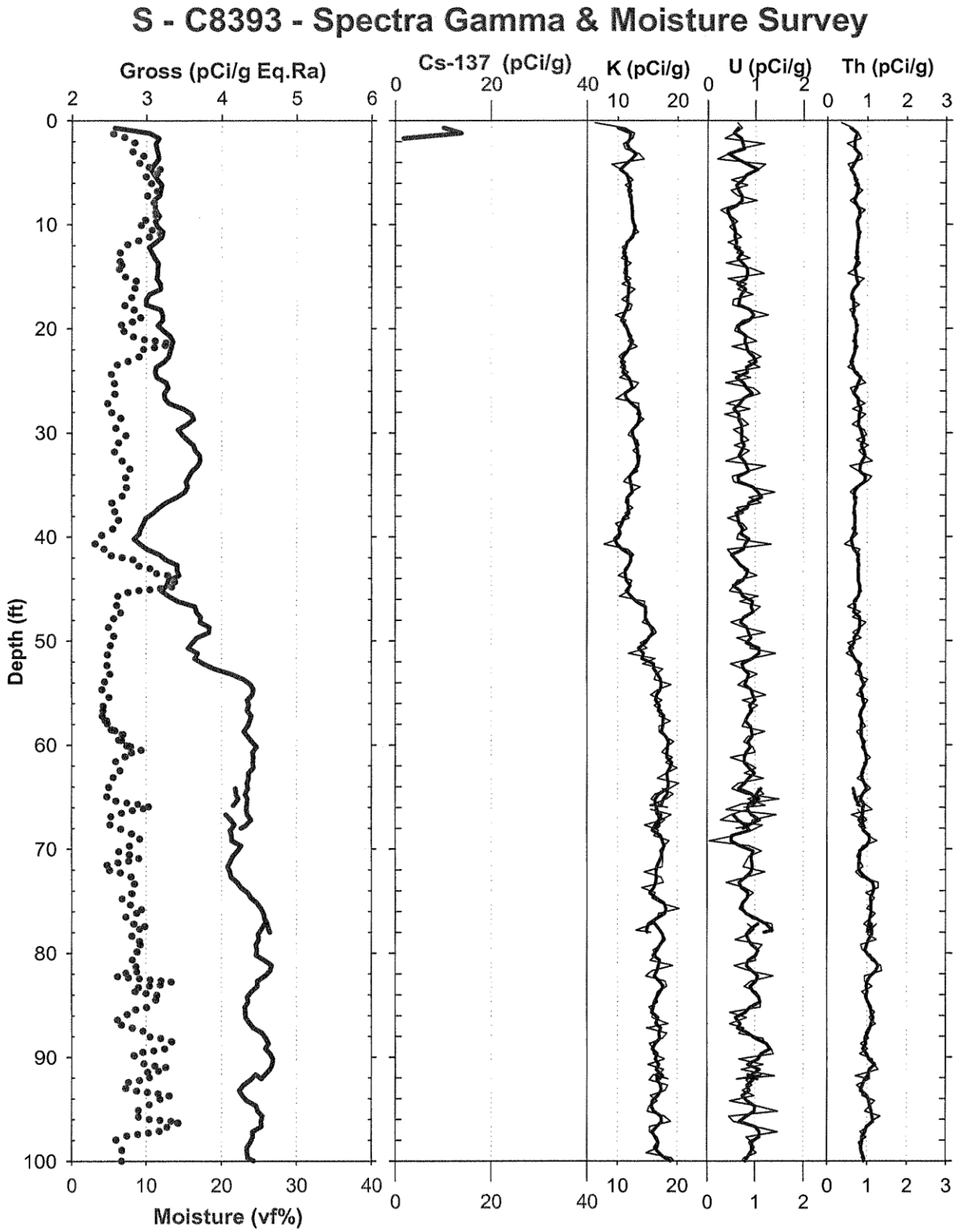
### Calibration Certificates

Spectral

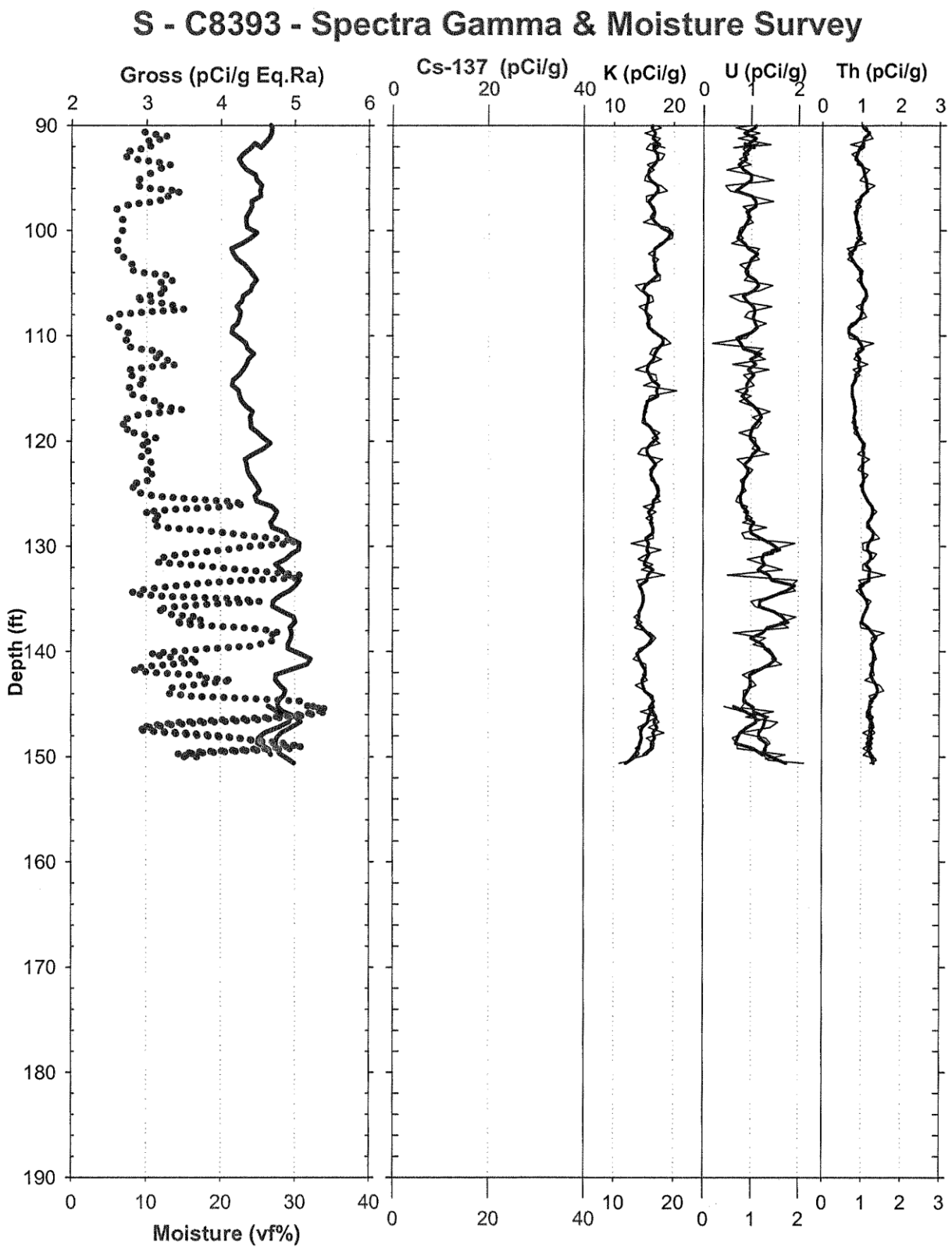
| | |
|---|---|
| Date: | Nov 1, 2010 |
| Electronic File: | Cal_SD-GR-2_2010-v0.zip |

Moisture

| | |
|---|---|
| Date: | Jun 16, 2011 |
| Electronic File: | SD-Moist2.792_2011.zip |


S - C8393 - Spectra Gamma & Moisture Survey
Gross (pCi/g Eq.Ra)
Cs-137 (pCi/g)
K (pCi/g)
U (pCi/g)
Th (pCi/g)
Depth (ft)
Moisture (vf%)

A-3


S - C8393 - Spectra Gamma & Moisture Survey
Gross (pCi/g Eq.Ra)
Cs-137 (pCi/g)
K (pCi/g)
U (pCi/g)
Th (pCi/g)
Depth (ft)
Moisture (vf%)

# S-Farm C8395 Header Information

## Small Diameter – Spectral Gamma & Moisture Survey

| | | | | |
|---|---|---|---|---|
| Probehole: | C8395 | Northing: | 134476.22m | Depth Ref: |
| Log Date: | June 2011 | Easting: | 566817.14m | Ground Surface |
| Project: | S Farm | Elevation: | 203.80m | |

### Repeat/Overlap Intervals

Spectral: 150-145
70-68
33-30

Moisture: 152-145

### Isotopes Analyzed

| Elements: | Energies Used (keV) |
|---|---|
| K-40 | 1462 |
| Natural Uranium | 1650-2390 |
| Natural Thorium | 2614 |
| Cs-137 | 661 |

### Observations

Spectral:

Cs-137 was observed near the surface (0-6ft), with a maximum of 17 pCi/g. A thin zone Cs-137 also exist at 31.8ft. The repeat at 31.8ft reads 23pCi/g and the 1st pass read 13pCi/g. The slight change in depth for spectra collection of the repeat caught more of the maximum. Note that a thin bed response will not read 100% of the activity, due to averaging of cleaner soils above and below the thin zone. The plotted gross uses an energy threshold of 1000keV, and does not respond to Cs-137.

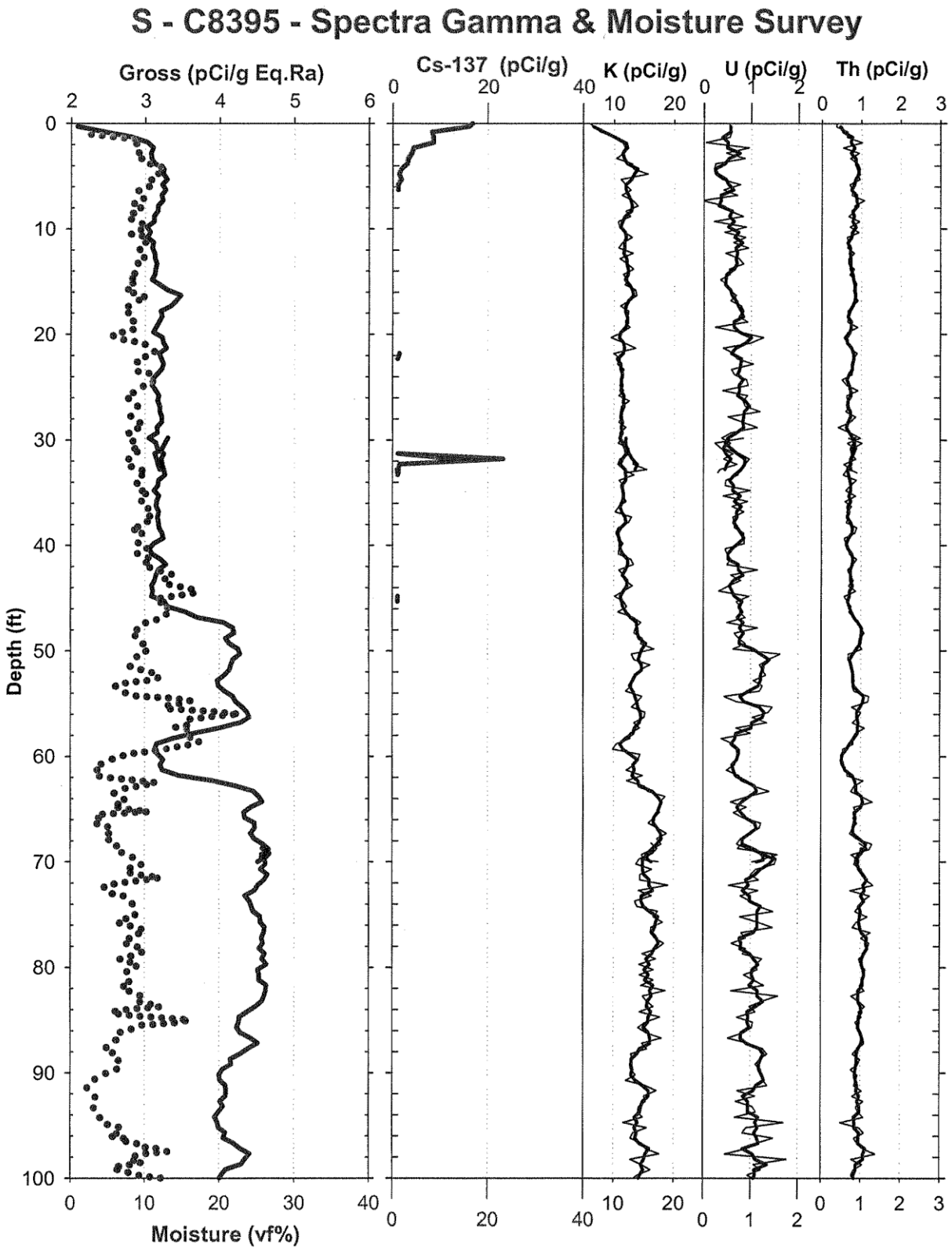
Moisture:

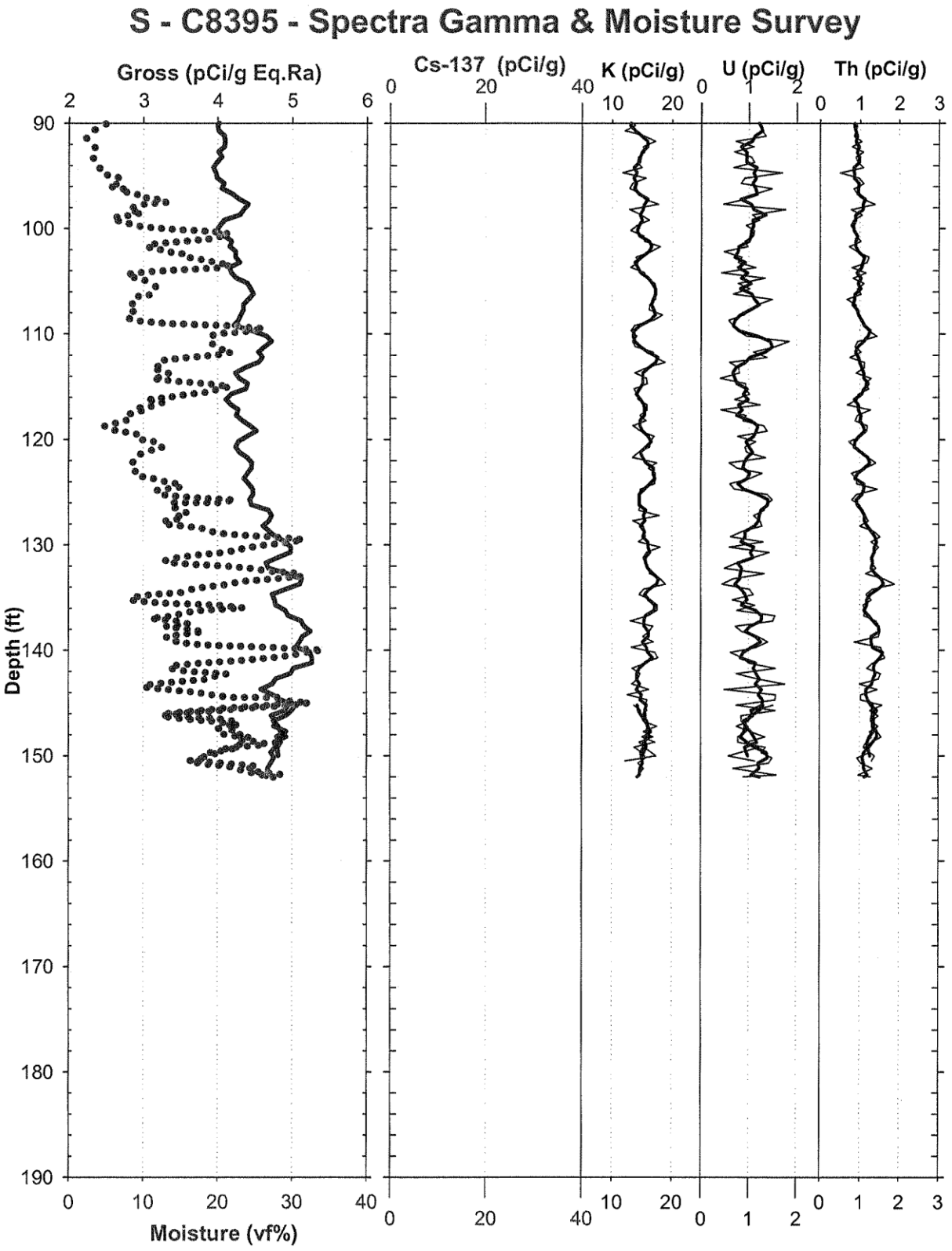
Moisture values range from 2-34%. There are several thin zones of higher moisture laminated between dry zones from 100ft to 150ft.

### Calibration Certificates

Spectral
Date: Nov 1, 2010
Electronic File: Cal_SD-GR-2_2010-v0.zip

Moisture
Date: Jun 16, 2011
Electronic File: SD-Moist2.792_2011.zip


S - C8395 - Spectra Gamma & Moisture Survey
Gross (pCi/g Eq.Ra)
Cs-137 (pCi/g)
K (pCi/g)
U (pCi/g)
Th (pCi/g)
Depth (ft)
Moisture (vf%)


S - C8395 - Spectra Gamma & Moisture Survey
Gross (pCi/g Eq.Ra)
Cs-137 (pCi/g)
K (pCi/g)
U (pCi/g)
Th (pCi/g)
Depth (ft)
Moisture (vf%)

# S-Farm C8397 Header Information

## Small Diameter – Spectral Gamma & Moisture Survey

| | | | | |
|---|---|---|---|---|
| Probehole: | C8397 | Northing: | 134520.14m | Depth Ref: |
| Log Date: | June 2011 | Easting: | 566810.51m | Ground Surface |
| Project: | S Farm | Elevation: | 203.45m | |

### Repeat/Overlap Intervals

| | | | |
|---|---|---|---|
| Spectral: | 152-151 | Moisture: | 150-140 |
| | 150-147 | | 62-60 |
| | 66-61 | | |
| | 56-49 | | |

### Isotopes Analyzed

| Elements: | Energies Used (keV) |
|---|---|
| K-40 | 1462 |
| Natural Uranium | 1650-2390 |
| Natural Thorium | 2614 |
| Cs-137 | 661 |

### Observations

Spectral:

Cs-137 was not observed. The plotted gross uses an energy threshold of 1000keV, and does not respond to Cs-137.

Moisture:

Moisture values range from 4-35%. There are several thin zones of higher moisture laminated between dry zones from 114ft to 147ft.

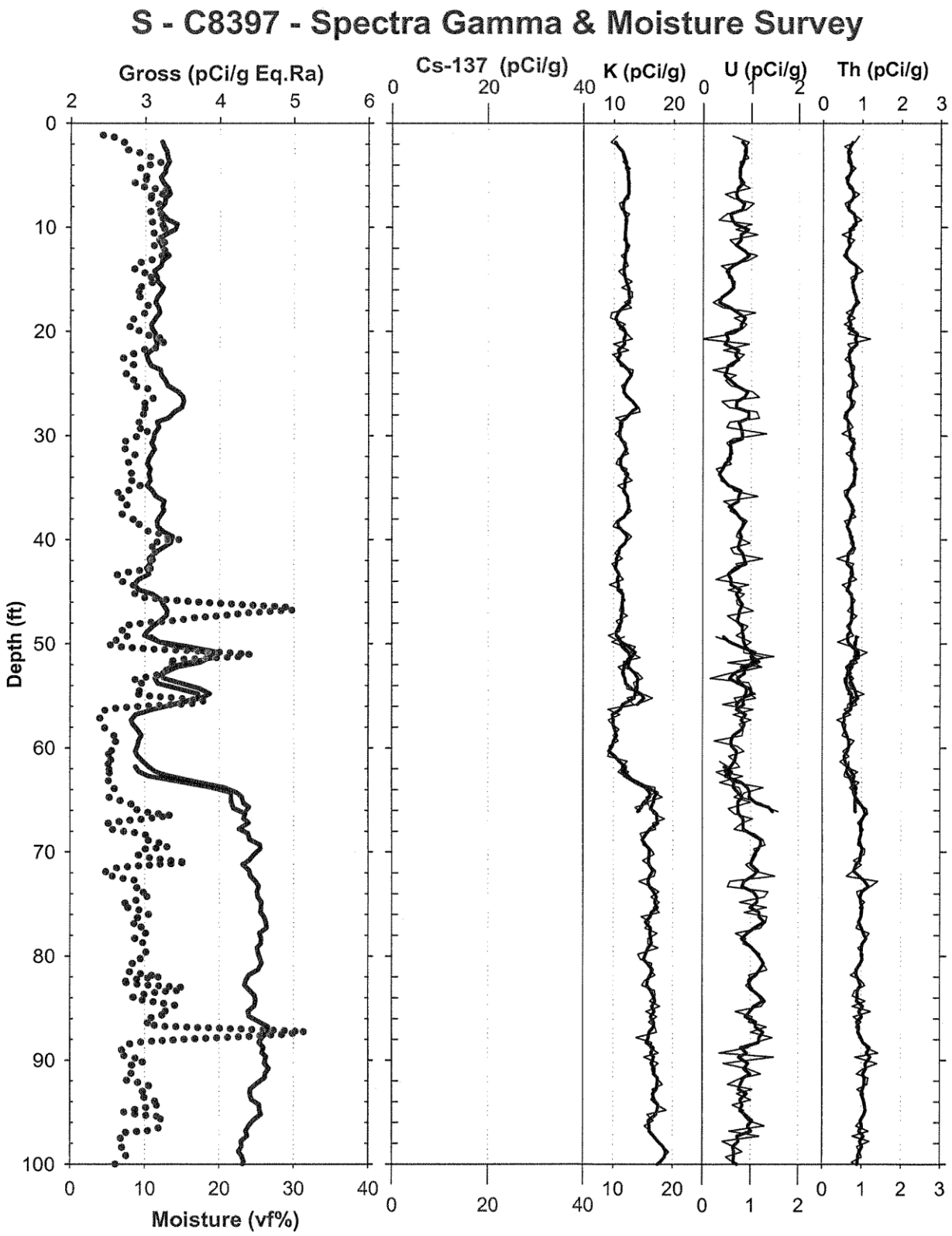
### Calibration Certificates

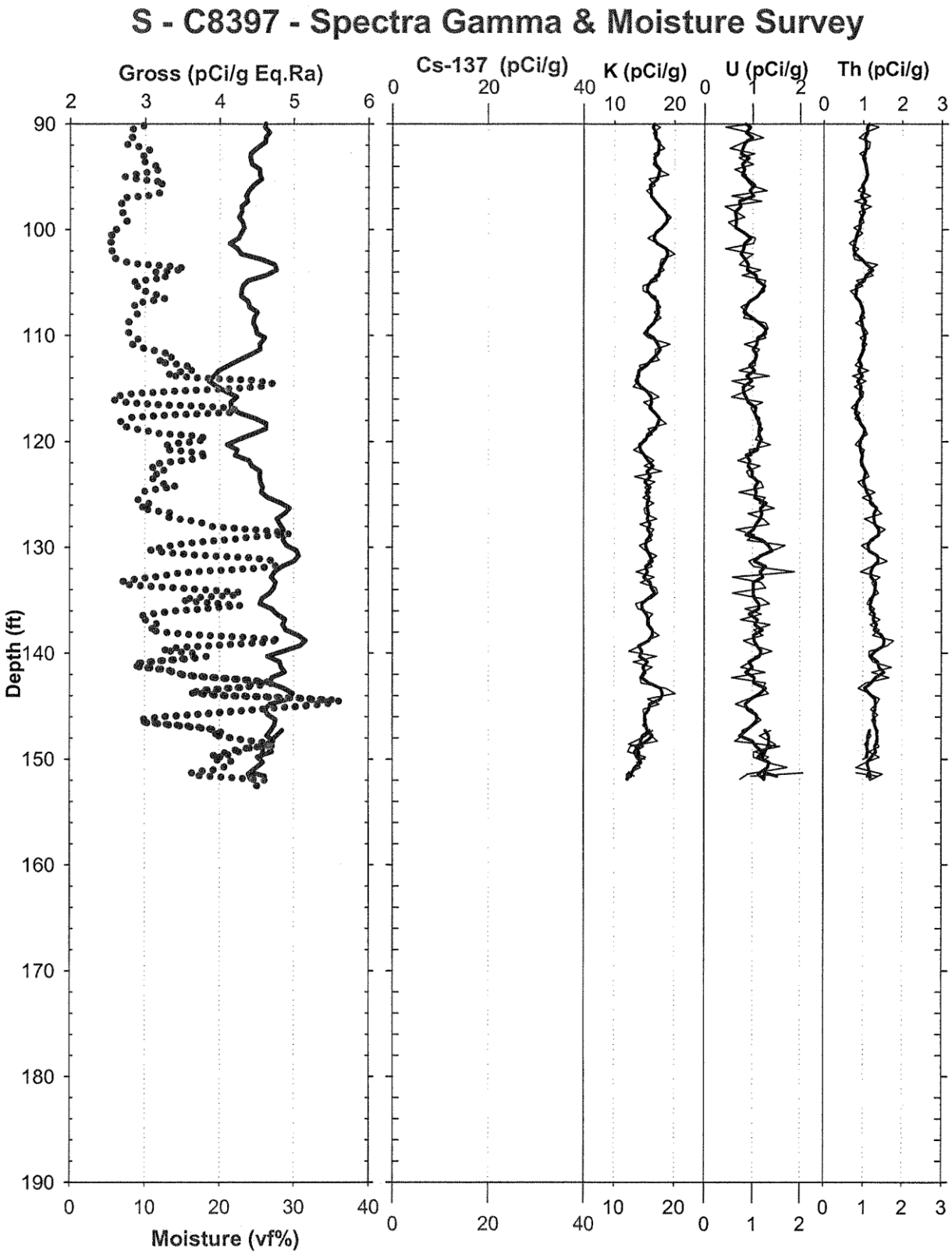
Spectral

| | |
|---|---|
| Date: | Nov 1, 2010 |
| Electronic File: | Cal_SD-GR-2_2010-v0.zip |

Moisture

| | |
|---|---|
| Date: | Jun 16, 2011 |
| Electronic File: | SD-Moist2.792_2011.zip |


S - C8397 - Spectra Gamma & Moisture Survey
Gross (pCi/g Eq.Ra)
Cs-137 (pCi/g)
K (pCi/g)
U (pCi/g)
Th (pCi/g)
Depth (ft)
Moisture (vf%)


S - C8397 - Spectra Gamma & Moisture Survey
Gross (pCi/g Eq.Ra)
Cs-137 (pCi/g)
K (pCi/g)
U (pCi/g)
Th (pCi/g)
Depth (ft)
Moisture (vf%)

# S-Farm C8399Header Information

## Small Diameter – Spectral Gamma & Moisture Survey

| | | | | |
|---|---|---|---|---|
| Probehole: | C8399 | Northing: | 134491.71m | Depth Ref: |
| Log Date: | July 2011 | Easting: | 566780.73m | Ground Surface |
| Project: | S Farm | Elevation: | 203.07m | |

### Repeat/Overlap Intervals

Spectral: 152-149
77-73

Moisture: 151-143

### Isotopes Analyzed

| Elements: | Energies Used (keV) |
|---|---|
| K-40 | 1462 |
| Natural Uranium | 1650-2390 |
| Natural Thorium | 2614 |
| Cs-137 | 661 |

### Observations

Spectral:

Cs-137 was observed near the surface (0.2-0.7ft), with a maximum of 42 pCi/g. The plotted gross uses an energy threshold of 1000keV, and does not respond to Cs-137.

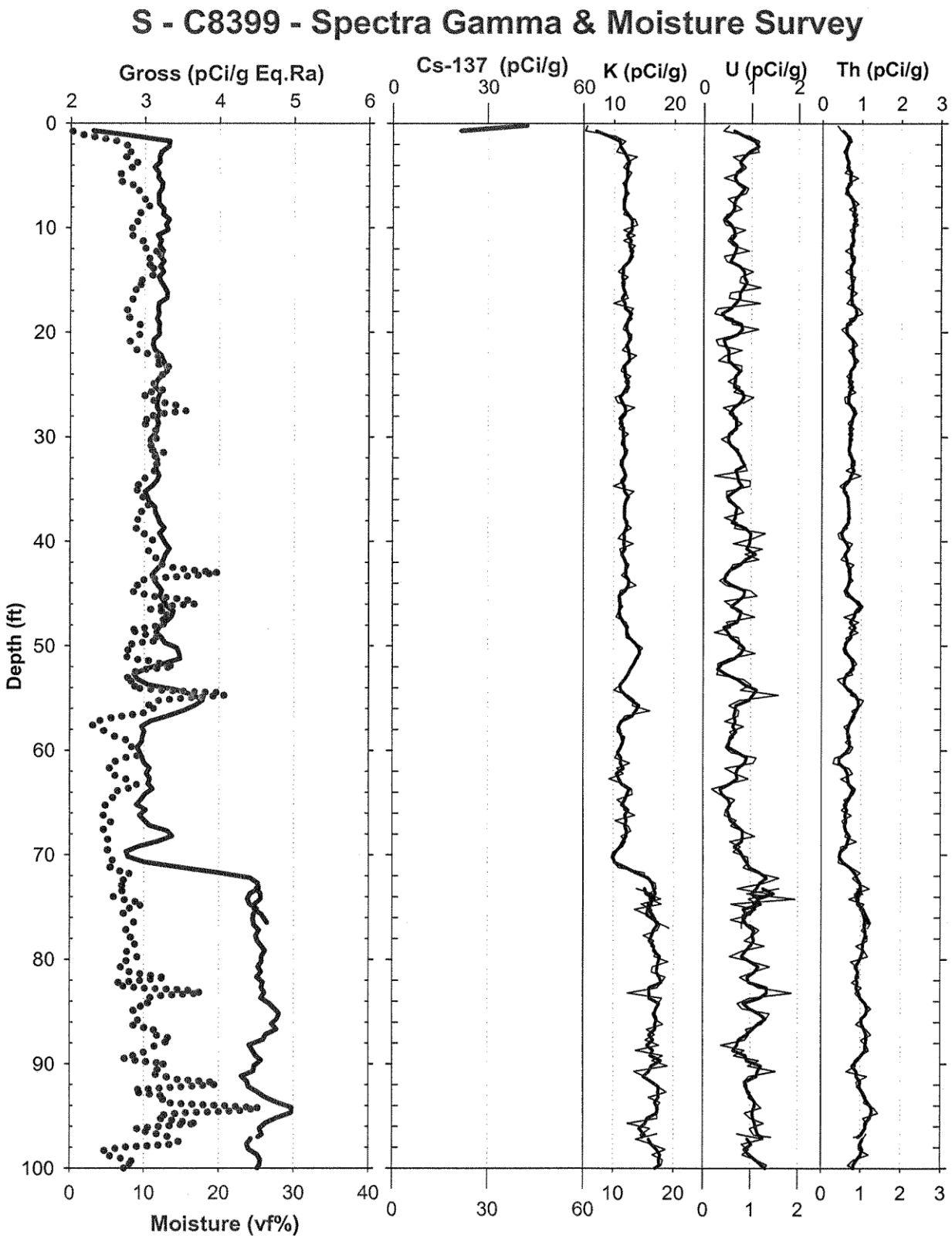
Moisture:

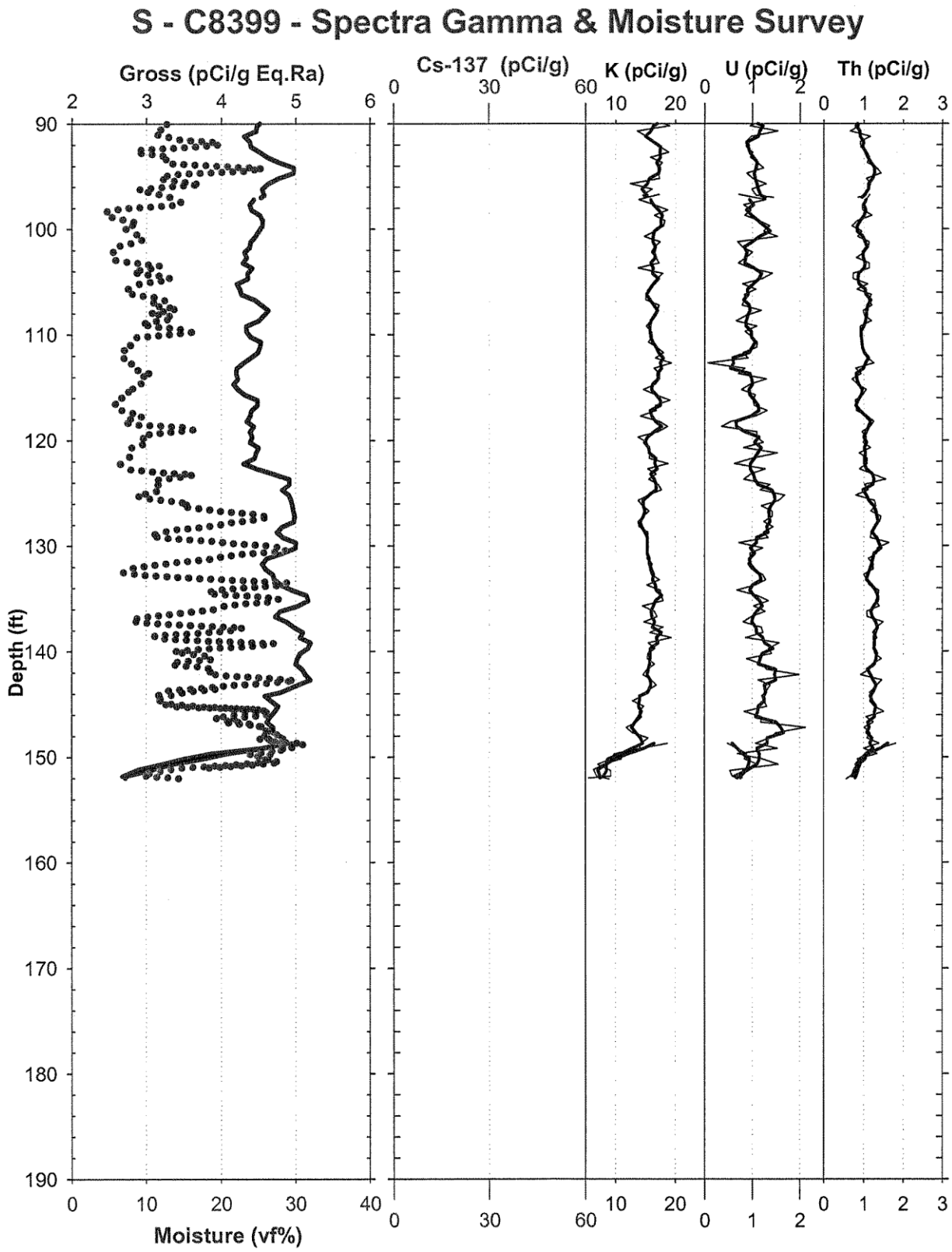
Moisture values range from 3-29%. There are several thin zones of higher moisture laminated between dry zones from 126ft to 150ft.

### Calibration Certificates

Spectral
Date: Nov 1, 2010
Electronic File: Cal_SD-GR-2_2010-v0.zip

Moisture
Date: Jun 16, 2011
Electronic File: SD-Moist2.792_2011.zip


S - C8399 - Spectra Gamma & Moisture Survey
Gross (pCi/g Eq.Ra)
Cs-137 (pCi/g)
K (pCi/g)
U (pCi/g)
Th (pCi/g)
Depth (ft)
Moisture (vf%)


S - C8399 - Spectra Gamma & Moisture Survey
Gross (pCi/g Eq.Ra)
Cs-137 (pCi/g)
K (pCi/g)
U (pCi/g)
Th (pCi/g)
Depth (ft)
Moisture (vf%)

# S-Farm C8401 Header Information

## Small Diameter – Spectral Gamma & Moisture Survey

| | | | | |
|---|---|---|---|---|
| Probehole: | C8401 | Northing: | 134459.65m | Depth Ref: |
| Log Date: | Aug 2011 | Easting: | 566795.53m | Ground Surface |
| Project: | S Farm | Elevation: | 203.31m | |

### Repeat/Overlap Intervals

| | | | |
|---|---|---|---|
| Spectral: | 125-122 | Moisture: | 151-145 |
| | 120-116 | | |

### Isotopes Analyzed

| Elements: | Energies Used (keV) |
|---|---|
| K-40 | 1462 |
| Natural Uranium | 1650-2390 |
| Natural Thorium | 2614 |
| Cs-137 | 661 |

### Observations

Spectral:

Cs-137 was observed near the surface (2.5ft), with a maximum of 1.3 pCi/g. The plotted gross uses an energy threshold of 1000keV, and does not respond to Cs-137.

Moisture:

Moisture values range from 3-37%. There are several thin zones of higher moisture laminated between dry zones from 83ft to 151ft. There was a depth error on the repeat. The plot of the repeat has been depth shifted by -0.4ft.

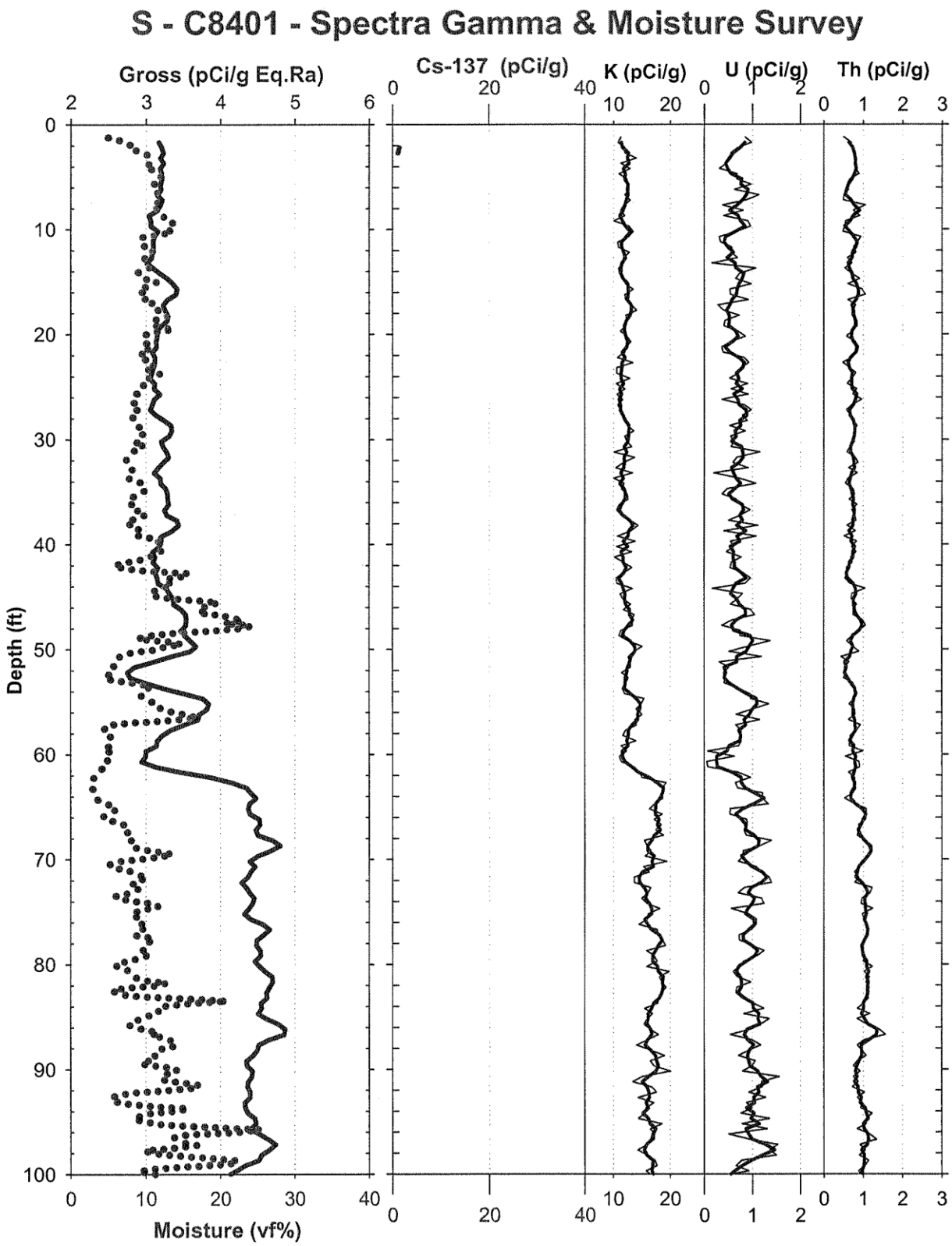
### Calibration Certificates

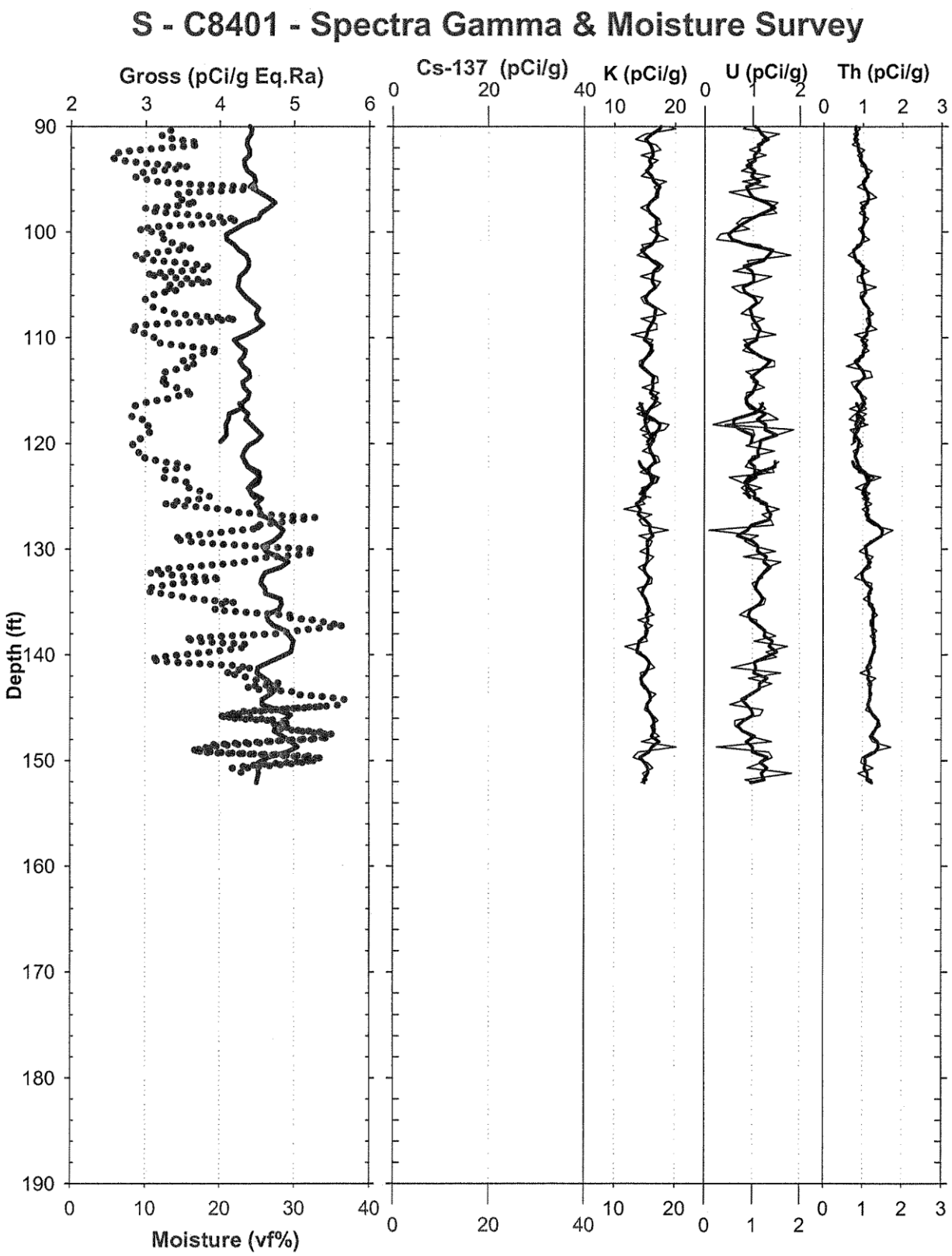
Spectral

| | |
|---|---|
| Date: | Nov 1, 2010 |
| Electronic File: | Cal_SD-GR-2_2010-v0.zip |

Moisture

| | |
|---|---|
| Date: | Jun 16, 2011 |
| Electronic File: | SD-Moist2.792_2011.zip |


S - C8401 - Spectra Gamma & Moisture Survey
Gross (pCi/g Eq.Ra)
Cs-137 (pCi/g)
K (pCi/g)
U (pCi/g)
Th (pCi/g)
Depth (ft)
Moisture (vf%)


S - C8401 - Spectra Gamma & Moisture Survey
Gross (pCi/g Eq.Ra)
Cs-137 (pCi/g)
K (pCi/g)
U (pCi/g)
Th (pCi/g)
Depth (ft)
Moisture (vf%)

# S-Farm C8403 Header Information

## Small Diameter – Spectral Gamma & Moisture Survey

| | | | | |
|---|---|---|---|---|
| Probehole: | C8403 | Northing: | 134431.90m | Depth Ref: |
| Log Date: | June 2011 | Easting: | 566864.05m | Ground Surface |
| Project: | S Farm | Elevation: | 202.84m | |

### Repeat/Overlap Intervals

Spectral: 150-149
105-104
105-102

Moisture: 150-144

### Isotopes Analyzed

| Elements: | Energies Used (keV) |
|---|---|
| K-40 | 1462 |
| Natural Uranium | 1650-2390 |
| Natural Thorium | 2614 |
| Cs-137 | 661 |

### Observations

Spectral:

Cs-137 was observed near the surface (0.7ft), with a maximum of 12 pCi/g. The plotted gross uses an energy threshold of 1000keV, and does not respond to Cs-137.

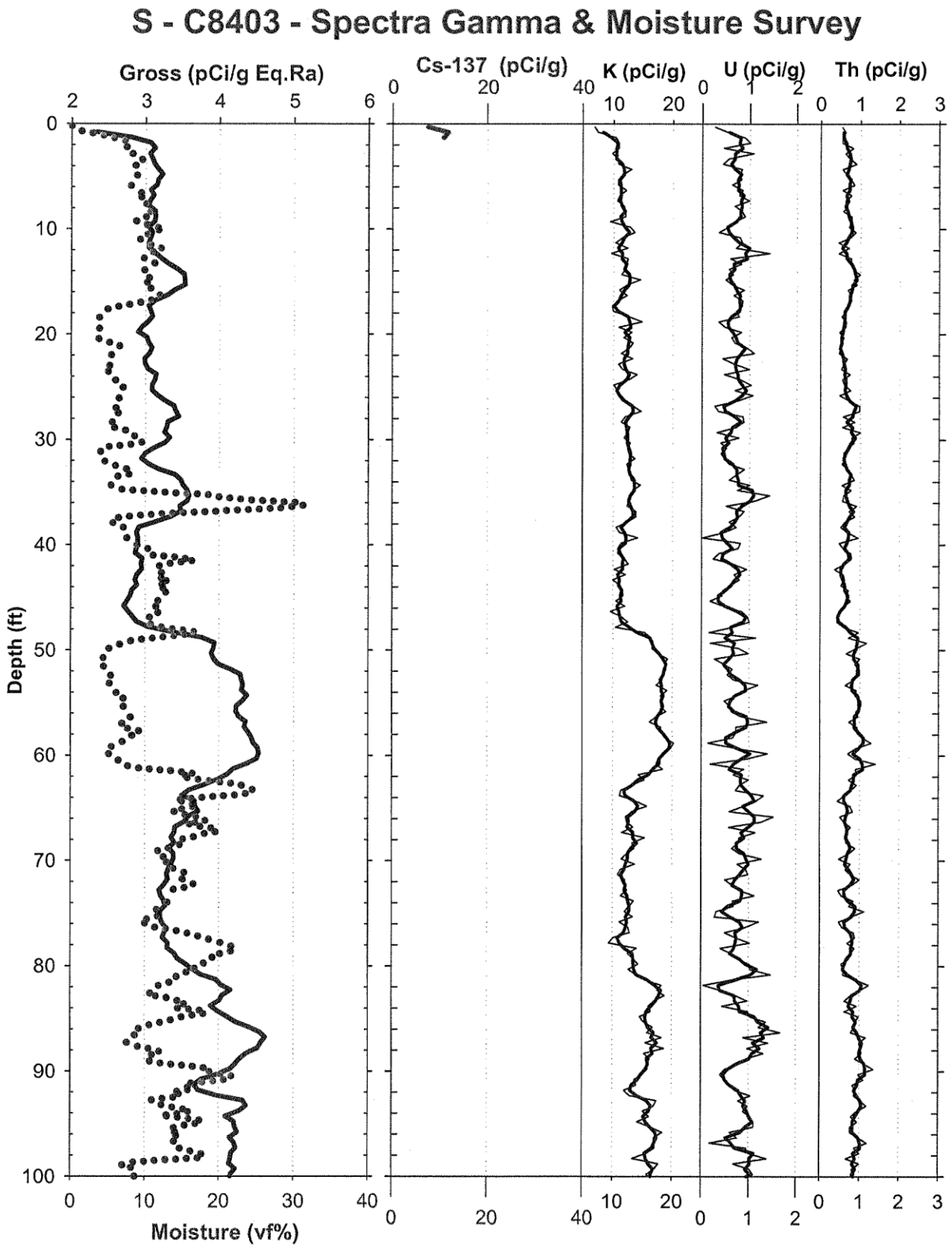
Moisture:

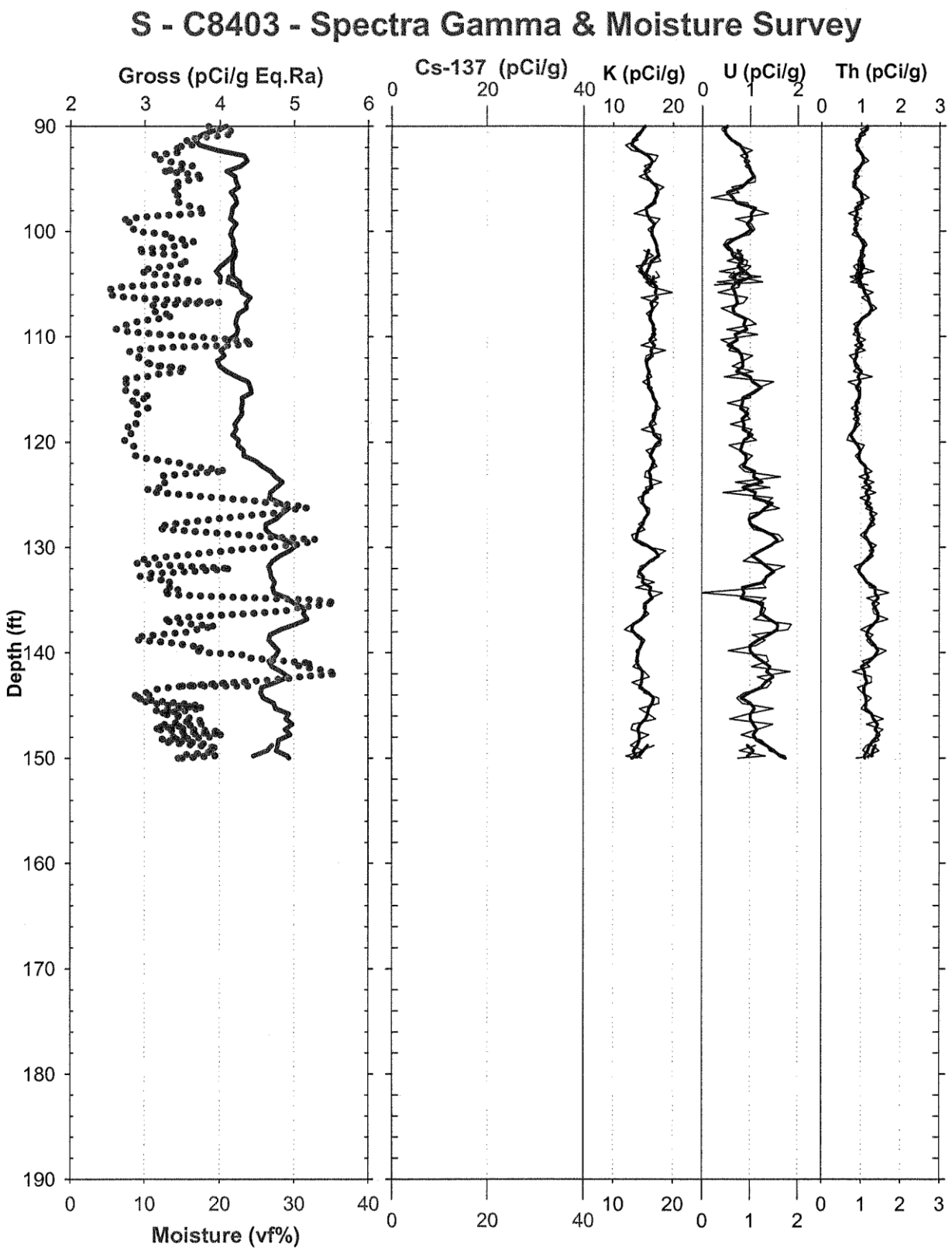
Moisture values range from 3-36%. There are several thin zones of higher moisture laminated between dry zones from 122ft to 144ft. There is correlation with all three natural isotopes (KUT).

### Calibration Certificates

Spectral
Date: Nov 1, 2010
Electronic File: Cal_SD-GR-2_2010-v0.zip

Moisture
Date: Jun 16, 2011
Electronic File: SD-Moist2.792_2011.zip


S - C8403 - Spectra Gamma & Moisture Survey
Gross (pCi/g Eq.Ra)
Cs-137 (pCi/g)
K (pCi/g)
U (pCi/g)
Th (pCi/g)
Depth (ft)
Moisture (vf%)


S - C8403 - Spectra Gamma & Moisture Survey
Gross (pCi/g Eq.Ra)
Cs-137 (pCi/g)
K (pCi/g)
U (pCi/g)
Th (pCi/g)
Depth (ft)
Moisture (vf%)

# S-Farm C8405 Header Information

## Small Diameter – Spectral Gamma & Moisture Survey

| | | | | |
|---|---|---|---|---|
| Probehole: | C8405 | Northing: | 134450.71m | Depth Ref: |
| Log Date: | June 2011 | Easting: | 566814.60m | Ground Surface |
| Project: | S Farm | Elevation: | 203.37m | |

### Repeat/Overlap Intervals

| Spectral: | 150-147 | Moisture: | 150-140 |
|---|---|---|---|
| | 54-51 | | 55-51 |
| | 53-48 | | 30-28 |

### Isotopes Analyzed

| Elements: | Energies Used (keV) |
|---|---|
| K-40 | 1462 |
| Natural Uranium | 1650-2390 |
| Natural Thorium | 2614 |
| Cs-137 | 661 |

### Observations

Spectral:

Cs-137 was observed near the surface (0.7ft), with a maximum of 2.5 pCi/g. The plotted gross uses an energy threshold of 1000keV, and does not respond to Cs-137.

Moisture:

Moisture values range from 3.7-34%. There are several thin zones of higher moisture laminated between dry zones from 122ft to 152ft.

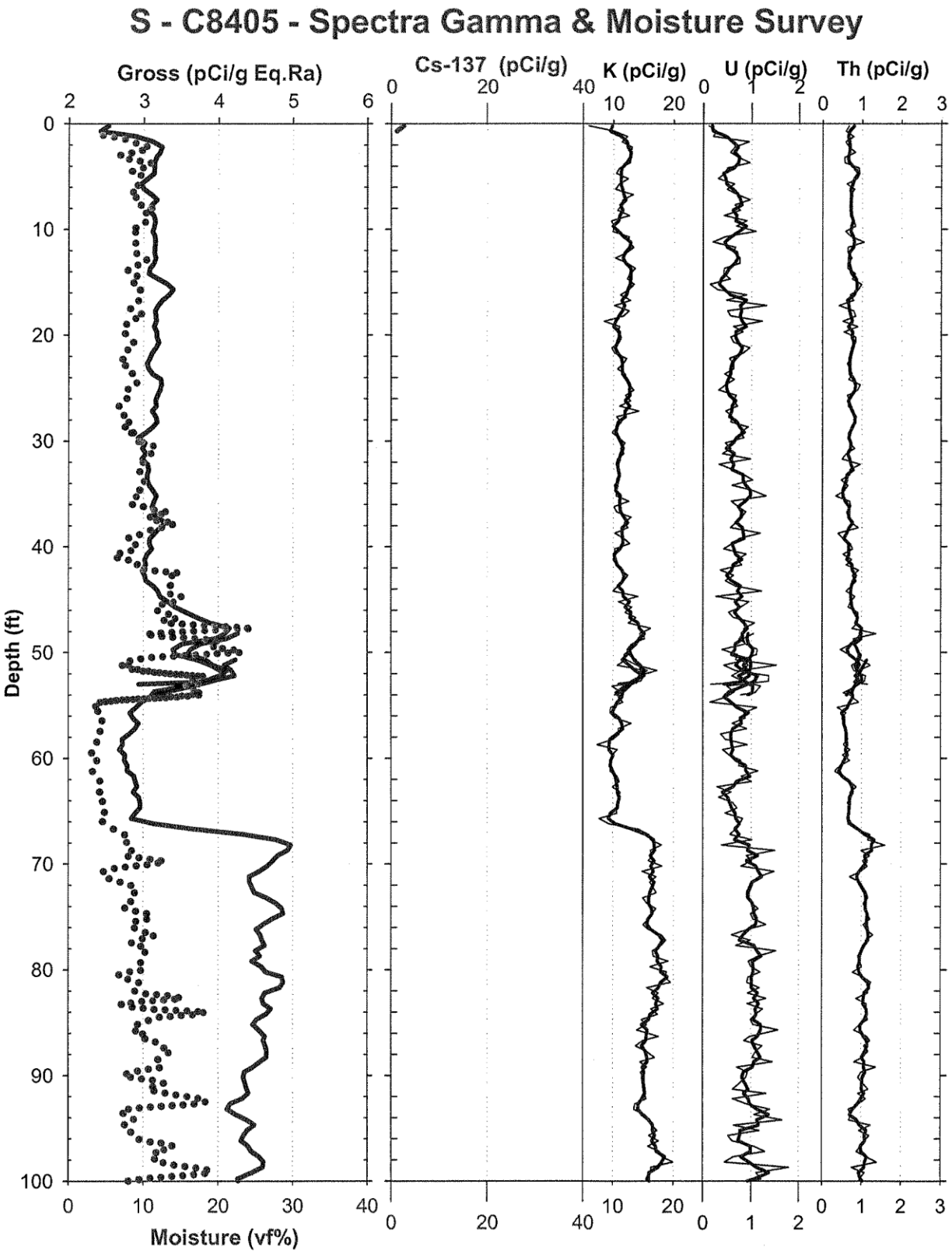
### Calibration Certificates

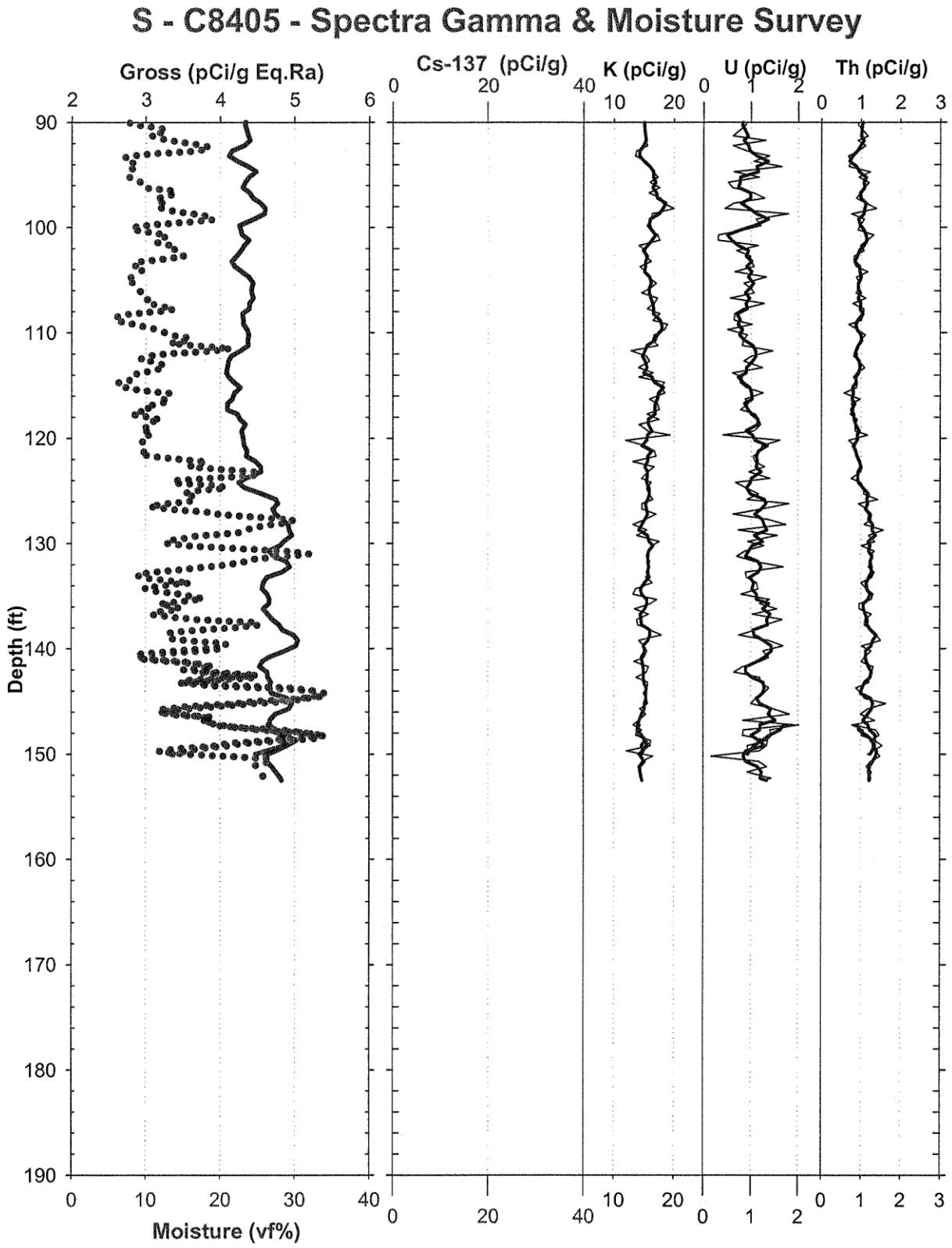
Spectral

| | |
|---|---|
| Date: | Nov 1, 2010 |
| Electronic File: | Cal_SD-GR-2_2010-v0.zip |

Moisture

| | |
|---|---|
| Date: | Jun 16, 2011 |
| Electronic File: | SD-Moist2.792_2011.zip |


S - C8405 - Spectra Gamma & Moisture Survey
Gross (pCi/g Eq.Ra)
Cs-137 (pCi/g)
K (pCi/g)
U (pCi/g)
Th (pCi/g)
Depth (ft)
Moisture (vf%)


S - C8405 - Spectra Gamma & Moisture Survey
Gross (pCi/g Eq.Ra)
Cs-137 (pCi/g)
K (pCi/g)
U (pCi/g)
Th (pCi/g)
Depth (ft)
Moisture (vf%)

# S-Farm C8407 Header Information

## Small Diameter – Spectral Gamma & Moisture Survey

| | | | | |
|---|---|---|---|---|
| Probehole: | C8407 | Northing: | 134450.73m | Depth Ref: |
| Log Date: | Aug 2011 | Easting: | 566762.81m | Ground Surface |
| Project: | S Farm | Elevation: | 203.08m | |

### Repeat/Overlap Intervals

Spectral: 150-147
56-53

Moisture: 151-145

### Isotopes Analyzed

| Elements: | Energies Used (keV) |
|---|---|
| K-40 | 1462 |
| Natural Uranium | 1650-2390 |
| Natural Thorium | 2614 |
| Cs-137 | 661 |

### Observations

Spectral:

Cs-137 was observed near the surface (0.2ft), with a maximum of 1.8 pCi/g. The plotted gross uses an energy threshold of 1000keV, and does not respond to Cs-137.

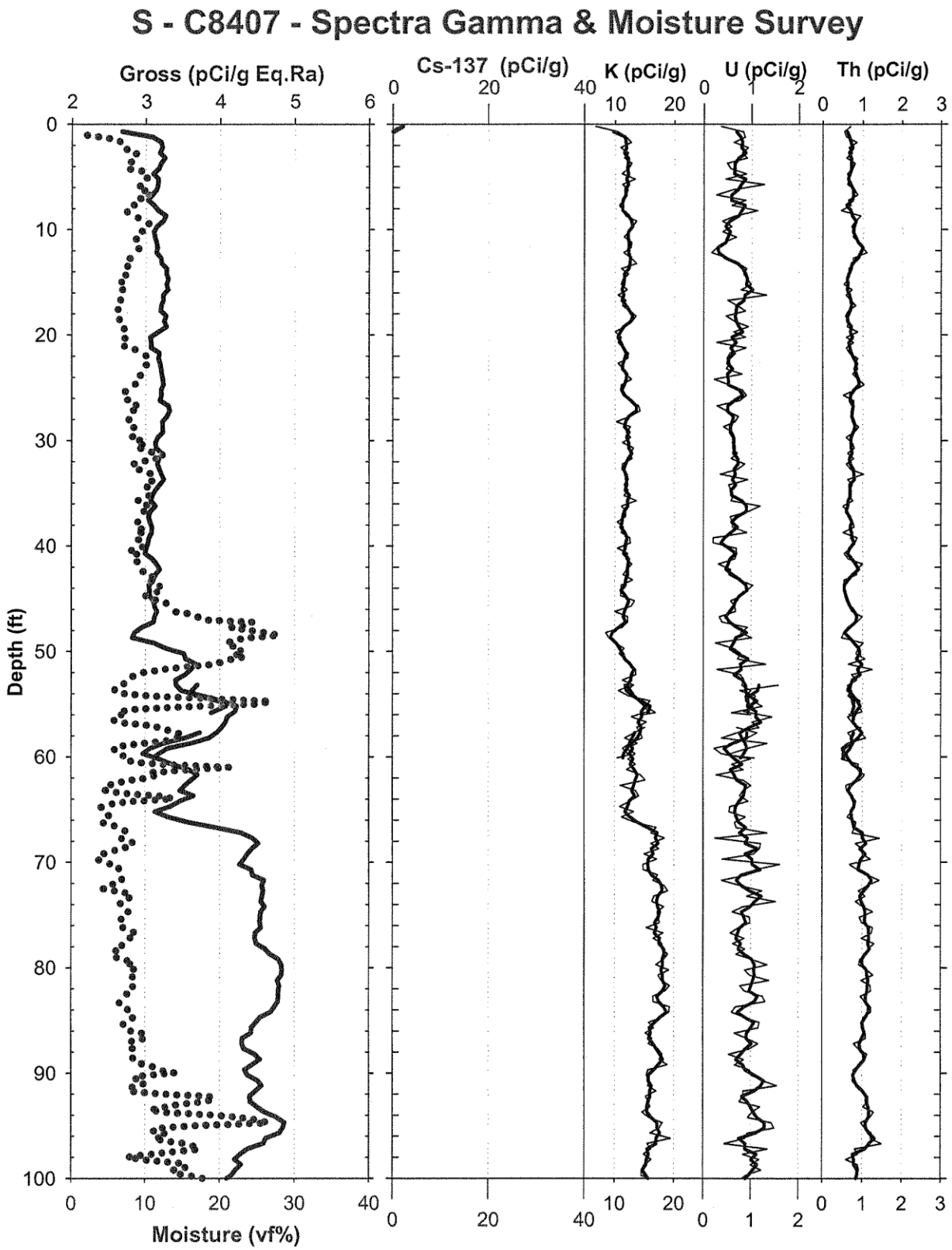
Moisture:

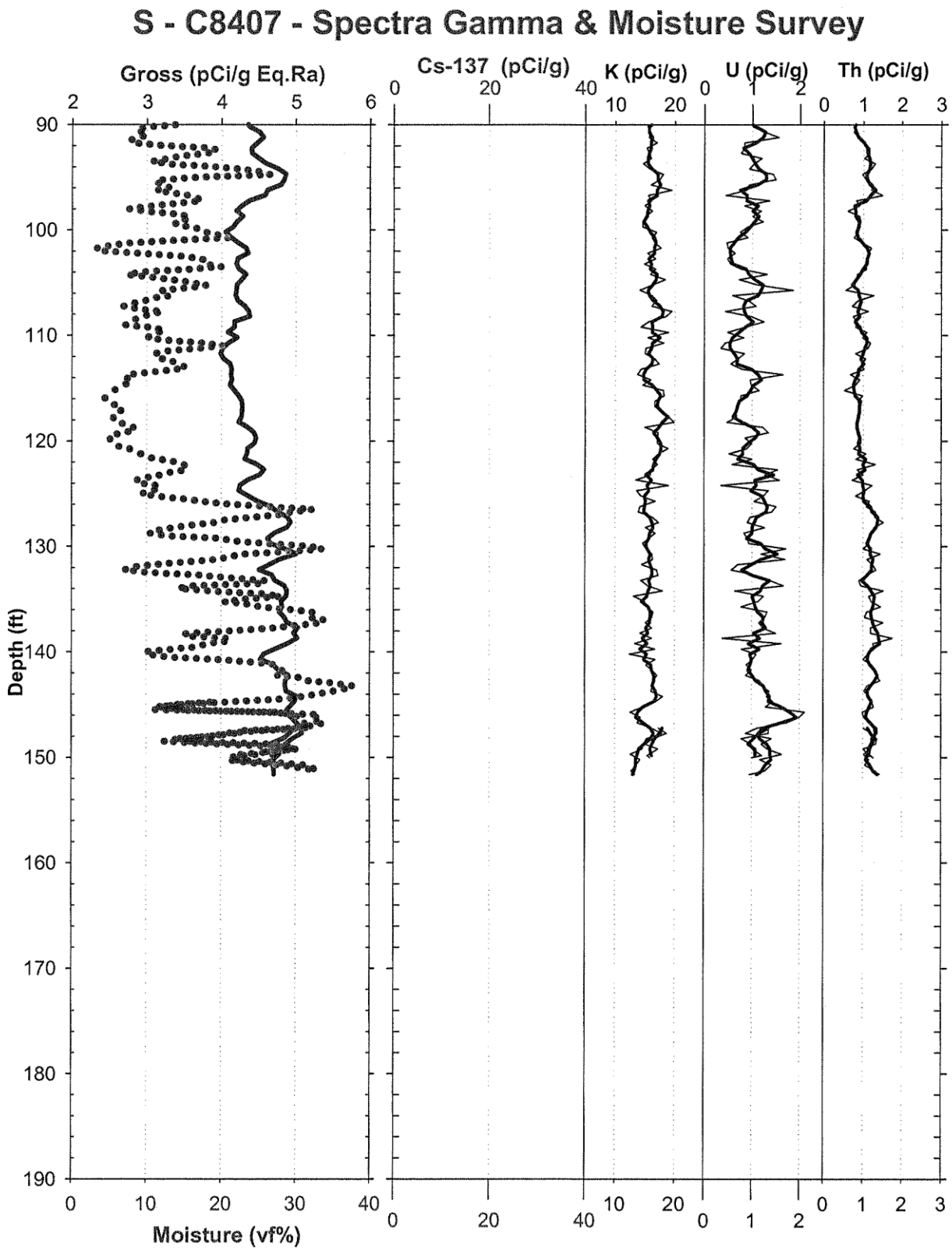
Moisture values range from 3-38%. There are several thin zones of higher moisture laminated between dry zones from 45ft to 65 ft and from 90ft to 151ft.

### Calibration Certificates

Spectral
Date: Nov 1, 2010
Electronic File: Cal_SD-GR-2_2010-v0.zip

Moisture
Date: Jun 16, 2011
Electronic File: SD-Moist2.792_2011.zip


S - C8407 - Spectra Gamma & Moisture Survey
Gross (pCi/g Eq.Ra)
Cs-137 (pCi/g)
K (pCi/g)
U (pCi/g)
Th (pCi/g)
Depth (ft)
Moisture (vf%)


S - C8407 - Spectra Gamma & Moisture Survey
Gross (pCi/g Eq.Ra)
Cs-137 (pCi/g)
K (pCi/g)
U (pCi/g)
Th (pCi/g)
Depth (ft)
Moisture (vf%)

# APPENDIX E

SAMPLE DETERMINATION MEETING MINUTES

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**Rory Z. Steffler**

**From:** Tabor, Cynthia L [Cynthia_L_Tabor@RL.gov]
**Sent:** Tuesday, August 23, 2011 9:26 AM
**To:** Rory Z. Steffler
**Subject:** FW: Meeting Minutes on S Farm Sample Depths - C8394 and C8404
**Attachments:** MM_PickingDepths_C8394_C8404.docx

Cindy Tabor
(509) 376-0988

washingtonriver protectionsolutions
contractor to the United States Department of Energy

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**From:** Tabor, Cynthia L
**Sent:** Wednesday, June 22, 2011 10:15 AM
**To:** Eberlein, Susan J; Lober, Robert W; Fort, Leslie A; Field, Jim G; Reynolds, Kent D; Myers, David A (Dave); Glaser, Danney R; Caggiano, Joseph; Doornbos, Martin H; Rohay, Virginia J; 'Barnes, Michael (ECY)'; 'Marc T. Levitt'; 'Brian D. Cubbage'; Sydnor, Harold A; Caggiano, Joseph; Bergeron, Marcel P; Templeton, Andrew M
**Subject:** Meeting Minutes on S Farm Sample Depths - C8394 and C8404

Hi All
Attached are the minutes from yesterday's meeting on sample depths for S Farm locations C8934 and C8404.

We also agreed to the following in the meeting:

> The group agreed to continue with the approach of choosing consistent sample intervals in subsequent holes – if the logs (i.e., gamma and moisture plots) show similar information - no meetings will be held. However, sample depths will be summarized in an email for documentation purposes. If logs yield unexpected information, a meeting will be held with relevant participants.

If anyone has any questions, please let me know.
Thanks Cindy

Cindy Tabor
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contractor to the United States Department of Energy

# Meeting Minutes from S-Farm Interim Barrier Sampling Depths
# June 21, 2011 Meeting

**Attendees:** Harold Syndor, Mike Barnes, Kent Reynolds, Cindy Tabor, Virginia Rohay, Dave Myers, Marcel Bergeron, Dan Glaser, Jim Field, Joe Caggiano

**Locations Discussed:** C8404 and C8394
**Outcome:** All Sample Depths identified below were agreed upon by attendees

## Summary Information:

**Data Evaluated to Help Determine Possible Sample Depths:**

- Draft Gamma and Moisture Plots for C8403 and C8393
- Dry Well logging information
- Available information from SX and S/SX direct push campaign efforts

**General Statements:**

- Consistently picking transition zones where we expect that contamination may have "accumulated". We picked similar areas in S/SX and S Farm direct push campaigns.

Note: The transition from H2 fines to Upper Cold Creek yielded the highest concentrations in S Farm (highest Tc-99 concentration of 1,090 pCi/g at C7180, west of SX-109).

- The group agreed to continue with the approach of choosing consistent sample intervals in subsequent holes – if the logs (i.e., gamma and moisture plots) show similar information - no meetings will be held. However, sample depths will be summarized in an email for documentation purposes. If logs yield unexpected information, a meeting will be held with relevant participants. (Joe Caggiano caveat: The agreement sounds fine to me except that we may want to add a caveat if there are "unusual circumstances" to consider. I can't think of what they would be offhand, but that contingency should probably be added.)

## Meeting Minutes from S-Farm East Interim Barrier Sampling Depths
## June 21, 2011 Meeting

- **Table 1: Sample Depths for C8404 and C8394**

| **Location**<br>Log Hole/Sample Hole | **Recommended Sample Depth (ft bgs)**<br>**[Depth ft amsl]** | **Reason** |
|---|---|---|
| **C8403/C8404**<br>(Southeast of Tank S-107)<br>**Reason for Sampling with Respect to Barrier**<br>• Tank S-104 designated as a leaker (~24,000 gals)<br>• 1996 water line rupture, 500,000 gals north of S Farm (most water infiltrated along the east side of S Farm)<br>**Gather data to assist in determining nature and extent of contamination (i.e., Tc-99) and to Further Assess the Path and Inventory of Tank S-104 Release and 1996 water line rupture** | 47 – 49<br>[~618] | • Transition zone from H1 to H2<br>• Appears to be a grain size change and higher moisture area |
| | 84 – 86<br>[~581] | • Transition zone from H2 to H2 fines<br>• Appears to be a grain size change and higher moisture area |
| | 122 – 124<br>[~543] | • Transition zone from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area |
| **C8393/C8394**<br>(Southeast of Tank S-104)<br>**Reason for Sampling with Respect to Barrier**<br>• Tank S-104 designated as a leaker (~24,000 gals)<br>• Tank S-104 filled above spare inlet (Location near spare inlet area)<br>• Nearby drywell (40-04-05) has detectable Cs-137 concentrations at depth<br>**Further Assess the Path and Inventory of Tank S-104 Release** | 43 – 45<br>[~626] | • Transition zone from Backfill to H1<br>• Appears to be a grain size change and higher moisture area<br>• Highest Cs-137 levels (> 100,000 pCi/g) from dry well 40-04-05 at this depth |
| | 88 – 90<br>[~581] | • Note: Transition zone from H2 to H2 fines is difficult to discern – picking depth consistent with C8404 (ft amsl)<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 8 pCi/g) from dry well 40-04-05 at this depth |
| | 126 – 128<br>[~543] | • Transition zone from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 0.1 pCi/g) from dry well 40-04-05 at this depth |

Stratigraphic info
Higher moisture and/or gamma per Draft Log
Logging from surrounding Dry Wells

**Rory Z. Steffler**

| | |
|---|---|
| **From:** | Tabor, Cynthia L [Cynthia_L_Tabor@RL.gov] |
| **Sent:** | Tuesday, August 23, 2011 9:25 AM |
| **To:** | Rory Z. Steffler |
| **Subject:** | FW: S Farm Direct Push Vadose Zone Sample Depths for Locations C8406, C8396, and C8398 |
| **Attachments:** | Depths_C8406_C8396_C8398.docx |

Cindy Tabor
(509) 376-0988

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contractor to the United States Department of Energy

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**From:** Tabor, Cynthia L
**Sent:** Monday, July 11, 2011 12:56 PM
**To:** Tabor, Cynthia L; Eberlein, Susan J; Lober, Robert W; Fort, Leslie A; Field, Jim G; Reynolds, Kent D; Myers, David A (Dave); Glaser, Danney R; Caggiano, Joseph; Doornbos, Martin H; Rohay, Virginia J; 'Barnes, Michael (ECY)'; 'Marc T. Levitt'; 'Brian D. Cubbage'; Sydnor, Harold A; Caggiano, Joseph; Bergeron, Marcel P; Templeton, Andrew M
**Cc:** Shrum, Ann; Berlin, Penelope
**Subject:** S Farm Direct Push Vadose Zone Sample Depths for Locations C8406, C8396, and C8398

Hi All
In our last S Farm sample selection meeting - It was agreed to continue with the approach of choosing consistent sample intervals (as those chosen for C8404 and C8394) – if logs (i.e., gamma and moisture plots) show similar information. No meetings will be held; however, sample depths will be communicated for documentation purposes. If logs yield unexpected information or if there are unusual circumstances, a meeting will be held with relevant participants.

At this time, we have chosen samples depths for 3 more locations – consistent with logic discussed. Please see attached Word file for sample depth information. If anyone has an issue with these sample depths – please let me know by COB Wed (July 13th).

For reference purposes – the associated sampling plan can be found at the following link - "RPP-PLAN-49132 - Rev 00": http://idmsweb.rl.gov/idms/livelink.exe/open/160326295

If anyone has any questions – please send an email (I am in the process of moving and am not sure when my phone will be hooked up).

Thanks everyone for your time
Cindy

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washington river protection solutions
contractor to the United States Department of Energy

# S-Farm Interim Barrier Sampling Depths
# C8406, C8396, and C8398

It was agreed to continue with the approach of choosing consistent sample intervals (as those chosen for C8404 and C8394) – if logs (i.e., gamma and moisture plots) show similar information.
No meetings will be held; however, sample depths will be communicated for documentation purposes. If logs yield unexpected information or if there are unusual circumstances, a meeting will be held with relevant participants.

**Summary Information:**

**Data Evaluated to Help Determine Possible Sample Depths:**

- Draft Gamma and Moisture Plots for C8405, C8395, and C8397. Note that log C8395 had a high gamma peak at approximately 32 ft bgs (corresponding Cs-137 concentration ~23 pCi/g). This depth is above the base of the tank (42 ft bgs)
- Dry Well logging information
- Available information from SX and S/SX direct push campaign efforts
- Logs and sample selections from C8404 and C8394 (Table 2 identifies Sample Selections)

**General Statements:**

- Consistently picking transition zones where contamination may have "accumulated" - similar areas in S/SX and S Farm direct push campaigns.

Note: The transition from H2 fines to Upper Cold Creek (at depths ranging from ~120-135 ft bgs) yielded the highest concentrations in S Farm (highest Tc-99 concentration of 1,090 pCi/g at C7180, west of SX-109).

**Table 1: Sample Depths for C8406, C8396, and C8398**

| **Location**<br>Log Hole/Sample Hole | **Stratigraphic Info (ft bgs)**<br>**[Depth ft amsl]** | **Sample Depth (ft bgs)**<br>**[Depth ft amsl]** | **Reason** |
|---|---|---|---|
| **C8405/C8406**<br>(Southeast of Tank S-105)<br>**Reason for Sampling with Respect to Barrier**<br>• Tank S-104 designated as a leaker (~24,000 gals)<br>• Tank S-105 associated with pipeline failure<br>**Gather data to assist in determining nature and extent of contamination (i.e., Tc-99) and to Further Assess the Path and Inventory of Tank S-104 Release** | Backfill/H1<br>43<br>[~624]<br>H1/H2<br>66.5<br>[~601]<br>H2/H2 fines<br>94<br>[~573]<br>H2 fines/PPLu<br>125<br>[~542] | 52-54<br>[~615] | • Below Backfill and H1 transition<br>• Appears to be a wider band showing a grain size change and higher moisture area |
| | | 98-100<br>[~569] | • Note: Transition from H2 to H2 fines is a gradational facies change and is not clearly displayed in logging data. Below transition from H2 to H2 fines<br>• Appears to be a grain size change and higher moisture area |
| | | 130-132<br>[~537] | • Below transition from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area – multiple peaks |

## S-Farm Interim Barrier Sampling Depths
## C8406, C8396, and C8398

| **Location**<br>Log Hole/Sample Hole | **Stratigraphic Info (ft bgs)**<br>**[Depth ft amsl]** | **Sample Depth (ft bgs)**<br>**[Depth ft amsl]** | **Reason** |
|---|---|---|---|
| **C8395/C8396**<br>(Between Tanks S-104 and S-105 – South of Diversion Box)<br>**Reason for Sampling with Respect to Barrier**<br>• Diversion Box and many pipelines nearby<br>• Tanks S-101 and S-105 associated with pipeline failure<br>• Higher conductivity area based on resistivity information<br>• Tank S-104 confirmed leaker (~24,000 gals)<br>**Further Assess the nature and depth of migration of releases near Tanks S-102 and S-105 and potentially to Further Assess the path and inventory of Tank S-104 Release** | Backfill/H1<br>43.5<br>[~625]<br>H1/H2<br>62<br>[~607]<br>H2/H2 fines<br>95<br>[~574]<br>H2 fines/PPLu<br>128.5<br>[~540] | 55-57<br>[~614] | • Below Backfill and H1 transition<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 8 pCi/g) from dry well 40-04-05 at this depth |
| | | 103-105<br>[~567] | • Transition from H2 fines to Upper Cold Creek<br>• Appears to be a wider band showing a grain size change and higher moisture area |
| | | 129-131<br>[~540] | • Transition from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area – multiple peaks |
| **C8397/C8398**<br>(Northeast of Tank S-102)<br>**Reason for Sampling with Respect to Barrier**<br>• Transfer line leak between S-103 and S-102<br>• Nearby drywell (40-02-03) has detectable Cs-137 concentrations at depth<br>• Nearby spare inlet<br>**Confirm Previous Results: Gather additional data to assist in determining nature and extent of contamination (i.e., Tc-99) and to Further Assess the nature and extent of releases near Tanks S-102 and S-103** | Backfill/H1<br>45<br>[~623]<br>H1/H2<br>63<br>[~601]<br>H2/H2 fines<br>86.5<br>[~581]<br>H2 fines/PPLu<br>125.5<br>[~542] | 46-48<br>[~621] | • Transition from H1 to H2<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 44 pCi/g) from dry well 40-02-03 at this depth (Highest Cs-137 concentration at 32 ft bgs: 2,418 pCi/g) |
| | | 86-88<br>[~581] | • Transition from H2 to H2 fines<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 0.3 pCi/g) from dry well 40-02-03 at this depth |
| | | 131-133<br>[~536] | • Transition from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area – multiple peaks |

Stratigraphic info
Higher moisture and/or gamma per Draft Log
Logging from surrounding Dry Wells

2

## S-Farm Interim Barrier Sampling Depths
## C8406, C8396, and C8398

**Table 2: For Reference - Sample Depths for C8404 and C8394**

| **Location**<br>Log Hole/Sample Hole | **Stratigraphic Info (ft bgs)**<br>**[Depth ft amsl]** | **Sample Depth (ft bgs)**<br>**[Depth ft amsl]** | **Reason** |
|---|---|---|---|
| **C8403/C8404**<br>(Southeast of Tank S-107)<br>**Reason for Sampling with Respect to Barrier**<br>• Tank S-104 designated as a leaker (~24,000 gals)<br>• 1996 water line rupture, 500,000 gals north of S Farm (most water infiltrated along the east side of S Farm)<br>**Gather data to assist in determining nature and extent of contamination (i.e., Tc-99) and to Further Assess the Path and Inventory of Tank S-104 Release and 1996 water line rupture** | H1/H2<br>48<br>[~617]<br><br>H2/H2 fines<br>85<br>[~580]<br><br>H2 fines/PPLu<br>121.5<br>[~544] | 47 – 49<br>[~618] | • Transition zone from H1 to H2<br>• Appears to be a grain size change and higher moisture area |
| | | 84 – 86<br>[~581] | • Transition zone from H2 to H2 fines<br>• Appears to be a grain size change and higher moisture area |
| | | 122 – 124<br>[~543] | • Transition zone from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area |
| **C8393/C8394**<br>(Southeast of Tank S-104)<br>**Reason for Sampling with Respect to Barrier**<br>• Tank S-104 designated as a leaker (~24,000 gals)<br>• Tank S-104 filled above spare inlet (Location near spare inlet area)<br>• Nearby drywell (40-04-05) has detectable Cs-137 concentrations at depth<br>**Further Assess the Path and Inventory of Tank S-104 Release** | Backfill/H1<br>42.5<br>[~626]<br><br>H1/H2<br>53<br>[~616]<br><br>H2/H2 fines<br>73<br>[~596]<br><br>H2 fines/PPLu<br>125<br>[~544] | 43 – 45<br>[~626] | • Transition zone from Backfill to H1<br>• Appears to be a grain size change and higher moisture area<br>• Highest Cs-137 levels (> 100,000 pCi/g) from dry well 40-04-05 at this depth |
| | | 88 – 90<br>[~581] | • Note: H2 to H2 fines contact is gradatinal and is not clearly defined – picking depth consistent with C8404 (ft amsl)<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 8 pCi/g) from dry well 40-04-05 at this depth |
| | | 126 – 128<br>[~543] | • Transition zone from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 0.1 pCi/g) from dry well 40-04-05 at this depth |

Stratigraphic info
Higher moisture and/or gamma per Draft Log
Logging from surrounding Dry Wells

**Rory Z. Steffler**

**From:** Tabor, Cynthia L [Cynthia_L_Tabor@RL.gov]
**Sent:** Tuesday, August 23, 2011 9:25 AM
**To:** Rory Z. Steffler
**Subject:** FW: S Farm Direct Push Vadose Zone Sample Depths for Location C8400
**Attachments:** Depths_C8400.docx

Cindy Tabor
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contractor to the United States Department of Energy

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**From:** Tabor, Cynthia L
**Sent:** Tuesday, August 09, 2011 2:09 PM
**To:** Tabor, Cynthia L; Eberlein, Susan J; Lober, Robert W; Fort, Leslie A; Field, Jim G; Reynolds, Kent D; Myers, David A (Dave); Glaser, Danney R; Caggiano, Joseph; Doornbos, Martin H; Rohay, Virginia J; 'Barnes, Michael (ECY)'; 'Marc T. Levitt'; 'Brian D. Cubbage'; Sydnor, Harold A; Caggiano, Joseph; Bergeron, Marcel P; Templeton, Andrew M
**Cc:** Shrum, Ann; Berlin, Penelope
**Subject:** S Farm Direct Push Vadose Zone Sample Depths for Location C8400

Hi All
In our S Farm sample selection meeting - It was agreed to continue with the approach of choosing consistent sample intervals (as those chosen for C8404 and C8394) – if logs (i.e., gamma and moisture plots) show similar information. No meetings will be held; however, sample depths will be communicated for documentation purposes. If logs yield unexpected information or if there are unusual circumstances, a meeting will be held with relevant participants.

At this time, we have chosen samples depths for 1 more location – consistent with logic discussed. Please see attached Word file for sample depth information (I have also included all the previous sample selection email for reference purposes). If anyone has an issue with these sample depths – please let me know by COB Thurs (Aug 11th).

Additionally, for reference purposes – the associated sampling plan can be found at the following link - "RPP-PLAN-49132 - Rev 00": http://idmsweb.rl.gov/idms/livelink.exe/open/160326295

If anyone has any questions, please let me know.

Thanks everyone for your time
Cindy

Note – we will also be holding a meeting either later this week or early next week – We met refusal 3 times trying to sample at location C8404 – so we will need to make adjustments with our plan.

Cindy Tabor
(509) 376-0988

# S-Farm Interim Barrier Sampling Depths
# C8400

It was agreed to continue with the approach of choosing consistent sample intervals (as those chosen for C8404 and C8394) – if logs (i.e., gamma and moisture plots) show similar information.
No meetings will be held; however, sample depths will be communicated for documentation purposes. If logs yield unexpected information or if there are unusual circumstances, a meeting will be held with relevant participants.

**Summary Information:**

**Data Evaluated to Help Determine Possible Sample Depths:**

- Draft Gamma and Moisture Plots for C8399 – Table 1 presents sample depths for C8400
- Other S-Farm Gamma and Moisture Plots and sample selection information (Table 2 provides S-Farm sample selection information)
- Dry Well logging information
- Available information from SX and S/SX direct push campaign efforts

**General Statements:**

- Consistently picking transition zones where contamination may have "accumulated" - similar areas in S/SX and S Farm direct push campaigns.

Note: The transition from H2 fines to Upper Cold Creek (at depths ranging from ~120-135 ft bgs) yielded the highest concentrations in SX-Farm (highest Tc-99 concentration of 1,090 pCi/g at C7180, west of SX-109).

**Table 1: Sample Depths for C8400**

| **Location**<br>Log Hole/Sample Hole | **Stratigraphic Info (ft bgs)**<br>**[Depth ft amsl]** | **Sample Depth (ft bgs)**<br>**[Depth ft amsl]** | **Reason** |
|---|---|---|---|
| **C8399/C8400**<br>(Southeast of Tank S-103)<br>• Transfer line leak between S-103 and S-102<br>• Tank S-103 associated with pipeline failure<br>• Higher conductivity area based on resistivity information<br>• Nearby spare inlet<br>**Further Assess the nature and extent of releases near Tanks S-102 and S-103** | Backfill/H1<br>42<br>[~624]<br><br>H1/H2<br>71.5<br>[~595]<br><br>H2/H2 fines<br>93<br>[~573]<br><br>H2 fines/PPLu<br>122.5<br>[~544]<br><br>PPLu/PPLl<br>150.2<br>[~516] | 54-56<br><br>[~618] | • Below Backfill and H1 transition<br>• Appears to be a grain size change and higher moisture area (highest moisture peak in zone) |
| | | 93-95<br><br>[~618] | • Transition from H2 to H2 fines<br>• Appears to be a grain size change and higher moisture area (highest moisture peak in zone) |
| | | 126-128<br><br>[~618] | • Immediately below transition from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area – multiple peaks – this is the first highest peak in zone |

Stratigraphic info
Higher moisture and/or gamma per Draft Log
Logging from surrounding Dry Wells

## S-Farm Interim Barrier Sampling Depths
## C8400

**Table 2: For Reference - Sample Depths for C8404 and C8394**

| **Location**<br>Log Hole/Sample Hole | **Stratigraphic Info (ft bgs)**<br>**[Depth ft amsl]** | **Sample Depth (ft bgs)**<br>**[Depth ft amsl]** | **Reason** |
|---|---|---|---|
| **C8403/C8404**<br>(Southeast of Tank S-107)<br>**Reason for Sampling with Respect to Barrier**<br>• Tank S-104 designated as a leaker/overfilled (~24,000 gals)<br>• 1996 water line rupture, 500,000 gals north of S Farm (most water infiltrated along the east side of S Farm)<br>**Gather data to assist in determining nature and extent of contamination (i.e., Tc-99) and to Further Assess the Path and Inventory of Tank S-104 Release and 1996 water line rupture** | H1/H2<br>48<br>[~617.5]<br><br>H2/H2 fines<br>85<br>[~580.5]<br><br>H2 fines/PPLu<br>121.5<br>[~544] | 47 – 49<br><br>[~618] | • Transition zone from H1 to H2<br>• Appears to be a grain size change and higher moisture area |
| | | 84 – 86<br><br>[~581] | • Transition zone from H2 to H2 fines<br>• Appears to be a grain size change and higher moisture area |
| | | 122 – 124<br><br>[~543] | • Transition zone from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area |
| **C8393/C8394**<br>(Southeast of Tank S-104)<br>**Reason for Sampling with Respect to Barrier**<br>• Tank S-104 designated as a leaker/overfilled (~24,000 gals)<br>• Tank S-104 filled above spare inlet (Location near spare inlet area)<br>• Nearby drywell (40-04-05) has detectable Cs-137 concentrations at depth<br>**Further Assess the Path and Inventory of Tank S-104 Release** | Backfill/H1<br>42.5<br>[~626]<br><br>H1/H2<br>53<br>[~616]<br><br>H2/H2 fines<br>73<br>[~596]<br><br>H2 fines/PPLu<br>125<br>[~544] | 43 – 45<br><br>[~626] | • Transition zone from Backfill to H1<br>• Appears to be a grain size change and higher moisture area<br>• Highest Cs-137 levels (> 100,000 pCi/g) from dry well 40-04-05 at this depth |
| | | 88 – 90<br><br>[~581] | • Note: H2 to H2 fines contact is gradational and is not clearly defined – picking depth consistent with C8404 (ft msl)<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 8 pCi/g) from dry well 40-04-05 at this depth |
| | | 126 – 128<br><br>[~543] | • Transition zone from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 0.1 pCi/g) from dry well 40-04-05 at this depth |

## S-Farm Interim Barrier Sampling Depths
## C8400

| | | | |
|---|---|---|---|
| **C8405/C8406**<br>(Southeast of Tank S-105)<br><br>**Reason for Sampling with Respect to Barrier**<br>• Tank S-104 designated as a leaker/overfilled (~24,000 gals)<br>• Tank S-105 associated with pipeline failure<br><br>**Gather data to assist in determining nature and extent of contamination (i.e., Tc-99) and to Further Assess the Path and Inventory of Tank S-104 Release** | Backfill/H1<br>43<br>[~624]<br><br>H1/H2<br>66.5<br>[~601]<br><br>H2/H2 fines<br>94<br>[~573]<br><br>H2 fines/PPLu<br>125<br>[~542] | 52-54<br><br>[~615] | • Below Backfill and H1 transition<br>• Appears to be a wider band showing a grain size change and higher moisture area |
| | | 98-100<br><br>[~569] | • Note: Transition from H2 to H2 fines is a gradational facies change and is not clearly displayed in logging data. Below transition from H2 to H2 fines<br>• Appears to be a grain size change and higher moisture area |
| | | 130-132<br><br>[~537] | • Below transition from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area – multiple peaks |
| **C8395/C8396**<br>(Between Tanks S-104 and S-105 – South of Diversion Box)<br><br>**Reason for Sampling with Respect to Barrier**<br>• Diversion Box and many pipelines nearby<br>• Tanks S-101 and S-105 associated with pipeline failure<br>• Higher conductivity area based on resistivity information<br>• Tank S-104 confirmed leaker/overfilled (~24,000 gals)<br><br>**Further Assess the nature and depth of migration of releases near Tanks S-102 and S-105 and potentially to Further Assess the path and inventory of Tank S-104 Release** | Backfill/H1<br>43.5<br>[~625]<br><br>H1/H2<br>62<br>[~607]<br><br>H2/H2 fines<br>95<br>[~574]<br><br>H2 fines/PPLu<br>128.5<br>[~540] | 55-57<br><br>[~614] | • Below Backfill and H1 transition<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 8 pCi/g) from dry well 40-04-05 at this depth |
| | | 103-105<br><br>[~567] | • Transition from H2 fines to Upper Cold Creek<br>• Appears to be a wider band showing a grain size change and higher moisture area |
| | | 129-131<br><br>[~540]<br><br>Note: Pipe broke ~ 116 ft bgs; therefore sample was collected at this depth | • Transition from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area – multiple peaks |

## S-Farm Interim Barrier Sampling Depths
## C8400

| | | | |
|---|---|---|---|
| **C8397/C8398**<br>(Northeast of Tank S-102)<br><br>**Reason for Sampling with Respect to Barrier**<br>• Transfer line leak between S-103 and S-102<br>• Nearby drywell (40-02-03) has detectable Cs-137 concentrations at depth<br>• Nearby spare inlet<br><br>**Confirm Previous Results: Gather additional data to assist in determining nature and extent of contamination (i.e., Tc-99) and to Further Assess the nature and extent of releases near Tanks S-102 and S-103** | Backfill/H1<br>45<br>[~623]<br><br>H1/H2<br>63<br>[~601]<br><br>H2/H2 fines<br>86.5<br>[~581]<br><br>H2 fines/PPLu<br>125.5<br>[~542] | 46-48<br><br>[~621] | • Transition from H1 to H2<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 44 pCi/g) from dry well 40-02-03 at this depth (Highest Cs-137 concentration at 32 ft bgs: 2,418 pCi/g) |
| | | 86-88<br><br>[~581] | • Transition from H2 to H2 fines<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 0.3 pCi/g) from dry well 40-02-03 at this depth |
| | | 131-133<br><br>[~536] | • Transition from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area – multiple peaks |

Stratigraphic info
Higher moisture and/or gamma per Draft Log
Logging from surrounding Dry Wells

**Meeting Notes: S Farm Final Sample Location Selection Meeting for C8401 and C8407 (replacing C8403)**

**Date: August 16, 2011**

**Attendees:** Harold Sydnor, Mike Barnes, Kent Reynolds, Cindy Tabor, Virginia Rohay, Dave Myers, Nigel Crook, Brian Cubbage, Dan Glaser, Jim Field

**Objective:**

To determine C8401 location (A, B, or C) and replacement location for C8403

**Background:**

1) Location C8403 was pushed to an approximate depth of 150 ft bgs. Location was logged for moisture and gamma. Three unsuccessful attempts were made to push sampling location C8404 (refusal met at an approximate depth of 40 ft bgs).
2) Sampling Plan RPP-PLAN-49132, Field Sampling and Analysis Plan for Soil Samples in Support of an Interim Barrier at S Farm indicated that C8401/C8402 (A, B, or C) will be selected based on quick turn results and field conditions.

**Information provided:**

- Location map
- Quick-turn analytical data (C8394, C8396, C8398, and C8406)
- Table from plan that identifies "Reason for Sampling with Respect to Barrier" for each location

**Options Discussed:**

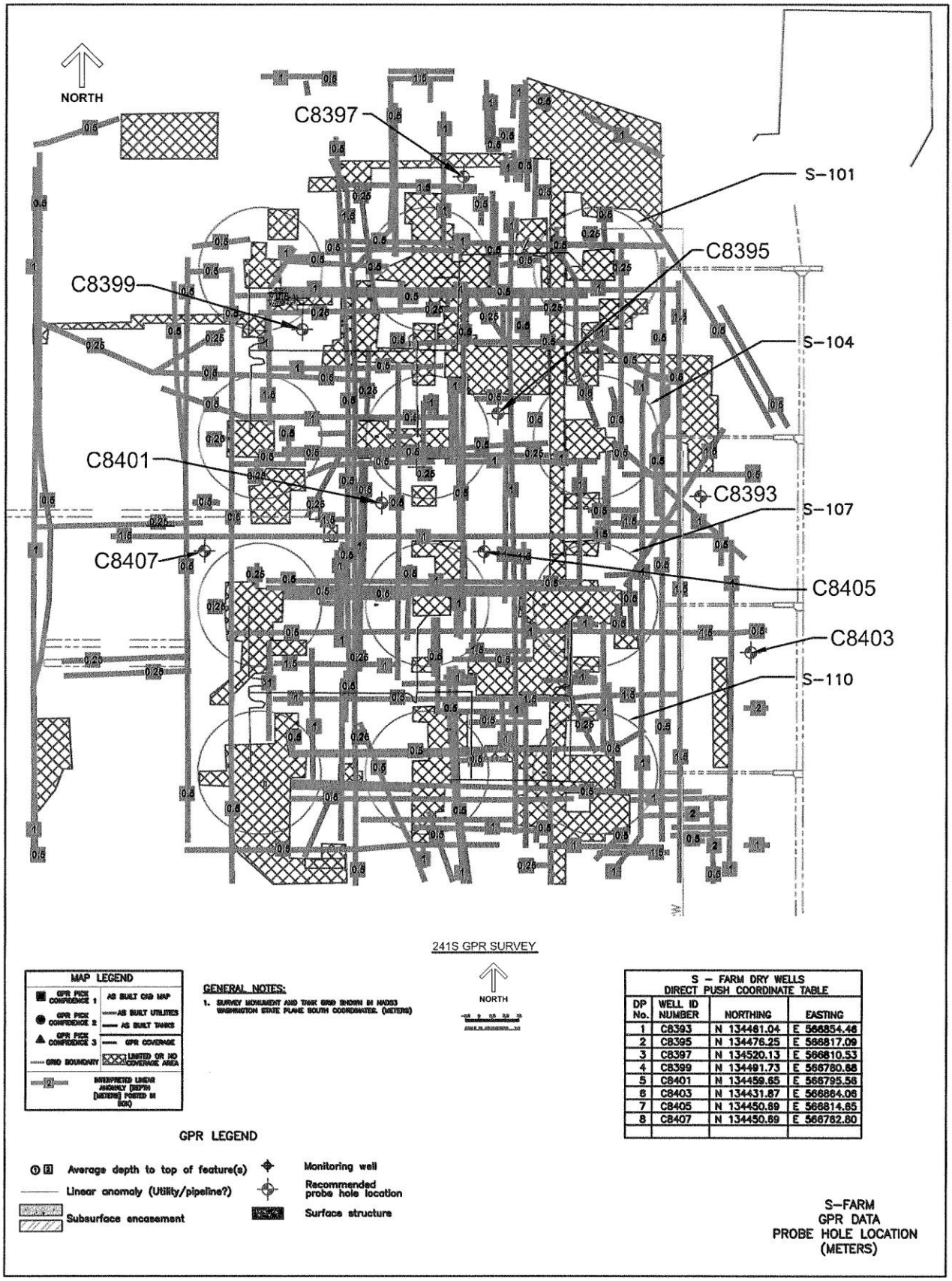
1) Replace sample location C8403 – keep to the east side and go North or South of Location
2) Replace C8403 – pick one of the C8401 options (A, B, or C)

**Unanimous Decision:**

- Do not continue direct push on east side of farm

  because:

  - C8394 [other east side location ] quick turn results indicated very low Tc-99 concentrations (detectable Tc-99 results below 1 pCi/g) and Nitrate results (below 20 µg/g)
  - Logging results from C8403 showed high moisture results; however, high moisture results were also shown in other S Farm direct push locations (e.g., C8397 – north of S-102 Tank)
  - There was a significant concern of damaging direct push rigs. Several failed attempts had been made at this location with different rigs.
- Use 2 of the C8401 locations for S Farm investigation (for a Total of 7 sampling locations)
  - C8401A = C8401 (sample hole C8402)
  - C8401C = C8407 (sample hole C8408)




S – FARM DRY WELLS
DIRECT PUSH COORDINATE TABLE

| DP No. | WELL ID NUMBER | NORTHING | EASTING |
|---|---|---|---|
| 1 | C8393 | N 134461.04 | E 566854.46 |
| 2 | C8395 | N 134476.25 | E 566817.09 |
| 3 | C8397 | N 134520.13 | E 566810.53 |
| 4 | C8399 | N 134491.73 | E 566780.68 |
| 5 | C8401 | N 134459.65 | E 566795.56 |
| 6 | C8403 | N 134431.87 | E 566864.06 |
| 7 | C8405 | N 134450.69 | E 566814.65 |
| 8 | C8407 | N 134450.69 | E 566762.80 |

# S-Farm Interim Barrier Sampling Depths
# C8402 and C8408

It was agreed to continue with the approach of choosing consistent sample intervals (as those chosen for C8404 and C8394) – if logs (i.e., gamma and moisture plots) show similar information.
No meetings will be held; however, sample depths will be communicated for documentation purposes. If logs yield unexpected information or if there are unusual circumstances, a meeting will be held with relevant participants.

**Summary Information:**

**Data Evaluated to Help Determine Possible Sample Depths:**

- Draft Gamma and Moisture Plots for C8401 and C8407 – Table 1 presents sample depths for C8402 and C8408
- Other S-Farm Gamma and Moisture Plots and sample selection information (Table 2 provides S-Farm sample selection information)
- Dry Well logging information
- Available information from SX and S/SX direct push campaign efforts
- Available S Farm Direct Push Analytical Data

**General Statements:**

- Consistently picking transition zones where contamination may have "accumulated" - similar areas in S/SX and S Farm direct push campaigns.

Note: The transition from H2 fines to Upper Cold Creek (at depths ranging from ~120-135 ft bgs) yielded the highest concentrations in SX-Farm (highest Tc-99 concentration of 1,090 pCi/g at C7180, west of SX-109). Additionally, the highest Tc-99 concentration so far for S Farm direct push is from C8406 (14.5 pCi/g)

**Table 1: Sample Depths for C8402 and C8408**

| **Location**<br>Log Hole/Sample Hole | **Stratigraphic Info (ft bgs)**<br>**[Elevation ft amsl]** | **Sample Depth (ft bgs)**<br>**[Elevation ft amsl]** | **Reason** |
|---|---|---|---|
| **C8401/C8402**<br>(Southwest of Tank S-105)<br>• Tanks S-105 and S-106 associated with pipeline failure<br>• Higher conductivity area based on resistivity information<br>**Gather data to assist in determining nature and extent of contamination (i.e., Tc-99)** | Backfill/H1<br>43.5<br>[~623]<br><br>H1/H2<br>62<br>[~604]<br><br>H2/H2 fines<br>101<br>[565]<br><br>H2 fines/PPLu<br>126<br>[~540] | 47-49<br><br>[~620] | • Below Backfill and H1 transition<br>• Appears to be a grain size change and large higher moisture area (highest moisture peak in zone - 25 volume fraction (vf)%) |
| | | 107-109<br><br>[~560] | • In H2 fines<br>• Appears to be a grain size change and higher moisture area in excess of 20 vf% – multiple peaks |
| | | 126-128<br><br>[~541] | • Immediately below transition from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area – multiple peaks – in excess of 32 vf% moisture content- two zones below have higher |

## S-Farm Interim Barrier Sampling Depths
## C8402 and C8408

| **Location**<br>Log Hole/Sample Hole | **Stratigraphic Info (ft bgs)**<br>**[Elevation ft amsl]** | **Sample Depth (ft bgs)**<br>**[Elevation ft amsl]** | **Reason** |
|---|---|---|---|
| **C8407/C8408**<br>(Southwest of Tank S-106 and Northwest of S-109)<br>• Tanks S-105 and S-106 associated with pipeline failure<br>• Higher conductivity area based on resistivity information<br>**Gather data to assist in determining nature and extent of contamination (i.e., Tc-99)** | Backfill/H1<br>45 ft<br>[~621]<br><br>H1/H2<br>67<br>[~599]<br><br>H2/H2 fines<br>~101.5<br>[565]<br><br>H2 fines/PPLu<br>127<br>[~539] | 47-49<br>[~619] | • H1<br>• Appears to be a grain size change and large higher moisture area 28vf% moisture |
| | | 94-96<br>[~572] | • Appears to be a grain size change and higher moisture area (highest moisture peak in zone) – multiple peaks 25-28 vf% moisture |
| | | 129-131<br>[~537] | • Transition from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area – multiple peaks 32-34 vf% moisture |

Stratigraphic info
Higher moisture and/or gamma per Draft Log
Logging from surrounding Dry Wells

**Table 2: For Reference - Sample Depths for C8404, C8394, C8406, C8396, C8398, and C8400**

| **Location**<br>Log Hole/Sample Hole | **Stratigraphic Info (ft bgs)**<br>**[Elevation ft amsl]** | **Sample Depth (ft bgs)**<br>**[Elevation ft amsl]** | **Reason** |
|---|---|---|---|
| **C8403/C8404**<br>(Southeast of Tank S-107)<br>**Reason for Sampling with Respect to Barrier**<br>• Tank S-104 designated as a leaker/overfilled (~24,000 gals)<br>• 1996 water line rupture, 500,000 gals north of S Farm (most water infiltrated along the east side of S Farm)<br>**Gather data to assist in determining nature and extent of contamination (i.e., Tc-99) and to Further Assess the Path and Inventory of Tank S-104 Release and 1996 water line rupture** | H1/H2<br>48<br>[~617.5]<br><br>H2/H2 fines<br>85<br>[~580.5]<br><br>H2 fines/PPLu<br>121.5<br>[~544] | 47 – 49<br>[~618] | • Transition zone from H1 to H2<br>• Appears to be a grain size change and higher moisture area |
| | | 84 – 86<br>[~581] | • Transition zone from H2 to H2 fines<br>• Appears to be a grain size change and higher moisture area |
| | | 122 – 124<br>[~543] | • Transition zone from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area |
| **C8393/C8394**<br>(Southeast of Tank S-104) | Backfill/H1<br>42.5 | 43 – 45 | • Transition zone from Backfill to H1<br>• Appears to be a grain size change and |

## S-Farm Interim Barrier Sampling Depths
## C8402 and C8408

| | | | |
|---|---|---|---|
| **Reason for Sampling with Respect to Barrier**<br>• Tank S-104 designated as a leaker/overfilled (~24,000 gals)<br>• Tank S-104 filled above spare inlet (Location near spare inlet area)<br>• Nearby drywell (40-04-05) has detectable Cs-137 concentrations at depth<br>**Further Assess the Path and Inventory of Tank S-104 Release** | [~626]<br><br>H1/H2<br>53<br>[~616]<br><br>H2/H2 fines<br>73<br>[~596]<br><br>H2 fines/PPLu<br>125<br>[~544] | [~626] | higher moisture area<br>• Highest Cs-137 levels (> 100,000 pCi/g) from dry well 40-04-05 at this depth |
| | | 88 – 90<br><br>[~581] | • Note: H2 to H2 fines contact is gradational and is not clearly defined – picking depth consistent with C8404 (ft msl)<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 8 pCi/g) from dry well 40-04-05 at this depth |
| | | 126 – 128<br><br>[~543] | • Transition zone from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 0.1 pCi/g) from dry well 40-04-05 at this depth |
| **C8405/C8406**<br>(Southeast of Tank S-105)<br>**Reason for Sampling with Respect to Barrier**<br>• Tank S-104 designated as a leaker/overfilled (~24,000 gals)<br>• Tank S-105 associated with pipeline failure<br>**Gather data to assist in determining nature and extent of contamination (i.e., Tc-99) and to Further Assess the Path and Inventory of Tank S-104 Release** | Backfill/H1<br>43<br>[~624]<br><br>H1/H2<br>66.5<br>[~601]<br><br>H2/H2 fines<br>94<br>[~573]<br><br>H2 fines/PPLu<br>125<br>[~542] | 52-54<br><br>[~615] | • Below Backfill and H1 transition<br>• Appears to be a wider band showing a grain size change and higher moisture area |
| | | 98-100<br><br>[~569] | • Note: Transition from H2 to H2 fines is a gradational facies change and is not clearly displayed in logging data. Below transition from H2 to H2 fines<br>• Appears to be a grain size change and higher moisture area |
| | | 130-132<br><br>[~537] | • Below transition from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area – multiple peaks |
| **C8395/C8396**<br>(Between Tanks S-104 and S-105 – South of Diversion Box)<br>**Reason for Sampling with Respect to Barrier**<br>• Diversion Box and many pipelines nearby<br>• Tanks S-101 and S-105 associated with pipeline | Backfill/H1<br>43.5<br>[~625]<br><br>H1/H2<br>62<br>[~607]<br><br>H2/H2 fines<br>95<br>[~574] | 55-57<br><br>[~614] | • Below Backfill and H1 transition<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 8 pCi/g) from dry well 40-04-05 at this depth<br><br>Approximately 22 pCi/g Cs 137 detected in C8395 at 31-33 ft bgs<br>2-3 pCi Cs 137 at 45 ft bgs |

## S-Farm Interim Barrier Sampling Depths
## C8402 and C8408

| | | | |
|---|---|---|---|
| failure<br>• Higher conductivity area based on resistivity information<br>• Tank S-104 confirmed leaker/overfilled (~24,000 gals)<br>**Further Assess the nature and depth of migration of releases near Tanks S-102 and S-105 and potentially to Further Assess the path and inventory of Tank S-104 Release** | H2 fines/PPLu<br>128.5<br>[~540] | 103-105<br>[~567] | • Transition from H2 fines to Upper Cold Creek<br>• Appears to be a wider band showing a grain size change and higher moisture area |
| | | 129-131<br>[~540]<br>Note: Pipe broke ~ 116 ft bgs; therefore sample was collected at this depth | • Transition from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area – multiple peaks |
| **C8397/C8398**<br>(Northeast of Tank S-102)<br>**Reason for Sampling with Respect to Barrier**<br>• Transfer line leak between S-103 and S-102<br>• Nearby drywell (40-02-03) has detectable Cs-137 concentrations at depth<br>• Nearby spare inlet<br>**Confirm Previous Results: Gather additional data to assist in determining nature and extent of contamination (i.e., Tc-99) and to Further Assess the nature and extent of releases near Tanks S-102 and S-103** | Backfill/H1<br>45<br>[~623]<br>H1/H2<br>63<br>[~601]<br>H2/H2 fines<br>86.5<br>[~581]<br>H2 fines/PPLu<br>125.5<br>[~542] | 46-48<br>[~621] | • Transition from H1 to H2<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 44 pCi/g) from dry well 40-02-03 at this depth (Highest Cs-137 concentration at 32 ft bgs: 2,418 pCi/g) |
| | | 86-88<br>[~581] | • Transition from H2 to H2 fines<br>• Appears to be a grain size change and higher moisture area<br>• Cs-137 levels (~ 0.3 pCi/g) from dry well 40-02-03 at this depth |
| | | 131-133<br>[~536] | • Transition from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area – multiple peaks |
| **C8399/C8400**<br>(Southeast of Tank S-103)<br>• Transfer line leak between S-103 and S- | Backfill/H1<br>42<br>[~624]<br>H1/H2 | 54-56<br>[~612] | • Below Backfill and H1 transition<br>• Appears to be a grain size change and higher moisture area (highest moisture peak in zone) |
| | | 93-95 | • Transition from H2 to H2 fines |

## S-Farm Interim Barrier Sampling Depths
## C8402 and C8408

| | | | |
|---|---|---|---|
| 102<br>• Tank S-103 associated with pipeline failure<br>• Higher conductivity area based on resistivity information<br>• Nearby spare inlet<br>**Further Assess the nature and extent of releases near Tanks S-102 and S-103** | 71.5<br>[~595]<br><br>H2/H2 fines<br>93<br>[~573]<br><br>H2 fines/PPLu<br>122.5<br>[~544]<br><br>PPLu/PPLI<br>150.2<br>[~516] | [~573] | • Appears to be a grain size change and higher moisture area (highest moisture peak in zone) |
| | | 126-128<br><br>[~540] | • Immediately below transition from H2 fines to Upper Cold Creek<br>• Appears to be a grain size change and higher moisture area – multiple peaks – this is the first highest peak in zone |

Stratigraphic info
Higher moisture and/or gamma per Draft Log
Logging from surrounding Dry Wells

**S Farm Interim Barrier "Quick Turn" Analysis Results**

**C8394**

| Depth (ft bgs) | Type | Nitrate (ug/g) | Tc-99 (pCi/g) |
|---|---|---|---|
| 43-45 | Sample | 3.1 | -0.0161 (<DL) |
| 88-90 | Sample | 19.7 | 0.6662 (J) |
| | Duplicate | 19.7 | 0.6532 (J) |
| 126-128 | Sample | 16.6 | 0.0178 (JB) |

**C8396**

| Depth (ft bgs) | Type | Nitrate (ug/g) | Tc-99 (pCi/g) |
|---|---|---|---|
| 55-57 | Sample | 15.87 | 0.527 |
| 103-105 | Sample | 16.585 | 0.799 |
| 117-119[a] | Sample | 21.79 | 2.023 |

[a]Sample depth was suppose to be 129-131 ft bgs, however pipe broke so sample was collected at depth obtained.

## S-Farm Interim Barrier Sampling Depths
## C8402 and C8408

**C8398**

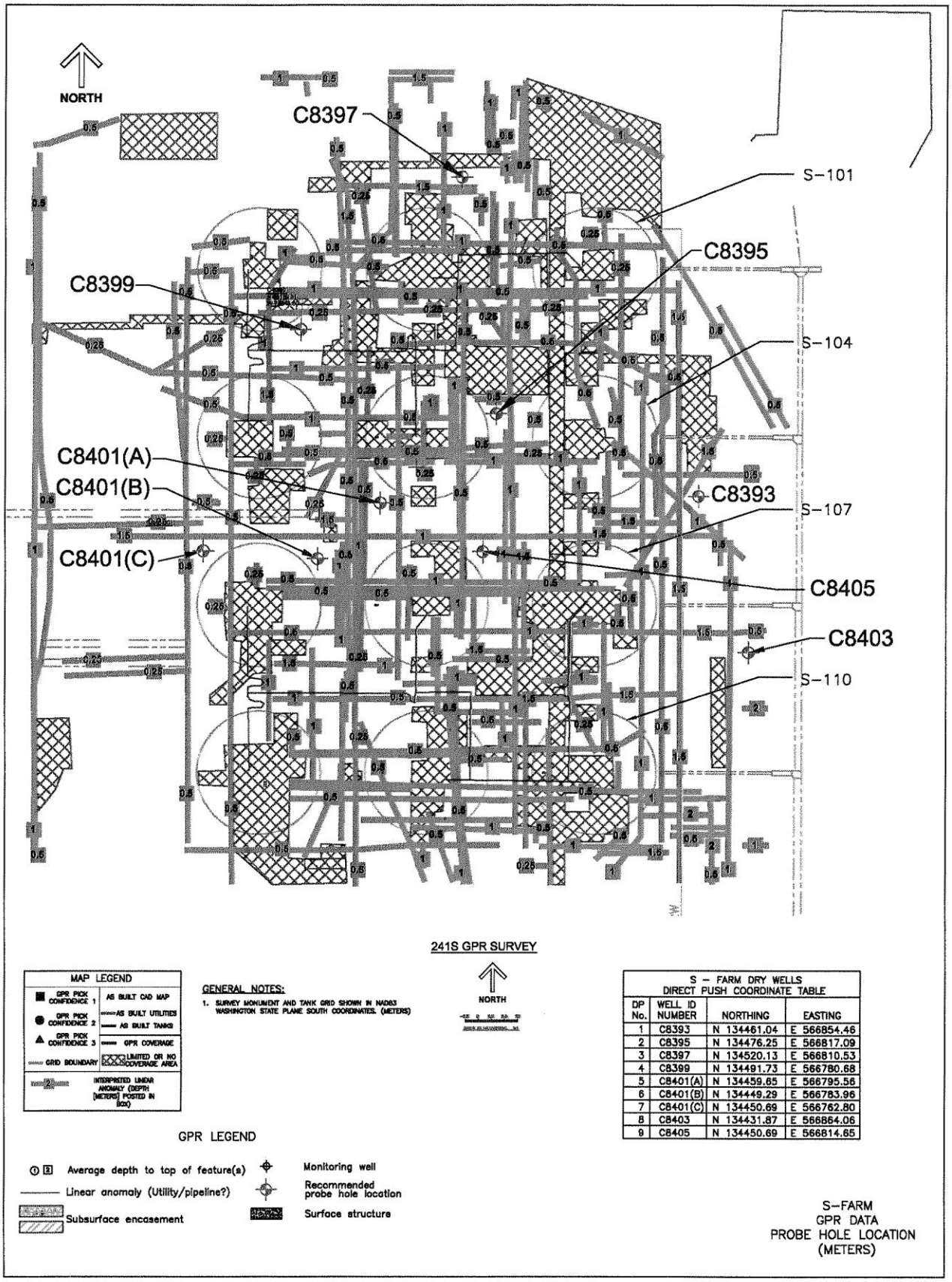
| Depth (ft bgs) | Type | Nitrate (ug/g) | Tc-99 (pCi/g) |
|---|---|---|---|
| 46-48 | Sample | 3.525 | ND |
| 86-88 | Sample | 6.475 | ND |
| 131-133 | Sample | 2.89 | ND |

**C8404 met refusal 3 times**

**C8406**

| Depth (ft bgs) | Type | Nitrate (ug/g) | Tc-99 (pCi/g) |
|---|---|---|---|
| 52-54 | Sample | 1.885 | ND |
| 98-100 | Sample | 7.92 | 0.163 |
| 130-132 | Sample | 140.475 | 14.5 |

ND – not detected
DL – detection limit.
J – less than the estimated quantitation limit.
B – Analyte found in an associated QC blank.
Yellow highlighted results are highest concentrations.




S – FARM DRY WELLS
DIRECT PUSH COORDINATE TABLE

| DP No. | WELL ID NUMBER | NORTHING | EASTING |
|---|---|---|---|
| 1 | C8393 | N 134461.04 | E 566854.46 |
| 2 | C8395 | N 134476.25 | E 566817.09 |
| 3 | C8397 | N 134520.13 | E 566810.53 |
| 4 | C8399 | N 134491.73 | E 566780.68 |
| 5 | C8401(A) | N 134459.65 | E 566795.56 |
| 6 | C8401(B) | N 134449.29 | E 566783.96 |
| 7 | C8401(C) | N 134450.69 | E 566762.80 |
| 8 | C8403 | N 134431.87 | E 566864.06 |
| 9 | C8405 | N 134450.69 | E 566814.65 |

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# APPENDIX F

CHAIN OF CUSTODY FORMS AND
FIELD LOGBOOK ENTRIES

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# C8394

| Soil Samples | | |
|---|---|---|
| **Date** | **Depth** | **Sample No.** |
| 7/13/2011 | 43 – 45 ft | B2D3P0-Rad |
| | | B2D430 |
| | | B2D431 |
| | | B2D432 |
| 7/19/2011 | 88 – 90 ft | B2D433-Rad |
| | | B2D434 |
| | | B2D435 |
| | | B2D436 |
| 7/20/2011 | 126 – 128 ft | B2D437 |
| | | B2D438 |
| | | B2D439 |
| | | B2D440 |

| ATL | SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST | ☑ LO-090-101 Rev EE.0<br>○ LO-090-102 Rev |
|---|---|---|

Date Samples Received: 7.13.11 Group #: 20110713

Number of Samples: 5-FAM VAdose 8394 I001 5203

Sample Custodian: [signature]

**Sample Custodian to Complete:**

| Action | Yes | No | N/A | Comments |
|---|---|---|---|---|
| RSA/COC provided? | ✓ | | | |
| RSR provided? | ✓ | | | |
| Verify GKI is complete | | | | ☑ In Project File |
| Check that outer custody seal is intact, if present | | | ✓ | |
| Record cooler temperature in centigrade, as appropriate | 1°C | | | ☐ Check if no cooler and/or no ice |
| Samples are intact and in good condition | ✓ | | | If No, provide comments on back |
| Verify that COC or RSA is accurate and complete, containing the following information: | | | | |
| • Client name and client sample number | ✓ | | | |
| • Date and time of sampling | ✓ | | | |
| • Sampling location or origin | ✓ | | | |
| • Container type, size, and number | ✓ | | | |
| • Analysis request is clear | ✓ | | | |
| • Signature of persons relinquishing and receiving samples | ✓ | | | |
| • Date and/or time of sample custody exchange | ✓ | | | |
| Verify that sample numbers on containers match the COC and/or RSA | ✓ | | | |
| Samples stored properly (e.g., refrigeration) | ✓ | | | |

Notify the PM immediately if any problems are noted. (Any "No" checked requires Project Manager resolution.)

**PM to Complete:**

Samples acceptable for release? yes PM Initials CSM Date 07/13/11

If No, comment on communication and resolution:

Other Comments:

A-6005-342 (REV 1)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-013 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Campbell | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND: 60 Days / 120 Days |
| SAMPLING LOCATION: C8394 I001 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: 43 to 45 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: 222-S Lab Operations | 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)

SPECIAL HANDLING AND/OR STORAGE

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | Liner |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 160g |
| SAMPLE ANALYSIS | Bulk Density - D2937 (TF); |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2D430 | SOIL | 7/13/11 | 1015 | ✓ |
| B2D431 | SOIL | 7/13/11 | 1015 | ✓ |
| B2D432 | SOIL | 7/13/11 | 1015 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: PR Ekstrom BC Ekstrom | DATE/TIME: 7/13/11 1050 | RECEIVED BY/STORED IN: RTSteele ATL RTSteele ATL 7.13.11 | DATE/TIME: 1050 |
| 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 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |

SPECIAL INSTRUCTIONS

The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

Billy Campbell 7-13-11

Temp blank 1°C RTSteele

GRP# 20110713

S11V004599 Liner A
S11V004600 Liner B
S11V004601 Liner C

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 5/24/2011

A-6003-618 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-013 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Campbell | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8394 I001 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: 43 to 45 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: 222-S Lab Operations | 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)

SPECIAL HANDLING AND/OR STORAGE

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | Liner |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 160g |
| SAMPLE ANALYSIS | Bulk Density - D2937 (TF); |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2D430 | SOIL | 7/13/11 | 1015 | ✓ |
| B2D431 | SOIL | 7/13/11 | 1015 | ✓ |
| B2D432 | SOIL | 7/13/11 | 1015 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: PR Ekstrom BC Ekstrom | DATE/TIME: 7/13/11 1050 | RECEIVED BY/STORED IN: RTSteele ATL RTSteele ATL 7-13-11 | DATE/TIME: 1050 |
| 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 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |

SPECIAL INSTRUCTIONS

The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

7-13-11

Temp blank 1°C RTSteele

GRP# 20110713

S11V004599 Liner A
S11V004600 Liner B
S11V004601 Liner C

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 5/24/2011

A-6003-618 (REV 2)

| ATL | SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST | LO-090-101 Rev E.E.0 |
|---|---|---|

Date Samples Received: 7.19.11 Group #: 20110717

Number of Samples: 1 set 5-Farm Barrier (C8394 - I002)

Sample Custodian: [signature]

**Sample Custodian to Complete:**

| Action | Yes | No | N/A | Comments |
|---|---|---|---|---|
| RSA/COC provided? | ✓ | | | |
| RSR provided? | ✓ | | | |
| Verify GKI is complete | | | | ☑ In Project File |
| Check that outer custody seal is intact, if present | | | ✓ | |
| Record cooler temperature in centigrade, as appropriate | ✓ | | | ☐ Check if no cooler and/or no ice |
| Samples are intact and in good condition | ✓ | | | If No, provide comments on back |
| Verify that COC or RSA is accurate and complete, containing the following information: | | | | |
| • Client name and client sample number | ✓ | | | |
| • Date and time of sampling | ✓ | | | |
| • Sampling location or origin | ✓ | | | |
| • Container type, size, and number | ✓ | | | |
| • Preservatives (if used) are noted on the COC/RSA and sample bottle | | | ✓ | |
| • Analysis request is clear | ✓ | | | |
| • Signature of persons relinquishing and receiving samples | ✓ | | | |
| • Date and/or time of sample custody exchange | ✓ | | | |
| Verify that sample numbers on containers match the COC and/or RSA | ✓ | | | |
| Samples stored properly (e.g., refrigeration) | ✓ | | | |

Notify the PM immediately if any problems are noted. (Any "No" checked requires Project Manager resolution.)

**PM to Complete:**

Samples acceptable for release? Yes PM Initials RTS Date 7.19.11

If No, comment on communication and resolution: pur. CSM

Other Comments:

A-6005-342 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-014 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Elstrom / Harris | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8394 I002 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 88 to 90 ft. | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: 222-S Lab Operations | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| A=Air<br>DL=Drum Liquids<br>DS=Drum Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SE=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | 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~6C |
| | | HOLDING TIME | 24 Hours |
| | | TYPE OF CONTAINER | G |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 500mL |
| | SPECIAL HANDLING AND/OR STORAGE | SAMPLE ANALYSIS | Generic Testing; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2D433 | SOIL | 7/19/11 | 0925 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |
| BRElstrom B.C. Elstrom | 7/19/11 1000 | RTSteele RTSteele ATL | 7.19.11 1000 |
| 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 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |

**SPECIAL INSTRUCTIONS**

The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

Don Harris 7-19-11

Temp Blank -1°C

GepH 20110713

S11V004620 Shoe

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 5/24/2011

A-6003-618 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-015 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Harris | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8394 I002 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: 88 to 90 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: 222-S Lab Operations | 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)

**SPECIAL HANDLING AND/OR STORAGE**

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | Liner |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 160g |
| SAMPLE ANALYSIS | Bulk Density - D2937 (TF); |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2D434 A | SOIL | 7/19/11 | 0925 | ✓ |
| B2D435 B | SOIL | 7/19/11 | 0925 | ✓ |
| B2D436 C | SOIL | 7/19/11 | 0925 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: RTSteele BCEkstrom | DATE/TIME: 7/19/11 1000 | RECEIVED BY/STORED IN: RTSteele RTSteele ATL | DATE/TIME: 7.19.11 1000 |
| 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 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |

**SPECIAL INSTRUCTIONS**
The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

John Harris 7-19-11

Temp blank -1°C RTSteele

GRP# 20110713
S11V004617 Liner A
S11V004618 Liner B
S11V004619 Liner C

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 5/24/2011

A-6003-618 (REV 2)

| ATL | SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST | LO-090-101 Rev E.G.0 |
|---|---|---|

Date Samples Received: 7.20.11 Group #: 20110713

Number of Samples: 1 set 5-Farm

Sample Custodian: [illegible]

**Sample Custodian to Complete:**

| Action | Yes | No | N/A | Comments |
|---|---|---|---|---|
| RSA/COC provided? | ✓ | | | |
| RSR provided? | ✓ | | | |
| Verify GKI is complete | | | | ☑ In Project File |
| Check that outer custody seal is intact, if present | | | ✓ | |
| Record cooler temperature in centigrade, as appropriate | | | | ☐ Check if no cooler and/or no ice |
| Samples are intact and in good condition | ✓ | | | If No, provide comments on back |
| Verify that COC or RSA is accurate and complete, containing the following information: | | | | |
| • Client name and client sample number | ✓ | | | |
| • Date and time of sampling | ✓ | | | |
| • Sampling location or origin | ✓ | | | |
| • Container type, size, and number | ✓ | | | |
| • Preservatives (if used) are noted on the COC/RSA and sample bottle | | | ✓ | |
| • Analysis request is clear | ✓ | | | |
| • Signature of persons relinquishing and receiving samples | ✓ | | | |
| • Date and/or time of sample custody exchange | ✓ | | | |
| Verify that sample numbers on containers match the COC and/or RSA | ✓ | | | |
| Samples stored properly (e.g., refrigeration) | ✓ | | | |

Notify the PM immediately if any problems are noted. (Any "No" checked requires Project Manager resolution.)

**PM to Complete:**

Samples acceptable for release? Yes PM Initials RJS Date 7.20.11

If No, comment on communication and resolution: PM CSM

Other Comments:

A-6005-342 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-016 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Campbell | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8394 I003 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 126 to 128 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: 222-S Lab Operations | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| A=Air<br>DL=Drum Liquids<br>DS=Drum Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SE=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | 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~6C |
| | | HOLDING TIME | 24 Hours |
| | | TYPE OF CONTAINER | G |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 500mL |
| | SPECIAL HANDLING AND/OR STORAGE | SAMPLE ANALYSIS | Generic Testing; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2D437 | SOIL | 7/20/11 | 1030 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: RJ Ekstrom RJ Ekstrom | DATE/TIME: 7/20/1100 | RECEIVED BY/STORED IN: RL Steele R L Steele ATL | DATE/TIME: 7.20.11 1100 |
| 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 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |

**SPECIAL INSTRUCTIONS**

The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

-1°C T.B. Metal

7-20-11

6496 20110713

SIV004638 Shoe

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 5/24/2011

A-6003-618 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-017 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Campbell | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8394 I003 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: 7/20/11 TFV2-09-008 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: 126 to 128 ft. | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: 222-S Lab Operations | 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)

**SPECIAL HANDLING AND/OR STORAGE**:

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | Liner |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 160g |
| SAMPLE ANALYSIS | Bulk Density - D2937 (TF); |

| SAMPLE NO. | | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|---|
| B2D438 | A | SOIL | 7/20/11 | 1030 | ✓ |
| B2D439 | B | SOIL | 7/20/11 | 1030 | ✓ |
| B2D440 | C | SOIL | 7/20/11 | 1030 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: B Ekstrom | DATE/TIME: 7/20/11 1100 | RECEIVED BY/STORED IN: R Stoddard ATL R Stoddard | DATE/TIME: 7.20.11 1100 |
| 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 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |

**SPECIAL INSTRUCTIONS**

The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

-10C T.B. 7-20-11
Rtd

CAP # 20110713

S11V004635 Liner A
S11V004636 Liner B
S11V004637 Liner C

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 5/24/2011

A-6003-618 (REV 2)

# C8396

| Soil Samples | | |
|---|---|---|
| **Date** | **Depth** | **Sample No.** |
| 8/4/2011 | 55 – 57 ft | B2FYT3-Rad |
| | | B2FYT4 |
| | | B2FYT5 |
| | | B2FYT6 |
| | | B2FYT7 |
| 8/8/2011 | 103 – 105 ft | B2FYT8-Rad |
| | | B2FYT9 |
| | | B2FYV0 |
| | | B2FYV1 |
| | | B2FYV2 |
| 8/9/2011 | 117 – 119 ft | B2FYV3-Rad |
| | | B2FYV4 |
| | | B2FYV5 |
| | | B2FYV6 |
| | | B2FYV7 |

| Composites | |
|---|---|
| **Date** | **Sample No.** |
| 8/4/2011 | B2FYT0 I001 |
| 8/8/2011 | B2FYT1 I002 |
| 8/9/2011 | B2FYT2 I003 |

RPP-RPT-51294, Rev. 0

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-061 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND: 60 Days / 120 Days |
| SAMPLING LOCATION: C8396 IC01 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | |
| ICE CHEST NO.: TFVS-09-C008 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 55 to 57 ft | COX: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ WSCF BEE 8/4/11 | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | PRESERVATION | None |
|---|---|---|---|
| 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 | 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) 1128108 | HOLDING TIME | 6 Months |
| | | TYPE OF CONTAINER | G/P |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 60mL |
| | SPECIAL HANDLING AND/OR STORAGE: RADIOACTIVE TIE TO: B2FYT3 | SAMPLE ANALYSIS | Rad Screen |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYT3 | SOIL | 8/4/11 | 0925 | ✓ |

~~GEA added per client request~~
~~8/4/11 KB~~
8/4/11 KB

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: RPS Custody Rep | DATE/TIME: 8/4/11 1000 | RECEIVED BY/STORED IN: KB Brozell / RP Bailey | DATE/TIME: 8/4/11 1000 |
| 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 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |

SPECIAL INSTRUCTIONS
The laboratory will composite any remaining material with the material from the liners from the same interval, and use it for the composite analyses.
Scott Sweet 8-4-11

| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
|---|---|---|---|
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

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| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-062 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR<br>Ekstrom / Snook | COMPANY CONTACT<br>ANASTOS, HL | TELEPHONE NO.<br>373-2616 | PROJECT COORDINATOR<br>SYDNOR, HA | PRICE CODE C03 | DATA TURNAROUND |
| SAMPLING LOCATION<br>C8396 I001 | PROJECT DESIGNATION<br>Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.<br>V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO. 09 BE 8/4/11<br>TFVS-~~10~~-008 | FIELD LOGBOOK NO.<br>TFVZ-10-000002 | ACTUAL SAMPLE DEPTH<br>55 to 57 ft | COA<br>N/A | METHOD OF SHIPMENT<br>GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO<br>~~222-S Lab Operations~~ WSCF BE 8/4/11 | OFFSITE PROPERTY NO.<br>N/A | | BILL OF LADING/AIR BILL NO.<br>N/A | 32°F / 55°C | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| A=Air<br>DL=Drum Liquids<br>DS=Drum Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SE=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | 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~6C |
| | | HOLDING TIME | 24 Hours |
| | | TYPE OF CONTAINER | G |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 500mL |
| | SPECIAL HANDLING AND/OR STORAGE<br>RADIOACTIVE TIE TO: B2FYT3 | SAMPLE ANALYSIS | Generic Testing; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYT4 | SOIL | 8/4/11 | 0925 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM<br>BE Ekstrom | DATE/TIME<br>8/4/11 1000 | RECEIVED BY/STORED IN<br>K Breeze | DATE/TIME<br>8/4/11 1000 |
| RELINQUISHED BY/REMOVED FROM<br>K Breeze | DATE/TIME<br>8/9/11 1200 | RECEIVED BY/STORED IN<br>Leslie Dietz | DATE/TIME<br>8/9/11 1200 |
| 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 |

**SPECIAL INSTRUCTIONS**

The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

Scott Shoe 8-4-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

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A-6003-618 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-063 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR<br>Elstrom / Snook | COMPANY CONTACT<br>ANASTOS, HL | TELEPHONE NO.<br>373-2616 | PROJECT COORDINATOR<br>SYDNOR, HA | PRICE CODE C03 | DATA TURNAROUND |
| SAMPLING LOCATION<br>C8396 I001 | PROJECT DESIGNATION<br>Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.<br>V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.<br>TFVS-09-008 | FIELD LOGBOOK NO.<br>TFVZ-10-000002 | ACTUAL SAMPLE DEPTH<br>55 to 57 ft | COA<br>N/A | METHOD OF SHIPMENT<br>GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO<br>~~221-S Lab Operations~~ WSCF BRE 8/4/11 | OFFSITE PROPERTY NO.<br>N/A | | BILL OF LADING/AIR BILL NO.<br>N/A | | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| A=Air<br>DL=Drum Liquids<br>DS=Drum Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SE=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | 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~6C |
| | | HOLDING TIME | 24 Hours |
| | | TYPE OF CONTAINER | Liner |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 160g |
| | SPECIAL HANDLING AND/OR STORAGE<br>RADIOACTIVE TIE TO: B2FYT3 | SAMPLE ANALYSIS | Bulk Density - D2937 (TF); |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYT5 A | SOIL | 8/4/11 | 0925 | ✓ |
| B2FYT6 B | SOIL | 8/4/11 | 0925 | ✓ |
| B2FYT7 C | SOIL | 8/4/11 | 0925 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM<br>B Elstrom BRE | DATE/TIME<br>8/4/11 1000 | RECEIVED BY/STORED IN<br>[illegible] | DATE/TIME<br>8/4/11 1000 |
| RELINQUISHED BY/REMOVED FROM<br>[illegible] | DATE/TIME<br>8/9/11 1200 | RECEIVED BY/STORED IN<br>Leslie [illegible] | DATE/TIME<br>8/9/11 1200 |
| 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 |

**SPECIAL INSTRUCTIONS**

The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

Scott Snook 8-4-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 7/28/2011

A-6003-618 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-064 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND: 60 Days / 120 Days |
| SAMPLING LOCATION: C8396 1002 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: 103 to 105 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ BRE 3/8/11 WSCF | 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)

112889

SPECIAL HANDLING AND/OR STORAGE: RADIOACTIVE TIE TO: B2FYT8

| PRESERVATION | None |
|---|---|
| HOLDING TIME | 6 Months |
| TYPE OF CONTAINER | G/P |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 60mL |
| SAMPLE ANALYSIS | Rad Screen; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYT8 | SOIL | 8/8/11 | 1345 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: B.E. Ekstrom | DATE/TIME: 8/8/11 1425 | RECEIVED BY/STORED IN: M. Nelson M. Nelson | DATE/TIME: 8/8/11 1425 |
| 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 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |

SPECIAL INSTRUCTIONS: The laboratory will composite any remaining material with the material from the liners from the same interval. and use it for the composite analyses.

Scott Snook 8-8-11

| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
|---|---|---|---|
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 7/28/2011 A-6003-618 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-065 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Elstrom/Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8396 I002 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 103 to 105 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ WSCF BLE 8/8/11 | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| A=Air<br>DL=Drum Liquids<br>DS=Drum Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SE=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | 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~6C |
| | | HOLDING TIME | 24 Hours |
| | | TYPE OF CONTAINER | G |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 500mL |
| | SPECIAL HANDLING AND/OR STORAGE<br>RADIOACTIVE TIE TO: B2FYT8 | SAMPLE ANALYSIS | Generic Testing; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYT9 | SOIL | 8/8/11 | 1345 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: B.C. Elstrom | DATE/TIME: 8/8/11 1425 | RECEIVED BY/STORED IN: M. Nelson | DATE/TIME: 8/8/11 1425 |
| RELINQUISHED BY/REMOVED FROM: [illegible] | DATE/TIME: 8/9/11 1200 | RECEIVED BY/STORED IN: Leshe Hiaz Zeeb | DATE/TIME: 8/9/11 1200 |
| 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 |

**SPECIAL INSTRUCTIONS**

The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

Scott Swoc 8-8-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 7/28/2011

A-6003-618 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-066 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Elstron / Smith | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8396 I002 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFVE-10-000002 | ACTUAL SAMPLE DEPTH: 103 to 105 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ WSCF 8/8/11 | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | 32°F-60°F | |

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)

**SPECIAL HANDLING AND/OR STORAGE**
RADIOACTIVE TIE TO: B2FYT8

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | Liner |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 160g |
| SAMPLE ANALYSIS | Bulk Density - D2937 (TF); |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYV0 A | SOIL | 8/8/11 | 1345 | ✓ |
| B2FYV1 B | SOIL | 8/8/11 | 1345 | ✓ |
| B2FYV2 C | SOIL | 8/8/11 | 1345 | ✓ |

| CHAIN OF POSSESSION | DATE/TIME | SIGN/ PRINT NAMES: RECEIVED BY/STORED IN | DATE/TIME |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: B Elstron B Elstron | 8/8/11 1425 | M. Nelson M. Nelson | 1425 8/8/11 |
| RELINQUISHED BY/REMOVED FROM: [illegible] | 8/9/11 1200 | [illegible] | 8/9/11 1200 |
| 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 |

**SPECIAL INSTRUCTIONS**
The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

Scott Smith 8-8-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 7/28/2011

A-6003-618 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-067 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ellstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8396 I003 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 117 to 119 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~232-S Lab Operations~~ WSCF BRE 8/9/11 | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | 4D / 160 | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| A=Air<br>DL=Drum Liquids<br>DS=Drum Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SE=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | 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)<br>112897 | PRESERVATION | None |
| | | HOLDING TIME | 6 Months |
| | | TYPE OF CONTAINER | G/P |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 60mL |
| | SPECIAL HANDLING AND/OR STORAGE<br>RADIOACTIVE TIE TO: B2FYV3 | SAMPLE ANALYSIS | Rad Screen; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYV3 1 | SOIL | 8/9/11 | 1145 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: B.C. Ellstrom | DATE/TIME: 8/9/11 1225 | RECEIVED BY/STORED IN: W.Breazeale / Bracy | DATE/TIME: 8/9/11 1225 |
| 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 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |

SPECIAL INSTRUCTIONS
The laboratory will composite any remaining material with the material from the liners from the same interval. and use it for the composite analyses.
8-9-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 7/28/2011 A-6003-618 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-068 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8396 I003 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 117 to 119 ft. | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ WSCF BEE 8/9/11 | 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)

**SPECIAL HANDLING AND/OR STORAGE**
RADIOACTIVE TIE TO: B2FYV3

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | G |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 500mL |
| SAMPLE ANALYSIS | Generic Testing; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYV4 | SOIL | 8/9/11 | 11:45 | ✓ |

| CHAIN OF POSSESSION | DATE/TIME | SIGN/ PRINT NAMES: RECEIVED BY/STORED IN | DATE/TIME |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: [signature] | 8/9/11 1225 | RECEIVED BY/STORED IN: [signature] | 8/9/11 1225 |
| RELINQUISHED BY/REMOVED FROM: TA Frazier | 8-10-11 1140 | RECEIVED BY/STORED IN: Leslie Diaz | 8/10/11 11:40 |
| 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 |

**SPECIAL INSTRUCTIONS**
The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

[signature] 8-9-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 7/28/2011

A-6002-510 (REV. 2)

RPP-RPT-51294, Rev. 0

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-069 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8396 I003 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: 117 to 119 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ BLE 8/9/11 WSCF | 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)

**SPECIAL HANDLING AND/OR STORAGE**
RADIOACTIVE TIE TO: B2FYV3

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | Liner |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 160g |
| SAMPLE ANALYSIS | Bulk Density - D2937 (TF); |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYV5 A | SOIL | 8/9/11 | 1145 | ✓ |
| B2FYV6 B | SOIL | 8/9/11 | 1145 | ✓ |
| B2FYV7 C | SOIL | 8/9/11 | 1145 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: BC Ekstrom | DATE/TIME: 8/9/11 1225 | RECEIVED BY/STORED IN: K Breazeal | DATE/TIME: 8/9/11 1225 |
| RELINQUISHED BY/REMOVED FROM: TA Frazier | DATE/TIME: 8-10-11 1140 | RECEIVED BY/STORED IN: Leslie Diaz | DATE/TIME: 8/10/11 1140 |
| 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 |

**SPECIAL INSTRUCTIONS**
The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.
[signature] 8-9-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 7/28/2011

A-6002-619 (REV 2)

RPP-RPT-51294, Rev. 0

| Assembler | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | C.O.C. No. 20111272 |
|---|---|---|
| N/A | | Page 1 of 1 |

| | | |
|---|---|---|
| Collector: Ekstrom/Rivera | Contact/Requestor: Jo Marie Johnson/Steve McKinney | Telephone No. 372-9474 MSIN T6-02 FAX |
| SAF No.: N/A | Sample Origin: S Farm Vadose | Purchase Order/Charge Code: N/A |
| Project Title: S Farm Barrier | Logbook/ Work Package No.: N/A | Ice Chest No. GWS-210 Temp. N/A |
| Shipped To (Lab): WSCF | Method of Shipment: Govt. Vehicle | Bill of Lading/Air Bill No.: N/A |
| Protocol: N/A | Data Turnaround: 2 working days from sample receipt | Parts and Return No.: N/A |

| Sample No. | Lab ID | * | Date | Time | No./Type Container | Sample Analysis | Preservative |
|---|---|---|---|---|---|---|---|
| 3 | B2FYT0 | | 8-4-11 | 0925 | 1 L glass | see list 1 (Lab Sample ID ~~S11V005623~~) S11V005573-I001 * | <6 C |
| 4 | B2FYT1 | | 8-8-11 | 1305 | 1 L glass | see list 1 (Lab Sample ID ~~S11V005624~~) cm 10/17/11 S11V005591-I002 * | <6 C |
| | ~~B2FYT2~~ | | ~~8-9-11~~ | | ~~1 L glass~~ | ~~see list 1 (Lab Sample ID S11V005628)~~ cm 10/17/11 LAD 8-9-11 | <6 C |
| | | | | | | | |
| | | | | | | ~~List 1: %moisture, Tc 99 by ICP/MS on a 1:1 water digest and nitrate on 1:1~~ | |
| | | | | | | ~~water digest~~ csm 10/17/11 | |
| | | | | | | | |
| | | | | | | *C8396 - Sample group 20111272 - composites | |
| | | | | | | | |
| | | | | | | | |

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS
~~Send results to Steve McKinney (Steve.C.Mckinney@rl.gov) and Mellissa Garrard (see SOW for e-mail address) Contract 36612, rel. 9~~
csm 10/17/11
Report per FSAP required analyses per e-mail dated 10-20-11

Hold Time
~~48 hours from sample receipt~~ csm 10/17/11
0° C [illegible]

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| Leslie Diaz | Leslie Diaz | 8/9/11 | 1535 | TA Frazier | Teresa Frazier | 8/9/11 | 1535 |
| TA Frazier | Teresa Frazier | 10/13/11 | 1000 | L.D. Wall | L.D. Wall | 10/13/11 | 1000 |
| L.D. Wall | L.D. Wall | 10/13/11 | 1045 | RT Steele | RT Steele | ATL 10/13/11 | 1045 |
| | | | | | | | |

Matrix*

| | | | |
|---|---|---|---|
| S | = Soil | DL | = Drum Liquids |
| SE | = Sediment | T | = Tissue |
| SO | = Solid | WI | = Wipe |
| SL | = Sludge | L | = Liquid |
| W | = Water | V | = Vegetation |
| O | = Oil | VA | = Vapor |
| A | = Air | X | = Other |
| DS | = Drum Solids | | |

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By — Date/Time

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. No. 20111272
Page 1 of 1

| | | |
|---|---|---|
| Assembler: N/A | Contact/Requestor: Jo Marie Johnson/Steve McKinney | Telephone No. 372-9474 MSIN T6-02 FAX |
| Collector: Ekstrom/Rinola | Sample Origin: S Farm Vadose | Purchase Order/Charge Code |
| SAF No.: N/A | Logbook/ Work Package No.: N/A | Ice Chest No. Temp. |
| Project Title: S Farm Barrier | Method of Shipment | Bill of Lading/Air Bill No. |
| Shipped To (Lab): WSCF | Data Turnaround: 2 working days from sample receipt | Parts and Return No. |
| Protocol: N/A | | |

| Sample No. | Lab ID | * | Date | Time | No./Type Container | Sample Analysis | Preserv |
|---|---|---|---|---|---|---|---|
| | B2FYT0 | | 8-4-11 | 0925 | 1 L glass | see list 1 (Lab Sample ID S11V005623) | <6 C |
| | B2FYT1 | | 8-8-11 | 1305 | 1 L glass | see list 1 (Lab Sample ID S11V005624) | <6 C |
| | ~~B2FYT2~~ | | ~~8-9-11~~ | | ~~1 L glass~~ | ~~see list 1 (Lab Sample ID S11V005628)~~ LAD 8-9-11 | <6 C |
| | | | | | | | |
| | | | | | | List 1: %moisture, Tc-99 by ICP/MS on a 1:1 water digest and nitrate on 1:1 | |
| | | | | | | water digest. | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS
Send results to Steve McKinney (Steve_C_McKinney@rl.gov) and Mellissa Garrard (see SOW for e-mail address) Contract 36612, rel. 9

Hold Time
48 hours from sample recei

| Relinquished By (Print / Sign) | Date/Time | Received By (Print / Sign) | Date/Time |
|---|---|---|---|
| Leslie Hat [signature] | 8/9/11 1535 | TA Rinazia [signature] | 8/9/11 1535 |
| Relinquished By | Date/Time | Received By | Date/Time |
| Relinquished By | Date/Time | Received By | Date/Time |
| Relinquished By | Date/Time | Received By | Date/Time |

Matrix*

| | | | |
|---|---|---|---|
| S | = Soil | DL | = Drum Li |
| SE | = Sediment | T | = Tissue |
| SO | = Solid | WI | = Wipe |
| SL | = Sludge | L | = Liquid |
| W | = Water | V | = Vegetat |
| O | = Oil | VA | = Vapor |
| A | = Air | X | = Other |
| DS | = Drum Solids | | |

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

| Assembler | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | C.O.C. No. 20111272 |
|---|---|---|
| N/A | | Page 1 of 1 |

| | | |
|---|---|---|
| Collector: Ekstrom/Rivera | Contact/Requestor: Jo Marie Johnson/Steve McKinney | Telephone No. 372-9474 MSIN T6-02 FAX |
| SAF No.: N/A | Sample Origin: S Farm Vadose | Purchase Order/Charge Code: N/A |
| Project Title: S Farm Barrier | Logbook/ Work Package No.: N/A | Ice Chest No. GWS-210 Temp. N/A |
| Shipped To (Lab): WSCF | Method of Shipment: Govt. Vehicle | Bill of Lading/Air Bill No. N/A |
| Protocol: N/A 12905 | Data Turnaround: 2 working days from sample receipt | Parts and Return No. N/A |

| Sample No. | Lab ID | * | Date | Time | No./Type Container | Sample Analysis | Preservative |
|---|---|---|---|---|---|---|---|
| 005 | B2FYT2 | | 8-9-11 | 1145 | 1 L glass | see list 1 (Lab Sample ID ~~S11V005620~~) S11V005609 - I003* | <6 C |
| | | | | | | cm 10/17/11 | |
| | | | | | | *C8396 - Sample group 20111272- composite | |
| | | | | | | ~~List 1: %moisture, Tc-99 by ICP/MS on a 1:1 water digest and nitrate on 1:1~~ | |
| | | | | | | ~~water digest.~~ csm 10/17/11 | |

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS
~~Send results to Steve McKinney (Steve C Mckinney@rl.gov) and Mellissa Garrard (see SOW for e-mail address) Contract 36612, rel. 9~~
csm 10/17/11
Report per FSAP.
Required analyses per e-mail dated 10-20-11

Hold Time
~~48 hours from sample receipt~~ csm 10/17/11
0°C [illegible]

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| Leslie Diaz | [illegible] | 8/10/11 | 1240 | [illegible] | [illegible] | 8/10/11 | 1240 |
| TA Frazier | [illegible] | 10/13/11 | 1000 | L.D. WALL | L.D. Wall | 10/13/11 | 1000 |
| L.D. WALL | L.D. Wall | 10/13/11 | 1045 | RF Steele | RF Steele | ATL | 10/13/11 1045 |
| | | | | | | | |

Matrix*
S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drum Solids, DL = Drum Liquids, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, VA = Vapor, X = Other

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By — Date/Time

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

RPP-RPT-51294, Rev. 0

| Assembler | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | C.O.C. No. 20111272 |
|---|---|---|
| N/A | | Page 1 of 1 |

| | | |
|---|---|---|
| Collector: Ekstrom/Rivera | Contact/Requestor: Jo Marie Johnson/Steve McKinney | Telephone No. 372-9474 MSIN T6-02 FAX |
| SAF No.: N/A | Sample Origin: S Farm Vadose | Purchase Order/Charge Code |
| Project Title: S Farm Barrier | Logbook/ Work Package No.: N/A | Ice Chest No. Temp. |
| Shipped To (Lab): WSCF | Method of Shipment | Bill of Lading/Air Bill No. |
| Protocol: N/A | Data Turnaround: 2 working days from sample receipt | Parts and Return No. |

| Sample No. | Lab ID | * | Date | Time | No./Type Container | Sample Analysis | Preservative |
|---|---|---|---|---|---|---|---|
| | B2FYT2 | | 8-9-11 | 1145 | 1 L glass | see list 1 (Lab Sample ID S11V005628) | <6 C |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | List 1: %moisture, Tc-99 by ICP/MS on a 1:1 water digest and nitrate on 1:1 | |
| | | | | | | water digest. | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS
Send results to Steve McKinney (Steve_G_Mckinney@rl.gov) and Mellissa Garrard (see SOW for e-mail address) Contract 36612, rel. 9

Hold Time: 48 hours from sample receipt

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| Leslie Diaz | [signature] | 8/10/11 | 1740 | [signature] | [signature] | 8/10/11 | 1240 |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |

Matrix*

| | | | |
|---|---|---|---|
| S | = Soil | DL | = Drum Liquids |
| SE | = Sediment | T | = Tissue |
| SO | = Solid | WI | = Wipe |
| SL | = Sludge | L | = Liquid |
| W | = Water | V | = Vegetation |
| O | = Oil | VA | = Vapor |
| A | = Air | X | = Other |
| DS | = Drum Solids | | |

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By — Date/Time

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

# C8398

| Soil Samples | | |
|---|---|---|
| **Date** | **Depth** | **Sample No.** |
| 8/8/2011 | 46 – 48 ft | B2FDL6 |
| | | B2FDH6 |
| | | B2FDH7 |
| | | B2FDH8 |
| | | B2FDH9 |
| 8/9/2011 | 86 – 88 ft | B2H086 |
| | | B2FDJ0 |
| | | B2FDJ1 |
| | | B2FDJ2 |
| | | B2FDJ3 |
| 8/10/2011 | 131 – 133 ft | B2H087 |
| | | B2FDJ4 |
| | | B2FDJ5 |
| | | B2FDJ6 |
| | | B2FDJ7 |

| Field Blank | |
|---|---|
| **Date** | **Sample No.** |
| 8/10/2011 | B2FDM3 |
| | B2FDM2 |

| Composites | |
|---|---|
| **Date** | **Sample No.** |
| 8/8/2011 | ~~B2FDM3~~ I001 B2FDJ8 |
| 8/9/2011 | B2FDJ9 I002 |
| 8/10/2011 | B2FDK0 I003 |

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-033 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom/Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND: 60 Days / 120 Days |
| SAMPLING LOCATION: C8398 Radscreen Tool | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | |
| ICE CHEST NO.: TFV5-09-008 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 46 to 48 ft. | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ WSCF BLE 8/4/11 | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | 32°/47 | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| A=Air<br>DL=Drum Liquids<br>DS=Drum Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SE=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | 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)<br><br>112888 | PRESERVATION | None |
| | | HOLDING TIME | 6 Months |
| | | TYPE OF CONTAINER | G/P |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 60mL |
| | SPECIAL HANDLING AND/OR STORAGE<br>RADIOACTIVE TIE TO: B2FDL6 | SAMPLE ANALYSIS | Rad Screen |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FDL6 | SOIL | 8/8/11 | 0925 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | | SPECIAL INSTRUCTIONS |
|---|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: B Ekstrom | DATE/TIME: 8/8/11 1300 | RECEIVED BY/STORED IN: Obscured | DATE/TIME: 8/8/11 1300 | Scott Snook 8-8-11 |
| 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 | |
| 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 |

PRINTED ON 6/22/2011 A-6003-618 (REV 2)

RPP-RPT-51294, Rev. 0

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-021 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Elestrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8398 I001 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: 46 to 48 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ WSCF BRE 8/4/11 | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| A=Air<br>DL=Drum Liquids<br>DS=Drum Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SE=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | 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~6C |
| | | HOLDING TIME | 24 Hours |
| | | TYPE OF CONTAINER | G |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 500mL |
| | SPECIAL HANDLING AND/OR STORAGE | SAMPLE ANALYSIS | Generic Testing; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FDH6 | SOIL | 8/8/11 | 0925 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | | SPECIAL INSTRUCTIONS |
|---|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: BR Elestrom BR Elestrom | DATE/TIME: 8/8/11 1300 | RECEIVED BY/STORED IN: [illegible] | DATE/TIME: 8/8/11 1300 | The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.<br>Scott Snook 8-8-11 |
| RELINQUISHED BY/REMOVED FROM: [illegible] | DATE/TIME: 8/9/11 1200 | RECEIVED BY/STORED IN: Leslie Diaz Leslie Diaz | DATE/TIME: 8/9/11 1200 | |
| 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 |

PRINTED ON 6/21/2011 A-6003-618 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-022 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8398 I001 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: 46 to 48 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ BCE 8/8/11 WSCF | 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)

**SPECIAL HANDLING AND/OR STORAGE**

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | Liner / Jar 500ml BCE 8/8/11 |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 160g |
| SAMPLE ANALYSIS | Bulk Density - D2937 (TF); |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FDH7 A | SOIL | 8/8/11 | 0925 | ✓ |
| B2FDH8 B | SOIL | 8/8/11 | 0925 | ✓ |
| B2FDH9 C | SOIL | 8/8/11 | 0925 | ✓ |

Liner B material placed in 500ml JAR BCE 8/8/11

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: [signature] | DATE/TIME: 8/8/11 1300 | RECEIVED BY/STORED IN: [signature] | DATE/TIME: 8/8/11 1300 |
| RELINQUISHED BY/REMOVED FROM: [signature] | DATE/TIME: 8/9/11 1200 | RECEIVED BY/STORED IN: Leslie Dixie [signature] | DATE/TIME: 8/9/11 1200 |
| 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 |

**SPECIAL INSTRUCTIONS**
The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

[signature] 8-8-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 6/21/2011 A-6003-618 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-071 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8398 I002 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 86 to 88 ft. | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: Waste Sampling & Characterization WSCF BOE 8/9/11 | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| A=Air<br>DL=Drum Liquids<br>DS=Drum Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SE=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | 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)<br>112893 | PRESERVATION | None |
| | | HOLDING TIME | 6 Months |
| | | TYPE OF CONTAINER | G/P |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 60mL |
| | SPECIAL HANDLING AND/OR STORAGE | SAMPLE ANALYSIS | Rad Screen; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2H086 | SOIL | 8/9/11 | 0910 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | | SPECIAL INSTRUCTIONS |
|---|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: B.C. Ekstrom | DATE/TIME: 8/9/11 0940 | RECEIVED BY/STORED IN: K. Breazeal | DATE/TIME: 8/9/11 0940 | Accept Snook 8-9-11 |
| 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 | |
| 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 |

PRINTED ON 8/4/2011 A-6003-618 (REV 2)

RPP-RPT-51294, Rev. 0

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-023 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8398 I002 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 86 to 88 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222 S Lab Operations~~ BeE 8/9/11 WSCF | 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)

**SPECIAL HANDLING AND/OR STORAGE**

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | G |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 500mL |
| SAMPLE ANALYSIS | Generic Testing; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FDJ0 | SOIL | 8/9/11 | 0910 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: BeEkstrom BeEkstrom | DATE/TIME: 8/9/11 0940 | RECEIVED BY/STORED IN: VBrazeal [signature] | DATE/TIME: 8/9/11 0940 |
| RELINQUISHED BY/REMOVED FROM: [signature] | DATE/TIME: 8/9/11 1200 | RECEIVED BY/STORED IN: Leslie Diaz [signature] | DATE/TIME: 8/9/11 1200 |
| 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 |

**SPECIAL INSTRUCTIONS**
The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

Scott Snook 8-9-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 6/21/2011 A-6003-618 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-024 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom/Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8398 I002 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 86 to 88 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~221-S Lab Operations~~ WSCF BLE 8/9/11 | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | 37°F / 50°F | |

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)

**SPECIAL HANDLING AND/OR STORAGE**

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | Liner |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 160g |
| SAMPLE ANALYSIS | Bulk Density - D2937 (TF); |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FDJ1 | SOIL A | 8/9/11 | 0910 | ✓ |
| B2FDJ2 | SOIL B | 8/9/11 | 0910 | ✓ |
| B2FDJ3 | SOIL C | 8/9/11 | 0910 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: BE Ekstrom | DATE/TIME: 8/9/11 0940 | RECEIVED BY/STORED IN: K Boxrud / Bailey | DATE/TIME: 8/9/11 0940 |
| RELINQUISHED BY/REMOVED FROM: [illegible] | DATE/TIME: 8/9/11 1200 | RECEIVED BY/STORED IN: Leslie Diaz / Liebelling | DATE/TIME: 8/9/11 1200 |
| 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 |

**SPECIAL INSTRUCTIONS**

The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

Scott Snook 8-9-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 6/21/2011

A-6003-618 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-072 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ehstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8398 I003 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 131 to 133.4 | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: Waste Sampling & Characterization WSCF BCE 8/10/11 | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | 35°F / 56°F | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | PRESERVATION | None |
|---|---|---|---|
| A=Air<br>DL=Drum Liquids<br>DS=Drum Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SE=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | 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)<br>112910 | HOLDING TIME | 6 Months |
| | | TYPE OF CONTAINER | G/P |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 60mL |
| | SPECIAL HANDLING AND/OR STORAGE | SAMPLE ANALYSIS | Rad Screen |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2H087 1 | SOIL | 8/10/11 | 0815 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | | SPECIAL INSTRUCTIONS |
|---|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: BCEhstrom | DATE/TIME: BCE 8/10/11 1305 8/10/11 1260 | RECEIVED BY/STORED IN: Victor Sims | DATE/TIME: BCE 8/10/11 1305 | Accept Snook 8-10-11 |
| 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 | |
| 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 |

PRINTED ON 8/4/2011 A-6003-618 (REV 2)

RPP-RPT-51294, Rev. 0

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-025 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8398 I003 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: BEE 8/10/11 TFV~~B~~S-09-008 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: 131 + 133 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~221-S Lab Operations~~ BEE 8/10/11 WSCF | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| A=Air<br>DL=Drum Liquids<br>DS=Drum Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SE=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | 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~6C |
| | | HOLDING TIME | 24 Hours |
| | | TYPE OF CONTAINER | G |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 500mL |
| | SPECIAL HANDLING AND/OR STORAGE | SAMPLE ANALYSIS | Generic Testing; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FDJ4 | SOIL | 8/10/11 | 0815 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: BEE 8/10/11 BEEkstrom | DATE/TIME: 8/10/11 1350 | RECEIVED BY/STORED IN: Victor [signature] 8/10/11 | DATE/TIME: 1325 |
| RELINQUISHED BY/REMOVED FROM: [signature] | DATE/TIME: 8/10/11 1335 | RECEIVED BY/STORED IN: Leslie Schultz [signature] 8/10/11 | DATE/TIME: 1335 |
| 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 |

**SPECIAL INSTRUCTIONS**

The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

Scott Snook 8-10-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 6/21/2011 A-6003-618 (REV 2)

RPP-RPT-51294, Rev. 0

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-026 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8398 I003 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-001 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 131 to 137 | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222 S Lab Operations~~ WSCF BRE 8/10/11 | 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)

**SPECIAL HANDLING AND/OR STORAGE**

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | Liner |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 160g |
| SAMPLE ANALYSIS | Bulk Density - D2937 (TF); |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FDJ5 | SOIL A | 8/10/11 | 0815 | ✓ |
| B2FDJ6 | SOIL B | 8/10/11 | 0815 | ✓ |
| B2FDJ7 | SOIL C | 8/10/11 | 0815 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: BRE 8/10/11 | DATE/TIME: 8/10/11 1305 | RECEIVED BY/STORED IN: Victor [signature] | DATE/TIME: 8/10/11 1305 |
| RELINQUISHED BY/REMOVED FROM: [signature] | DATE/TIME: 08/10/11 1335 | RECEIVED BY/STORED IN: Leslie DIAZ [signature] | DATE/TIME: 8/10/11 1335 |
| 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 |

**SPECIAL INSTRUCTIONS**
The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.
Scott Snook 8-10-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 6/21/2011 A-6003-618 (REV 2)

| ATL | SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST | LO-090-101 Rev E.E.6 |
|---|---|---|

Date Samples Received: 8-9-11 Group #: Q0111140

Number of Samples: 1 Field blank (C8398) VADOSE

Sample Custodian: [illegible]

**Sample Custodian to Complete:**

| Action | Yes | No | N/A | Comments |
|---|---|---|---|---|
| RSA/COC provided? | ✓ | | | |
| RSR provided? | | | ✓ | |
| Verify GKI is complete | | | ✓ | ☐ In Project File |
| Check that outer custody seal is intact, if present | | | ✓ | |
| Record cooler temperature in centigrade, as appropriate | 4°C | | | ☐ Check if no cooler and/or no ice |
| Samples are intact and in good condition | | | | If No, provide comments on back |
| Verify that COC or RSA is accurate and complete, containing the following information: | | | | |
| • Client name and client sample number | ✓ | | | |
| • Date and time of sampling | ✓ | | | |
| • Sampling location or origin | ✓ | | | |
| • Container type, size, and number | ✓ | | | |
| • Preservatives (if used) are noted on the COC/RSA and sample bottle | ✓ | | | |
| • Analysis request is clear | ✓ | | | |
| • Signature of persons relinquishing and receiving samples | ✓ | | | |
| • Date and/or time of sample custody exchange | ✓ | | | |
| Verify that sample numbers on containers match the COC and/or RSA | ✓ | | | |
| Samples stored properly (e.g., refrigeration) | ✓ | | | |

Notify the PM immediately if any problems are noted. (Any "No" checked requires Project Manager resolution.)

**PM to Complete:**

Samples acceptable for release? yes PM Initials DPR Date 8/9/11

If No, comment on communication and resolution:

Other Comments:

A-6005-342 (REV 2)

RPP-RPT-51294, Rev. 0

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-007-007 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND: 60 Days / 120 Days |
| SAMPLING LOCATION: C8398 - Field Blank | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier - QC Sample | | SAF NO.: V11-007 | AIR QUALITY: ☐ | |
| ICE CHEST NO.: TFV2-09-008 BRE 8/10/11 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: N/A | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~Waste Sampling & Characterization~~ 222-S. BRE 8/10/11 | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | | |

D.I. Lot# J28E02 expires 7/31/12

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| 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 | 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 | None |
| | | HOLDING TIME | 6 Months |
| | | TYPE OF CONTAINER | G |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 60mL |
| | SPECIAL HANDLING AND/OR STORAGE | SAMPLE ANALYSIS | Rad Screen; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FDM3 | WATER | 8/10/11 | ~~0815~~ 0755 BRE 8/10/11 | V |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | | SPECIAL INSTRUCTIONS |
|---|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: B Ekstrom B Ekstrom | DATE/TIME: 8/10/11 ~~1250~~ 1305 BRE 8/10/11 | RECEIVED BY/STORED IN: RtSteele ATL | DATE/TIME: 8.10.11 1355 BRE 8/10/11 | Scott Snook 8-10-11 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME: 1355 | RECEIVED BY/STORED IN | DATE/TIME | Temp blank -4°C RTS |
| 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 |

PRINTED ON 8/4/2011 A-6003-618 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-007-004 | PAGE 1 OF 2 |
|---|---|---|---|---|---|
| COLLECTOR: Elsstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND: 60 Days / 120 Days |
| SAMPLING LOCATION: C8398 - Field Blank | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier - QC Sample | | SAF NO.: V11-007 | AIR QUALITY: ☐ | |
| ICE CHEST NO.: TFVZ-09-001 (BRE 8/10/11) | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: N/A | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ WSCF 222-S (RKS 8/10/11) | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | | |

DI Lot # J28E02

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)

SPECIAL HANDLING AND/OR STORAGE:

| PRESERVATION | HNO3 to pH <2 | H2SO4 to pH <2/Cool~6C | Cool~6C | NaOH to pH >=12/Cool~6C | None | HNO3 to pH <2 |
|---|---|---|---|---|---|---|
| HOLDING TIME | 28 Days | 7 Days | 28 Days/48 Hours | 14 Days | 6 Months | 6 Months |
| TYPE OF CONTAINER | G/P | G/P | G/P | G/P | G/P | G/P |
| NO. OF CONTAINER(S) | 1 | 1 | 1 | 1 | 1 | 2 |
| VOLUME | 500mL | 250mL | 500mL | 250mL | 1000mL | 1000mL |
| SAMPLE ANALYSIS | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | 300.7_AMMONIUM (TF); | IC Anions - 9056; | Total Cyanide - 9014 (TF); | C-14; H3 - TRITIUM; I129_SEP_GEA (TF); | SEE ITEM (2) IN SPECIAL INSTRUCTIONS |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|---|
| B2FDM2 | WATER | 8/10/11 | 0755 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

| CHAIN OF POSSESSION | DATE/TIME | SIGN/ PRINT NAMES | DATE/TIME |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: BR Elsstrom (BRE 8/10/11) | 8/10/11 1250 | RECEIVED BY/STORED IN: RTSteele (RTS 8/10/11) | 8-10-11 1355 |
| RELINQUISHED BY/REMOVED FROM: RTSteele | 1355 | RECEIVED BY/STORED IN: | |
| RELINQUISHED BY/REMOVED FROM: | | RECEIVED BY/STORED IN: | |
| RELINQUISHED BY/REMOVED FROM: | | RECEIVED BY/STORED IN: | |
| RELINQUISHED BY/REMOVED FROM: | | RECEIVED BY/STORED IN: | |
| RELINQUISHED BY/REMOVED FROM: | | RECEIVED BY/STORED IN: | |
| RELINQUISHED BY/REMOVED FROM: | | RECEIVED BY/STORED IN: | |

SPECIAL INSTRUCTIONS

SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

Scott Sherk 8-10-11

Temp blank ~4 °C RTSteele

1- S11V005314
2- S11V005313
3- S11V005311
4- S11V005312
5- S11V005315
6- S11V005316

| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
|---|---|---|---|
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 6/21/2011

A-6003-618 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-007-004 | PAGE 2 OF 2 |
|---|---|---|---|---|---|
| COLLECTOR<br>Ehstrom / Snook | COMPANY CONTACT<br>ANASTOS, HL | TELEPHONE NO.<br>373-2616 | PROJECT COORDINATOR<br>SYDNOR, HA | PRICE CODE C03 | DATA TURNAROUND |
| SAMPLING LOCATION<br>C8398 - Field Blank | PROJECT DESIGNATION<br>Direct Push Samples for S Tank Farm - Interim Barrier - QC Sample | | SAF NO.<br>V11-007 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.<br>TFVS-09-008 | FIELD LOGBOOK NO.<br>TFVZ-10-000002 | ACTUAL SAMPLE DEPTH<br>~~131-133 ft~~ N/A BEE 8/10 | COA<br>N/A | METHOD OF SHIPMENT<br>GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO<br>222-S Lab Operations | OFFSITE PROPERTY NO.<br>N/A | | BILL OF LADING/AIR BILL NO.<br>N/A | | |

**SPECIAL INSTRUCTIONS**

(1) Mercury - 7470 - (CV) (TF); 6010_Metals_ICP {Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Cerium, Chromium, Cobalt, Copper, Europium, Iron, Lanthanum, Lead, Lithium, Magnesium, Manganese, Molybdenum, Neodymium, Nickel, Niobium, Palladium, Phosphorus, Potassium, Praseodymium, Rhodium, Rubidium, Ruthenium, Samarium, Selenium, Silicon, Silver, Sodium, Strontium, Sulfur, Tantalum, Tellurium, Thallium, Thorium, Tin, Titanium, Tungsten, Vanadium, Yttrium, Zinc, Zirconium}; RADISO_ICPMS (TF) {Neptunium-237, Technetium-99, Thorium-230, Thorium-232, Tin-126, Uranium-233, Uranium-234, Uranium-235, Uranium-236, Uranium-238};
(2) GAMMA ENERGY ANALYSIS (TF); Americium-241 (TF); Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; CURIUM {Curium-242, Curium-243/244}; Nickel-63 (TF); Strontium-89,90 -- Total Sr; Selenium-79 (TF);

PRINTED ON 6/21/2011 A-6003-618 (REV 2)

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Assembler: N/A

C.O.C. No. 20111143

Page 1 of 1

| | | |
|---|---|---|
| Collector: Ekstrom/Rivera | Contact/Requestor: Jo Marie Johnson/Steve McKinney | Telephone No. 372-9474 MSIN T6-02 FAX |
| SAF No.: N/A | Sample Origin: S Farm Vadose | Purchase Order/Charge Code: N/A |
| Project Title: S Farm Barrier | Logbook/ Work Package No.: N/A | Ice Chest No. GWS-210 Temp. N/A |
| Shipped To (Lab): WSCF | Method of Shipment: Govt. Vehicle | Bill of Lading/Air Bill No. N/A |
| Protocol: N/A | Data Turnaround: 2 working days from sample receipt | Parts and Return No. N/A |

| Sample No. | Lab ID | * | Date | Time | No./Type Container | Sample Analysis | Preservative |
|---|---|---|---|---|---|---|---|
| 1 | B2FDJ8 | | 8-8-11 | 0925 | 1 L glass | see list 1 (Lab Sample ID ~~S11V005625~~) cm 10/17/11 S11V005321 - I001 * | <6 C |
| 2 | B2FDJ9 | | 8-9-11 | 0910 | 1 L glass | see list 1 (Lab Sample ID ~~S11V005626~~) cm 10/17/11 S11V005339 - I002 * | <6 C |
| | ~~B2FDK0~~ | | | | ~~1 L glass~~ | ~~see list 1 (Lab Sample ID S11V005627)~~ LAD 8-9-11 | <6 C |
| | | | | | | * C8398 - Group # 20111143 - composites | |
| | | | | | | ~~List 1: %moisture, Tc-99 by ICP/MS on a 1:1 water digest and nitrate on 1:1~~ | |
| | | | | | | water digest. csm 10/17/11 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

112905

SPECIAL INSTRUCTIONS

~~Send results to Steve McKinney (Steve_C_McKinney@rl.gov) and Melissa Garrard (see SOW for e mail address). Contract 36612, rel. 9~~ csm 10/17/11

Report per FSAP.
Required analyses per e-mail dated 10-20-11

Hold Time: ~~48 hours from sample receipt~~ csm 10/17/11

OC RHTeele

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| Leslie DIAZ | Leslie Diaz | | 8/9/11 1535 | TA FRAZIER | Teresa Frazier | | 8/9/11 1535 |
| TA FRAZIER | Teresa Frazier | | 10/13/11 1000 | L.D. WALL | L.D. Wall | | 10/13/11 1000 |
| L.D. WALL | L.D. Wall | | 10/13/11 1045 | RH Steele | RHTeele | ATL | 10/13/11 1045 |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |

Matrix*

| | | | |
|---|---|---|---|
| S = Soil | | DL = Drum Liquids | |
| SE = Sediment | | T = Tissue | |
| SO = Solid | | WI = Wipe | |
| SL = Sludge | | L = Liquid | |
| W = Water | | V = Vegetation | |
| O = Oil | | VA = Vapor | |
| A = Air | | X = Other | |
| DS = Drum Solids | | | |

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

RPP-RPT-51294, Rev. 0

| Assembler | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | C.O.C. No. 20111143 |
|---|---|---|
| N/A | | Page 1 of 1 |

| | | |
|---|---|---|
| Collector: Ekstrom/Rivera | Contact/Requestor: Jo Marie Johnson/Steve McKinney | Telephone No. 372-9474 MSIN T6-02 FAX |
| SAF No.: N/A | Sample Origin: S Farm Vadose | Purchase Order/Charge Code |
| Project Title: S Farm Barrier | Logbook/ Work Package No.: N/A | Ice Chest No. Temp. |
| Shipped To (Lab): WSTF | Method of Shipment | Bill of Lading/Air Bill No. |
| Protocol: N/A | Data Turnaround: 2 working days from sample receipt | Parts and Return No. |

| Sample No. | Lab ID | * | Date | Time | No./Type Container | Sample Analysis | Preservat |
|---|---|---|---|---|---|---|---|
| | B2FDJ8 | | 8-8-11 | 0925 | 1 L glass | see list 1 (Lab Sample ID S11V005625) | <6 C |
| | B2FDJ9 | | 8-9-11 | 0910 | 1 L glass | see list 1 (Lab Sample ID S11V005626) | <6 C |
| | ~~B2FDK0~~ | | | | ~~1 L glass~~ | ~~see list 1 (Lab Sample ID S11V005627)~~ LAD 8-9-11 | <6 C |
| | | | | | | | |
| | | | | | | List 1: %moisture, Tc-99 by ICP/MS on a 1:1 water digest and nitrate on 1:1 | |
| | | | | | | water digest. | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS
Send results to Steve McKinney (Steve_G_Mckinney@rl.gov) and Mellissa Garrard (see SOW for e-mail address) Contract 36612, rel. 9

Hold Time: 48 hours from sample receip

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| Leslie Diaz | Leslie Diaz | 8/9/11 | 1535 | TA Frazier | [illegible] | [illegible] | 8/9/11 1535 |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |

Matrix*

| | | | |
|---|---|---|---|
| S | = Soil | DL | = Drum Liq |
| SE | = Sediment | T | = Tissue |
| SO | = Solid | WI | = Wipe |
| SL | = Sludge | L | = Liquid |
| W | = Water | V | = Vegetatic |
| O | = Oil | VA | = Vapor |
| A | = Air | X | = Other |
| DS | = Drum Solids | | |

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By — Date/Time

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

| | | |
|---|---|---|
| Assembler: N/A | | C.O.C. No. 20111143 |
| | | Page 1 of 1 |
| Collector: Ekanor Rivera | Contact/Requestor: Jo Marie Johnson/Steve McKinney | Telephone No. 372-9474 MSIN T6-02 FAX |
| SAF No.: N/A | Sample Origin: S Farm Vadose | Purchase Order/Charge Code |
| Project Title: S Farm Barrier | Logbook/ Work Package No.: N/A | Ice Chest No. Temp. |
| Shipped To (Lab): MSCF | Method of Shipment | Bill of Lading/Air Bill No. |
| Protocol: N/A | Data Turnaround: 2 working days from sample receipt | Parts and Return No. |

| Sample No. | Lab ID | * | Date | Time | No./Type Container | Sample Analysis | Preservative |
|---|---|---|---|---|---|---|---|
| | B2FDK0 | | 8-10-11 | | 1 L glass | see list 1 (Lab Sample ID S11V005627) | <6 C |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | List 1: %moisture, Tc-99 by ICP/MS on a 1:1 water digest and nitrate on 1:1 | |
| | | | | | | water digest. | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS

Send results to Steve McKinney (Steve_G_Mckinney@rl.gov) and Mellissa Garrard (see SOW for e-mail address) Contract 36612, rel. 9

Hold Time: 48 hours from sample receipt

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| Leslie Diaz | Leslie Diaz | | 8/10/11 1435 | | | | 8/10/11 1435 |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |

Matrix*

| | | | |
|---|---|---|---|
| S | = Soil | DL | = Drum Liquids |
| SE | = Sediment | T | = Tissue |
| SO | = Solid | WI | = Wipe |
| SL | = Sludge | L | = Liquid |
| W | = Water | V | = Vegetation |
| O | = Oil | VA | = Vapor |
| A | = Air | X | = Other |
| DS | = Drum Solids | | |

| FINAL SAMPLE DISPOSITION | Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time |
|---|---|---|---|
| | | | |

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

RPP-RPT-51294, Rev. 0

| Assembler | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | C.O.C. No. 20111143 |
|---|---|---|
| N/A | | Page 1 of 1 |

| | | |
|---|---|---|
| Collector: Ekstrom/Rivera | Contact/Requestor: Jo Marie Johnson/Steve McKinney | Telephone No. 372-9474 MSIN T6-02 FAX |
| SAF No.: N/A | Sample Origin: S Farm Vadose | Purchase Order/Charge Code: N/A |
| Project Title: S Farm Barrier | Logbook/ Work Package No.: N/A | Ice Chest No. GWS-210 Temp. N/A |
| Shipped To (Lab): WSCF | Method of Shipment: Govt. vehicle | Bill of Lading/Air Bill No. N/A |
| Protocol: N/A | Data Turnaround: 2 working days from sample receipt | Parts and Return No. N/A |

| Sample No. | Lab ID | * | Date | Time | No./Type Container | Sample Analysis | Preservative |
|---|---|---|---|---|---|---|---|
| 6 | B2FDK0 | | 8-10-11 | | 1 L glass | see list 1 (Lab Sample ID ~~S11V005627~~) S11V005357 - I003 | <6 C |
| | | | | | | cm 10/17/11 | |
| | | | | | | C 8398 - Sample group # 2011 - composite | |
| | | | | | | | |
| | | | | | | ~~List 1: %moisture, Tc-99 by ICP/MS on a 1:1 water digest and nitrate on 1:1~~ | |
| | | | | | | ~~water digest~~. csm 10/17/11 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS
~~Send results to Steve McKinney (Steve_G_McKinney@rl.gov) and Melissa Garrard (see SOW for e-mail address) Contract 36612, rel. 9~~
csm 10/17/11
Report per FSAP.
Required analyses per e-mail dated 10-20-11

Hold Time
~~48 hours from sample receipt~~
csm 10/17/11
0°C [signature]

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| Leslie Diaz | Leslie Diaz | 8/10/11 | 1435 | [signature] | [signature] | [signature] | 8/10/11 1435 |
| TA Frazier | Teresa Frazier | 10/13/11 | 1000 | L.D. Wall | L.D. Wall | 10/13/11 | 1000 |
| L.D. Wall | L.D. Wall | 10/13/11 | 1045 | R.T. Steele | R.T. Steele | ATL | 10/13/11 1045 |
| | | | | | | | |

Matrix*
S = Soil; SE = Sediment; SO = Solid; SL = Sludge; W = Water; O = Oil; A = Air; DS = Drum Solids; DL = Drum Liquids; T = Tissue; WI = Wipe; L = Liquid; V = Vegetation; VA = Vapor; X = Other

| FINAL SAMPLE DISPOSITION | Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time |
|---|---|---|---|
| | | | |

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

# C8400

| Soil Samples | | |
|---|---|---|
| **Date** | **Depth** | **Sample No.** |
| 8/12/2011 | 54 – 56 ft | B2FYP2-Rad |
| | | B2FYP3 |
| | | B2FYP4 |
| | | B2FYP5 |
| | | B2FYP6 |
| 8/15/2011 | 93 – 95 ft | B2FYP7-Rad |
| | | B2FYP8 |
| | | B2FYP9 |
| | | B2FYR0 |
| | | B2FYR1 |
| 8/18/2011 | 126 – 128 ft | B2FYR2-Rad |
| | | B2FYR3 |
| | | B2FYR4 |
| | | B2FYR5 |
| | | B2FYR6 |

| Composites – COC 20111290 | |
|---|---|
| **Date** | **Sample No.** |
| 8/12/2011 | B2FYY0 |
| 8/15/2011 | B2FYY1 |
| 8/18/2011 | B2FYY2 |

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-051 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Elstrom / Villarreal | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8400 I001 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: 54 to 56 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ WSCF RLE 8/12/11 | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | 32°F 58°F | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| A=Air, DI=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegetation, W=Water, WI=Wipe, X=Other | 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) 08/12/11 #9: 112940 | PRESERVATION | None |
| | | HOLDING TIME | 6 Months |
| | | TYPE OF CONTAINER | G/P |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 60mL |
| | SPECIAL HANDLING AND/OR STORAGE: RADIOACTIVE TIE TO: B2FYP2 | SAMPLE ANALYSIS | Rad Screen; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYP2 | SOIL | 8/12/11 | 0930 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | | SPECIAL INSTRUCTIONS |
|---|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: [signature] | DATE/TIME: 8/12/11 1005 | RECEIVED BY/STORED IN: M. Nelson [signature] | DATE/TIME: 8/12/11 1005 | The laboratory will composite any remaining material with the material from the liners from the same interval, and use it for the composite analyses. [signature] 8-12-11 |
| 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 | |
| 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 |

PRINTED ON 7/28/2011 A-6003-618 (REV 2)

## Chain of Custody

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-052 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Elstrom / Villarreal | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8400 I001 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 54 to 56 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ WSCF BCE 8/12/11 | 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)

**SPECIAL HANDLING AND/OR STORAGE**: RADIOACTIVE TIE TO: B2FYP2

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | G |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 500mL |
| SAMPLE ANALYSIS | Generic Testing; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYP3 | SOIL | 8/12/11 | 0930 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: B.E. Elstrom | DATE/TIME: 8/12/11 1005 | RECEIVED BY/STORED IN: M. Nelson M.Nelson | DATE/TIME: 8/12/11 1005 |
| RELINQUISHED BY/REMOVED FROM: Victor Villarreal | DATE/TIME: 8/12/11 1145 | RECEIVED BY/STORED IN: Leslie Diaz | DATE/TIME: 8/12/11 11:45 |
| 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 |

**SPECIAL INSTRUCTIONS**

The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

Scott Duncan 8-12-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 7/28/2011 A-6003-618 (REV 2)

RPP-RPT-51294, Rev. 0

## Chain of Custody

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-053 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Elstrom/Villarreal | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8400 I001 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: 54 to 56 ft. | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ BRE 8/12/11 WSCF | 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)

**SPECIAL HANDLING AND/OR STORAGE**
RADIOACTIVE TIE TO: B2FYP2

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | Liner |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 160g |
| SAMPLE ANALYSIS | Bulk Density - D2937 (TF); |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYP4 A | SOIL | 8/12/11 | 0930 | ✓ |
| B2FYP5 B | SOIL | 8/12/11 | 0930 | ✓ |
| B2FYP6 C | SOIL | 8/12/11 | 0930 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: [signature] | DATE/TIME: 8/12/11 1005 | RECEIVED BY/STORED IN: M. Nelson M. Nelson | DATE/TIME: 8/12/11 1005 |
| RELINQUISHED BY/REMOVED FROM: Victor Sims [signature] | DATE/TIME: 8/12/11 1145 | RECEIVED BY/STORED IN: Leslie Diaz Leslie Diaz | DATE/TIME: 8/12/11 1145 |
| 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 |

**SPECIAL INSTRUCTIONS**
The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.
[signature] 8-12-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

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RPP-RPT-51294, Rev. 0

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-054 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8400 I002 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: 93 to 95 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ WSCF 8/15/11 | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| 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 | 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) 112962 | PRESERVATION | None |
| | | HOLDING TIME | 6 Months |
| | | TYPE OF CONTAINER | G/P |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 60mL |
| | SPECIAL HANDLING AND/OR STORAGE: RADIOACTIVE TIE TO: B2FYP7 | SAMPLE ANALYSIS | Rad Screen |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYP7 | SOIL | 8/15/11 | 1355 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: Ekstrom & Ekstrom | DATE/TIME: 8/15/11 1455 | RECEIVED BY/STORED IN: Victor Sims | DATE/TIME: 8/15/11 1455 |
| 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 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |

SPECIAL INSTRUCTIONS

The laboratory will composite any remaining material with the material from the liners from the same interval. and use it for the composite analyses.

Scott Snook
8-15-11

| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
|---|---|---|---|
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 7/28/2011 A-6003-618 (REV 2)

RPP-RPT-51294, Rev. 0

## Chain of Custody

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-055 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8400 I002 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: 93 to 95 ft. | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ RES 8/15/11 WSCF | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| A=Air<br>DL=Drum Liquids<br>DS=Drum Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SE=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | 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~6C |
| | | HOLDING TIME | 24 Hours |
| | | TYPE OF CONTAINER | G |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 500mL |
| | SPECIAL HANDLING AND/OR STORAGE<br>RADIOACTIVE TIE TO: B2FYP7 | SAMPLE ANALYSIS | Generic Testing: |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYP8 | SOIL | 8/15/11 | 1355 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: [signature] | DATE/TIME: 8/15/11 1455 | RECEIVED BY/STORED IN: Victor Sims [signature] | DATE/TIME: 8/15/11 1455 |
| RELINQUISHED BY/REMOVED FROM: Victor Sims [signature] | DATE/TIME: 8/17/11 1145 | RECEIVED BY/STORED IN: Leslie Diaz Rosales [signature] | DATE/TIME: 8/17/11 11:45 |
| 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 |

**SPECIAL INSTRUCTIONS**

The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

Scott Snook 8-15-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 7/28/2011 A-6003-618 (REV.2)

RPP-RPT-51294, Rev. 0

## Chain of Custody

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-056 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND: 60 Days / 120 Days |
| SAMPLING LOCATION: C8400 1002 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 93 to 95 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ BRE 8/15/11 WSCF | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | 32 f/60 f | |

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)

**SPECIAL HANDLING AND/OR STORAGE**
RADIOACTIVE TIE TO: B2FYP7

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | Liner / 500ml |
| NO. OF CONTAINER(S) | 1 / 2 500ml |
| VOLUME | 160g |
| SAMPLE ANALYSIS | Bulk Density - D2937 (TF): |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | | |
|---|---|---|---|---|---|
| B2FYP9 A | SOIL | 8/15/11 | 1355 | ✓ | |
| B2FYR0 B | SOIL | 8/15/11 | 1355 | ✓ | 500 ml jar BRE 8/15/11 |
| B2FYR1 C | SOIL | 8/15/11 | 1355 | ✓ | 500 ml jar BRE 8/15/11 |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: BR Ekstrom / Ekstrom | DATE/TIME: 8/15/11 1455 | RECEIVED BY/STORED IN: Victor Snook 8/15/11 | DATE/TIME: 1455 |
| RELINQUISHED BY/REMOVED FROM: Victor Snook 8/17/11 | DATE/TIME: 1145 | RECEIVED BY/STORED IN: Leslie Diaz 8/17/11 | DATE/TIME: 1145 |
| 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 |

**SPECIAL INSTRUCTIONS**
The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

Scott Snook 8-15-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 7/28/2011 A-6003-618 (REV 2)

RPP-RPT-51294, Rev. 0

| Assembler | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | C.O.C. No. 20111290 |
|---|---|---|
| N/A | | Page 1 of 1 |

| | | |
|---|---|---|
| Collector: Ekstrom/Rivera | Contact/Requestor: Jo Marie Johnson/Steve McKinney | Telephone No. 372-9474 MSIN T6-02 FAX |
| SAF No.: N/A | Sample Origin: S Farm Vadose | Purchase Order/Charge Code: N/A |
| Project Title: S Farm Barrier | Logbook/ Work Package No.: N/A | Ice Chest No. GWS-210 Temp. N/A |
| Shipped To (Lab): WSCF | Method of Shipment: Govt. Vehicle | Bill of Lading/Air Bill No.: N/A |
| Protocol: N/A 113006 | Data Turnaround: 2 working days from sample receipt | Parts and Return No.: N/A |

| Sample No. | Lab ID | * | Date | Time | No./Type Container | Sample Analysis | Preservative |
|---|---|---|---|---|---|---|---|
| 1 | B2FYY0 | | 8-12-11 | 0930 | 1 L glass | see list 1 (Lab Sample ID ~~S11V005634~~) S11V005635 - I001 * | <6 C |
| 2 | B2FYY1 | | 8-15-11 | 1355 | 1 L glass | see list 1 (Lab Sample ID ~~S11V005652~~) cm 10/17/11 S11V005~~653~~ cm | <6 C |
| MD 8-17-11 | ~~B2FYY2~~ | | ~~8-17-11~~ | | ~~1 L glass~~ | ~~see list 1 (Lab Sample ID S11V005688)~~ cm 10/17/11 5653 - I002 * 10/17/11 | <6 C |
| | | | | | | * C 8400 - sample group 20111290 - composites | |
| | | | | | | ~~List 1: %moisture, Tc 99 by ICP/MS on a 1:1 water digest and nitrate on 1:1~~ | |
| | | | | | | ~~water digest.~~ csm 10/17/11 | |

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS

~~Send results to Steve McKinney (Steve G Mckinney@rl.gov) and Melissa Garrard (see SOW for e-mail address) Contract 36612, rel. 9~~ csm 10/17/11

Report per FSAP. 0°C [illegible]

Required analyses per e-mail dated 10/20/11

Hold Time: ~~40 hours from sample receipt~~ csm 10/17/11

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| Leslie Diaz | Leslie Diaz | | 8/17/11 1350 | [illegible] | [illegible] | | 8/17/11 135 |
| TA Frazier | Teresa Frazier | | 10/13/11 1000 | L.D. WALL | L.D. Wall | | 10/13/11 1000 |
| L.D. WALL | L.D. Wall | | 10/14/11 1045 | RF Steele | RF Steele | AHL | 10/13/11 1045 |
| | | | | | | | |

Matrix*

| | | | |
|---|---|---|---|
| S | = Soil | DL | = Drum Liquids |
| SE | = Sediment | T | = Tissue |
| SO | = Solid | WI | = Wipe |
| SL | = Sludge | L | = Liquid |
| W | = Water | V | = Vegetation |
| O | = Oil | VA | = Vapor |
| A | = Air | X | = Other |
| DS | = Drum Solids | | |

| FINAL SAMPLE DISPOSITION | Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time |
|---|---|---|---|
| | | | |

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-057 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8400 I003 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFUZ-10-000002 | ACTUAL SAMPLE DEPTH: 126 to 128ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ W5CF BeE 8/16/11 | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A 31/50 | | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| A=Air<br>DL=Drum Liquids<br>DS=Drum Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SE=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | 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)<br>1129916 | PRESERVATION | None |
| | | HOLDING TIME | 6 Months |
| | | TYPE OF CONTAINER | G/P |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 60mL |
| | SPECIAL HANDLING AND/OR STORAGE<br>RADIOACTIVE TIE TO: B2FYR2 | SAMPLE ANALYSIS | Rad Screen; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYR2 | SOIL | 8/18/11 | 0825 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: B2 Ekstrom B2 Ekstrom | DATE/TIME: 8/18/11 0930 | RECEIVED BY/STORED IN: DB Kozal Hacayl | DATE/TIME: 8/18/11 0930 |
| 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 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |

SPECIAL INSTRUCTIONS

The laboratory will composite any remaining material with the material from the liners from the same interval. and use it for the composite analyses.

Scott Snook 8-18-11

| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
|---|---|---|---|
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

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## Chain of Custody

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-058 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8400 I003 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 126 to 128 ft. | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ WSCF RRE 8/16/11 | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | PRESERVATION | Cool~6C |
|---|---|---|---|
| A=Air<br>DL=Drum Liquids<br>DS=Drum Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SE=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | 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) | HOLDING TIME | 24 Hours |
| | | TYPE OF CONTAINER | G |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 500mL |
| | SPECIAL HANDLING AND/OR STORAGE<br>RADIOACTIVE TIE TO: B2FYR2 | SAMPLE ANALYSIS | Generic Testing |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYR3 | SOIL | 8/18/11 | 0825 | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | | SPECIAL INSTRUCTIONS |
|---|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: [illegible] | DATE/TIME: 8/18/11 0930 | RECEIVED BY/STORED IN: [illegible] | DATE/TIME: 8/18/11 0930 | The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.<br>Scott Snook 8-18-11 |
| RELINQUISHED BY/REMOVED FROM: [illegible] | DATE/TIME: 8/18/11 | RECEIVED BY/STORED IN: Barbara Miller | DATE/TIME: 8/18/11 1312 | |
| 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 | |

PRINTED ON 7/28/2011 A-6003-618 (REV 2)

## Chain of Custody

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-059 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Eberstrom / Snook | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8400 I003 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: 126 to 128 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ WSCF BEE 8/18/11 | 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)

SPECIAL HANDLING AND/OR STORAGE: RADIOACTIVE TIE TO: B2FYR2

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | Liner |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 160g |
| SAMPLE ANALYSIS | Bulk Density - D2937 (TF); |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FYR4 A | SOIL | 8/18/11 | 0825 | ✓ |
| B2FYR5 B | SOIL | 8/18/11 | 0825 | ✓ |
| B2FYR6 C | SOIL | 8/18/11 | 0825 | ✓ |

← Liner Bio-contaminated BEE 8/18/11
500 mL Jar BEE 8/18/11

| CHAIN OF POSSESSION | DATE/TIME | SIGN/ PRINT NAMES: RECEIVED BY/STORED IN | DATE/TIME |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: Eberstrom B Eberstrom | 8/18/11 0930 | RECEIVED BY/STORED IN: Porcazal, Abreu | 8/18/11 0930 |
| RELINQUISHED BY/REMOVED FROM: [illegible] | 8/18/11 | RECEIVED BY/STORED IN: Barbara Mitek | 8/18/11 1312 |
| 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 |

SPECIAL INSTRUCTIONS

The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

Scott Snook 8-18-11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 7/28/2011 A-6003-618 (REV 2)

| Assembler | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | C.O.C. No. 20111290 |
|---|---|---|
| N/A | | Page 1 of 1 |

| | | |
|---|---|---|
| Collector: Ekstrom/Rivera | Contact/Requestor: Jo Marie Johnson/Steve McKinney | Telephone No. 372-9474 MSIN T6-02 FAX |
| SAF No.: N/A | Sample Origin: S Farm Vadose | Purchase Order/Charge Code: N/A |
| Project Title: S Farm Barrier | Logbook/ Work Package No.: N/A | Ice Chest No. GWS-210 Temp. N/A |
| Shipped To (Lab): WSCF | Method of Shipment: Govt. vehicle | Bill of Lading/Air Bill No. N/A |
| Protocol: N/A | Data Turnaround: 2 working days from sample receipt | Parts and Return No. N/A |

| Sample No. | Lab ID | * | Date | Time | No./Type Container | Sample Analysis | Preservative |
|---|---|---|---|---|---|---|---|
| 3 | B2FYY2 | | 8-18-11 | 0825 | 1 L glass | see list 1 (Lab Sample ID ~~S11V005688~~) S11V00 5689 - I003 * | <6 C |
| | | | | | | CM 10/17/11 | |
| | | | | | | * C8400 - Group# 20111290 - Composite | |
| | | | | | | | |
| | | | | | | ~~List 1: %moisture, Tc-99 by ICP/MS on a 1:1 water digest and nitrate on 1:1~~ | |
| | | | | | | ~~water digest~~ CSM 10/17/11 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS

~~Send results to Steve McKinney (Steve_G_McKinney@rl.gov) and Mellissa Garrard (see SOW for e-mail address) Contract 36612, rel. 9~~ CSM 10/17/11 0°C report per FSAP. Required analyses per e-mail 10/20/2011.

Hold Time: ~~48 hours from sample receipt~~ CSM 10/17/11

| Relinquished By (Print / Sign) | Date/Time | Received By (Print / Sign) | Date/Time |
|---|---|---|---|
| Barbara Miller B Miller | 8/18/11 1430 | K Breazeal K Breazeal | 8/18/11 1430 |
| Tarnazier Teresa Tarnazier | 10/13/11 1000 | L.D. Wall L.D. Wall | LW. 10/13/11 ~~10~~ 10/13/11 1000 |
| L.D. Wall L.D. Wall | 10/13/11 1045 | R.F. Steele R.F. Steele AtL | 10/13/11 1045 |
| | | | |

Matrix*

| | | | |
|---|---|---|---|
| S | = Soil | DL | = Drum Liquids |
| SE | = Sediment | T | = Tissue |
| SO | = Solid | WI | = Wipe |
| SL | = Sludge | L | = Liquid |
| W | = Water | V | = Vegetation |
| O | = Oil | VA | = Vapor |
| A | = Air | X | = Other |
| DS | = Drum Solids | | |

| FINAL SAMPLE DISPOSITION | Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time |
|---|---|---|---|
| | | | |

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

RPP-RPT-51294, Rev. 0

## Chain of Custody

| Assembler | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | C.O.C. No. 20111290 |
|---|---|---|
| N/A | | Page 1 of 1 |

| | | |
|---|---|---|
| Collector: Ekstrom/Rivera | Contact/Requestor: Jo Marie Johnson/Steve McKinney | Telephone No. 372-9474 MSIN T6-02 FAX |
| SAF No.: N/A | Sample Origin: S Farm Vadose | Purchase Order/Charge Code |
| Project Title: S Farm Barrier | Logbook/ Work Package No.: N/A | Ice Chest No. Temp. |
| Shipped To (Lab): WSCF | Method of Shipment | Bill of Lading/Air Bill No. |
| Protocol: N/A | Data Turnaround: 2 working days from sample receipt | Parts and Return No. |

| Sample No. | Lab ID | * | Date | Time | No./Type Container | Sample Analysis | Preservative |
|---|---|---|---|---|---|---|---|
| 3 | D2FYY2 | | 8-18-11 | 0825 | 1 L glass | see list 1 (Lab Sample ID S11V005688) | <6 C |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | List 1: %moisture, Tc-99 by ICP/MS on a 1:1 water digest and nitrate on 1:1 | |
| | | | | | | water digest. | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS
Send results to Steve McKinney (Steve_G_Mckinney@rl.gov) and Mellissa Garrard (see SOW for e-mail address) Contract 36612, rel. 9

Hold Time: 48 hours from sample receipt

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| Barbara Miller | B. Miller | | 8/18/11/1430 | K Breazeal | K Breazeal | 8/18/11 | 1430 |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |

Matrix*

| | | | |
|---|---|---|---|
| S | = Soil | DL | = Drum Liquids |
| SE | = Sediment | T | = Tissue |
| SO | = Solid | WI | = Wipe |
| SL | = Sludge | L | = Liquid |
| W | = Water | V | = Vegetation |
| O | = Oil | VA | = Vapor |
| A | = Air | X | = Other |
| DS | = Drum Solids | | |

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By — Date/Time

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

RPP-RPT-51294, Rev. 0

| Assembler | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | C.O.C. No. 20111290 |
|---|---|---|
| N/A | | Page 1 of 1 |

| | | |
|---|---|---|
| Collector: Ekstrom/Rivera | Contact/Requestor: Jo Marie Johnson/Steve McKinney | Telephone No. 372-9474 MSIN T6-02 FAX |
| SAF No.: N/A | Sample Origin: S Farm Vadose | Purchase Order/Charge Code |
| Project Title: S Farm Barrier | Logbook/ Work Package No.: N/A | Ice Chest No. Temp. |
| Shipped To (Lab): WSCF | Method of Shipment | Bill of Lading/Air Bill No. |
| Protocol: N/A 113006 | Data Turnaround: 2 working days from sample receipt | Parts and Return No. |

| Sample No. | Lab ID | * | Date | Time | No./Type Container | Sample Analysis | Preservative |
|---|---|---|---|---|---|---|---|
| 1 | B2FYY0 | | 8-12-11 | 0930 | 1 L glass | see list 1 (Lab Sample ID S11V005634) | <6 C |
| 2 | B2FYY1 | | 8-15-11 | 1355 | 1 L glass | see list 1 (Lab Sample ID S11V005652) | <6 C |
| 1AD 8-17-11 | ~~B2FYY2~~ | | ~~8-17-11~~ | | ~~1 L glass~~ | ~~see list 1 (Lab Sample ID S11V005688)~~ | <6 C |
| | | | | | | | |
| | | | | | | List 1: %moisture, Tc-99 by ICP/MS on a 1:1 water digest and nitrate on 1:1 | |
| | | | | | | water digest. | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS ○ Yes ◉ No

SPECIAL INSTRUCTIONS: Send results to Steve McKinney (Steve G McKinney@rl.gov) and Mellissa Garrard (see SOW for e-mail address) Contract 36612, rel. 9

Hold Time: 48 hours from sample receipt

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| Leslie Diaz | Leslie Diaz | | 8/17/11 1350 | [illegible] | [illegible] | | 8/17/11 135 |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |

Matrix*

| | | | |
|---|---|---|---|
| S | = Soil | DL | = Drum Liquids |
| SE | = Sediment | T | = Tissue |
| SO | = Solid | WI | = Wipe |
| SL | = Sludge | L | = Liquid |
| W | = Water | V | = Vegetation |
| O | = Oil | VA | = Vapor |
| A | = Air | X | = Other |
| DS | = Drum Solids | | |

| FINAL SAMPLE DISPOSITION | Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time |
|---|---|---|---|
| | | | |

All samples containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6003-962 (03/05)

| ATL | SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST | LO-090-101 Rev E.E.0 ~~SFarm~~ mmg 10/20/11 |
|---|---|---|

Date Samples Received: 10·13·11 Group #: ~~20111030~~, 20111250 S-Farm
Number of Samples: 21 total 20111272, 20111243, 20111290 } SFarm
Sample Custodian: [signature]

**Sample Custodian to Complete:**

| Action | Yes | No | N/A | Comments |
|---|---|---|---|---|
| RSA/COC provided? | ✓ | | | |
| RSR provided? | ✓ | | | |
| Verify GKI is complete | | | ✓ | ☑ In Project File |
| Check that outer custody seal is intact, if present | ✓ | | | on Ice Cooler |
| Record cooler temperature in centigrade, as appropriate | | | ✓ | ☐ Check if no cooler and/or no ice Cooler 1, 0°C Cooler 2, 0°C |
| Samples are intact and in good condition | ✓ | | | If No, provide comments on back |
| Verify that COC or RSA is accurate and complete, containing the following information: | | | | |
| • Client name and client sample number | ✓ | | | |
| • Date and time of sampling | ✓ | | | |
| • Sampling location or origin | ✓ | | | |
| • Container type, size, and number | ✓ | | | |
| • Preservatives (if used) are noted on the COC/RSA and sample bottle | ✓ | | | |
| • Analysis request is clear | ✓ | | | |
| • Signature of persons relinquishing and receiving samples | ✓ | | | |
| • Date and/or time of sample custody exchange | ✓ | | | |
| Verify that sample numbers on containers match the COC and/or RSA | ✓ | | | |
| Samples stored properly (e.g., refrigeration) | ✓ | | | |

Notify the PM immediately if any problems are noted. (Any "No" checked requires Project Manager resolution.)

**PM to Complete:**

Samples acceptable for release? Yes PM Initials [initials] Date 10/13/11

If No, comment on communication and resolution:

Other Comments:

A-6005-342 (REV 2)

| ATL | SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST | LO-090-101 Rev E.E.0 ~~SFarm~~ mmm 10/20/11 |
|---|---|---|

Date Samples Received: 10·13·11

Number of Samples: 21 total

Sample Custodian: [signature]

Group #: ~~20111030~~, 20111250 S-Farm
20111272
20111243 } SFarm
20111290

**Sample Custodian to Complete:**

| Action | Yes | No | N/A | Comments |
|---|---|---|---|---|
| RSA/COC provided? | ✓ | | | |
| RSR provided? | ✓ | | | |
| Verify GKI is complete | | | ✓ | ☑ In Project File |
| Check that outer custody seal is intact, if present | ✓ | | | ON Ice Cooler |
| Record cooler temperature in centigrade, as appropriate | | | ✓ | ☐ Check if no cooler and/or no ice Cooler 1, 0°C Cooler 2, 0°C |
| Samples are intact and in good condition | ✓ | | | If No, provide comments on back |
| Verify that COC or RSA is accurate and complete, containing the following information: | | | | |
| • Client name and client sample number | ✓ | | | |
| • Date and time of sampling | ✓ | | | |
| • Sampling location or origin | ✓ | | | |
| • Container type, size, and number | ✓ | | | |
| • Preservatives (if used) are noted on the COC/RSA and sample bottle | ✓ | | | |
| • Analysis request is clear | ✓ | | | |
| • Signature of persons relinquishing and receiving samples | ✓ | | | |
| • Date and/or time of sample custody exchange | ✓ | | | |
| Verify that sample numbers on containers match the COC and/or RSA | ✓ | | | |
| Samples stored properly (e.g., refrigeration) | ✓ | | | |

Notify the PM immediately if any problems are noted. (Any "No" checked requires Project Manager resolution.)

**PM to Complete:**

Samples acceptable for release? Yes PM Initials [initials] Date 10/13/11

If No, comment on communication and resolution:

Other Comments:

A-6005-342 (REV 2)

# C8402

| Soil Samples | | |
|---|---|---|
| **Date** | **Depth** | **Sample No.** |
| 9/8/2011 | 47 – 49 ft | B2FDK1 |
| | | B2FDK2 |
| | | B2FDK3 |
| | | B2FDK4 |
| | | B2FDK5 |
| 9/12/2011 | 107 – 109 ft | B2FDK6 |
| | | B2FDK7 |
| | | B2FDK8 |
| 9/13/2011 | Eq Blank | B2FDM0 |
| | Field Blank | B2FDM1 |
| 9/13/2011 | 126 - 128 | B2FDK9 |
| | | B2FDL0 |
| | | B2FDL1 |
| | | B2FDL2 |

RPP-RPT-51294, Rev. 0

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-027 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: SHARP/RIVERA | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND |
| SAMPLING LOCATION: C8402 1001 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY ☐ | 60 Days / 120 Days |
| ICE CHEST NO.: TFUS-08-04 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 44-49 | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: 9-9-11 PS ~~222-S Lab Operations~~ UNSCF | 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)

SPECIAL HANDLING AND/OR STORAGE

| PRESERVATION | Cool~6C |
|---|---|
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | G |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 500mL |
| SAMPLE ANALYSIS | Generic Testing; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FDK1 | SOIL | 9-8-11 | 1010 | ✓ |

GRP # 20111161
511V005390

| CHAIN OF POSSESSION | SIGN/ PRINT NAMES |
|---|---|
| RELINQUISHED BY/REMOVED FROM: RSP RSharp 9-8-11 DATE/TIME: 1210 | RECEIVED BY/STORED IN: Oberrad Y Brown 9/8/11 1210 DATE/TIME |
| RELINQUISHED BY/REMOVED FROM: Oberrad Y Brown 9/15/11 0950 DATE/TIME | RECEIVED BY/STORED IN: R.D. Sutton 9/15/11 0950 DATE/TIME |
| RELINQUISHED BY/REMOVED FROM: R.D. Sutton 9-15-11 1000 DATE/TIME | RECEIVED BY/STORED IN: 9-15-11 1000 DATE/TIME |
| RELINQUISHED BY/REMOVED FROM: 9/15/11 1330 DATE/TIME | RECEIVED BY/STORED IN: 9/15/11 1330 DATE/TIME |
| RELINQUISHED BY/REMOVED FROM: 9/15/11 1400 DATE/TIME | RECEIVED BY/STORED IN: RHTeele CTTeele AHL 9-15-11 1400 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 |

SPECIAL INSTRUCTIONS: The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

9-8-11

O'R Related 9-15-11

| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
|---|---|---|---|
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 6/21/2011

A-6003-618 (REV 2)

RPP-RPT-51294, Rev. 0

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-028 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: SHART / RIVERA | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND: 60 Days / 120 Days |
| SAMPLING LOCATION: C8402 I001 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | |
| ICE CHEST NO.: TFVS-09-08 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: 47.49 | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: 9-9-11 RS ~~222-S Lab Operations~~ WSCF | 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)

**SPECIAL HANDLING AND/OR STORAGE**

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | Liner |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 160g |
| SAMPLE ANALYSIS | Bulk Density - D2937 (TF); |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FDK2 | SOIL | 9-8-11 | 1010 | ✓ |
| B2FDK3 | SOIL | 9-8-11 | 1010 | ✓ |
| B2FDK4 | SOIL | 9-8-11 | 1010 | ✓ |

GRP # 20111161
S11V005387
5388
5389

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: RSharp 9-8-11 | DATE/TIME: 1210 | RECEIVED BY/STORED IN: KBreazeal K Breazeal | DATE/TIME: 9/8/11 1210 |
| RELINQUISHED BY/REMOVED FROM: KBreazeal K Breazeal | DATE/TIME: 9/15/11 0950 | RECEIVED BY/STORED IN: R.D. Julian | DATE/TIME: 9/15/11 0950 |
| RELINQUISHED BY/REMOVED FROM: R.D. Julian | DATE/TIME: 9-15-11 1000 | RECEIVED BY/STORED IN: [illegible] | DATE/TIME: 9/15/11 1000 |
| RELINQUISHED BY/REMOVED FROM: [illegible] | DATE/TIME: 9/15/11 1330 | RECEIVED BY/STORED IN: [illegible] | DATE/TIME: 9/15/11 1330 |
| RELINQUISHED BY/REMOVED FROM: [illegible] | DATE/TIME: 9/15/11 1460 | RECEIVED BY/STORED IN: RTSteele ATL | DATE/TIME: 9.15.11 1460 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |

**SPECIAL INSTRUCTIONS**
The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

[signature] 9-8-11

0°C RTSteele 9.15.11

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 6/21/2011 A-6003-618 (REV 2)

RPP-RPT-51294, Rev. 0

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-029 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Rivera | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND: 60 Days / 120 Days |
| SAMPLING LOCATION: C8402 I002 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: 107 to 109 ft. | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ WSCF BRE 9/12/11 | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| A=Air<br>DL=Drum Liquids<br>DS=Drum Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SE=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | 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~6C |
| | | HOLDING TIME | 24 Hours |
| | | TYPE OF CONTAINER | G |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 500mL |
| | SPECIAL HANDLING AND/OR STORAGE | SAMPLE ANALYSIS | Generic Testing; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FDK5 | SOIL | 9/12/11 | 1315 | ✓ |

GRP# 20111161
511V005408

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: [signature] | DATE/TIME: 9/12/11 1400 | RECEIVED BY/STORED IN: [signature] | DATE/TIME: 9/12/11 1400 |
| RELINQUISHED BY/REMOVED FROM: [signature] | DATE/TIME: 9/15/11 0950 | RECEIVED BY/STORED IN: R.D. Julian [signature] | DATE/TIME: 9/15/11 0950 |
| RELINQUISHED BY/REMOVED FROM: R.D. Julian [signature] | DATE/TIME: 9-15-11 1000 | RECEIVED BY/STORED IN: [signature] | DATE/TIME: 9-15-11 100 |
| RELINQUISHED BY/REMOVED FROM: [signature] | DATE/TIME: 9/15/11 1320 | RECEIVED BY/STORED IN: [signature] | DATE/TIME: 9/15/11 1320 |
| RELINQUISHED BY/REMOVED FROM: [signature] | DATE/TIME: 9/15/11 1400 | RECEIVED BY/STORED IN: RTSteele ATL | DATE/TIME: 9.15.11 1400 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |

SPECIAL INSTRUCTIONS

The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

[signature] 9-12-11

0°C RTSteele 9.15.11

| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
|---|---|---|---|
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 6/21/2011 A-6003-618 (REV 2)

RPP-RPT-51294, Rev. 0

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-006-030 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Ekstrom / Rivera | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 | DATA TURNAROUND: 60 Days / 120 Days |
| SAMPLING LOCATION: C8402 I002 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier | | SAF NO.: V11-006 | AIR QUALITY: ☐ | |
| ICE CHEST NO.: TFVS-09-008 | FIELD LOGBOOK NO.: TFV2-10-000002 | ACTUAL SAMPLE DEPTH: 107 to 109 ft | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: ~~222-S Lab Operations~~ WSCF BRE 9/12/11 | OFFSITE PROPERTY NO.: N/A | | BILL OF LADING/AIR BILL NO.: N/A | 42°F / 60°F | |

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)

**SPECIAL HANDLING AND/OR STORAGE**

| | |
|---|---|
| PRESERVATION | Cool~6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | Liner |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 160g |
| SAMPLE ANALYSIS | Bulk Density - D2937 (TF); |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B2FDK6 | SOIL | 9/12/11 | 1315 | V |
| B2FDK7 | SOIL | 9/12/11 | 1315 | V |
| B2FDK8 | SOIL | 9/12/11 | 1315 | V |

GRPH 20111161
SIN00 5405
SIN00 5406
SIN00 5407

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: [signature] | DATE/TIME: 9/12/11 1400 | RECEIVED BY/STORED IN: [signature] | DATE/TIME: 9/12/11 1400 |
| RELINQUISHED BY/REMOVED FROM: [signature] | DATE/TIME: 9/15/11 0950 | RECEIVED BY/STORED IN: R.D. Julian [signature] | DATE/TIME: 9/15/11 0950 |
| RELINQUISHED BY/REMOVED FROM: R.D. Julian [signature] | DATE/TIME: 9-15-11 1000 | RECEIVED BY/STORED IN: [signature] | DATE/TIME: 9-15-11 1000 |
| RELINQUISHED BY/REMOVED FROM: [signature] | DATE/TIME: 9/15/11 1330 | RECEIVED BY/STORED IN: [signature] | DATE/TIME: 9/15/11 1330 |
| RELINQUISHED BY/REMOVED FROM: [signature] | DATE/TIME: 9/15/11 1400 | RECEIVED BY/STORED IN: RTRTEELE AHL | DATE/TIME: 9-15-11 1400 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |

**SPECIAL INSTRUCTIONS**
The laboratory will determine bulk density for each liner, then the material from the liners and shoe (500 ml glass jar assigned to generic testing) shall be composited and analyzed for the composite analyses.

[signature] 9-12-11

0°C [signature] 9.15.11

| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
|---|---|---|---|
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 6/21/2011 A-6003-618 (REV 2)

| ATL | SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST | LO-090-101 Rev EG.0 |
|---|---|---|

Date Samples Received: 9.13.11 Group #: 20111159

Number of Samples: 1 5 FARM EQ C8402

Sample Custodian: [illegible]

**Sample Custodian to Complete:**

| Action | Yes | No | N/A | Comments |
|---|---|---|---|---|
| RSA/COC provided? | ✓ | | | |
| RSR provided? | ✓ | | | |
| Verify GKI is complete | | | | ☑ In Project File |
| Check that outer custody seal is intact, if present | | | ✓ | |
| Record cooler temperature in centigrade, as appropriate | 4°C pk | | | ☐ Check if no cooler and/or no ice |
| Samples are intact and in good condition | ✓ | | | If No, provide comments on back |
| Verify that COC or RSA is accurate and complete, containing the following information: | | | | |
| • Client name and client sample number | ✓ | | | |
| • Date and time of sampling | ✓ | | | |
| • Sampling location or origin | ✓ | | | |
| • Container type, size, and number | ✓ | | | |
| • Preservatives (if used) are noted on the COC/RSA and sample bottle | | | | |
| • Analysis request is clear | ✓ | | | |
| • Signature of persons relinquishing and receiving samples | ✓ | | | |
| • Date and/or time of sample custody exchange | ✓ | | | |
| Verify that sample numbers on containers match the COC and/or RSA | ✓ | | | |
| Samples stored properly (e.g., refrigeration) | ✓ | | | |

Notify the PM immediately if any problems are noted. (Any "No" checked requires Project Manager resolution.)

**PM to Complete:**

Samples acceptable for release? Yes PM Initials pk Date 9.13.11

If No, comment on communication and resolution: pk CSM

Other Comments:

A-6005-342 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | V11-007-002 | PAGE 1 OF 2 |
|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| COLLECTOR: Ekstrom / Riviera | COMPANY CONTACT: ANASTOS, HL | TELEPHONE NO.: 373-2616 | PROJECT COORDINATOR: SYDNOR, HA | PRICE CODE: C03 / DATA TURNAROUND |
| SAMPLING LOCATION: C8402 - Equipment Blank prior to I003 | PROJECT DESIGNATION: Direct Push Samples for S Tank Farm - Interim Barrier - QC Sample | | SAF NO.: V11-007 | AIR QUALITY ☐ / 60 Days / 120 Days |
| ICE CHEST NO.: TFVS-09-004 | FIELD LOGBOOK NO.: TFVZ-10-000002 | ACTUAL SAMPLE DEPTH: SEE 9/13/11 N/A ~~120 to 128 ft~~ | COA: N/A | METHOD OF SHIPMENT: GOVERNMENT VEHICLE / ORIGINAL |
| SHIPPED TO: 222-S Lab Operations | 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)

SPECIAL HANDLING AND/OR STORAGE

| PRESERVATION | HNO3 to pH <2 | H2SO4 to pH <2/Cool~6C | Cool~6C | NaOH to pH >=12/Cool~6C | None | HNO3 to pH <2 |
|---|---|---|---|---|---|---|
| HOLDING TIME | 28 Days | 7 Days | 28 Days/48 Hours | 14 Days | 6 Months | 6 Months |
| TYPE OF CONTAINER | G/P | G/P | G/P | G/P | G/P | G/P |
| NO. OF CONTAINER(S) | 1 | 1 | 1 | 1 | 1 | 2 |
| VOLUME | 500mL | 250mL | 500mL | 250mL | 1000mL | 1000mL |
| SAMPLE ANALYSIS | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | 300.7_AMMONIUM (TF); | IC Anions - 9056; | Total Cyanide - 9014 (TF); | C-14; H3 - TRITIUM; I129_SEP_GEA (TF); | SEE ITEM (2) IN SPECIAL INSTRUCTIONS |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|---|
| B2FDM0 | WATER | 9/13/11 | 0820 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: RS Anthony S Ekstrom | DATE/TIME: 9/13/11 0930 | RECEIVED BY/STORED IN: RTSteele RTSteele ATL | DATE/TIME: 9.13.11 0930 |
| 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 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |

SPECIAL INSTRUCTIONS

SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

Grp #20111159

Temp 4°C 9-12-11

pt Cline

1-S11V005378
2-S11V005377
3-S11V005375
4-S11V005376
5-S11V005379
6-S11V005380

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 6/21/2011

A-6003-618 (REV 2)

| Washington River Protection Solutions | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | V11-007-002 | PAGE 2 OF 2 |
|---|---|---|---|---|---|
| COLLECTOR<br>Elsinom/Riviera | COMPANY CONTACT<br>ANASTOS, HL | TELEPHONE NO.<br>373-2616 | PROJECT COORDINATOR<br>SYDNOR, HA | PRICE CODE C03<br>AIR QUALITY ☐ | DATA TURNAROUND<br>60 Days / 120 Days |
| SAMPLING LOCATION<br>C8402 - Equipment Blank Prior to Ioo3 | PROJECT DESIGNATION<br>Direct Push Samples for S Tank Farm - Interim Barrier - QC Sample | | SAF NO.<br>V11-007 | | |
| ICE CHEST NO.<br>TFVS-09-004 | FIELD LOGBOOK NO.<br>TFVZ-10-000002 | ACTUAL SAMPLE DEPTH<br>N/A ~~120 to 128 ft~~ | COA<br>N/A | METHOD OF SHIPMENT<br>GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO<br>222-S Lab Operations | OFFSITE PROPERTY NO.<br>N/A | | BILL OF LADING/AIR BILL NO.<br>N/A | | |

**SPECIAL INSTRUCTIONS**

(1) Mercury - 7470 - (CV) (TF); 6010_Metals_ICP {Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Cerium, Chromium, Cobalt, Copper, Europium, Iron, Lanthanum, Lead, Lithium, Magnesium, Manganese, Molybdenum, Neodymium, Nickel, Niobium, Palladium, Phosphorus, Potassium, Praseodymium, Rhodium, Rubidium, Ruthenium, Samarium, Selenium, Silicon, Silver, Sodium, Strontium, Sulfur, Tantalum, Tellurium, Thallium, Thorium, Tin, Titanium, Tungsten, Vanadium, Yttrium, Zinc, Zirconium}; RADISO_ICPMS (TF) {Neptunium-237, Technetium-99, Thorium-230, Thorium-232, Tin-126, Uranium-233, Uranium-234, Uranium-235, Uranium-236, Uranium-238};
(2) GAMMA ENERGY ANALYSIS (TF); Americium-241 (TF); Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; CURIUM {Curium-242, Curium-243/244}; Nickel-63 (TF); Strontium-89,90 -- Total Sr; Selenium-79 (TF);

PRINTED ON 6/21/2011

A-6003-618 (REV 2)

# APPENDIX G

WASHINGTON STATE DEPARTMENT
OF ECOLOGY DOCUMENTS

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WASHINGTON STATE DEPARTMENT OF ECOLOGY

# Notice of Intent to Construct a Soil Boring or Soil Sampling or Vapor Sampling Well

This form and required fees **MUST BE RECEIVED** by the Department of Ecology **72 HOURS BEFORE** you construct a well.

Notification Number **SE09635**

Submit one completed form for each job site and required fee (check or money order only) to: Department of Ecology Cashiering Unit, P.O. Box 47611, Olympia, WA 98504-7611

**NOTE: Please print. Processing your Notice of Intent may be delayed if all fields are not filled in completely.**

| | | | |
|---|---|---|---|
| 1. Property Owner: U.S. Department of Energy | | Phone Number: | |
| Mailing Address: 825 Jadwin Ave. | City: Richland | State: WA | Zip Code: 99354 |
| 2. Agent (if different from above): Energy Solutions | | Phone Number: 509-308-0136 | |
| Mailing Address: 2521 Stevens Dr. | City: Richland | State: WA | Zip Code: 99354 |

3. Well Location

**Tax Parcel Number, ¼, Section, Township, and Range are Required.** Latitude and longitude (if available).

| | | | | | |
|---|---|---|---|---|---|
| County Name: Benton | | | | | |
| Well Site Street Address: S Tank Farm Hanford Site | City: | State: WA | Zip Code: | | |
| Tax parcel number: | ¼ -¼ (within 40 acres): NW | ¼ (within 40 acres): SE | Section: 12 | Township: 12 | Range: 26E |
| Latitude Degrees: | Latitude Time: min sec | Horizontal Collection Method: | | | |
| Longitude Degrees: | Longitude Time: min sec | | | | |

4. Well Construction Type: Geotech Soil Boring

Project Name: 241-S TF DP Barrier Construction

5. Approximate start date (mm/dd/year): 04/22/2011

WASHINGTON STATE DEPARTMENT OF ECOLOGY

# Notice of Intent to Decommission a Well

Notification Number

AE12960

This form and required fees **MUST BE RECEIVED** by the Department of Ecology **72 HOURS BEFORE** you construct a well.

Submit one completed form for each job site and required fee (check or money order only) to: Department of Ecology Cashiering Unit, P.O. Box 47611, Olympia, WA 98504-7611

**NOTE: Please print. Processing your Notice of Intent may be delayed if all fields are not filled in completely.**

1. Property Owner: U.S. Department of Energy
   Phone Number:
   Mailing Address: 825 Jadwin Ave. | City: Richland | State: WA | Zip Code: 99354

2. Agent (if different from above): Energy Solutions
   Phone Number: 509-308-0136
   Mailing Address: 2521 Stevens Dr. | City: Richland | State: WA | Zip Code: 99354

3. Well Location

**Tax Parcel Number, ¼, Section, Township, and Range are Required.** Latitude and longitude (if available).

County Name: Benton

Well Site Street Address: S Tank Farm Hanford Site | City: | State: WA | Zip Code:

| Tax parcel number | ¼ -¼ (within 40 acres) | ¼ (within 40 acres) | Section | Township | Range |
|---|---|---|---|---|---|
| | NW | SE | 12 | 12 | 26E |

| Latitude Degrees | Latitude Time min sec | Horizontal Collection Method |
|---|---|---|
| Longitude Degrees | Longitude Time min sec | |

4. Notice of Intent Number of well being decomissioned: SE09635
   Unique Well Tag Numer of well being decomissioned (if applicable):

5. Well Type to Decommission

Geotech Soil Boring/Sampling Well - No Fee — How Many? 14

G-2

ENERGYSOLUTIONS

October 5, 2011 FS-NW-LT-5538

State of Washington
Department of Ecology
Nuclear Waste Program
Hanford Project
3100 Port of Benton Boulevard
Richland, Washington 99354

Subject: Water Well Reports

To Whom It May Concern,

Attached are Water Well Report forms addressing decommissioning operations for 18 geotechnical borings. These Water Well report forms have been completed with information from field operations (reference Notice of Intent Start Card SE09635 and Abandonment Start Card AE12960). These geotechnical borings are located on the Hanford Site, 200 West Area, S Tank Farm.

These geotechnical soil borings are designated as C8393 through C8408. The odd numbered borings are conducted as exploratory/moisture probes installations as identified on the Resource Protection Well Reports and the even numbered borings are driven for obtaining samples at predetermined depths also noted on the Resource Protection Well Reports.

The fractional section system topographical location for these geotechnical borings is NW ¼ SE ¼, Section 12, Township 12N, Range 26EWM

If you have any questions, please contact me at 375-9587.

Very truly yours,

Martin G. Gardner, Manager
Field Characterization and
Environmental Services

jmr

Attachment

| | | |
|---|---|---|
| CHPRC | - C. Busler | R4-18 |
| | D. P. Capelle | R3-60 |
| | M. E. Steele | T5-71 |
| Energy*Solutions* | - K. D. Reynolds | G2-02 |
| | D. E. Skoglie | G2-02 |
| | R. Z. Steffler | G2-02 |
| | MGG File/LB | |

2345 Stevens Drive, Suite 240 • Richland, Washington 99354 • 509.371.8006
Fax: 509.375.9986 / 509.371.1906 / 509.375.9500 • www.energysolutions.com

ENERGYSOLUTIONS

FS-NW-LT-5538

ATTACHMENTS

Resource Protection Well Reports

Consisting of 19 pages
including cover sheet

2345 Stevens Drive, Suite 240 • Richland, Washington 99354 • 509.371.8006
Fax: 509.375.9986 / 509.371.1906 / 509.375.9500 • www.energysolutions.com

Please print, sign and return to the Department of Ecology

# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number*: SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8408

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David E. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____ Long Deg _____ Min _____ Sec _____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 08/30/2011

Work/Decommission Completed Date 09/07/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.625 inch O.D.) was driven to a depth of 131 ft bgs. The drive point O.D. is ~3.0 inches diameter. Samples were obtained at 94 to 96 and 129 to 131 ft bgs. Reference Variance Request for Direct Push Bore-holes dated 3/30/2010. | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br>Formation was sand with minor gravel layers (noted during driving). |
| 0 ft oOooOOoooOoOOoOoOoOo<br>oooOOooOoOOooOooOoOoOooO<br>OoOoOoooOOooOoooOooOOoo<br>oOoOoOooOoOoooOooOoOoOo<br>ooOooOoooOoooOooOOOoooO<br>OooOoOOOoooOooOoooOoOo<br>oooOOoOooOOOooOoOooOooO<br>oOoooOOOOooOoOOoooooOoo<br>OOoOooOoooooOOOooOOoooo<br>OoooOOoooOOOoooOoOoOoo<br>OooOOoOOooOoooOOOOoOoo<br>94 - 96 ft oOooOOoOOoooOOoo<br>oOoOoooOooOoOooOooOooOOO<br>OooOOoooOoOooOoooOOooOo<br>OoOOoOOoooOOOoooOOooOoO<br>oOoOooOoOoOOoooOOooOOOO<br>OoOooOoOOoOOooOoOoOooOo<br>OOoOOoooOoOOoooooOoOooOo<br>129 - 131 ft OooOoOOoOOoOoO | The DPT tubing was back-pulled and bentonite crumbles placed to fill the void.<br>Bentonite crumbles = OoOooO<br>NOTE: Bore-hole locations are surveyed. | |

SCALE: 1"= 43 ft PAGE 1 OF 1

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8407

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David E. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____ Long Deg _____ Min _____ Sec _____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 08/24/2011

Work/Decommission Completed Date 08/30/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.5 inch O.D.) was driven to a depth of 152.3 ft bgs. The drive point O.D. is ~3.0 inches diameter. Geophysical logging (Gamma and Moisture) were conducted. Moisture probes were installed at depths of 150, 131, 111, 91, 71, 51 and 31 ft bgs.<br><br>0 ft<br>oooOOooOoOOooOooOoOoOooO<br>OoOoOoooOOooOoooOooOOoo<br>31 ft ----------<br>OoooOoooOooOOOoooOOooOo<br>51 ft ----------<br>oooOOoOooOOOooOoOooOoooO<br>71 ft ----------<br>OOoOooOoooooOOOooOOoooooo<br>91 ft ----------<br>OoOOoooOoooOOOOoOooOoOo<br>111 ft ----------<br>oOoOoooOooOoOooOooOooOOO<br>131 ft ----------<br>OoOOoOOoooOOOoooOOooOoO<br>150 ft ----------<br>152 ft OooOoOOoOOoOoOoooO | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10.<br><br>The DPT tubing was back-pulled and bentonite crumbles placed between the moisture probe intervals to fill the void.<br><br>Completion materials at the point of the Moisture probe consisted of sand and diatomite.<br><br>Bentonite crumbles = OoOooOoo<br><br>Moisture probe completion = --------<br><br>Surface protection was cemented in place and a identification attached.<br><br>NOTE: Bore-hole locations are surveyed. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br><br>Formation was sand with minor gravel layers (noted during driving). |

SCALE: 1"= 50.7 ft PAGE 1 OF 1

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number*: SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8406

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David F. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____ Long Deg _____ Min _____ Sec _____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 07/28/2011

Work/Decommission Completed Date 08/02/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.625 inch O.D.) was driven to a depth of 132 ft bgs. The drive point O.D. is ~3.0 inches diameter. Samples were obtained at 52 to 54, 98 to100 and 130 to 132 ft bgs. Reference Variance Request for Direct Push Bore-holes dated 3/30/2010. | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br>Formation was sand with minor gravel layers (noted during driving). |
| 0 ft oOooOOoooOoOOoOoOoOo<br>oooOOooOoOOooOooOoOoOooO<br>OoOoOoooOOooOoooOooOOoo<br>oOoOoOooOoOoooOooOoOoOo<br>ooOooOoooOoooOooOOOooO<br>oOOooOoOOoOooOoooooOOOoo<br>OOoooooOoooOOoooOOOoooo<br>52 - 54 ft OoOoOooOooOOoOOo<br>OOOoooooOoOoOoooOooOooOo<br>oOoOoooOooOoOooOooOooOOO<br>OooOOoooOoOooOoooOOooO<br>OoOOoOOooOOOoooOOooOoO<br>oOoOooOoOoOOoooOOooOOOO<br>OOoOOoooOoOOoooooOoOooOo<br>98 - 100 ft OooOoOOoOOoOoO<br>oOoooooOOOOOoOoooOOooO<br>OOoooOOOOooOooOoOoooOoo<br>OOoooOOOooOoOoOooOoOoo<br>130 - 132 ft OoooOOooOOOoo | The DPT tubing was back-pulled and bentonite crumbles placed to fill the void.<br>Bentonite crumbles = OoOooO<br>NOTE: Bore-hole locations are surveyed. | |

SCALE: 1"= 44 ft PAGE 1 OF 1

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number*: SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8405

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David E. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____ Long Deg _____ Min _____ Sec _____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 06/08/2011

Work/Decommission Completed Date 08/11/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.5 inch O.D.) was driven to a depth of 152.3 ft bgs. The drive point O.D. is ~3.0 inches diameter. Geophysical logging (Gamma and Moisture) were conducted. Moisture probes were installed at depths of 150, 131, 111, 91, 71, 51 and 31 ft bgs.<br><br>0 ft<br>oooOOooOoOOooOooOoOoOooO<br>OoOoOoooOOooOoooOooOOoo<br>31 ft ----------<br>OoooOoooOooOOOoooOOooOo<br>51 ft ----------<br>oooOOoOooOOOooOoOooOoooO<br>71 ft ----------<br>OOoOooOoooooOOOooOOoooo<br>91 ft ----------<br>OoOOoooOoooOOOOoOooOoOo<br>111 ft ----------<br>oOoOoooOooOoOooOooOooOOO<br>131 ft ----------<br>OoOOoOOoooOOOoooOOooOoO<br>150 ft ----------<br>152 ft OooOoOOoOOoOoOoooO | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10.<br><br>The DPT tubing was back-pulled and bentonite crumbles placed between the moisture probe intervals to fill the void.<br><br>Completion materials at the point of the Moisture probe consisted of sand and diatomite.<br><br>Bentonite crumbles = OoOooOoo<br><br>Moisture probe completion = --------<br><br>Surface protection was cemented in place and a identification attached.<br><br>NOTE: Bore-hole locations are surveyed. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br><br>Formation was sand with minor gravel layers (noted during driving). |

SCALE: 1"= 50.7 ft PAGE 1 OF 1

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction

☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8404 C

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David E. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection

☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____ Long Deg _____ Min _____ Sec _____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 08/03/2011

Work/Decommission Completed Date 08/03/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.625 inch O.D.) was driven to a depth of 43 ft bgs where refusal was encountered. The drive point O.D. is ~3.0 inches diameter.<br><br>0 ft oOooOOoooOoOOoOoOooO<br>oooOOooOoOOooOooOoOOoooO<br>OoOoOoooOOooOoooOooOOoo<br>oOoOoOooOoOoooOooOoOoOo<br>ooOooOoooOoooOooOOOoooO<br>oOOooOoOOoOooOoooooOOOoo<br>OOoooooOoooOOoooOOOoooo<br>ooOoooOooOooOoOooOOoooO<br>OoOOooOOOoooOOOoooooOoO<br>oOoooOooOooOooOoOoOoooOo<br>oOoOooOooOooOOOOooOOooo<br>OoOOoOOoooOOOoooOOooOoo<br>OooOOoOOooOoOOoOoOoooOo<br>oOOoooooOoOOoooOOooOOOO<br>OOoOOoooOoOOoooooOoOooO<br>OOoOOoooOOooOoOOoOOoOo<br>oOoooooOOOOOoOoooOOooO<br>OOoooOOOOooOooOoOoooOoo<br>OOoooOOOooOoOoOooOOooO<br>43 ft OoooOOoooOOOoooOoOo | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10.<br><br>The DPT tubing was back-pulled and bentonite crumbles placed to fill the void.<br><br>Bentonite crumbles = OoOooO<br><br>NOTE: Bore-hole locations are surveyed. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br><br>Formation was sand with minor gravel layers and hard pan (noted during driving). |

SCALE: 1"= 14 ft PAGE 1 OF 1

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number*: SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8404 B

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David E. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____ Long Deg _____ Min _____ Sec _____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 07/26/2011

Work/Decommission Completed Date 07/27/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.625 inch O.D.) was driven to a depth of 41 ft bgs where refusal was encountered. The drive point O.D. is ~3.0 inches diameter.<br><br>0 ft oOooOOoooOoOOoOoOooO<br>oooOOooOoOOooOooOoOOoooO<br>OoOoOoooOOooOooOooOOoo<br>oOoOoOooOoOoooOooOoOoOo<br>ooOooOoooOoooOooOOOoooO<br>oOOooOoOOoOooOoooooOOOoo<br>OOoooooOoooOOoooOOOoooo<br>ooOoooOooOooOoOooOOoooO<br>OoOOooOOOoooOOOoooooOoO<br>oOoooOooOooOooOoOoOooOo<br>oOoOooOooOooOOOOooOOoooo<br>OoOOoOOoooOOOoooOOooOoo<br>OooOOoOOooOoOOoOoOooOo<br>oOOoooooOoOOoooOOooOOOO<br>OOoOOoooOoOOoooooOoOooO<br>OOoOOoooOOooOoOOoOOoOo<br>oOoooooOOOOOoOoooOOooO<br>OOoooOOOOooOooOoOoooOoo<br>OOoooOOOooOoOoOooOOooO<br>41 ft OoooOOooOOOooOoOo | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10.<br><br>The DPT tubing was back-pulled and bentonite crumbles placed to fill the void.<br><br>Bentonite crumbles = OoOooO<br><br>NOTE: Bore-hole locations are surveyed. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br><br>Formation was sand with minor gravel layers and hard pan (noted during driving). |

SCALE: 1"= 14 ft PAGE 1 OF 1

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8404 A

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David E. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____ Long Deg _____ Min _____ Sec _____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 07/21/2011

Work/Decommission Completed Date 07/26/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.625 inch O.D.) was driven to a depth of 42.5 ft bgs where refusal was encountered. The drive point O.D. is ~3.0 inches diameter.<br><br>0 ft oOooOOoooOoOOoOoOooO<br>oooOOooOoOOooOooOoOOoooO<br>OoOoOoooOOooOoooOooOOoo<br>oOoOoOooOoOoooOooOoOoOo<br>ooOooOoooOoooOooOOOoooO<br>oOOooOoOOoOooOoooooOOOoo<br>OOoooooOoooOOoooooOOOoooo<br>ooOoooOooOooOoOooOOoooooO<br>OoOOooOOOoooOOOoooooOoO<br>oOoooOooOooOooOoOoOoooOo<br>oOoOooOooOooOOOOooOOoooo<br>OoOOoOOoooOOOoooOOooOoo<br>OooOOoOOooOoOOoOoOoooOo<br>oOOoooooOoOOoooOOooOOOO<br>OOoOOoooOoOOoooooOoOooO<br>OOoOOoooOOooOoOOoOOoOo<br>oOoooooOOOOOoOoooooOOooO<br>OOoooooOOOOooOooOoOoooOoo<br>OOoooooOOOooOoOoOooOOooO<br>42.5 ft OoooooOOooOOOoooOoOo | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10.<br><br>The DPT tubing was back-pulled and bentonite crumbles placed to fill the void.<br><br>Bentonite crumbles = OoOooO<br><br>NOTE: Bore-hole locations are surveyed. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br><br>Formation was sand with minor gravel layers and hard pan (noted during driving). |

SCALE: 1"= 14 ft PAGE 1 OF 1

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8403

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David E. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg ____ Min ____ Sec ____ Long Deg ____ Min ____ Sec ____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 05/09/2011

Work/Decommission Completed Date 08/11/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.5 inch O.D.) was driven to a depth of 152.3 ft bgs. The drive point O.D. is ~3.0 inches diameter. Geophysical logging (Gamma and Moisture) were conducted. Moisture probes were installed at depths of 150, 131, 111, 91, 71, 51 and 31 ft bgs.<br><br>0 ft<br>oooOOooOoOOooOooOoOoOooO<br>OoOoOoooOOooOoooOooOOoo<br>31 ft ----------<br>OoooOoooOooOOOoooOOooOo<br>51 ft ----------<br>oooOOoOooOOOooOoOooOoooO<br>71 ft ----------<br>OOoOooOoooooOOOooOOoooo<br>91 ft ----------<br>OoOOoooOoooOOOOoOooOoOo<br>111 ft ----------<br>oOoOoooOooOoOooOooOooOOO<br>131 ft ----------<br>OoOOoOOoooOOOoooOOooOoO<br>150 ft ----------<br>152 ft OooOoOOoOOoOoOoooO | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10.<br><br>The DPT tubing was back-pulled and bentonite crumbles placed between the moisture probe intervals to fill the void.<br><br>Completion materials at the point of the Moisture probe consisted of sand and diatomite.<br><br>Bentonite crumbles = OoOooOoo<br><br>Moisture probe completion = --------<br><br>Surface protection was cemented in place and a identification attached.<br><br>NOTE: Bore-hole locations are surveyed. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br><br>Formation was sand with minor gravel layers (noted during driving). |

SCALE: 1"= 50.7 ft PAGE 1 OF 1

ECY 050-12 (Rev. 7/06)

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number*: SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8402

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David E. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____

Long Deg _____ Min _____ Sec _____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 09/07/2011

Work/Decommission Completed Date 09/14/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.625 inch O.D.) was driven to a depth of 128 ft bgs. The drive point O.D. is ~3.0 inches diameter. Samples were obtained at 47 to 49, 107 to109 and 126 to 128 ft bgs. Reference Variance Request for Direct Push Bore-holes dated 3/30/2010. | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br>Formation was sand with minor gravel layers (noted during driving). |
| 0 ft oOooOOoooOoOOoOoOoOo oooOOooOoOOooOooOoOoOooO OoOoOoooooOOooOoooOooOOoo oOoOoOooOoOoooooOooOoOoOo ooOooOoooooOoooOooOOOoooO oOOooOoOOoOooOoooooOOOoo OOoooooOoooOOoooooOOOoooo 47 - 49 ft OoOoOooOooOOoOOo OOOoooooOoOoOoooOooOooOo oOoOoooOooOoOooOooOooOOO OooOOoooooOoOooOoooOOooO OoOOoOOoooOOOoooOOooOoO oOoOooOoOoOOoooOOooOOOO OOoOOoooOoOOoooooOoOooOo 107 - 109 ft OooOoOOoOOoOoO oOoooooooOOOOOoOoooooOOooO OOoooooOOOOooOooOoOoooOoo OOoooooOOOooOoOoOooOoOoo 126 - 128 ft OoooooOOooOOOoo | The DPT tubing was back-pulled and bentonite crumbles placed to fill the void.<br>Bentonite crumbles = OoOooO<br>NOTE: Bore-hole locations are surveyed. | |

SCALE: 1"= 44 ft PAGE 1 OF 1

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number*: SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8401

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David F. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____ Long Deg _____ Min _____ Sec _____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 08/17/2011

Work/Decommission Completed Date 09/15/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.5 inch O.D.) was driven to a depth of 152.3 ft bgs. The drive point O.D. is ~3.0 inches diameter. Geophysical logging (Gamma and Moisture) were conducted. Moisture probes were installed at depths of 150, 131, 111, 91, 71, 51 and 31 ft bgs.<br><br>0 ft<br>oooOOooOoOOooOooOoOoOooO<br>OoOoOoooooOOooOoooOooOOoo<br>31 ft ----------<br>OoooooOoooOooOOOoooOOooOo<br>51 ft ----------<br>oooOOoOooOOOooOoOooOoooO<br>71 ft ----------<br>OOoOooOoooooOOOooOOoooooo<br>91 ft ----------<br>OoOOoooOoooOOOOoOooOoOo<br>111 ft ----------<br>oOoOoooOooOoOooOooOooOOO<br>131 ft ----------<br>OoOOoOOoooOOOoooOOooOoO<br>150 ft ----------<br>152 ft OooOoOOoOOoOoOoooO | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10.<br><br>The DPT tubing was back-pulled and bentonite crumbles placed between the moisture probe intervals to fill the void.<br><br>Completion materials at the point of the Moisture probe consisted of sand and diatomite.<br><br>Bentonite crumbles = OoOooOoo<br><br>Moisture probe completion = --------<br><br>Surface protection was cemented in place and a identification attached.<br><br>NOTE: Bore-hole locations are surveyed. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br><br>Formation was sand with minor gravel layers (noted during driving). |

SCALE: 1"= 50.7 ft PAGE 1 OF 1

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8400

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David E. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg ____ Min ____ Sec ____ Long Deg ____ Min ____ Sec ____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 08/30/2011

Work/Decommission Completed Date 09/07/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.625 inch O.D.) was driven to a depth of 131 ft bgs. The drive point O.D. is ~3.0 inches diameter. Samples were obtained at 54 to 56, 93 to 95 and 126 to 128 ft bgs. Reference Variance Request for Direct Push Bore-holes dated 3/30/2010. | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br>Formation was sand with minor gravel layers (noted during driving). |
| 0 ft oOooOOoooOoOOoOoOoOo<br>oooOOooOoOOooOooOoOoOooO<br>OoOoOoooooOOooOoooOooOOoo<br>oOoOoOooOoOoooooOooOoOoOo<br>ooOooOoooooOoooOooOOOoooO<br>OooOoOOOoooooOooOoooooOoOo<br>54 - 56 ft OoOOoooOoooOooOOo<br>oooOOoOooOOOooOoOooOoooO<br>oOoooOOOOooOoOOoooooOoo<br>OOoOooOoooooOOOooOOoooooo<br>OoooOOoooooOOOoooooOoOoOoo<br>OooOOoOOoooOoooOOOOoOoo<br>93 - 95 ft oOooOOoOOoooOOoo<br>oOoOoooOooOoOooOooOooOOO<br>OooOOoooooOoOooOoooOOooOo<br>OoOOoOOoooOOOoooOOooOoO<br>oOoOooOoOoOOoooOOooOOOO<br>OoOooOoOOoOOooOoOoOooOo<br>OOoOOoooOoOOoooooOoOooOo<br>126 - 138 ft OooOoOOoOOoOoO | The DPT tubing was back-pulled and bentonite crumbles placed to fill the void.<br>Bentonite crumbles = OoOooO<br>NOTE: Bore-hole locations are surveyed. | |

SCALE: 1"= ~43 ft PAGE 1 OF 1

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number*: SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8399

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David E. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg ____ Min ____ Sec ____ Long Deg ____ Min ____ Sec ____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 07/07/2011

Work/Decommission Completed Date 08/11/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.5 inch O.D.) was driven to a depth of 152.3 ft bgs. The drive point O.D. is ~3.0 inches diameter. Geophysical logging (Gamma and Moisture) were conducted. Moisture probes were installed at depths of 150, 131, 111, 91, 71, 51 and 31 ft bgs.<br><br>0 ft<br>oooOOooOoOOooOooOoOoOooO<br>OoOoOoooooOOooOoooOooOOoo<br>31 ft ----------<br>OoooooOoooOooOOOoooOOooOo<br>51 ft ----------<br>oooOOoOooOOOooOoOooOoooO<br>71 ft ----------<br>OOoOooOoooooOOOooOOoooooo<br>91 ft ----------<br>OoOOoooOoooOOOOoOooOoOo<br>111 ft ----------<br>oOoOoooOooOoOooOooOooOOO<br>131 ft ----------<br>OoOOoOOoooOOOoooOOooOoO<br>150 ft ----------<br>152 ft OooOoOOoOOoOoOoooO | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10.<br><br>The DPT tubing was back-pulled and bentonite crumbles placed between the moisture probe intervals to fill the void.<br><br>Completion materials at the point of the Moisture probe consisted of sand and diatomite.<br><br>Bentonite crumbles = OoOooOoo<br><br>Moisture probe completion = --------<br><br>Surface protection was cemented in place and a identification attached.<br><br>NOTE: Bore-hole locations are surveyed. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br><br>Formation was sand with minor gravel layers (noted during driving). |

SCALE: 1"= 50.7 ft PAGE 1 OF 1

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8398

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David E Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____ Long Deg _____ Min _____ Sec _____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 08/04/2011

Work/Decommission Completed Date 08/10/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.625 inch O.D.) was driven to a depth of 133 ft bgs. The drive point O.D. is ~3.0 inches diameter. Samples were obtained at 46 to 48, 86 to88 and 131 to 133 ft bgs. Reference Variance Request for Direct Push Bore-holes dated 3/30/2010. | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br>Formation was sand with minor gravel layers (noted during driving). |
| 0 ft oOooOOoooOoOOoOoOoOo<br>oooOOooOoOOooOooOoOoOooO<br>OoOoOoooOOooOoooOooOOoo<br>oOoOoOooOoOoooOooOoOoOo<br>ooOooOoooOoooOooOOOoooO<br>46 - 48 ft oooOOoOooOOOooOoO<br>oOoooOOOOooOoOOoooooOoo<br>OOoOooOoooooOOOooOOoooo<br>OoooOOoooOOOoooOoOoOoo<br>OooOOoOOoooOooOOOOoOoo<br>86 - 88 ft oOooOOoOOoooOOoo<br>oOoOoooOooOoOooOooOooOOO<br>OooOOoooOoOooOoooOOooOo<br>OoOOoOOoooOOOoooOOooOoO<br>oOoOooOoOoOOoooOOooOOOO<br>OoOooOoOOoOOooOoOoOooOo<br>OOoOOoooOoOOoooooOoOooOo<br>131 - 133 ft OooOoOOoOOoOoO | The DPT tubing was back-pulled and bentonite crumbles placed to fill the void.<br><br>Bentonite crumbles = OoOooO<br><br>NOTE: Bore-hole locations are surveyed. | |

SCALE: 1"= 44 ft PAGE 1 OF 1

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8397

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David C. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg ____ Min ____ Sec ____ Long Deg ____ Min ____ Sec ____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 06/16/2011

Work/Decommission Completed Date 08/11/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.5 inch O.D.) was driven to a depth of 152.3 ft bgs. The drive point O.D. is ~3.0 inches diameter. Geophysical logging (Gamma and Moisture) were conducted. Moisture probes were installed at depths of 150, 131, 111, 91, 71, 51 and 31 ft bgs.<br><br>0 ft<br>oooOOooOoOOooOooOoOoOooO<br>OoOoOoooOOooOoooOooOOoo<br>31 ft ----------<br>OoooOoooOooOOOoooOOooOo<br>51 ft ----------<br>oooOOoOooOOOooOoOooOoooO<br>71 ft ----------<br>OOoOooOoooooOOOooOOoooo<br>91 ft ----------<br>OoOOoooOoooOOOOoOooOoOo<br>111 ft ----------<br>oOoOoooOooOoOooOooOooOOO<br>131 ft ----------<br>OoOOoOOoooOOOoooOOooOoO<br>150 ft ----------<br>152 ft OooOoOOoOOoOoOoooO | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10.<br><br>The DPT tubing was back-pulled and bentonite crumbles placed between the moisture probe intervals to fill the void.<br><br>Completion materials at the point of the Moisture probe consisted of sand and diatomite.<br><br>Bentonite crumbles = OoOooOoo<br><br>Moisture probe completion = --------<br><br>Surface protection was cemented in place and a identification attached.<br><br>NOTE: Bore-hole locations are surveyed. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br><br>Formation was sand with minor gravel layers (noted during driving). |

SCALE: 1"= 50.7 ft PAGE 1 OF 1

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number*: SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8396

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David F. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____ Long Deg _____ Min _____ Sec _____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 08/03/2011

Work/Decommission Completed Date 08/10/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.625 inch O.D.) was driven to a depth of 119 ft bgs. The drive point O.D. is ~3.0 inches diameter. Samples were obtained at 55 to 57, 103 to105 and 117 to 119 ft bgs. Reference Variance Request for Direct Push Bore-holes dated 3/30/2010. | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br>Formation was sand with minor gravel layers (noted during driving). |
| 0 ft oOooOOoooOoOOoOoOoOo oooOOooOoOOooOooOoOoOooO OoOoOoooooOOooOoooOooOOoo oOoOoOooOoOoooooOooOoOoOo ooOooOoooooOoooOooOOOoooO oOOooOoOOoOooOoooooOOOoo OOoooooOoooOOoooooOOOoooo 55 - 57 ft OoOoOooOooOOoOOo OOOoooooOoOoOoooOooOooOo oOoOoooOooOoOooOooOooOOO OooOOoooooOoOooOoooOOooO OoOOoOOoooOOOoooOOooOoO oOoOooOoOoOOoooOOooOOOO OOoOOoooOoOOoooooOoOooOo 103 - 105 ft OooOoOOoOOoOoO oOoooooooOOOOOoOoooooOOooO OOoooooOOOOooOooOoOoooOoo 117 - 119 ft OoooooOOooOOOoo | The DPT tubing was back-pulled and bentonite crumbles placed to fill the void.<br><br>Bentonite crumbles = OoOooO<br><br>NOTE: Bore-hole locations are surveyed. | |

SCALE: 1"= 40 ft PAGE 1 OF 1

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number*: SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8395

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David E. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____ Long Deg _____ Min _____ Sec _____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 06/13/2011

Work/Decommission Completed Date 08/11/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.5 inch O.D.) was driven to a depth of 152.3 ft bgs. The drive point O.D. is ~3.0 inches diameter. Geophysical logging (Gamma and Moisture) were conducted. Moisture probes were installed at depths of 150, 131, 111, 91, 71, 51 and 31 ft bgs.<br><br>0 ft<br>oooOOooOoOOooOooOoOoOooO<br>OoOoOoooOOooOoooOooOOoo<br>31 ft ----------<br>OoooOoooOooOOOoooOOooOo<br>51 ft ----------<br>oooOOoOooOOOooOoOooOoooO<br>71 ft ----------<br>OOoOooOoooooOOOooOOoooooo<br>91 ft ----------<br>OoOOoooOoooOOOOoOooOoOo<br>111 ft ----------<br>oOoOoooOooOoOooOooOooOOO<br>131 ft ----------<br>OoOOoOOoooOOOoooOOooOoO<br>150 ft ----------<br>152 ft OooOoOOoOOoOoOoooO | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10.<br><br>The DPT tubing was back-pulled and bentonite crumbles placed between the moisture probe intervals to fill the void.<br><br>Completion materials at the point of the Moisture probe consisted of sand and diatomite.<br><br>Bentonite crumbles = OoOooOoo<br><br>Moisture probe completion = --------<br><br>Surface protection was cemented in place and a identification attached.<br><br>NOTE: Bore-hole locations are surveyed. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br><br>Formation was sand with minor gravel layers (noted during driving). |

SCALE: 1"= 50.7 ft PAGE 1 OF 1

ECY 050-12 (Rev. 7/06)

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# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number:* SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8394

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David E. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____ Long Deg _____ Min _____ Sec _____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 07/01/2011

Work/Decommission Completed Date 07/21/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.625 inch O.D.) was driven to a depth of 128 ft bgs. The drive point O.D. is ~3.0 inches diameter. Samples were obtained at 88 to 90 and 126 to 128 ft bgs. Reference Variance Request for Direct Push Bore-holes dated 3/30/2010. | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br>Formation was sand with minor gravel layers (noted during driving). |
| 0 ft oOooOOoooOoOOoOoOooO<br>oooOOooOoOOooOooOoOOoooO<br>OoOoOoooooOOooOoooOooOOoo<br>oOoOoOooOoOoooooOooOoOoOo<br>ooOooOoooooOoooOooOOOoooO<br>oOOooOoOOoOooOoooooOOOoo<br>OOoooooOoooOOoooooOOOoooo<br>ooOoooOooOooOoOooOOoooooO<br>OoOOooOOOoooOOOoooooOoO<br>oOoooOooOooOooOoOoOoooOo<br>oOoOooOooOooOOOOooOOoooo<br>OoOOoOOoooOOOoooOOooOoo<br>88 - 90 ft OoOOoooOOooOOOO<br>OOoOOoooOoOOoooooOoOooO<br>OOoOOoooOOooOoOOoOOoOo<br>oOoooooooOOOOOoOoooooOOooO<br>OOoooooOOOOooOooOoOoooOoo<br>OOoooooOOOooOoOoOooOOooO<br>126 - 128 ft OoooooOOooOOOoo | The DPT tubing was back-pulled and bentonite crumbles placed to fill the void.<br><br>Bentonite crumbles = OoOooO<br><br>NOTE: Bore-hole locations are surveyed. | |

SCALE: 1"= 43 ft PAGE 1 OF 1

ECY 050-12 (Rev. 7/06)

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Please print, sign and return to the Department of Ecology

# RESOURCE PROTECTION WELL REPORT

**CURRENT Notice of Intent No. AE12960**

**(SUBMIT ONE WELL REPORT PER WELL INSTALLED)**

**Construction/Decommission** *("x" in box)*

☐ Construction
☒ Decommission

*ORIGINAL INSTALLATION Notice of Intent Number*: SE09635

Consulting Firm Energy Solutions

Unique Ecology Well IDTag No. C8393

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee

Name (Print Last, First Name) Skoglie, David

Driller/Engineer /Trainee Signature David E. Skoglie

Driller or Trainee License No. 1580

**If trainee, licensed driller's Signature and License Number:**

**Type of Well** *("x in box)*

☐ Resource Protection
☒ Geotech Soil Boring

Property Owner U.S. Department of Energy

Site Address 825 Jadwin Ave.

City Richland County Benton

Location NW1/4-1/4 SE1/4 Sec 12 Twn 12 R 26E

EWM ☒ or WWM ☐

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Min _____ Sec _____

Long Deg _____ Min _____ Sec _____

Tax Parcel No. N/A

Cased or Uncased Diameter 3.0 inch Static Level N/A

Work/Decommission Start Date 05/25/2011

Work/Decommission Completed Date 08/11/2011

| Construction Design | Well Data | Formation Description |
|---|---|---|
| The direct push tubing (2.5 inch O.D.) was driven to a depth of 152.3 ft bgs. The drive point O.D. is ~3.0 inches diameter. Geophysical logging (Gamma and Moisture) were conducted. Moisture probes were installed at depths of 150, 131, 111, 91, 71, 51 and 31 ft bgs.<br><br>0 ft<br>oooOOooOoOOooOooOoOoOooO<br>OoOoOoooooOOooOoooOooOOoo<br>31 ft ----------<br>OoooooOoooOooOOOoooOOooOo<br>51 ft ----------<br>oooOOoOooOOOooOoOooOoooO<br>71 ft ----------<br>OOoOooOoooooOOOooOOoooooo<br>91 ft ----------<br>OoOOoooOoooOOOOoOooOoOo<br>111 ft ----------<br>oOoOoooOooOoOooOooOooOOO<br>131 ft ----------<br>OoOOoOOoooOOOoooOOooOoO<br>150 ft ----------<br>152 ft OooOoOOoOOoOoOoooO | Reference: Variance Request for Direct Push Bore-holes, dated 03/30/10.<br><br>The DPT tubing was back-pulled and bentonite crumbles placed between the moisture probe intervals to fill the void.<br><br>Completion materials at the point of the Moisture probe consisted of sand and diatomite.<br><br>Bentonite crumbles = OoOooOoo<br><br>Moisture probe completion = --------<br><br>Surface protection was cemented in place and a identification attached.<br><br>NOTE: Bore-hole locations are surveyed. | S Tank Farm, 200 West Area, Hanford Site, Benton County<br><br>Formation was sand with minor gravel layers (noted during driving). |

SCALE: 1"= 50.7 ft PAGE 1 OF 1

ECY 050-12 (Rev. 7/06)

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# APPENDIX H

SAFETY DOCUMENTATION

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Field Safety and Health Inspection Report REV 1 2/2/11

## Field Safety and Health Inspection Report

| | | | | | |
|---|---|---|---|---|---|
| *Date* | 4/11/2011 | *Time* | 1000-1300 | *Inspected by* | Kris Hutchings<br>Click here to enter text. |
| *Location* | 241 S Farm, DOE Hanford Site | | | | |
| *Work Activities* | Initial project walkdown to prepare project JHA and work package | | | | |
| *Weather Conditions* | Clear skies, windy conditions | | | | |

## Observations ( check all that apply )

| *Industrial Hygiene* | | *Industrial Safety* | | | | | |
|---|---|---|---|---|---|---|---|
| ☐ | IH Monitoring/Sampling | ☐ | Applicable PPE | ☐ | Heavy Equipment | ☐ | Excavations |
| ☐ | Hazard Communication | ☒ | Walking/Working Surfaces | ☐ | Elevating Work Platforms | ☐ | Underground Utilities |
| ☐ | Respiratory Protection | ☐ | Housekeeping | ☐ | Crane and Rigging | ☐ | Machine Guarding |
| ☐ | Confined Space | ☐ | Showers and Eyewash Stations | ☐ | Vehicular Traffic | ☐ | Rotating/Moving Equipment |
| ☐ | First Aid/Injury/Illness | ☐ | Electrical | ☐ | Fall Hazards | ☐ | Hand/Power Tools |
| ☐ | Heat Stress (WGBT) | ☐ | L.O.T.O. | ☐ | Falling Objects | ☐ | Stored Energy |
| ☐ | Ergonomics | ☐ | Overhead Utilities | ☐ | Ladders and Stairs | ☐ | Pinch Points |
| ☐ | Ventilation/IEQ | ☐ | Signs and Barricades | ☐ | Scaffolds | ☐ | Applicable Permits |
| ☐ | Noise and/or Vibration | ☐ | Fire Hazards | ☐ | Air/Steam/Fluid > 500 psi | ☒ | P.O.D. Meeting |
| ☐ | Lighting | ☐ | Compressed Gas Storage | ☐ | Steam/Fluid >200°F | ☐ | Work Documents |
| ☐ | Other IH | ☐ | Exits/Doors/Fire Lanes | ☐ | Employee Concern | ☐ | Other (Safety) |

## Comments/Items needing addressed

An initial S farm walkdown was conducted to prepare the Job Hazard Analysis (JHA). The P.O.D. was conducted by Harold Sydnor. The prejob included the purpose of the farm entry, the anticipated hazards and the roles and responsibilities of the workers present. Windy conditions required all individuals to wear goggles to prevent dust from entering the eye. The work area was found to be open and free from overhead hazards. Some potential drill site locations may be difficult for workers/equipment to access due to surface structures and surface contour. The work is slated to begin

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Field Safety and Health Inspection Report REV 1 2/2/11

| | | | |
|---|---|---|---|
| during heat stress season and a discussion of heat stress controls was held with the field work supervisor and project personnel. | | | |
| Signature/Date | | Review Signature/Date | |
| | | | |
| | | | |

| Attachments |
|---|
| |

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Field Safety and Health Inspection Report REV 1 2/2/11

| Field Safety and Health Inspection Report | | | | | |
|---|---|---|---|---|---|
| *Date* | 6/20/2011 | *Time* | 1130-1330 | *Inspected by* | Kris Hutchings |
| *Location* | Probe Hole C8397, 241-S DP Barrier Construction Project, Hanford WA | | | | |
| *Work Activities* | Geophysical logging was being conducted on C8395 and C8393. Drilling crew was returning from lunch anticipating driving at C8397 through the end of the shift. | | | | |
| *Weather Conditions* | Sunny, clear skies, approximately 75 F. | | | | |

Observations ( check all that apply )

| *Industrial Hygiene* | | *Industrial Safety* | | | | | |
|---|---|---|---|---|---|---|---|
| ☐ | IH Monitoring/Sampling | ☒ | Applicable PPE | ☐ | Heavy Equipment | ☐ | Excavations |
| ☐ | Hazard Communication | ☐ | Walking/Working Surfaces | ☐ | Elevating Work Platforms | ☐ | Underground Utilities |
| ☐ | Respiratory Protection | ☒ | Housekeeping | ☐ | Crane and Rigging | ☐ | Machine Guarding |
| ☐ | Confined Space | ☐ | Showers and Eyewash Stations | ☐ | Vehicular Traffic | ☐ | Rotating/Moving Equipment |
| ☐ | First Aid/Injury/Illness | ☐ | Electrical | ☐ | Fall Hazards | ☐ | Hand/Power Tools |
| ☒ | Heat Stress (WGBT) | ☐ | L.O.T.O. | ☐ | Falling Objects | ☐ | Stored Energy |
| ☐ | Ergonomics | ☐ | Overhead Utilities | ☐ | Ladders and Stairs | ☐ | Pinch Points |
| ☐ | Ventilation/IEQ | ☐ | Signs and Barricades | ☐ | Scaffolds | ☐ | Applicable Permits |
| ☐ | Noise and/or Vibration | ☐ | Fire Hazards | ☐ | Air/Steam/Fluid > 500 psi | ☐ | P.O.D. Meeting |
| ☐ | Lighting | ☐ | Compressed Gas Storage | ☐ | Steam/Fluid >200°F | ☐ | Work Documents |
| ☒ | Other IH | ☐ | Exits/Doors/Fire Lanes | ☒ | Employee Concern | ☐ | Other (Safety) |

Comments/Items needing addressed

Visited with the field work supervisor on the project about a field revision to the project JHA to incorporate the use of misting fans and also to refer to the work as moderate. The project did not have an available Industrial Hygiene Technician (IHT), and E.S. did not have a WGBT unit back from factory calibration. The field work supervisor was monitoring the temperature with the Hanford weather station as discussed with project Industrial Hygiene. It is anticipated that the E.S. WGBT units will be calibrated and available for the crew in approximately 7 business days. An employee concern about the

first aid kit inside the project trailer was addressed. The kit contains several items that have exceeded labeled expiration dates. It is recommended that for the project duration, the kit again be serviced and inventoried on a regular basis and that the supplies needed be ordered as soon as possible. It was discovered that upon re-entry to the farm after a lunch break, the emergency signaling strobe would not switch on when triggered remotely. Work was stopped while workers attempted to trouble shoot the strobe. Prior to the implementation of the used of the new GSM switch strobes, the Vadose project purchased several pairs of noise cancelling communication muffs. It was found that the two drillers onsite that day did not bring their muffs, as it was assumed the GSM strobe would provide sufficient emergency warning. A pair was located and personnel adjusted as needed. It was discovered upon attempted re-entry into the farm that the dedicated cell phones used with the communication muffs were not available (one dead battery, one off site). Work was stopped while two of the project phones were located. This scenario leads to a recommendation for the workers to always bring the appropriate PPE to the project site, including the noise cancelling communication muffs. Additionally is recommended that an appropriate corrective process be in place to prevent the removal of the cell phones from the project sites. The GSM switch strobe light was found to have a faulty power switch and has been repaired, tested, and returned to service. It is recommended in addition to the strobe, at least one drill crew team member wear the communication muffs. In the event of another strobe failure, the backup system would already be in place and the same phone used to trigger the strobe can communicate with the muffs. To mitigate the complaints by some that the muffs are uncomfortable for them to wear, it is recommended that a hard hat mount for the muffs be purchased if it is determined that the change in configuration would still provide adequate hearing protection.

| Signature/Date | | Review Signature/Date | |
|---|---|---|---|
| | | | |
| | | | |

| Attachments |
|---|
| *None* |

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Field Safety and Health Inspection Report REV 1 2/2/11

| Field Safety and Health Inspection Report | | | | | |
|---|---|---|---|---|---|
| *Date* | 08/23/11 | *Time* | 1000-1200 | *Inspected by* | Kris Hutchings |
| *Location* | 241-S Farm, Hanford WA, S Farm Vadose Characterization | | | | |
| *Work Activities* | Workers were driving probe hole to depth, at time of visit the crew was placing work in a safe configuration to replace a drive head. | | | | |
| *Weather Conditions* | >86 F | | | | |

| Observations ( check all that apply ) | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Industrial Hygiene* | | *Industrial Safety* | | | | | |
| ☐ | IH Monitoring/Sampling | ☐ | Applicable PPE | ☐ | Heavy Equipment | ☐ | Excavations |
| ☐ | Hazard Communication | ☐ | Walking/Working Surfaces | ☐ | Elevating Work Platforms | ☐ | Underground Utilities |
| ☐ | Respiratory Protection | ☐ | Housekeeping | ☐ | Crane and Rigging | ☐ | Machine Guarding |
| ☐ | Confined Space | ☐ | Showers and Eyewash Stations | ☐ | Vehicular Traffic | ☐ | Rotating/Moving Equipment |
| ☐ | First Aid/Injury/Illness | ☐ | Electrical | ☐ | Fall Hazards | ☐ | Hand/Power Tools |
| ☒ | Heat Stress (WGBT) | ☐ | L.O.T.O. | ☐ | Falling Objects | ☐ | Stored Energy |
| ☐ | Ergonomics | ☐ | Overhead Utilities | ☐ | Ladders and Stairs | ☐ | Pinch Points |
| ☐ | Ventilation/IEQ | ☐ | Signs and Barricades | ☐ | Scaffolds | ☐ | Applicable Permits |
| ☐ | Noise and/or Vibration | ☐ | Fire Hazards | ☐ | Air/Steam/Fluid > 500 psi | ☐ | P.O.D. Meeting |
| ☐ | Lighting | ☐ | Compressed Gas Storage | ☐ | Steam/Fluid >200°F | ☐ | Work Documents |
| ☒ | Other IH | ☐ | Exits/Doors/Fire Lanes | ☐ | Employee Concern | ☐ | Other (Safety) |

## Comments/Items needing addressed

Visited the S Farm project to observe the work activities. At the time of the visit the workers were placing the work in a safe configuration to prepare to replace a broken drive head. *Heat Stress:* A survey of the farm at the time of the visit found no WGBT was in place in the work zone or in the area around the change trailer or work trailer. A subsequent conversation (8/24/11) with the field work supervisor clarified that the WGBT data was being collected from the Hanford weather station with periodic phone calls. At the time of the visit an Industrial Hygiene Technician was not available to place the WGBT.

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Field Safety and Health Inspection Report REV 1 2/2/11

*Other IH (RWP CO-645):* Observed the drill crew remove their muffs and exit the farm. The crew did not have an HPT present to survey their hands prior to handling the muffs. To ensure that the RWP was being followed appropriately a subsequent conversation (8/25/11) was had with project HPT personnel. It was stated that the workers are reminded to have two layers of latex gloves in addition to the leather gloves to comply with the RWP CO-645. A commitment to review the RWP with the drill crew was made.

*Other IH (Emergency Communication):* Observed the drill crew did not have the Sensear SDP muffs, relying on the GSM Strobe. Inquired about the strobe being tested prior to shift and the workers stated that it had been. At the time of the visit, there were no support personnel observing the drill work to identify hazards and trigger the strobe. A subsequent conversation (8/24/11) with the field work supervisor clarified that support personnel were present during other periods of work activity for the day. It is recommended that during all work activities an assigned individual should maintain a line of sight on the crew and watch for hazards that may endanger the work crew.

| Signature/Date | | Review Signature/Date | |
|---|---|---|---|
| | | | |
| | | | |

## Attachments

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Field Safety and Health Inspection Report REV 1 2/2/11

| Field Safety and Health Inspection Report | | | | | |
|---|---|---|---|---|---|
| *Date* | 08/25/11 | *Time* | 1300-1430 | *Inspected by* | Kris Hutchings |
| *Location* | 241-S Farm, Hanford WA, S Farm Vadose Characterization | | | | |
| *Work Activities* | Workers reach total depth (TD) for the boreholes and geophysical logging was proceeding on both holes. | | | | |
| *Weather Conditions* | Hanford Weather Station 200 West: 94 F, Clear Skies, 4-8 MPH | | | | |

| Observations ( check all that apply ) | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Industrial Hygiene* | | *Industrial Safety* | | | | | |
| ☐ | IH Monitoring/Sampling | ☐ | Applicable PPE | ☐ | Heavy Equipment | ☐ | Excavations |
| ☐ | Hazard Communication | ☐ | Walking/Working Surfaces | ☐ | Elevating Work Platforms | ☐ | Underground Utilities |
| ☐ | Respiratory Protection | ☐ | Housekeeping | ☐ | Crane and Rigging | ☐ | Machine Guarding |
| ☐ | Confined Space | ☐ | Showers and Eyewash Stations | ☐ | Vehicular Traffic | ☐ | Rotating/Moving Equipment |
| ☐ | First Aid/Injury/Illness | ☐ | Electrical | ☐ | Fall Hazards | ☐ | Hand/Power Tools |
| ☒ | Heat Stress (WGBT) | ☐ | L.O.T.O. | ☐ | Falling Objects | ☐ | Stored Energy |
| ☐ | Ergonomics | ☐ | Overhead Utilities | ☐ | Ladders and Stairs | ☐ | Pinch Points |
| ☐ | Ventilation/IEQ | ☐ | Signs and Barricades | ☐ | Scaffolds | ☐ | Applicable Permits |
| ☐ | Noise and/or Vibration | ☐ | Fire Hazards | ☐ | Air/Steam/Fluid > 500 psi | ☐ | P.O.D. Meeting |
| ☐ | Lighting | ☐ | Compressed Gas Storage | ☐ | Steam/Fluid >200°F | ☐ | Work Documents |
| ☒ | Other IH | ☐ | Exits/Doors/Fire Lanes | ☐ | Employee Concern | ☐ | Other (Safety) |

## Comments/Items needing addressed

*Heat Stress:* Arrived late afternoon. No WGBT was observed in the work zone, or in the area near the change trailer or work trailer. The WGBT for the 200 West area reported 94 F. During logging activities the work crew makes only short periodic entries and has a well integrated work rest cycle. Inquired if the work crew was staying hydrated. The bulk of the logging activities are performed inside work trailer in an air conditioned environment.

*Other IH (Work Teams):* Observed the logging sub-contractor entering and working in the tank farm

| | | | |
|---|---|---|---|
| alone during heat stress conditions. The individual worker entered the tank farm on a periodic basis for short durations ranging from 10 to 30 minutes as needed. It is recommended that, at a minimum the worker be observed, line of sight, during work activities as a precaution in the event of an injury, an emergency weather condition, or other unanticipated hazards associated with work in a Hanford tank farm arise and require a rapid response. | | | |
| Signature/Date | | Review Signature/Date | |
| | | | |
| | | | |

| Attachments |
|---|
| |

# INFORMATION CLEARANCE REVIEW AND RELEASE APPROVAL

## Part I: Background Information

Title: Completion Report for the 241-S Tank Farm Direct Push Barrier Characterization

Information Category:
- ☐ Abstract ☐ Journal Article ☐ Summary
- ☐ Internet ☐ Visual Aid ☐ Software
- ☐ Full Paper ☑ Report ☐ Other

Publish to OSTI? ☐ Yes ☑ No

| Trademark/Copyright "Right to Use" Information or Permission Documentation | Yes | NA |
|---|---|---|
| | ☐ | ☑ |

Document Number: RPP-RPT-51294 Revision 0 Date: January 2012

Author: Tabor, Cindy L

## Part II: External/Public Presentation Information

Conference Name:

Sponsoring Organization(s): WRPS

Date of Conference: Conference Location:

Will Material be Handed Out? ☐ Yes ☑ No Will Information be Published? ☐ Yes ☑ No *(If Yes, attach copy of Conference format instructions/guidance.)*

## Part III: WRPS Document Originator Checklist

| *Description* | *Yes* | *N/A* | *Print/Sign/Date* |
|---|---|---|---|
| Information Product meets requirements in TFC-BSM-AD-C-01? | ☐ | ☑ | |
| Document Release Criteria in TFC-ENG-DESIGN-C-25 completed? (Attach checklist) | ☐ | ☑ | |
| If product contains pictures, safety review completed? | ☑ | ☐ | Roberts, Sheryl K IDMS workflow data attached |

## Part IV: WRPS Internal Review

| *Function* | *Organization* | *Date* | *Print Name/Signature/Date* |
|---|---|---|---|
| Subject Matter Expert | WRPS | 11/19/2019 | Tabor, Cindy L workflow data attached |
| Responsible Manager | WRPS | 11/05/2019 | Rutland, Paul L workflow data attached |
| Other: | | | |

## Part V: IRM Clearance Services Review

| *Description* | *Yes* | *No* | *Print Name/Signature* |
|---|---|---|---|
| Document Contains Classified Information? | ☐ | ☒ | If Answer is "Yes," ADC Approval Required<br>Print Name/Signature/Date |
| Document Contains Information Restricted by DOE Operational Security Guidelines? | ☐ | ☒ | Reviewer Signature:<br>Print Name/Signature/Date |
| Document is Subject to Release Restrictions?<br>*If the answer is "Yes," please mark category at right and describe limitation or responsible organization below:* | ☐ | ☒ | Document contains:<br>☐ Applied Technology ☐ Protected CRADA<br>☐ Personal/Private ☐ Export Controlled<br>☐ Proprietary ☐ Procurement – Sensitive<br>☐ Patentable Info. ☐ OUO<br>☐ Predecisional Info. ☐ UCNI<br>☐ Restricted by Operational Security Guidelines<br>☐ Other (Specify) |
| Additional Comments from Information Clearance Specialist Review? | ☐ | ☒ | Information Clearance Specialist Approval<br>APPROVED<br>By Lynn M. Ayers at 9:29 am, Nov 19, 2019<br>Print Name/Signature/Date |

**When IRM Clearance Review is Complete – Return to WRPS Originator for Final Signature Routing (Part VI)**

# INFORMATION CLEARANCE REVIEW AND RELEASE APPROVAL

## Part VI: Final Review and Approvals

| *Description* | *Approved for Release* | | *Print Name/Signature* |
|---|---|---|---|
| | *Yes* | *N/A* | |
| WRPS External Affairs | ☒ | ☐ | McCune, Hal C - IDMS workflow data attached |
| WRPS Office of Chief Counsel | ☒ | ☐ | Roden, Mari L - IDMS workflow data attached |
| DOE – ORP Public Affairs/Communications | ☒ | ☐ | Levardi, Yvonne & Tyree, Geoff - workflow data attached |
| Other: | ☒ | ☐ | Zelen, Ben J - IDMS workflow data attached |
| Other: | ☒ | ☐ | Lobos, Rodrigo A - IDMS workflow data attached |

Comments Required for WRPS-Indicate Purpose of Document:

This report documents field activities at 241-S Tank Farm.

**APPROVED**
*By Lynn M. Ayers at 9:29 am, Nov 19, 2019*

**Approved for Public Release; Further Dissemination Unlimited**

**Information Release Station**

Was/Is Information Product Approved for Release? ☒ Yes ☐ No

If Yes, what is the Level of Releaser? ☑ Public/Unrestricted ☐ Other (Specify) _____

Date Information Product Stamped/Marked for Release: 11/19/2019

Was/Is Information Product Transferred to OSTI? ☐ Yes ☒ No

**Forward Copies of Completed Form to WRPS Originator**

```
- <workflow name="(LMA) Normal - RPP-RPT-51294 R0" id="251968409">
  - <task name="Clearance Process" id="0" date-initiated="20191105T0829"
      performer="Lynn M Ayers" performer-id="212954838" username="h3998817">
      <comments>DUE: Tuesday, November 19, 2019 - 8 AM Please review for public
        release, Completion Report for the 241-S Tank Farm Direct Push Barrier
        Characterization, Rev. 0, submitted by Cindy Tabor. Thank you, Lynn Ayers
        Information Clearance</comments>
    </task>
    <task name="Add XML" id="1" date-done="20191105T0829" />
    <task name="Manager Approval" id="41" date-due="20191108T0829" date-
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      username="h4494439" disposition="Approve" authentication="true" />
    <task name="Document Reviewer2" id="53" date-due="20191108T0838" date-
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      username="h7687509" disposition="Public Release" authentication="true" />
    <task name="Document Reviewer1" id="54" date-due="20191108T0838" date-
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      username="h0081997" disposition="Public Release" authentication="true" />
    <task name="Document Reviewer4" id="51" date-due="20191108T0838" date-
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      id="232334741" username="h2488419" disposition="Public Release"
      authentication="true" />
    <task name="Document Reviewer3" id="52" date-due="20191108T0838" date-
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      username="h0048955" disposition="Public Release" authentication="true" />
    <task name="Doc Owner Clearance Review" id="13" date-due="20191112T1058"
      date-done="20191111T1608" performer="Cynthia L Tabor" performer-
      id="173738849" username="h6436378" disposition="Send On"
      authentication="true" />
    <task name="Milestone 1" id="24" date-done="20191111T1608" />
    <task name="ORP Document Reviewer3" id="59" date-due="20191113T1608" date-
      done="20191112T0910" performer="Benjamin J Zelen" performer-id="141965018"
      username="h1214744" disposition="Public Release" authentication="true" />
  - <task name="ORP Document Reviewer2" id="58" date-due="20191113T1608" date-
      done="20191114T1146" performer="Geoff T Tyree" performer-id="6158846"
      username="h0068565" disposition="Public Release" authentication="true">
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  - <task name="ORP Document Reviewer1" id="57" date-due="20191113T1608" date-
      done="20191115T1042" performer="Yvonne M Levardi" performer-id="185346745"
      username="h7131303" disposition="Public Release" authentication="true">
      <comments>no comments</comments>
    </task>
    <task name="Doc Owner Reviews ORP Comments" id="61" date-
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      authentication="true" />
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