REVIEW COMMENT RECORD (RCR)

1. Date 08/14/06	2. Review No.
3. Project No. 216-Z-9 Crib	4. Page 1 of 2

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
Validation Package for SDG WSCF20060389	Borehole C3427	RL Weiss	WCH - S&DM	Sigma 1 372-9631

17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. Closed
Organization Manager (Optional)	R. L. Weiss 0814/06 Reviewer/Point of Contract Date R. L. Weiss Author/Originator	Reviewer/Point of Contact 9-20-06 Date Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Reviewer Concurrence Required	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	All (General Chemistry, SVOA, Metals, PCB): Laboratory Case Narrative contains the following for all analytical sections; "A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spike Duplicate were analyzed for each delivery group per GRP Letter of instruction.". For all analyses except ICP/AES, the Case Narrative further notes that MS/MSDs were run on samples from different delivery groups (all but anions from different SAFs). There is insufficient information provided to determine if the ICP-AES MS/MDSs were run on the sample or to identify which analytes were run by ICP-AES versus ICP-MS. Without additional information or clarification, all results should be flagged "J" for MS/MSD issues.		Suggestion to flag all results is rejected: The MS/MSD and samples for each batch are given on pp. 39-40 of the lab report. These pages have been added to the data validation report. The samples are identified on these pages by the lab sample number, which is given for the samples on lab report pp.9-10, 21-23 and for the MS/MSD on lab report pp. 12-20, 27-35. The analytical method numbers for each analysis are given on lab report pp.9-10, 21-23. The analytical method descriptions are given on lab report pp 37-38 and were clarified in the response to Data Package Validation Discrepancy Report and Information Request #3 for VSR06-007. This information has been added to App. 6 of the DV reports.	Accept RLW 9-20-06

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12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Reviewer Concurrence Required	15. Disposition (Provide justification if NOT accepted.)	16. Status
2	General Chemistry, Pages 2, 3, 8, 10, 19, & 20: Results on page 10 show analysis dates of 5/11 & 5/17 (Nitrate only) for anions. Provided QC information is only for analysis on 5/17. Without additional information or clarification, all anion results run on ~~5/5~~ 5/11 [JRJ] results should be flagged "J" for missing QC.		Rejected: The DV procedure requires that the MS, MSD, and sample be prepared at the same time. The lab narrative says that the preparation date is 5/10/06 for anion analysis. In the case cited here, the analysis dates of the samples and MS/MSD differ, but they are not required to be the same per MS/MSD criteria. However, since hold time for nitrate is now being calculated as the difference between analysis date and prep date (per Data Package Validation Discrepancy Report and Information Request VSR06-007-2), the hold time is 7 days, more than double the allotted 48 hr. Since nitrate was detected, the result should be flagged "J" for hold time. The DV report has been revised accordingly.	
3	SVOA, Page 9; Validator should "X-out" PCB section of result page.		Accepted	

Project Hanford Management System **COMMENT RESOLUTION SHEET**		Sheet 1 of 2
Document Number: WSCF20060389	**Revision Number** N/A	**Date:** Aug 22, 2006

Document Title:
Data Validation 216-Z-9 Crib Slant Borehole C3427

Corrections Completed WR Thackaberry 9/19/06

Reviewer:	**Project/Organization:**
Bill Thackaberry	FH/GRP/QA
Reviewers, if other than original:	**Responsible Manager:** Dana Farwick

Initials (If other than listed reviewer)	Section/ Step	Comments/Discrepancies	COMMENT(S) Basis	Recommendation	Resolution
	General Chem	No Data summary presented		Provide the table	Accepted, although not required by DV procedure.
	Metals	No Data summary presented			Accepted, although not required by DV procedure.
	Metals	Pg 20, checklist item 3, Field/trip blank analyzed? has been marked N/A. Should be No			Accepted
	Metals	pg 20, checklist item 4, Performance audit samples analyzed? has been marked N/A. Should be No			Accepted
	PCBs	No Data summary presented			Accepted, although not required by DV procedure.

Project Hanford Management System COMMENT RESOLUTION SHEET (continued)					Sheet 2 of 2
Document Number: WSCF20060389			Revision Number N/A		Date: Aug 22, 2006
	PCBs	pg 18, checklist item 3, comment that "validation instruction requires flagging as UR" This is not consistent with statement on page 3.			Accepted. All comments have been deleted for this item. Answer to checklist question "blank acceptable?" changed to "yes".
	PCBs	Pg 18, checklist item 3, Field/trip blank analyzed? has been marked N/A. Should be No			Accepted
	PCBs	Pg 18, checklist item 4, Performance audit samples analyzed? has been marked N/A. Should be No.			Accepted
	SemiVOA	No Data summary presented			Accepted, although not required by DV procedure.
	SemiVOA	Pg 20, checklist item 3, Field/trip blank analyzed? has been marked N/A. Should be No			Accepted
	SemiVOA	pg 20, checklist item 4, Performance audit samples analyzed? has been marked N/A. Should be No			Accepted

Date: July 21, 2006, Revised August 25, 2006
To: Fluor Hanford, Inc
From: Environmental Quality Management, Inc.
Project: 216-Z-9 Crib Slant Borehole C3427
Subject: Data Validation for Data Package WSCF20060389 Polychlorinated Biphenyls

INTRODUCTION

This memo presents the results of data validation on Data Package WSCF20060389, prepared by the Waste Sampling and Characterization Facility (WSCF). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analysis
B1HK57	4/18/06	Soil	C	EPA 8082

Data validation was conducted in accordance with HNF-20433, Rev. 0, *Data Validation Procedure for Chemical Analyses* and DOE/RL-2001-01, Rev. 0, App. B, *Plutonium/Organic-Rich Process Condensate/Process Waste Group Operable Unit Representative Sites Sample and Analysis Plan*. Appendices 1 through 6 provide additional information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

The analytical holding time for determining polychlorinated biphenyl compounds (PCBs) is 14 days to extraction, plus another 40 days permitted to analysis. The samples must be held at 4 degrees C prior to extraction.

The holding times were met.

Blanks

- Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one method blank analysis must be conducted for every 20 samples and/or for every analytical batch of samples. The blank is processed through all steps of the sample preparation and analysis

procedures. The blank results are not to exceed either the required detection limit (RDL) or three times the method detection limit (MDL).

The blank results met the above criteria.

- Field Blanks

No field blanks were submitted for analysis

Accuracy

- Surrogates

Surrogates are used to assess the accuracy of the method. Acceptable results for organic surrogates are 50-150%.

Surrogate recoveries were acceptable.

- Matrix Spikes

Matrix spike (MS) analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spikes must be analyzed at least once per batch of samples, using the same procedures as samples and added as early in the sample preparation process as possible.

MS recoveries must fall within the range of 70-130%.

An MS recovery was obtained for Aroclor-1254. The recovery was within the required limits.

- Laboratory Control Samples (LCS)/Blank Spike Sample (BSS)

BSS/LCSs are also a measure of accuracy. Blank spikes or LCS recoveries must be within 70-130%.

An LCS recovery was obtained for Aroclor-1254. The recovery was within the required limits.

Precision

- Matrix Spike Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are

greater than five times the required detection limit (RDL) and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the RDL, the control limit is two times the RDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

An MSD was run for Aroclor-1254, and the RPD was within the required limits.

- Field Duplicate Samples

  No field duplicates were submitted for analysis

Analytical Detection Limits

Reported analytical detection levels were compared against the required detection limits (RDLs) given in DOE/RL-2001-01, Rev. 0, App. B.

Aroclor-1221 was undetected with a detection limit of 23 ug/kg. This exceeds the RDL of 16.5 ug/kg. However, in accordance with the validation procedure, validation qualifiers are not required. Detection limits for the other Aroclors did not exceed the RDL.

Completeness

Data package WSCF20060389 was submitted for validation and verified for completeness. Completeness is based on the percentage of requested data that were reported and determined to be valid (i.e., not rejected).

The completeness percentage was 100%

MAJOR DEFICIENCIES

None.

MINOR DEFICIENCIES

Aroclor-1221 was undetected with a detection limit in excess of the RDL.

REFERENCES

HNF-20433, Rev. 0, *Data Validation Procedure for Chemical Analysis,* Fluor Hanford, Inc., Richland, Washington (2004).

DOE/RL-2001-01, Rev. 0, App. B, *Plutonium/Organic-Rich Process Condensate/Process Waste Group Operable Unit Representative Sites Sample and Analysis Plan*, U.S. Department of Energy, Richland, Washington (2004).

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the data validation procedure are as follows:

U - Indicates the compound or analysis was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data was usable for decision making purposes.

J – Indicates the compound or analyte was analyzed and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data was usable for the decision making purposes.

R – Indicates the compound or analyte was analyzed for, detected and due to identified major QC deficiency, the data are unusable.

UR – Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to a major QC deficiency.

Appendix 2

Summary of Data Qualifiers

DATA QUALIFICATION SUMMARY

SDG: WSCF20060389	REVIEWER: JRJ	DATE: 7/21/06	PAGE 1 OF 1
COMMENTS: No results were qualified.			
SAMPLES AFFECTED	**QUALIFIER**	**COMPOUND**	**REASON**

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

POLYCHLORINATED BIPHENYL ANALYSIS, SOIL (UG/KG)

Project: FLUOR HANFORD			
Laboratory: WSCF			
Case:	SDG: WSCF20060389		
Sample Number		B1HK57	
Remarks			
Sample Date		4/18/2006	
Extraction Date		5/1/2006	
Analysis Date		5/4/2006	
PCB Compounds	**RTQL**	**Result**	**Q**
Aroclor-1016	16.5	12	U
Aroclor-1221	16.5	23	U
Aroclor-1232	16.5	12	U
Aroclor-1242	16.5	12	U
Aroclor-1248	16.5	12	U
Aroclor-1254	16.5	12	U
Aroclor-1260	16.5	12	U
Aroclor-1262	16.5	12	U
Aroclor-1268	16.5	12	U

RTQL = required target quantitation limit
Q = validation qualifier; laboratory-applied non-detect qualifiers "U" have been included for clarity.

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
Project: F06-005: F06-005

Group #: WSCF20060389

Sample #	Client ID		CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
Organic														
W060000954	B1HK57	TRENT	12674-11-2	Aroclor-1016	SOIL	LA-523-427	U	< 12.0	ug/kg	1.00	12	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	11104-28-2	Aroclor-1221	SOIL	LA-523-427	U	< 23.0	ug/kg	1.00	23	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	11141-16-5	Aroclor-1232	SOIL	LA-523-427	U	< 12.0	ug/kg	1.00	12	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	53469-21-9	Aroclor-1242	SOIL	LA-523-427	U	< 12.0	ug/kg	1.00	12	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	12672-29-6	Aroclor-1248	SOIL	LA-523-427	U	< 12.0	ug/kg	1.00	12	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	11097-69-1	Aroclor-1254	SOIL	LA-523-427	U	< 12.0	ug/kg	1.00	12	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	11096-82-5	Aroclor-1260	SOIL	LA-523-427	U	< 12.0	ug/kg	1.00	12	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	37324-23-5	Aroclor-1262	SOIL	LA-523-427	U	< 12.0	ug/kg	1.00	12	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	11100-14-4	Aroclor-1268	SOIL	LA-523-427	U	< 12.0	ug/kg	1.00	12	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	100-02-7	4-Nitrophenol	SOIL	LA-523-456	U	< 310	ug/kg	1.00	3.1e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	106-46-7	1,4-Dichlorobenzene	SOIL	LA-523-456	U	< 480	ug/kg	1.00	4.8e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	108-95-2	Phenol	SOIL	LA-523-456	U	< 250	ug/kg	1.00	2.5e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	120-82-1	1,2,4-Trichlorobenzene	SOIL	LA-523-456	U	< 320	ug/kg	1.00	3.2e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	121-14-2	2,4-Dinitrotoluene	SOIL	LA-523-456	U	< 190	ug/kg	1.00	1.9e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	129-00-0	Pyrene	SOIL	LA-523-456	U	< 1.30e+03	ug/kg	1.00	1.3e+03	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	59-50-7	4-Chloro-3-methylphenol	SOIL	LA-523-456	U	< 170	ug/kg	1.00	1.7e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	621-64-7	N-Nitrosodi-n-dipropylamine	SOIL	LA-523-456	U	< 270	ug/kg	1.00	2.7e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	83-32-9	Acenaphthene	SOIL	LA-523-456	U	< 250	ug/kg	1.00	2.5e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	87-86-5	Pentachlorophenol	SOIL	LA-523-456	U	< 280	ug/kg	1.00	2.8e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	95-57-8	2-Chlorophenol	SOIL	LA-523-456	U	< 270	ug/kg	1.00	2.7e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	100-01-6	4-Nitroaniline	SOIL	LA-523-456	U	< 310	ug/kg	1.00	3.1e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	101-55-3	4-Bromophenylphenyl ether	SOIL	LA-523-456	U	< 180	ug/kg	1.00	1.8e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	105-67-9	2,4-Dimethylphenol	SOIL	LA-523-456	U	< 320	ug/kg	1.00	3.2e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	106-47-8	4-Chloroaniline	SOIL	LA-523-456	U	< 540	ug/kg	1.00	5.4e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	108-60-1	Bis(2-chloro-1-methylethyl)eth	SOIL	LA-523-456	U	< 320	ug/kg	1.00	3.2e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	111-44-4	Bis(2-chloroethyl) ether	SOIL	LA-523-456	U	< 360	ug/kg	1.00	3.6e+02	05/04/06	04/18/06	04/27/06

MDL=Minimum Detection Limit
RQ=Result Qualifier

B - The analyte < the RDL but > = the IDL/MDL (inorganic)
C - The Analyte was found in the Associated Blank.
E - Analyte is an estimate, has potentially larger errors
U - Analyzed for but not detected above limiting criteria.

DF=Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

Report WGPP/ver. 1.3
Groundwater Remediation Program

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Appendix 4

Laboratory Narrative and Chain of Custody Documentation

Sample Delivery Group	**WSCF20060389, Rev. 1**
Sample Matrix	**Soil**
Sample Visual	**N/A**
SAF Number	**F06-005**
Data Deliverable	**Summary Report**

Introduction

Two (2) 216-Z-9 Trench Slant Characterization Borehole (C3427, I22), soil samples (B1HK57 and B1HK62) were received at the WSCF Laboratory on April 27, 2006. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Groundwater Remediation Program – Letter of Instruction*, referenced in the cover letter.

The narrative (Attachment 1) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 2) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information. Copies of the chain of custody and sample receipt are included as Attachment 3.

It should be noted that the attached chain of custody was stamped "iced", initialed and dated by the WSCF Laboratory Sample Custodian during sample receiving, indicating the presence of ice in the sample container.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report,* pages 37 through 38, for a complete listing of approved analytical methods.

Inorganic Comments

Ammonia - The hold time for this analysis was met. A Blank, Duplicate, Laboratory Control Sample, Matrix Spike and Matrix Spike Duplicate were analyzed with each delivery group per GRP Letter of Instruction. See page 12 for QC details. Analytical Note:

- Duplicate, Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018).

All QC controls are within the established limits.

Anions - The hold times for this analysis were met. A Blank, Duplicate, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per GRP Letter of Instruction. See pages 13 through 14 for QC details. Analytical Notes:

- Preparation Date: 10-may-2006.

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6/08/06

- Duplicate, Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HK77 (SDG# 20060478, SAF# F06-005).

- Sample results that were less than the lowest calibration standard but greater than the detection limit were B flagged.

- Phosphate – Matrix Spike and Matrix Spike Duplicate recoveries were less than established laboratory limits. Low recoveries were due to probable matrix interference.

All other QC controls are within the established limits.

ICP-AES Metals – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per GRP Letter of Instruction. See pages 15 through 19 for QC details. Analytical Notes:

- Preparation Date: 09-may-2006.

- Manganese – Matrix Spike and Matrix Spike Duplicate recoveries were less than established laboratory limits. Sample results (B1HK57 and B1HK62) were E flagged.

- Sodium – Matrix Spike and Matrix Spike Duplicate recoveries exceeded established laboratory limits. Sample result (B1HK62) was E flagged.

- Aluminum, Calcium, Iron, Magnesium, and Phosphorus – insufficient spike concentrations. Sample concentration was greater than four times the spike concentration.

- Bismuth, Copper, Potassium, Manganese, Phosphorus and Vanadium – Analytes detected in the associated preparation Blank sample were evaluated and there was no significant affect on sample results except for Phosphorus. Phosphorus sample results were C flagged.

All other QC controls are within the established limits.

ICP-MS Metals – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See page 20 for QC details. Analytical Notes:

- Preparation Date: 17-may-2006.

- Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018).

- Mercury – Analyte detected in the associated preparation Blank sample was evaluated and sample results were C flagged.

All other QC controls are within the established limits.

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Percent Solids – analyzed for organic moisture correction.

Organic Comments

- Sample results are moisture corrected and reported on dry weight basis.

PCBs – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See pages 27 through 28 for QC details. Analytical Notes:

- Preparation Date: 01-may-2006.
- Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018).

All QC controls are within the established limits.

Semi-VOA – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See pages 29 through 34 for QC details. Analytical Notes:

- Preparation Date: 01-may-2006.
- Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018).
- 1,4-Dichlorobenzene – Matrix Spike and Matrix Spike Duplicate sample recoveries slightly exceeded established laboratory limits.
- 4-Chloro-3-methylphenol – Matrix Spike Duplicate and Laboratory Control Sample recoveries slightly exceeded established laboratory limits.
- 2-Chlorophenol – Laboratory Control Sample recovery slightly exceeded established laboratory limits.
- 2-Fluorophenyl (B1HK62) – Surrogate sample recovery slightly exceeded established laboratory limits.
- 2-Fluorobiphenyl – Laboratory Control Sample recovery slightly exceeded established laboratory limits.
- Phenol – Laboratory Control Sample recovery slightly exceeded established laboratory limits.

All other QC controls are within the established limits.

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6/06/06

This Summary Report is in compliance with the SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the WSCF Laboratory Analytical Manager and Client Services, as verified by the following signature.

Pauline D. Mix
WSCF Client Services

Abbreviations

Hg – mercury
IC – ion chromatography
ICP – inductively coupled plasma
ICP/AES – ICP/atomic emission spectroscopy
ICP/MS – ICP/mass spectrometry
Total U – total uranium
AT/TB – total alpha/total beta
AEA – Alpha Energy Analysis
WTPH-G – Total Hydrocarbons-Gasoline
Am – americium
Cm - curium
Pu – plutonium
Np – neptunium
GEA – gamma energy analysis
H3 – Tritium
Sr – Strontium 89, 90
WTPH-D – Total Hydrocarbons-Diesel
TSS – Total Suspended Solids

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6/6/06

Fluor Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

FOR-005-051 PAGE 1 OF 1

COLLECTOR: Mokler/Pope/Pfister

COMPANY CONTACT: TRENT, SJ

TELEPHONE NO.: 373-5869

PROJECT COORDINATOR: TRENT, SJ

PRICE CODE: 8N

DATA TURNAROUND: 45 Days / 45 Days

SAMPLING LOCATION: C3427, Slant, I-22

PROJECT DESIGNATION: 216-Z-9 Trench Slant Characterization Borehole - Soil

SAF NO.: FOR-005

AIR QUALITY:

ICE CHEST NO.:

FIELD LOGBOOK NO.: HNF-N-360-1

COA: 121618ES10

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

SHIPPED TO: Waste Sampling & Characterization

OFFSITE PROPERTY NO.:

BILL OF LADING/AIR BILL NO.:

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: Item #1 - 241g, Item #2 - 245g, Item #3 - 248g, PCB's - 238g

SPECIAL HANDLING AND/OR STORAGE: 200-00389

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	PRESERVATION			
				Cool 4C	Cool 4C	Cool 4C	Cool 4C
B1HK67	SOIL	4-18-06	1025	TYPE OF CONTAINER: G	G	G/P	G
W0600009S4				NO. OF CONTAINER(S): 1	1	1	1
				VOLUME: 120mL	120mL	120mL	120mL
				SAMPLE ANALYSIS: SEE ITEM (1) IN SPECIAL INSTRUCTIONS	PCBs - 8082;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS
					X	X	X

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
[illegible]	4-18-06 1120	Site Rep	4-18-06 1120
[illegible]	4-27-06 1306	[illegible]	4-27-06 1306
[illegible]	4-27-06 1340	[illegible]	4-27-06 1640

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS

(1)Semi-VOA - 8270B (TCL); Semi-VOA - 8270B (Add-On) (1,2,4-Trimethylbenzene, Cyclohexanone, Dibutyl Butylphosphonate, Tributyl phosphate)
(2)ICP Metals - 6010B (TAL); ICP Metals - 6010B (Add-On) (Arsenic, Beryllium, Bismuth, Lead, Lithium, Phosphorus, Selenium, Strontium) ICP/MS - 200.8 (Hg); (3)IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphorous in phosphate, Sulfate) Cations (IC) - 300.7 (Nitrogen in ammonium)
1540
[illegible] 5-2-06

ICED
[illegible] Initial
4-27-06 Date

LABORATORY SECTION: RECEIVED BY / TITLE / DATE/TIME

FINAL SAMPLE DISPOSITION: DISPOSAL METHOD / DISPOSED BY / DATE/TIME

A-6003-618 (03/05)

Appendix 5

Data Validation Supporting Documentation

PESTICIDE/PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 216-Z-9 Crib Slant (C3427)			DATA PACKAGE: WSCF20060389		
VALIDATOR: JRJ		LAB: WSCF		DATE: 7/21/06	
			SDG: WSCF20060389		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082 PCB	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
B1HK57 / Soil					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... (Yes) No N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

DDT and endrin breakdowns acceptable? ..... Yes No (N/A)

Comments: _____

PESTICIDE/PCB DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E)	Yes	No	(N/A)
Calibration blank results acceptable? (Levels D, E)	Yes	No	(N/A)
Laboratory blanks analyzed?	(Yes)	No	N/A
Laboratory blank results acceptable?	(Yes)	(No)	N/A
Field/trip blanks analyzed? (Levels C, D, E)	Yes	(No)	(N/A)
Field/trip blank results acceptable? (Levels C, D, E)	Yes	No	(N/A)
Transcription/calculation errors? (Levels D, E)	Yes	No	(N/A)

8/24/06 8/24/06

Comments:

Aroclor 1221 blank was non-detect with DL of 20 ug/kg
Aroclor 1221 result for sample was non-detect
Validation instructions requires flagging as "UR"

8/24/06

4. ACCURACY (Levels C, D, and E)

Surrogates analyzed?	(Yes)	No	N/A
Surrogate recoveries acceptable?	(Yes)	No	N/A
Surrogates traceable? (Levels D, E)	Yes	No	(N/A)
Surrogates expired? (Levels D, E)	Yes	No	(N/A)
MS/MSD samples analyzed?	(Yes)	No	N/A
MS/MSD results acceptable?	(Yes)	No	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	(N/A)
MS/MSD standards expired? (Levels D, E)	Yes	No	(N/A)
LCS/BSS samples analyzed?	(Yes)	No	N/A
LCS/BSS results acceptable?	(Yes)	No	N/A
Standards traceable? (Levels D, E)	Yes	No	(N/A)
Standards expired? (Levels D, E)	Yes	No	(N/A)
Transcription/calculation errors? (Levels D, E)	Yes	No	(N/A)
Performance audit sample(s) analyzed?	Yes	(No)	(N/A)
Performance audit sample results acceptable?	Yes	No	(N/A)

8/24/06

Comments:

PESTICIDE/PCB DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? obtained ? ..... Yes No N/A
Duplicate results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: _____

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No N/A
Positive results resolved acceptably? ..... Yes No N/A
Comments: _____

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A
Comments: _____

PESTICIDE/PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) ..... Yes No (N/A)
Compound quantitation acceptable? (Levels D, E) ..... Yes No (N/A)
Results reported for all requested analyses? ..... (Yes) No N/A
Results supported in the raw data? (Levels D, E) ..... Yes No (N/A)
Samples properly prepared? (Levels D, E) ..... Yes No (N/A)
Detection limits meet RDL? ..... Yes (No) N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: Aroclor-1221 was non-detect with DL of 23 ug/kg. This exceeds RDL of 16.5 ug/kg.

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed? ..... Yes No (N/A)
Lot check performed? ..... Yes No (N/A)
Check recoveries acceptable? ..... Yes No (N/A)
GPC cleanup performed? ..... Yes No (N/A)
GPC check performed? ..... Yes No (N/A)
GPC check recoveries acceptable? ..... Yes No (N/A)
GPC calibration performed? ..... Yes No (N/A)
GPC calibration check performed? ..... Yes No (N/A)
GPC calibration check retention times acceptable? ..... Yes No (N/A)
Check/calibration materials traceable? ..... Yes No (N/A)
Check/calibration materials Expired? ..... Yes No (N/A)
Analytical batch QC given similar cleanup? ..... Yes No (N/A)
Transcription/Calculation Errors? ..... Yes No (N/A)
Comments:

PESTICIDE/PCB DATA VALIDATION CHECKLIST

Comments:

Appendix 6

Additional Documentation Requested by Client
(Quality Control Data)

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: PCBs complete list

SAF Number: F06-005
Sample Date: 04/27/06
Receive Date:04/27/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
Lab ID: W060000944									
BATCH QC ASSOCIATED WITH SAMPLE									
MS	Aroclor-1254	11097-69-1	200.36	97.300	% Recov	05/04/06	75.000	125.000	
MS	Decachlorobiphenyl	2051-24-3	228.14	111.000	% Recov	05/04/06	50.000	150.000	
MS	Tetrachloro-m-xylene	877-09-8	244.00	118.000	% Recov	05/04/06	50.000	150.000	
MSD	Aroclor-1254	11097-69-1	177.06	86.400	% Recov	05/04/06	75.000	125.000	
MSD	Decachlorobiphenyl	2051-24-3	221.72	108.000	% Recov	05/04/06	50.000	150.000	
MSD	Tetrachloro-m-xylene	877-09-8	233.07	114.000	% Recov	05/04/06	50.000	150.000	
SPK-RPD	Aroclor-1254	11097-69-1	86.400	11.867	RPD	05/04/06	0.000	25.000	
SPK-RPD	Decachlorobiphenyl	2051-24-3	108.000	2.740	RPD	05/04/06	0.000	20.000	
SPK-RPD	Tetrachloro-m-xylene	877-09-8	114.000	3.448	RPD	05/04/06	0.000	20.000	
Lab ID: W060000954									
BATCH QC ASSOCIATED WITH SAMPLE									
SURR	Decachlorobiphenyl	2051-24-3	230.34	98.600	% Recov	05/04/06	50.000	150.000	
SURR	Tetrachloro-m-xylene	877-09-8	238.45	102.000	% Recov	05/04/06	50.000	150.000	
Lab ID: W060000955									
BATCH QC ASSOCIATED WITH SAMPLE									
SURR	Decachlorobiphenyl	2051-24-3	256.48	103.000	% Recov	05/04/06	50.000	150.000	
SURR	Tetrachloro-m-xylene	877-09-8	262.67	105.000	% Recov	05/04/06	50.000	150.000	
BATCH QC									
BLANK	Aroclor-1016	12674-11-2	< 10	n/a	UGKG	05/04/06			U
BLANK	Aroclor-1221	11104-28-2	< 20	n/a	ug/Kg	05/04/06			U
BLANK	Aroclor-1232	11141-16-5	< 10	n/a	ug/Kg	05/04/06			U
BLANK	Aroclor-1242	53469-21-9	< 10	n/a	ug/Kg	05/04/06			U
BLANK	Aroclor-1248	12672-29-6	< 10	n/a	ug/Kg	05/04/06			U

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1-Jun-2006 09:48:30

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6/6/06

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: PCBs complete list

SAF Number: F06-005
Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
BLANK	Aroclor-1254	11097-69-1	< 10	n/a	ug/Kg	05/04/06			U
BLANK	Aroclor-1260	11096-82-5	< 10	n/a	ug/Kg	05/04/06			U
BLANK	Aroclor-1262	37324-23-5	< 10	n/a	ug/Kg	05/04/06			U
BLANK	Aroclor-1268	11100-14-4	< 10	n/a	ug/Kg	05/04/06			U
BLANK	Decachlorobiphenyl	2051-24-3	155.60	77.900	% Recov	05/04/06	50.000	150.000	
BLANK	Tetrachloro-m-xylene	877-09-8	157.35	78.700	% Recov	05/04/06	50.000	150.000	
LCS	Aroclor-1254	11097-69-1	198.72	99.400	% Recov	05/04/06	70.000	130.000	
LCS	Decachlorobiphenyl	2051-24-3	190.36	95.200	% Recov	05/04/06	50.000	150.000	
LCS	Tetrachloro-m-xylene	877-09-8	189.88	94.900	% Recov	05/04/06	50.000	150.000	

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w13qlog v1 01-jun-2006 09:48:18

W13q Worklist/Batch/QC Report for Group# WSCF20060389

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
				SAMPLE	W060000954	Percent Solids
				SAMPLE	W060000955	Percent Solids
			32800	BLANK		PCBs complete list
			32800	LCS		PCBs complete list
			32800	MS	W060000944	PCBs complete list
			32800	MSD	W060000944	PCBs complete list
			32800	SPK-RPD	W060000944	PCBs complete list
			32800	SAMPLE	W060000954	PCBs complete list
			32800	SURR	W060000954	PCBs complete list
			32800	SAMPLE	W060000955	PCBs complete list
			32800	SURR	W060000955	PCBs complete list
			32804	BLANK		SW-846 8270C Semi-Vols
			32804	LCS		SW-846 8270C Semi-Vols
			32804	MS	W060000944	SW-846 8270C Semi-Vols
			32804	MSD	W060000944	SW-846 8270C Semi-Vols
			32804	SPK-RPD	W060000944	SW-846 8270C Semi-Vols
			32804	SAMPLE	W060000954	SW-846 8270C Semi-Vols
			32804	SURR	W060000954	SW-846 8270C Semi-Vols
			32804	SAMPLE	W060000955	SW-846 8270C Semi-Vols
			32804	SURR	W060000955	SW-846 8270C Semi-Vols
28592	1	28963	32815	BLANK		ICP Metals Analysis, Grd H20 P
28592	2	28963	32815	LCS		ICP Metals Analysis, Grd H20 P
28592	5	28963	32815	MS	W060000954	ICP Metals Analysis, Grd H20 P
28592	6	28963	32815	MSD	W060000954	ICP Metals Analysis, Grd H20 P
28592	4	28963	32815	SAMPLE	W060000954	ICP Metals Analysis, Grd H20 P
28592	6	28963	32815	SPK-RPD	W060000954	ICP Metals Analysis, Grd H20 P
28592	7	28963	32815	SAMPLE	W060000955	ICP Metals Analysis, Grd H20 P
28613	2	28984	32824	BLANK		Ammonia (N) by IC
28613	10	28984	32824	BLANK		Ammonia (N) by IC
28613	3	28984	32824	LCS		Ammonia (N) by IC
28613	5	28984	32824	DUP	W060000944	Ammonia (N) by IC
28613	6	28984	32824	MS	W060000944	Ammonia (N) by IC
28613	7	28984	32824	MSD	W060000944	Ammonia (N) by IC
28613	8	28984	32824	SAMPLE	W060000954	Ammonia (N) by IC
28613	9	28984	32824	SAMPLE	W060000955	Ammonia (N) by IC
28669	2	29040	32883	BLANK		Anions by Ion Chromatography
28669	12	29040	32883	BLANK		Anions by Ion Chromatography
28669	3	29040	32883	LCS		Anions by Ion Chromatography
28669	8	29040	32883	SAMPLE	W060000954	Anions by Ion Chromatography
28669	9	29040	32883	SAMPLE	W060000955	Anions by Ion Chromatography
28669	5	29040	32883	DUP	W060001184	Anions by Ion Chromatography
28669	6	29040	32883	MS	W060001184	Anions by Ion Chromatography
28669	7	29040	32883	MSD	W060001184	Anions by Ion Chromatography
28674	1	29045	32885	BLANK		ICP-2008 MS All possible metal
28674	2	29045	32885	LCS		ICP-2008 MS All possible metal
28674	4	29045	32885	MS	W060000944	ICP-2008 MS All possible metal
28674	5	29045	32885	MSD	W060000944	ICP-2008 MS All possible metal
28674	5	29045	32885	SPK-RPD	W060000944	ICP-2008 MS All possible metal

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28674	6	29045	32885	SAMPLE	W060000954	ICP-2008 MS All possible metal
28674	7	29045	32885	SAMPLE	W060000955	ICP-2008 MS All possible metal

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6/6/06

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WSCF
METHOD REFERENCES REPORT

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory or industry methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though the WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

LA-503-401	LA-503-401: ANALYSIS OF CATIONS BY ION CHROMATOGRAPHY	
	EPA-600/4-86-024 300.7	Dissolved Sodium, Ammonium, Potassium, and Calcium in Wet Deposition by Chemical
	HEIS 300.7_IC	Determination of Ammonium by Ion Chromatography
LA-505-411	LA-505-411: ELEMENTAL ANALYSIS BY INDUCTIVELY COUPLED PLASMA ATOMIC EMISSION SPE	
	EPA SW-846 6010B	INDUCTIVELY COUPLED PLASMA-ATOMIC EMISSION SPECTROMETRY
	HEIS 6010_METALS_ICP	Inductively Coupled Plasma-Atomic Emmision Spectrometry
LA-505-412	LA-505-412: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY	
	EPA-600/R-94-111 200.8	DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY COUPLED PLAS
	HEIS 6010_METALS_ICP	Inductively Coupled Plasma-Atomic Emmision Spectrometry
LA-519-412	LA-519-412: TOTAL RESIDUE/% SOLIDS DRIED AT 103 - 105 C	
	EPA-600/4-79-020 160.3	RESIDUE, TOTAL
	HEIS 160.1_TDS	Residue, Filterable
	Standard Methods 2540B	Total Solids Dried at 103-105 C
LA-523-427	LA-523-427: POLYCHLORINATED BIPHENYLS (PCBs) BY GAS CHROMATOGRAPHY	
	EPA SW-846 3510C	SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION
	EPA SW-846 3545	PRESSURIZED FLUID EXTRACTION (PFE)
	EPA SW-846 3665A	SULFURIC ACID/PERMANGANATE CLEANUP
	EPA SW-846 8000B	DETERMINATIVE CHROMATOGRAPHIC SEPARATIONS
	EPA SW-846 8082	POLYCHLORINATED BIPHENYLS (PCBs) BY GAS CHROMATOGRAPHY
	HEIS 8082_PCB_GC	Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at \\ap006\aspdocs\WSCF\Sample Mgmt\ProcedureMethodCrossReference.pdf. This document includes on-line links to full-text versions of the procedures and methods, where available.

WSCF
METHOD REFERENCES REPORT

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory or industry methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though the WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

LA-523-456	LA-523-456: SEMIVOLATILE SAMPLE ANALYSIS BY SW-846, METHOD 8270C	
	EPA SW-846 8000B	DETERMINATIVE CHROMATOGRAPHIC SEPARATIONS
	EPA SW-846 8270C	SEMIVOLATILE ORGANIC COMPOUNDS BY GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)
	HEIS 8270_SVOA_GCMS	Semivolatile Orgamoc Compounds By Gas Chromatography/Mass Spectrometry (GC/MS)
LA-533-410	LA-533-410: ANION ANALYSIS BY ION CHROMATOGRAPHY	
	EPA-600/R-94-111 300.0	DETERMINATION OF INORGANIC ANIONS BY ION CHROMATOGRAPHY
	HEIS 300.0_ANIONS_IC	Determination of Inorganic Anions by Ion Chromatography

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at \\ap006\aspdocs\WSCF\Sample Mgmt\ProcedureMethodCrossReference.pdf. This document includes on-line links to full-text versions of the procedures and methods, where available.

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Dalyces
6/6/06

Webb, Christine R

From: Nielsen, John H
Sent: Wednesday, September 27, 2006 12:55 PM
To: Webb, Christine R
Cc: Nielsen, John H
Subject: RE: Revised DAN-2981 - moved Bldg location

OK for the new location, there are no known underground telecommunication facilities at the new location.

Thank You

John H. Nielsen
373-6222
john_h_nielsen@rl.gov

From: Webb, Christine R
Sent: Wednesday, September 27, 2006 11:31 AM
To: Demarah, Robert L; Smith, Tod G; Perry, Theodore E (Ted); Nielsen, John H; Belden, Ronald D; Sackschewsky, Michael R; Prendergast-Kennedy, Ellen L
Cc: Clements, Ron L
Subject: Revised DAN-2981 - moved Bldg location
Importance: High

<< File: DAN-2981 revised.pdf >>

Please review the attached .pdf sketches (2) of the new location for KR-4 Pump and Treat Bldg. 2A, reviewed on DAN-2981.

The building will now be **placed on the existing well pad for well 199-K-134 (alias C4735)** - The well drilling was approved on Excavation Permit number DAN-2618 in March 2005. No underground lines were detected on the GPR scan. No radiological or utility concerns were identified. Cultural and Biological approvals were on letter #2005-100-017.

All of you have previously signed DAN-2981. I need you to concur via E:Mail, that the new location of Bldg. 2A is not a problem. **I need your responses by COB today**.

Christine R. Webb 373-5573 or 373-3917

Webb, Christine R

From: Demarah, Robert L
Sent: Wednesday, September 27, 2006 1:09 PM
To: Webb, Christine R
Subject: RE: Revised DAN-2981 - moved Bldg location

The new location is not a problem. Thanks, Bob.

From: Webb, Christine R
Sent: Wednesday, September 27, 2006 11:31 AM
To: Demarah, Robert L; Smith, Tod G; Perry, Theodore E (Ted); Nielsen, John H; Belden, Ronald D; Sackschewsky, Michael R; Prendergast-Kennedy, Ellen L
Cc: Clements, Ron L
Subject: Revised DAN-2981 - moved Bldg location
Importance: High

<< File: DAN-2981 revised.pdf >>

Please review the attached .pdf sketches (2) of the new location for KR-4 Pump and Treat Bldg. 2A, reviewed on DAN-2981.

The building will now be **placed on the existing well pad for well 199-K-134 (alias C4735)** - The well drilling was approved on Excavation Permit number DAN-2618 in March 2005. No underground lines were detected on the GPR scan. No radiological or utility concerns were identified. Cultural and Biological approvals were on letter #2005-100-017.

All of you have previously signed DAN-2981. I need you to concur via E:Mail, that the new location of Bldg. 2A is not a problem. **I need your responses by COB today**.

Christine R. Webb 373-5573 or 373-3917

REVIEW COMMENT RECORD (RCR)

1. Date 08/14/06	2. Review No.
3. Project No. 216-Z-9 Crib	4. Page 1 of 2

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
Validation Package for SDG WSCF20060389	Borehole C3427	RL Weiss	WCH - S&DM	Sigma 1 372-9631

17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. Closed
Organization Manager (Optional)	R. L. Weiss Reviewer/Point of Contract 0814/06 Date R. L. Weiss Author/Originator	Reviewer/Point of Contact 9-20-06 Date Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Reviewer Concurrence Required	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	All (General Chemistry, SVOA, Metals, PCB): Laboratory Case Narrative contains the following for all analytical sections; "A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spike Duplicate were analyzed for each delivery group per GRP Letter of instruction.". For all analyses except ICP/AES, the Case Narrative further notes that MS/MSDs were run on samples from different delivery groups (all but anions from different SAFs). There is insufficient information provided to determine if the ICP-AES MS/MDSs were run on the sample or to identify which analytes were run by ICP-AES versus ICP-MS. Without additional information or clarification, all results should be flagged "J" for MS/MSD issues.		Suggestion to flag all results is rejected: The MS/MSD and samples for each batch are given on pp. 39-40 of the lab report. These pages have been added to the data validation report. The samples are identified on these pages by the lab sample number, which is given for the samples on lab report pp.9-10, 21-23 and for the MS/MSD on lab report pp. 12-20, 27-35. The analytical method numbers for each analysis are given on lab report pp.9-10, 21-23. The analytical method descriptions are given on lab report pp 37-38 and were clarified in the response to Data Package Validation Discrepancy Report and Information Request #3 for VSR06-007. This information has been added to App. 6 of the DV reports.	Accept RLW 9-20-06

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Reviewer Concurrence Required	15. Disposition (Provide justification if NOT accepted.)	16. Status
2	General Chemistry, Pages 2, 3, 8, 10, 19, & 20: Results on page 10 show analysis dates of 5/11 & 5/17 (Nitrate only) for anions. Provided QC information is only for analysis on 5/17. Without additional information or clarification, all anion results run on ~~5/5~~ 5/11 [JRJ] results should be flagged "J" for missing QC.		Rejected: The DV procedure requires that the MS, MSD, and sample be prepared at the same time. The lab narrative says that the preparation date is 5/10/06 for anion analysis. In the case cited here, the analysis dates of the samples and MS/MSD differ, but they are not required to be the same per MS/MSD criteria. However, since hold time for nitrate is now being calculated as the difference between analysis date and prep date (per Data Package Validation Discrepancy Report and Information Request VSR06-007-2), the hold time is 7 days, more than double the allotted 48 hr. Since nitrate was detected, the result should be flagged "J" for hold time. The DV report has been revised accordingly.	
3	SVOA, Page 9; Validator should "X-out" PCB section of result page.		Accepted	

Project Hanford Management System **COMMENT RESOLUTION SHEET**		Sheet 1 of 2
Document Number: WSCF20060389	**Revision Number** N/A	**Date:** Aug 22, 2006

Document Title:
Data Validation 216-Z-9 Crib Slant Borehole C3427

Corrections Completed WBThackaberry 9/19/06

Reviewer: Bill Thackaberry **Reviewers,** if other than original:	**Project/Organization:** FH/GRP/QA **Responsible Manager:** Dana Farwick

Initials (If other than listed reviewer)	**Section/ Step**	**Comments/Discrepancies**	**COMMENT(S) Basis**	**Recommendation**	**Resolution**
	General Chem	No Data summary presented		Provide the table	Accepted, although not required by DV procedure.
	Metals	No Data summary presented			Accepted, although not required by DV procedure.
	Metals	Pg 20, checklist item 3, Field/trip blank analyzed? has been marked N/A. Should be No			Accepted
	Metals	pg 20, checklist item 4, Performance audit samples analyzed? has been marked N/A. Should be No			Accepted
	PCBs	No Data summary presented			Accepted, although not required by DV procedure.

Document Number: WSCF20060389			Revision Number N/A		Date: Aug 22, 2006
	PCBs	pg 18, checklist item 3, comment that "validation instruction requires flagging as UR" This is not consistent with statement on page 3.			Accepted. All comments have been deleted for this item. Answer to checklist question "blank acceptable?" changed to "yes".
	PCBs	Pg 18, checklist item 3, Field/trip blank analyzed? has been marked N/A. Should be No			Accepted
	PCBs	Pg 18, checklist item 4, Performance audit samples analyzed? has been marked N/A. Should be No.			Accepted
	SemiVOA	No Data summary presented			Accepted, although not required by DV procedure.
	SemiVOA	Pg 20, checklist item 3, Field/trip blank analyzed? has been marked N/A. Should be No			Accepted
	SemiVOA	pg 20, checklist item 4, Performance audit samples analyzed? has been marked N/A. Should be No			Accepted

Date: July 21, 2006, Revised August 25, 2006
To: Fluor Hanford, Inc
From: Environmental Quality Management, Inc.
Project: 216-Z-9 Crib Slant Borehole C3427
Subject: Data Validation for Data Package WSCF20060389 Metals

INTRODUCTION

This memo presents the results of data validation on Data Package WSCF20060389, prepared by the Waste Sampling and Characterization Facility (WSCF). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analysis
B1HK57	4/18/06	Soil	C	See note

Note: Analysis by inductively coupled plasma emission spectrometry for aluminum, iron, magnesium, manganese, nickel, potassium, silver, sodium, antimony, barium, cadmium, chromium, cobalt, copper, vanadium, zinc, calcium, lead, lithium, strontium, arsenic, beryllium, bismuth, phosphorus, and selenium; inductively coupled plasma/mass spectrometry for mercury.

Data validation was conducted in accordance with HNF-20433, Rev. 0, *Data Validation Procedure for Chemical Analyses* and DOE/RL-2001-01, Rev. 0, App. B, *Plutonium/Organic-Rich Process Condensate/Process Waste Group Operable Unit Representative Sites Sample and Analysis Plan*. Appendices 1 through 6 provide additional information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times are assessed to ascertain whether the holding time requirements have been met. The analytical holding time requirement for metals in soils is 180 days, except for mercury, which has a holding time requirement of 28 days. Mercury analysis also requires that the samples be shipped and stored at 4 degrees C.

The mercury analysis was performed on May 18, 2006, 30 days after April 18, 2006, when the sample was collected, and two days after the 28-day holding time limit had passed. Therefore, the mercury result was qualified as approximate and flagged with a "J." All other holding times and storage requirements were met.

Blanks

- Method blanks

  Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one method blank per analytical batch of samples must be analyzed. The method blank consists of pure water and is processed through each set of the sample preparation and analysis procedures.

  The laboratory blank shall be less than or equal to the required detection limit and less than or equal to three times the instrument detection limit.

  All method blank results met these criteria.

- Field Blanks

  No field blanks were submitted for analysis

Accuracy

- Matrix Spikes

  Matrix spike (MS) analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spikes must be analyzed at least one per analytical batch and must be taken through the same procedures and added as early in the sample preparation process as possible. MS recoveries must fall within the range of 70 to 130%. If the sample concentration exceeds the spike concentration by a factor of 4 or more, no qualification is required.

  The MS recovery for sodium was greater than 130%, but sodium was undetected in the sample; therefore no qualification is required.

  MS results were not reported for aluminum, iron, magnesium, calcium, and phosphorus. The laboratory narrative explains that the sample results for these elements were more than four times higher than the MS, so no qualification is required.

  All other MS recoveries were within limits.

- Laboratory Control Sample (LCS) or Blank Spike Sample (BBS)

  LCSs /BSSs are also used to measure accuracy. They are analyzed at a frequency of one per analytical batch. The acceptable limits for the LCS/ BSS are 70-130%.

The LCS recoveries for iron and antimony were 147% and 230%, respectively, exceeding the 70-130% limits. Iron was detected in the sample, so the iron result was qualified as approximate and flagged with a "J." Antimony was not detected in the sample, so no qualification was required. All other LCS recoveries met the criteria.

Precision

- Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the required detection limit (RDL) and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the RDL, the control limit is two times the RDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

MS/MS duplicate recoveries for all analytes were acceptable. Neither duplicate sample or MS duplicate results were reported for aluminum, iron, magnesium, calcium, and phosphorus. However, an MS duplicate was run and its sample results for these elements were more than four times the spikes amount, so no qualification is required.

- Field Duplicate Samples

No field duplicates were submitted for analysis

Analytical Detection Limits

Reported analytical detection levels were compared against the required detection limits (RDLs) given in DOE/RL-2001-01, App. B.

Detection limits for non-detect results were all less than or equal to the RDLs

Completeness

Data package WSCF20060389 was submitted for validation and verified for completeness. Completeness is based on the percentage of requested data that were reported and determined to be valid (i.e., not rejected).

The completeness percentage was 100%

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The mercury analysis was performed after the holding time limit had passed. Therefore, the mercury result was flagged with a "J."

The LCS recoveries for iron and antimony exceeded the limits. Iron was detected in the sample, so the iron result was flagged with a "J." Antimony was not detected in the sample, so that result was not qualified.

REFERENCES

HNF-20433, Rev. 0, *Data Validation Procedure for Chemical Analysis,* Fluor Hanford, Inc., Richland, Washington (2004).

DOE/RL-2001-01, Rev. 0, App. B, *Plutonium/Organic-Rich Process Condensate/Process Waste Group Operable Unit Representative Sites Sample and Analysis Plan*, U.S. Department of Energy, Richland, Washington (2004).

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the data validation procedure are as follows:

U - Indicates the compound or analysis was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data was usable for decision making purposes.

J – Indicates the compound or analyte was analyzed and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data was usable for the decision making purposes.

R – Indicates the compound or analyte was analyzed for, detected and due to identified major QC deficiency, the data are unusable.

UR – Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to a major QC deficiency.

Appendix 2

Summary of Data Qualifiers

DATA QUALIFICATIONS SUMMARY

SDG: WSCF20060389	REVIEWER: JRJ	DATE: 7/21/06	PAGE 1 OF 1
COMMENTS:			
SAMPLES AFFECTED	QUALIFIER	COMPOUND	REASON
B1HK57	J	Mercury	Hold Time
B1HK57	J	Iron	Laboratory Control Sample

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

METAL ANALYSIS, SOIL (UG/KG)

Project: FLUOR-HANFORD			
Laboratory: WSCF			
Case:	SDG: WSCF20060389		
Sample Number		B1HK57	
Remarks			
Sample Date		4/18/2006	
Extraction Date			
Analysis Date		05/10/2006*	
Metals	**RTQL**	**Result**	**Q**
Aluminum		12600000	
Antimony		2470	U
Arsenic	10,000	3000	
Barium	20,000	66100	
Beryllium		523	
Bismuth	10,000	2170	U
Cadmium	500	118000	
Calcium		13200000	
Chromium	1000	14800	
Cobalt		9290	
Copper	2500	19900	
Iron		20800000	J
Lead	10,000	17000	
Lithium		16100	
Magnesium		7140000	
Manganese		508000	
Mercury	200	78	J
Nickel	4000	15700	
Phosphorus	10,000	927000	
Potassium		1990000	
Selenium	10,000	1780	U
Silver	2,000	197	U
Sodium		1950000	U
Strontium		30000	
Vanadium		32700	
Zinc		83700	

RTQL = required target quantitation limit
Q = validation qualifier; laboratory-applied non-detect qualifiers "U" have been included for clarity.
*Exception: Analysis date for mercury is 5/18/06.

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
Project: F06-005: F06-005

Group #: WSCF20060389

Validation Qualifier

Sample #	Client ID		CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
Inorganic														
~~WO60000954~~	~~B1HK57~~	~~TRENT~~	~~NH4-N~~	~~Nitrogen in ammonium~~	~~SOIL~~	~~LA-503-401~~		~~14.2~~	~~mg/kg~~	~~40.00~~	~~0.20~~	~~05/08/06~~	~~04/18/06~~	~~04/27/06~~
WO60000954	B1HK57	TRENT	TS	Total solids	SOIL	LA-519-412		83.4	%	1.00	0.0	05/08/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	16984-48-8	Fluoride	SOIL	LA-532-410		35.3	mg/kg	50.00	2.0	05/11/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	16887-00-6	Chloride	SOIL	LA-533-410	B	5.68	mg/kg	50.00	1.7	05/11/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	NO2-N	Nitrogen in Nitrite	SOIL	LA-533-410	U	< 0.490	mg/kg	50.00	0.49	05/11/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	NO3-N	Nitrogen in Nitrate	SOIL	LA-533-410		187	mg/kg	1.00e+002	3.5	05/17/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	PO4-P	Phosphate (P) by IC	SOIL	LA-533-410	U	< 3.90	mg/kg	50.00	3.9	05/11/06	04/18/06	04/27/06
~~WO60000954~~	~~B1HK57~~	~~TRENT~~	~~14808-79-8~~	~~Sulfate~~	~~SOIL~~	~~LA-533-410~~	~~B~~	~~16.6~~	~~mg/kg~~	~~50.00~~	~~0.5~~	~~05/11/06~~	~~04/18/06~~	~~04/27/06~~
WO60000954	B1HK57	TRENT	7429-90-5	Aluminum	SOIL	LA-505-411		1.26e+04	mg/kg	9.87e+003	2.7e+02	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7439-89-6	Iron	SOIL	LA-505-411		2.09e+04	mg/kg	9.87e+003	2.1e+02	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7439-95-4	Magnesium	SOIL	LA-505-411		7.14e+03	mg/kg	98.74	1.9	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7439-96-5	Manganese	SOIL	LA-505-411	E	508	mg/kg	9.87e+003	9.9	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7440-02-0	Nickel	SOIL	LA-505-411		16.7	mg/kg	98.74	0.099	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7440-09-7	Potassium	SOIL	LA-505-411		1.99e+03	mg/kg	98.74	11	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7440-22-4	Silver	SOIL	LA-505-411	U	< 0.197	mg/kg	98.74	0.20	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7440-23-5	Sodium	SOIL	LA-505-411	U	< 1.85e+03	mg/kg	9.87e+003	2.0e+03	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7440-36-0	Antimony	SOIL	LA-505-411	U	< 2.47	mg/kg	98.74	2.5	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7440-39-3	Barium	SOIL	LA-505-411		66.1	mg/kg	98.74	0.099	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7440-43-9	Cadmium	SOIL	LA-505-411		116	mg/kg	98.74	0.099	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7440-47-3	Chromium	SOIL	LA-505-411		14.8	mg/kg	98.74	0.30	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7440-48-4	Cobalt	SOIL	LA-505-411		9.29	mg/kg	98.74	0.099	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7440-50-8	Copper	SOIL	LA-505-411		19.9	mg/kg	98.74	0.30	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7440-62-2	Vanadium	SOIL	LA-505-411		32.7	mg/kg	98.74	0.30	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7440-66-6	Zinc	SOIL	LA-505-411		83.7	mg/kg	98.74	0.30	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7440-70-2	Calcium	SOIL	LA-505-411		1.32e+04	mg/kg	9.87e+003	1.6e+02	05/10/06	04/18/06	04/27/06
WO60000954	B1HK57	TRENT	7439-92-1	Lead	SOIL	LA-505-411		17.0	mg/kg	98.74	2.1	05/10/06	04/18/06	04/27/06

J

MDL=Minimum Detection Limit
RQ=Result Qualifier

B - The analyte < the RDL but > = the IDL/MDL (inorganic)
E - Analyte is an estimate, has potentially larger errors
C - The Analyte was found in the Associated Blank.
U - Analyzed for but not detected above limiting criteria.

DF=Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

Report WGPP/ver. 1.3
Groundwater Remediation Program

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
Project: F06-005: F06-005

Group #: WSCF20060389

Sample #	Client ID		CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
WG60000954	B1HK57	TRENT	7439-93-2	Lithium	SOIL	LA-505-411		16.1	mg/kg	98.74	0.099	05/10/06	04/18/06	04/27/06
WG60000954	B1HK57	TRENT	7440-24-6	Strontium	SOIL	LA-505-411		30.0	mg/kg	98.74	0.099	05/10/06	04/18/06	04/27/06
WG60000954	B1HK57	TRENT	7440-38-2	Arsenic	SOIL	LA-505-411		3.00	mg/kg	98.74	2.2	05/10/06	04/18/06	04/27/06
WG60000954	B1HK57	TRENT	7440-41-7	Beryllium	SOIL	LA-505-411		0.523	mg/kg	98.74	0.099	05/10/06	04/18/06	04/27/06
WG60000954	B1HK57	TRENT	7440-69-9	Bismuth	SOIL	LA-505-411	U	< 2.17	mg/kg	98.74	2.2	05/10/06	04/18/06	04/27/06
WG60000954	B1HK57	TRENT	7723-14-0	Phosphorus	SOIL	LA-505-411	C	927	mg/kg	9.87e+003	4.7e+02	05/10/06	04/18/06	04/27/06
WG60000954	B1HK57	TRENT	7782-49-2	Selenium	SOIL	LA-505-411	U	< 1.78	mg/kg	98.74	1.8	05/10/06	04/18/06	04/27/06
WG60000954	B1HK57	TRENT	7439-97-6	Mercury	SOIL	LA-505-412	C	0.0778	mg/kg	1.11	0.044	05/18/06	04/18/06	04/27/06
~~WG60000955~~	~~B1HK62~~	~~TRENT~~	~~NH4-N~~	~~Nitrogen in ammonium~~	~~SOIL~~	~~LA-505-401~~		~~2.66~~	~~mg/kg~~	~~50.00~~	~~0.20~~	~~05/08/06~~	~~04/24/06~~	~~04/27/06~~
WG60000955	B1HK62	TRENT	TS	Total solids	SOIL	LA-519-412		79.6	%	1.00	0.0	05/08/06	04/24/06	04/27/06
WG60000955	B1HK62	TRENT	16984-48-8	Fluoride	SOIL	LA-533-410	U	< 2.00	mg/kg	50.00	2.0	05/11/06	04/24/06	04/27/06
WG60000955	B1HK62	TRENT	16887-00-6	Chloride	SOIL	LA-533-410		8.26	mg/kg	50.00	1.7	05/11/06	04/24/06	04/27/06
WG60000955	B1HK62	TRENT	NO2-N	Nitrogen in Nitrite	SOIL	LA-533-410	U	< 0.490	mg/kg	50.00	0.49	05/11/06	04/24/06	04/27/06
WG60000955	B1HK62	TRENT	NO3-N	Nitrogen in Nitrate	SOIL	LA-533-410		157	mg/kg	1.99e+002	3.6	05/17/06	04/24/06	04/27/06
WG60000955	B1HK62	TRENT	PO4-P	Phosphate (P) by IC	SOIL	LA-533-410	U	< 3.98	mg/kg	50.00	3.9	05/11/06	04/24/06	04/27/06
WG60000955	B1HK62	TRENT	14808-79-8	Sulfate	SOIL	LA-533-410	B	11.4	mg/kg	50.00	8.5	05/11/06	04/24/06	04/27/06
WG60000955	B1HK62	TRENT	7429-90-5	Aluminum	SOIL	LA-505-411		7.15e+03	mg/kg	93.41	2.6	05/10/06	04/24/06	04/27/06
WG60000955	B1HK62	TRENT	7439-89-6	Iron	SOIL	LA-505-411		1.56e+04	mg/kg	9.34e+003	2.0e+02	05/10/06	04/24/06	04/27/06
WG60000955	B1HK62	TRENT	7439-95-4	Magnesium	SOIL	LA-505-411		5.67e+03	mg/kg	93.41	1.8	05/10/06	04/24/06	04/27/06
WG60000955	B1HK62	TRENT	7439-96-5	Manganese	SOIL	LA-505-411	E	304	mg/kg	93.41	0.093	05/10/06	04/24/06	04/27/06
WG60000955	B1HK62	TRENT	7440-02-0	Nickel	SOIL	LA-505-411		13.2	mg/kg	93.41	0.093	05/10/06	04/24/06	04/27/06
WG60000955	B1HK62	TRENT	7440-09-7	Potassium	SOIL	LA-505-411		1.27e+03	mg/kg	93.41	11	05/10/06	04/24/06	04/27/06
WG60000955	B1HK62	TRENT	7440-22-4	Silver	SOIL	LA-505-411		0.565	mg/kg	93.41	0.19	05/10/06	04/24/06	04/27/06
WG60000955	B1HK62	TRENT	7440-23-5	Sodium	SOIL	LA-505-411	E	270	mg/kg	93.41	19	05/10/06	04/24/06	04/27/06
WG60000955	B1HK62	TRENT	7440-36-0	Antimony	SOIL	LA-505-411	U	< 2.34	mg/kg	93.41	2.3	05/10/06	04/24/06	04/27/06
WG60000955	B1HK62	TRENT	7440-39-3	Barium	SOIL	LA-505-411		51.9	mg/kg	93.41	0.093	05/10/06	04/24/06	04/27/06
~~WG60000955~~	~~B1HK62~~	~~TRENT~~	~~7440-43-9~~	~~Cadmium~~	~~SOIL~~	~~LA-505-411~~		~~0.165~~	~~mg/kg~~	~~93.41~~	~~0.093~~	~~05/10/06~~	~~04/24/06~~	~~04/27/06~~

8/26/06

MDL=Minimum Detection Limit
RQ=Result Qualifier

B - The analyte < the RDL but > = the IDL/MDL (inorganic)
C - The Analyte was found in the Associated Blank.
E - Analyte is an estimate, has potentially larger errors
U - Analyzed for but not detected above limiting criteria.

DF=Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

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Validation Qualifier

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Sample Delivery Group	**WSCF20060389, Rev. 1**
Sample Matrix	**Soil**
Sample Visual	**N/A**
SAF Number	**F06-005**
Data Deliverable	**Summary Report**

Introduction

Two (2) 216-Z-9 Trench Slant Characterization Borehole (C3427, I22), soil samples (B1HK57 and B1HK62) were received at the WSCF Laboratory on April 27, 2006. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Groundwater Remediation Program – Letter of Instruction*, referenced in the cover letter.

The narrative (Attachment 1) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 2) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information. Copies of the chain of custody and sample receipt are included as Attachment 3.

It should be noted that the attached chain of custody was stamped "iced", initialed and dated by the WSCF Laboratory Sample Custodian during sample receiving, indicating the presence of ice in the sample container.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report*, pages 37 through 38, for a complete listing of approved analytical methods.

Inorganic Comments

Ammonia - The hold time for this analysis was met. A Blank, Duplicate, Laboratory Control Sample, Matrix Spike and Matrix Spike Duplicate were analyzed with each delivery group per GRP Letter of Instruction. See page 12 for QC details. Analytical Note:

- Duplicate, Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018).

All QC controls are within the established limits.

Anions - The hold times for this analysis were met. A Blank, Duplicate, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per GRP Letter of Instruction. See pages 13 through 14 for QC details. Analytical Notes:

- Preparation Date: 10-may-2006.

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- Duplicate, Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HK77 (SDG# 20060478, SAF# F06-005).

- Sample results that were less than the lowest calibration standard but greater than the detection limit were B flagged.

- Phosphate – Matrix Spike and Matrix Spike Duplicate recoveries were less than established laboratory limits. Low recoveries were due to probable matrix interference.

All other QC controls are within the established limits.

ICP-AES Metals – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per GRP Letter of Instruction. See pages 15 through 19 for QC details. Analytical Notes:

- Preparation Date: 09-may-2006.

- Manganese – Matrix Spike and Matrix Spike Duplicate recoveries were less than established laboratory limits. Sample results (B1HK57 and B1HK62) were E flagged.

- Sodium – Matrix Spike and Matrix Spike Duplicate recoveries exceeded established laboratory limits. Sample result (B1HK62) was E flagged.

- Aluminum, Calcium, Iron, Magnesium, and Phosphorus – insufficient spike concentrations. Sample concentration was greater than four times the spike concentration.

- Bismuth, Copper, Potassium, Manganese, Phosphorus and Vanadium – Analytes detected in the associated preparation Blank sample were evaluated and there was no significant affect on sample results except for Phosphorus. Phosphorus sample results were C flagged.

All other QC controls are within the established limits.

ICP-MS Metals – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See page 20 for QC details. Analytical Notes:

- Preparation Date: 17-may-2006.

- Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018).

- Mercury – Analyte detected in the associated preparation Blank sample was evaluated and sample results were C flagged.

All other QC controls are within the established limits.

REVISED Daynes 6/6/06

Percent Solids – analyzed for organic moisture correction.

Organic Comments

- Sample results are moisture corrected and reported on dry weight basis.

PCBs – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See pages 27 through 28 for QC details. Analytical Notes:

- Preparation Date: 01-may-2006.
- Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018).

All QC controls are within the established limits.

Semi-VOA – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See pages 29 through 34 for QC details. Analytical Notes:

- Preparation Date: 01-may-2006.
- Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018).
- 1,4-Dichlorobenzene – Matrix Spike and Matrix Spike Duplicate sample recoveries slightly exceeded established laboratory limits.
- 4-Chloro-3-methylphenol – Matrix Spike Duplicate and Laboratory Control Sample recoveries slightly exceeded established laboratory limits.
- 2-Chlorophenol – Laboratory Control Sample recovery slightly exceeded established laboratory limits.
- 2-Fluorophenyl (B1HK62) – Surrogate sample recovery slightly exceeded established laboratory limits.
- 2-Fluorobiphenyl – Laboratory Control Sample recovery slightly exceeded established laboratory limits.
- Phenol – Laboratory Control Sample recovery slightly exceeded established laboratory limits.

All other QC controls are within the established limits.

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6/06/06

This Summary Report is in compliance with the SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the WSCF Laboratory Analytical Manager and Client Services, as verified by the following signature.

Pauline D. Mix
WSCF Client Services

Abbreviations
Hg – mercury
IC – ion chromatography
ICP – inductively coupled plasma
ICP/AES – ICP/atomic emission spectroscopy
ICP/MS – ICP/mass spectrometry
Total U – total uranium
AT/TB – total alpha/total beta
AEA – Alpha Energy Analysis
WTPH-G – Total Hydrocarbons-Gasoline
Am – americium
Cm - curium
Pu – plutonium
Np – neptunium
GEA – gamma energy analysis
H3 – Tritium
Sr – Strontium 89, 90
WTPH-D – Total Hydrocarbons-Diesel
TSS – Total Suspended Solids

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6/6/06

Fluor Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | F06-005-061 | PAGE 1 OF 1

COLLECTOR Molder/Pope/Pfister	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ
SAMPLING LOCATION C3427, Slant, 1-22	PROJECT DESIGNATION 216-2-9 Trench Slant Characterization Borehole - Soil		SAF NO. F06-005
ICE CHEST NO.	FIELD LOGBOOK NO. HNF-N-360-1	COA 121618ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE
SHIPPED TO Waste Sampling & Characterization	OFFSITE PROPERTY NO.		BILL OF LADING/AIR BILL NO.

PRICE CODE: BN | AIR QUALITY: [ ] | DATA TURNAROUND: 45 Days / 45 Days

MATRIX*: A=Air, DS=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:
ITEM #1 - 241g
ITEM #2 - 245g
ITEM #3 - 248g
PCB'S - 238g

SPECIAL HANDLING AND/OR STORAGE: 20060389

PRESERVATION	Cool 4C	Cool 4C	Cool 4C	Cool 4C
TYPE OF CONTAINER	aG	aG	G/P	G
NO. OF CONTAINER(S)	1	1	1	1
VOLUME	120mL	120mL	120mL	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	PCBs - 8082;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B1HK67 W060000954	SOIL	4-18-06	1025	X	X	X	X

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
J Stroebel / [signature]	4-18-06 1130	Site Rad	4-18-06 1130
2-9 Site [signature]	4-27-06 1300	S.S. Pile [signature]	4-27-06 1300
S.S Pile [signature]	4-27-06 ~~1240~~ 1540	TA Frozier [signature]	4-27-06 ~~1240~~ 1540 tg 5-2-06

SPECIAL INSTRUCTIONS

(1)Semi-VOA - 8270B (TCL); Semi-VOA - 8270B (Add-On) (1,2,4-Trimethylbenzene, Cyclohexanone, Dibutyl Butylphosphonate, Tributyl phosphate)
(2)ICP Metals - 6010B (TAL); ICP Metals - 6010B (Add-On) (Arsenic, Beryllium, Bismuth, Lead, Lithium, Phosphorus, Selenium, Strontium) ICP/MS - 200.8 (Hg);
(3)IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphorous in phosphate, Sulfate) Cations (IC) - 300.7 (Nitrogen in ammonium)

ICED
[initials] Initial
4-27-06 Date

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(03/03)

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

ALIDATION LEVEL:	A	B	C	D	E
PROJECT: 216-Z-9 Crib Start (C3422)			DATA PACKAGE: WSCF200603 89		
VALIDATOR: JRJ		LAB: WSCF		DATE: 7/21/06	
			SDG: WSCF200603 89		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
		200.8/Hg			
SAMPLES/MATRIX					
B1HK57 / Soil					

1. **DATA PACKAGE COMPLETENESS AND CASE NARRATIVE**

Technical verification documentation present? ..... Yes No N/A

Comments: _____

2. **INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)**

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICP interference checks acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No (N/A)
ICB and CCB results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... (Yes) No N/A
Field blanks analyzed? (Levels C, D, E) ..... Yes (No) (N/A) JFJ 8/24/06
Field blank results acceptable? (Levels C, D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: _____

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... (Yes) (No) N/A JFJ 8/24/06
MS/MSD results acceptable? ..... (Yes) No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)
LCS/BSS samples analyzed? ..... (Yes) No N/A
LCS/BSS results acceptable? ..... Yes (No) N/A
Standards traceable? (Levels D, E) ..... Yes No (N/A)
Standards expired? (Levels D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Performance audit sample(s) analyzed? ..... Yes (No) (N/A) JFJ 8/24/06
Performance audit sample results acceptable? ..... Yes No (N/A)
Comments:
MS/MSD not reported for Al, Fe, Mg, Ca, P, but narrative says sample was > 4X spike, so no flag.
LCS for Fe = 147%, flagged 7/21/06. Fe was detected in sample, so flagged "J"
LCS for Sb = 230%, Sb not detected in sample so no flag.

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. **PRECISION (Levels C, D, and E)**

Duplicate ~~RPD values acceptable?~~ results reported? Yes (No) N/A 8/29/06
Duplicate results acceptable? Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) Yes No (N/A)
MS/MSD standards expired? (Levels D, E) Yes No (N/A)
Field duplicate RPD values acceptable? Yes No (N/A)
Field split RPD values acceptable? Yes No (N/A)
Transcription/calculation errors? (Levels D, E) Yes No (N/A)

Comments: No MSD or dup. sample result for Al, Fe, Mg, Ca, P, ~~so flagged "J"~~ but sample was >4X spike, so OK. 8/29/06

6. **ICP QUALITY CONTROL (Levels D and E)**

ICP serial dilution samples analyzed? Yes No (N/A)
ICP serial dilution %D values acceptable? Yes No (N/A)
ICP post digestion spike required? Yes No (N/A)
ICP post digestion spike values acceptable? Yes No (N/A)
Standards traceable? Yes No (N/A)
Standards expired? Yes No (N/A)
Transcription/calculation errors? Yes No (N/A)
Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required? ..... Yes No (N/A)
Duplicate injection %RSD values acceptable? ..... Yes No (N/A)
Analytical spikes performed as required? ..... Yes No (N/A)
Analytical spike recoveries acceptable? ..... Yes No (N/A)
Standards traceable? ..... Yes No (N/A)
Standards expired? ..... Yes No (N/A)
MSA performed as required? ..... Yes No (N/A)
MSA results acceptable? ..... Yes No (N/A)
Transcription/calculation errors? ..... Yes No (N/A)
Comments: _____

8. HOLDING TIMES (all levels)

Samples properly preserved? ..... (Yes) No N/A
Sample holding times acceptable? ..... Yes (No) N/A
Comments: HT for Hg was 30 da, >28 da limit. Flagged "J".

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses?	(Yes)	No	N/A
Rresults supported in the raw data? (Levels D, E)	Yes	No	(N/A)
Samples properly prepared? (Levels D, E)	Yes	No	(N/A)
Detection limits meet RDL?	(Yes)	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	(N/A)

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

Comments (attach additional sheets as necessary):

Appendix 6

Additional Documentation Requested
(Quality Control Data)

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: ICP Metals Analysis, Grd H20 P

SAF Number: F06-005
Sample Date: 04/18/06
Receive Date:04/27/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
Lab ID: W060000954									
BATCH QC ASSOCIATED WITH SAMPLE									
MS	Silver	7440-22-4	178	89.899	% Recov	05/10/06	75.000	125.000	
MS	Aluminum	7429-90-5	NA	n/a	% Recov	05/10/06	75.000	125.000	
MS	Arsenic	7440-38-2	201	101.515	% Recov	05/10/06	75.000	125.000	
MS	Barium	7440-39-3	100.9	101.919	% Recov	05/10/06	75.000	125.000	
MS	Beryllium	7440-41-7	93.877	94.825	% Recov	05/10/06	75.000	125.000	
MS	Bismuth	7440-69-9	154	77.778	% Recov	05/10/06	75.000	125.000	
MS	Calcium	7440-70-2	NA	n/a	% Recov	05/10/06	75.000	125.000	
MS	Cadmium	7440-43-9	190	95.960	% Recov	05/10/06	75.000	125.000	
MS	Cobalt	7440-48-4	188.71	94.288	% Recov	05/10/06	75.000	125.000	
MS	Chromium	7440-47-3	184.2	93.030	% Recov	05/10/06	75.000	125.000	
MS	Copper	7440-50-8	184.1	92.980	% Recov	05/10/06	75.000	125.000	
MS	Iron	7439-89-6	NA	n/a	% Recov	05/10/06	75.000	125.000	
MS	Potassium	7440-09-7	2128	107.475	% Recov	05/10/06	75.000	125.000	
MS	Lithium	7439-93-2	93.9	94.848	% Recov	05/10/06	70.000	130.000	
MS	Magnesium	7439-95-4	NA	n/a	% Recov	05/10/06	75.000	125.000	
MS	Manganese	7439-96-5	148	74.747	% Recov	05/10/06	75.000	125.000	*
MS	Sodium	7440-23-5	596	301.010	% Recov	05/10/06	75.000	125.000	*
MS	Nickel	7440-02-0	180.3	91.061	% Recov	05/10/06	75.000	125.000	
MS	Phosphorus	7723-14-0	NA	n/a	% Recov	05/10/06	70.000	130.000	
MS	Lead	7439-92-1	193	97.475	% Recov	05/10/06	75.000	125.000	
MS	Antimony	7440-36-0	176	88.889	% Recov	05/10/06	75.000	125.000	
MS	Selenium	7782-49-2	197	99.495	% Recov	05/10/06	75.000	125.000	
MS	Strontium	7440-24-6	98	98.990	% Recov	05/10/06	70.000	130.000	
MS	Vanadium	7440-62-2	187.3	94.596	% Recov	05/10/06	75.000	125.000	
MS	Zinc	7440-66-6	178.3	90.051	% Recov	05/10/06	75.000	125.000	
MSD	Silver	7440-22-4	187	92.118	% Recov	05/10/06	75.000	125.000	

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WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: ICP Metals Analysis, Grd H20 P

SAF Number: F06-005
Sample Date: 04/18/06
Receive Date:04/27/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
MSD	Aluminum	7429-90-5	NA	n/a	% Recov	05/10/06	75.000	125.000	
MSD	Arsenic	7440-38-2	200	98.522	% Recov	05/10/06	75.000	125.000	
MSD	Barium	7440-39-3	99.9	97.941	% Recov	05/10/06	75.000	125.000	
MSD	Beryllium	7440-41-7	96.477	94.585	% Recov	05/10/06	75.000	125.000	
MSD	Bismuth	7440-69-9	161	79.310	% Recov	05/10/06	75.000	125.000	
MSD	Calcium	7440-70-2	NA	n/a	% Recov	05/10/06	75.000	125.000	
MSD	Cadmium	7440-43-9	192	94.581	% Recov	05/10/06	75.000	125.000	
MSD	Cobalt	7440-48-4	191.71	94.439	% Recov	05/10/06	75.000	125.000	
MSD	Chromium	7440-47-3	187.2	92.217	% Recov	05/10/06	75.000	125.000	
MSD	Copper	7440-50-8	189.1	93.153	% Recov	05/10/06	75.000	125.000	
MSD	Iron	7439-89-6	NA	n/a	% Recov	05/10/06	75.000	125.000	
MSD	Potassium	7440-09-7	2050	100.985	% Recov	05/10/06	75.000	125.000	
MSD	Lithium	7439-93-2	95.9	94.020	% Recov	05/10/06	75.000	125.000	
MSD	Magnesium	7439-95-4	NA	n/a	% Recov	05/10/06	75.000	125.000	
MSD	Manganese	7439-96-5	116	56.128	% Recov	05/10/06	75.000	125.000	*
MSD	Sodium	7440-23-5	598	294.581	% Recov	05/10/06	75.000	125.000	*
MSD	Nickel	7440-02-0	186.3	91.773	% Recov	05/10/06	75.000	125.000	
MSD	Phosphorus	7723-14-0	NA	n/a	% Recov	05/10/06	75.000	125.000	
MSD	Lead	7439-92-1	199	98.030	% Recov	05/10/06	75.000	125.000	
MSD	Antimony	7440-36-0	186	91.626	% Recov	05/10/06	75.000	125.000	
MSD	Selenium	7782-49-2	203	100.000	% Recov	05/10/06	75.000	125.000	
MSD	Strontium	7440-24-6	100	98.039	% Recov	05/10/06	75.000	125.000	
MSD	Vanadium	7440-62-2	192.3	94.729	% Recov	05/10/06	75.000	125.000	
MSD	Zinc	7440-66-6	180.3	88.818	% Recov	05/10/06	75.000	125.000	
SPK-RPD	Silver	7440-22-4	92.118	2.438	RPD	05/10/06	0.000	20.000	
SPK-RPD	Aluminum	7429-90-5		n/a	RPD	05/10/06	0.000	20.000	
SPK-RPD	Arsenic	7440-38-2	98.522	2.992	RPD	05/10/06	0.000	20.000	
SPK-RPD	Barium	7440-39-3	97.941	3.981	RPD	05/10/06	0.000	20.000	
SPK-RPD	Beryllium	7440-41-7	94.586	0.253	RPD	05/10/06	0.000	20.000	
SPK-RPD	Bismuth	7440-69-9	79.310	1.950	RPD	05/10/06	0.000	20.000	

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6/6/06

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: ICP Metals Analysis, Grd H20 P

SAF Number: F06-005
Sample Date: 04/18/06
Receive Date:04/27/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
SPK-RPD	Calcium	7440-70-2		n/a	RPD	05/10/06	0.000	20.000	
SPK-RPD	Cadmium	7440-43-9	94.581	1.447	RPD	05/10/06	0.000	20.000	
SPK-RPD	Cobalt	7440-48-4	94.438	0.148	RPD	05/10/06	0.000	20.000	
SPK-RPD	Chromium	7440-47-3	92.217	0.878	RPD	05/10/06	0.000	20.000	
SPK-RPD	Copper	7440-50-8	93.159	0.186	RPD	05/10/06	0.000	20.000	
SPK-RPD	Iron	7439-89-6		n/a	RPD	05/10/06	0.000	20.000	
SPK-RPD	Potassium	7440-09-7	100.985	6.227	RPD	05/10/06	0.000	20.000	
SPK-RPD	Lithium	7439-93-2	94.020	0.877	RPD	05/10/06	0.000	20.000	
SPK-RPD	Magnesium	7439-95-4		n/a	RPD	05/10/06	0.000	20.000	
SPK-RPD	Manganese	7439-96-5	58.126	25.014	RPD	05/10/06	0.000	20.000	*
SPK-RPD	Sodium	7440-23-5	294.581	2.159	RPD	05/10/06	0.000	20.000	
SPK-RPD	Nickel	7440-02-0	91.773	0.779	RPD	05/10/06	0.000	20.000	
SPK-RPD	Phosphorus	7723-14-0		n/a	RPD	05/10/06	0.000	20.000	
SPK-RPD	Lead	7439-92-1	98.030	0.568	RPD	05/10/06	0.000	20.000	
SPK-RPD	Antimony	7440-36-0	91.626	3.032	RPD	05/10/06	0.000	20.000	
SPK-RPD	Selenium	7782-49-2	100.000	0.506	RPD	05/10/06	0.000	20.000	
SPK-RPD	Strontium	7440-24-6	98.039	0.965	RPD	05/10/06	0.000	20.000	
SPK-RPD	Vanadium	7440-62-2	94.729	0.140	RPD	05/10/06	0.000	20.000	
SPK-RPD	Zinc	7440-66-6	68.818	1.379	RPD	05/10/06	0.000	20.000	
BATCH QC									
BLANK	Silver	7440-22-4	<2e-3	n/a	ug/L	05/10/06			U
BLANK	Aluminum	7429-90-5	<2.7e-2	n/a	ug/L	05/10/06			U
BLANK	Arsenic	7440-38-2	<2.2e-2	n/a	ug/L	05/10/06			U
BLANK	Barium	7440-39-3	<1e-3	n/a	ug/L	05/10/06			U
BLANK	Beryllium	7440-41-7	<1e-3	n/a	ug/L	05/10/06			U
BLANK	Bismuth	7440-69-9	2.3e-2	0.023	ug/L	05/10/06			
BLANK	Calcium	7440-70-2	<1.6e-2	n/a	ug/L	05/10/06			U
BLANK	Cadmium	7440-43-9	<1e-3	n/a	ug/L	05/10/06			U
BLANK	Cobalt	7440-48-4	<1e-3	n/a	ug/L	05/10/06			U

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WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: ICP Metals Analysis, Grd H20 P

SAF Number: F06-005
Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
BLANK	Chromium	7440-47-3	<3e-3	n/a	ug/L	05/10/06			U
BLANK	Copper	7440-50-8	6e-3	0.006	ug/L	05/10/06			
BLANK	Iron	7439-89-6	<2.1e-2	n/a	ug/L	05/10/06			U
BLANK	Potassium	7440-09-7	0.124	0.124	ug/L	05/10/06			
BLANK	Lithium	7439-93-2	<1e-3	n/a	ug/L	05/10/06			U
BLANK	Magnesium	7439-95-4	<1.8e-2	n/a	ug/L	05/10/06			U
BLANK	Manganese	7439-96-5	1e-3	0.001	ug/L	05/10/06			
BLANK	Sodium	7440-23-5	<0.198	n/a	ug/L	05/10/06			U
BLANK	Nickel	7440-02-0	<1e-3	n/a	ug/L	05/10/06			U
BLANK	Phosphorus	7723-14-0	4.9e-2	0.049	ug/L	05/10/06			
BLANK	Lead	7439-92-1	<2.1e-2	n/a	ug/L	05/10/06			U
BLANK	Antimony	7440-36-0	<2.5e-2	n/a	ug/L	05/10/06			U
BLANK	Selenium	7782-49-2	<1.6e-2	n/a	ug/L	05/10/06			U
BLANK	Strontium	7440-24-6	<1e-3	n/a	ug/L	05/10/06			U
BLANK	Vanadium	7440-62-2	3e-3	0.003	ug/L	05/10/06			
BLANK	Zinc	7440-66-6	<3e-3	n/a	ug/L	05/10/06			U
LCS	Silver	7440-22-4	147	113.077	% Recov	05/10/06	46.000	155.000	
LCS	Aluminum	7429-90-5	7345	116.218	% Recov	05/10/06	44.000	157.000	
LCS	Arsenic	7440-38-2	174	108.075	% Recov	05/10/06	79.000	121.000	
LCS	Barium	7440-39-3	266	105.556	% Recov	05/10/06	80.000	120.000	
LCS	Beryllium	7440-41-7	102	108.051	% Recov	05/10/06	81.000	119.000	
LCS	Bismuth	7440-69-9	184	91.089	% Recov	05/10/06	80.000	120.000	
LCS	Calcium	7440-70-2	3279	113.825	% Recov	05/10/06	78.000	124.000	
LCS	Cadmium	7440-43-9	142	110.938	% Recov	05/10/06	90.000	120.000	
LCS	Cobalt	7440-48-4	37.3	105.966	% Recov	05/10/06	85.000	115.000	
LCS	Chromium	7440-47-3	74.8	107.626	% Recov	05/10/06	77.000	122.000	
LCS	Copper	7440-50-8	157	106.061	% Recov	05/10/06	80.000	120.000	
LCS	Iron	7439-89-6	16420	140.607	% Recov	05/10/06	47.000	152.000	
LCS	Potassium	7440-09-7	2020	105.208	% Recov	05/10/06	64.000	136.000	
LCS	Lithium	7439-93-2	7.03	117.953	% Recov	05/10/06	80.000	120.000	

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WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: ICP Metals Analysis, Grd H20 P

SAF Number: F06-005
Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
LCS	Magnesium	7439-95-4	2294	112.451	% Recov	05/10/06	71.000	129.000	
LCS	Manganese	7439-96-5	444	108.824	% Recov	05/10/06	76.000	124.000	
LCS	Sodium	7440-23-5	456	102.472	% Recov	05/10/06	51.000	149.000	
LCS	Nickel	7440-02-0	156	106.122	% Recov	05/10/06	74.000	121.000	
LCS	Phosphorus	7723-14-0	482	109.050	% Recov	05/10/06	76.000	123.000	
LCS	Lead	7439-92-1	162	114.085	% Recov	05/10/06	77.000	123.000	
LCS	Antimony	7440-36-0	140	229.685	% Recov	05/10/06	53.000	205.000	*
LCS	Selenium	7782-49-2	88.8	107.185	% Recov	05/10/06	74.000	126.000	
LCS	Strontium	7440-24-6	89.1	108.071	% Recov	05/10/06	74.000	126.000	
LCS	Vanadium	7440-62-2	114	117.163	% Recov	05/10/06	70.000	129.000	
LCS	Zinc	7440-66-6	208	126.061	% Recov	05/10/06	77.000	123.000	*

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WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: ICP-2008 MS All possible metal

SAF Number: F06-005
Sample Date: 04/27/06
Receive Date:04/27/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
Lab ID: W060000944									
BATCH QC ASSOCIATED WITH SAMPLE									
MS	Mercury	7439-97-6	2.51311	125.856	% Recov	05/18/06	70.000	130.000	
MSD	Mercury	7439-97-6	2.45911	122.956	% Recov	05/18/06	70.000	130.000	
SPK-RPD	Mercury	7439-97-6	122.956	2.172	RPD	05/18/06	0.000	20.000	
BATCH QC									
BLANK	Mercury	7439-97-6	8.458e-2	0.085	ug/L	05/18/06			
LCS	Mercury	7439-97-6	19.75	116.864	% Recov	05/18/06	71.000	132.000	

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w13qlog v1 01-jun-2006 09:48:18

W13q Worklist/Batch/QC Raport for Group# WSCF20060389

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
				SAMPLE	W060000954	Percent Solids
				SAMPLE	W060000955	Percent Solids
			32800	BLANK		PCBs complete list
			32800	LCS		PCBs complete list
			32800	MS	W060000944	PCBs complete list
			32800	MSD	W060000944	PCBs complete list
			32800	SPK-RPD	W060000944	PCBs complete list
			32800	SAMPLE	W060000954	PCBs complete list
			32800	SURR	W060000954	PCBs complete list
			32800	SAMPLE	W060000955	PCBs complete list
			32800	SURR	W060000955	PCBs complete list
			32804	BLANK		SW-846 8270C Semi-Vols
			32804	LCS		SW-846 8270C Semi-Vols
			32804	MS	W060000944	SW-846 8270C Semi-Vols
			32804	MSD	W060000944	SW-846 8270C Semi-Vols
			32804	SPK-RPD	W060000944	SW-846 8270C Semi-Vols
			32804	SAMPLE	W060000954	SW-846 8270C Semi-Vols
			32804	SURR	W060000954	SW-846 8270C Semi-Vols
			32804	SAMPLE	W060000955	SW-846 8270C Semi-Vols
			32804	SURR	W060000955	SW-846 8270C Semi-Vols
28592	1	28963	32815	BLANK		ICP Metals Analysis, Grd H20 P
28592	2	28963	32815	LCS		ICP Metals Analysis, Grd H20 P
28592	5	28963	32815	MS	W060000954	ICP Metals Analysis, Grd H20 P
28592	6	28963	32815	MSD	W060000954	ICP Metals Analysis, Grd H20 P
28592	4	28963	32815	SAMPLE	W060000954	ICP Metals Analysis, Grd H20 P
28592	6	28963	32815	SPK-RPD	W060000954	ICP Metals Analysis, Grd H20 P
28592	7	28963	32815	SAMPLE	W060000955	ICP Metals Analysis, Grd H20 P
28613	2	28984	32824	BLANK		Ammonia (N) by IC
28613	10	28984	32824	BLANK		Ammonia (N) by IC
28613	3	28984	32824	LCS		Ammonia (N) by IC
28613	5	28984	32824	DUP	W060000944	Ammonia (N) by IC
28613	6	28984	32824	MS	W060000944	Ammonia (N) by IC
28613	7	28984	32824	MSD	W060000944	Ammonia (N) by IC
28613	8	28984	32824	SAMPLE	W060000954	Ammonia (N) by IC
28613	9	28984	32824	SAMPLE	W060000955	Ammonia (N) by IC
28669	2	29040	32883	BLANK		Anions by Ion Chromatography
28669	12	29040	32883	BLANK		Anions by Ion Chromatography
28669	3	29040	32883	LCS		Anions by Ion Chromatography
28669	8	29040	32883	SAMPLE	W060000954	Anions by Ion Chromatography
28669	9	29040	32883	SAMPLE	W060000955	Anions by Ion Chromatography
28669	5	29040	32883	DUP	W060001184	Anions by Ion Chromatography
28669	6	29040	32883	MS	W060001184	Anions by Ion Chromatography
28669	7	29040	32883	MSD	W060001184	Anions by Ion Chromatography
28674	1	29045	32885	BLANK		ICP-2008 MS All possible metal
28674	2	29045	32885	LCS		ICP-2008 MS All possible metal
28674	4	29045	32885	MS	W060000944	ICP-2008 MS All possible metal
28674	5	29045	32885	MSD	W060000944	ICP-2008 MS All possible metal
28674	5	29045	32885	SPK-RPD	W060000944	ICP-2008 MS All possible metal

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28674	6	29045	32885	SAMPLE	W060000954	ICP-2008 MS All possible metal
28674	7	29045	32885	SAMPLE	W060000955	ICP-2008 MS All possible metal

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WSCF
METHOD REFERENCES REPORT

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory or industry methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though the WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

LA-503-401	LA-503-401: ANALYSIS OF CATIONS BY ION CHROMATOGRAPHY	
	EPA-600/4-86-024 300.7	Dissolved Sodium, Ammonium, Potassium, and Calcium in Wet Deposition by Chemical
	HEIS 300.7_IC	Determination of Ammonium by Ion Chromatography
LA-505-411	LA-505-411: ELEMENTAL ANALYSIS BY INDUCTIVELY COUPLED PLASMA ATOMIC EMISSION SPE	
	EPA SW-846 6010B	INDUCTIVELY COUPLED PLASMA-ATOMIC EMISSION SPECTROMETRY
	HEIS 6010_METALS_ICP	Inductively Coupled Plasma-Atomic Emmision Spectrometry
LA-505-412	LA-505-412: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY	
	EPA-600/R-94-111 200.8	DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY COUPLED PLAS
	HEIS 6010_METALS_ICP	Inductively Coupled Plasma-Atomic Emmision Spectrometry
LA-519-412	LA-519-412: TOTAL RESIDUE/% SOLIDS DRIED AT 103 - 105 C	
	EPA-600/4-79-020 160.3	RESIDUE, TOTAL
	HEIS 160.1_TDS	Residue, Filterable
	Standard Methods 2540B	Total Solids Dried at 103-105 C
LA-523-427	LA-523-427: POLYCHLORINATED BIPHENYLS (PCBs) BY GAS CHROMATOGRAPHY	
	EPA SW-846 3510C	SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION
	EPA SW-846 3545	PRESSURIZED FLUID EXTRACTION (PFE)
	EPA SW-846 3665A	SULFURIC ACID/PERMANGANATE CLEANUP
	EPA SW-846 8000B	DETERMINATIVE CHROMATOGRAPHIC SEPARATIONS
	EPA SW-846 8082	POLYCHLORINATED BIPHENYLS (PCBs) BY GAS CHROMATOGRAPHY
	HEIS 8082_PCB_GC	Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at \\ap006\aspdocs\WSCF\Sample Mgmt\ProcedureMethodCrossReference.pdf. This document includes on-line links to full-text versions of the procedures and methods, where available.

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WSCF
METHOD REFERENCES REPORT

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory or industry methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though the WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

LA-523-456	LA-523-456: SEMIVOLATILE SAMPLE ANALYSIS BY SW-846, METHOD 8270C	
	EPA SW-846 8000B	DETERMINATIVE CHROMATOGRAPHIC SEPARATIONS
	EPA SW-846 8270C	SEMIVOLATILE ORGANIC COMPOUNDS BY GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)
	HEIS 8270_SVOA_GCMS	Semivolatile Orgamoc Compounds By Gas Chromatography/Mass Spectrometry (GC/MS)
LA-533-410	LA-533-410: ANION ANALYSIS BY ION CHROMATOGRAPHY	
	EPA-600/R-94-111 300.0	DETERMINATION OF INORGANIC ANIONS BY ION CHROMATOGRAPHY
	HEIS 300.0_ANIONS_IC	Determination of Inorganic Anions by Ion Chromatography

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at \\ap006\aspdocs\WSCF\Sample Mgmt\ProcedureMethodCrossReference.pdf. This document includes on-line links to full-text versions of the procedures and methods, where available.

Data Package Validation Discrepancy Report and Information Request

To:	Steve Trent, Fluor Hanford
From:	J. R. Jewett, for Environmental Quality Management, Inc.
Pages:	1
Date:	7/21/06
VSR and Data Package:	VSR06-007 / SDG WSCF20060389
Information Request #:	3

Description of Issue: WSCF Method LA-505-412

WSCF20060389 (p. 37) reports that both WSCF methods LA-505-411 and LA-505-412 are ICP/AES. For LA-505-412, the report also references EPA method number 200.8; however, 200.8 is ICP/MS, not ICP/AES. I'm fairly certain LA-505-412 is actually ICP/MS, because the QC page for mercury (p. 20) identifies the method as "ICP-2008 MS". Please confirm.

RESPONSE: You are correct; method LA-505-411 covers ICP/AES while LA-505-412 covers ICPMS.

REVIEW COMMENT RECORD (RCR)

1. Date 08/14/06	2. Review No.
3. Project No. 216-Z-9 Crib	4. Page 1 of 2

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
Validation Package for SDG WSCF20060389	Borehole C3427	RL Weiss	WCH - S&DM	Sigma 1 372-9631

17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. Closed
Organization Manager (Optional) Date	0814/06 R. L. Weiss Reviewer/Point of Contact Date R. L. Weiss Author/Originator	9-20-06 Reviewer/Point of Contact Date Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Reviewer Concurrence Required	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	All (General Chemistry, SVOA, Metals, PCB): Laboratory Case Narrative contains the following for all analytical sections; "A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spike Duplicate were analyzed for each delivery group per GRP Letter of instruction.". For all analyses except ICP/AES, the Case Narrative further notes that MS/MSDs were run on samples from different delivery groups (all but anions from different SAFs). There is insufficient information provided to determine if the ICP-AES MS/MDSs were run on the sample or to identify which analytes were run by ICP-AES versus ICP-MS. Without additional information or clarification, all results should be flagged "J" for MS/MSD issues.		Suggestion to flag all results is rejected: The MS/MSD and samples for each batch are given on pp. 39-40 of the lab report. These pages have been added to the data validation report. The samples are identified on these pages by the lab sample number, which is given for the samples on lab report pp.9-10, 21-23 and for the MS/MSD on lab report pp. 12-20, 27-35. The analytical method numbers for each analysis are given on lab report pp.9-10, 21-23. The analytical method descriptions are given on lab report pp 37-38 and were clarified in the response to Data Package Validation Discrepancy Report and Information Request #3 for VSR06-007. This information has been added to App. 6 of the DV reports.	Accept RLW 9-20-06

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Reviewer Concurrence Required	15. Disposition (Provide justification if NOT accepted.)	16. Status
2	General Chemistry, Pages 2, 3, 8, 10, 19, & 20: Results on page 10 show analysis dates of 5/11 & 5/17 (Nitrate only) for anions. Provided QC information is only for analysis on 5/17. Without additional information or clarification, all anion results run on ~~5/5~~ 5/11 [JRJ] results should be flagged "J" for missing QC.		Rejected: The DV procedure requires that the MS, MSD, and sample be prepared at the same time. The lab narrative says that the preparation date is 5/10/06 for anion analysis. In the case cited here, the analysis dates of the samples and MS/MSD differ, but they are not required to be the same per MS/MSD criteria. However, since hold time for nitrate is now being calculated as the difference between analysis date and prep date (per Data Package Validation Discrepancy Report and Information Request VSR06-007-2), the hold time is 7 days, more than double the allotted 48 hr. Since nitrate was detected, the result should be flagged "J" for hold time. The DV report has been revised accordingly.	
3	SVOA, Page 9; Validator should "X-out" PCB section of result page.		Accepted	

Project Hanford Management System **COMMENT RESOLUTION SHEET**		Sheet 1 of 2
Document Number: WSCF20060389	**Revision Number** N/A	**Date:** Aug 22, 2006

Document Title:
Data Validation 216-Z-9 Crib Slant Borehole C3427

Corrections Completed WR Thackaberry 9/19/06

Reviewer: Bill Thackaberry **Reviewers,** if other than original:	**Project/Organization:** FH/GRP/QA **Responsible Manager:** Dana Farwick

Initials (If other than listed reviewer)	**Section/ Step**	**Comments/Discrepancies**	**COMMENT(S) Basis**	**Recommendation**	**Resolution**
	General Chem	No Data summary presented		Provide the table	Accepted, although not required by DV procedure.
	Metals	No Data summary presented			Accepted, although not required by DV procedure.
	Metals	Pg 20, checklist item 3, Field/trip blank analyzed? has been marked N/A. Should be No			Accepted
	Metals	pg 20, checklist item 4, Performance audit samples analyzed? has been marked N/A. Should be No			Accepted
	PCBs	No Data summary presented			Accepted, although not required by DV procedure.

Project Hanford Management System COMMENT RESOLUTION SHEET (continued)					Sheet 2 of 2
Document Number: WSCF20060389			Revision Number N/A		Date: Aug 22, 2006
	PCBs	pg 18, checklist item 3, comment that "validation instruction requires flagging as UR" This is not consistent with statement on page 3.			Accepted. All comments have been deleted for this item. Answer to checklist question "blank acceptable?" changed to "yes".
	PCBs	Pg 18, checklist item 3, Field/trip blank analyzed? has been marked N/A. Should be No			Accepted
	PCBs	Pg 18, checklist item 4, Performance audit samples analyzed? has been marked N/A. Should be No.			Accepted
	SemiVOA	No Data summary presented			Accepted, although not required by DV procedure.
	SemiVOA	Pg 20, checklist item 3, Field/trip blank analyzed? has been marked N/A. Should be No			Accepted
	SemiVOA	pg 20, checklist item 4, Performance audit samples analyzed? has been marked N/A. Should be No			Accepted

Date: July 21, 2006, Revised September 18, 2006
To: Fluor Hanford, Inc
From: Environmental Quality Management, Inc.
Project: 216-Z-9 Crib Slant Borehole C3427
Subject: Data Validation for Data Package WSCF20060389 General Chemistry

INTRODUCTION

This memo presents the results of data validation on Data Package WSCF20060389, prepared by the Waste Sampling and Characterization Facility (WSCF). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analysis
B1HK57	4/18/06	Soil	C	See Note

Note: Ammonium ion and anion analysis by ion chromatography

Data validation was conducted in accordance with HNF-20433, Rev. 0, *Data Validation Procedure for Chemical Analyses* and DOE/RL-2001-01, Rev. 0, App. B, *Plutonium/Organic-Rich Process Condensate/Process Waste Group Operable Unit Representative Sites Sample and Analysis Plan.* Appendices 1 through 6 provide additional information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times are assessed to ascertain whether the holding time requirements have been met. The analytical holding time requirement for ion chromatography is 28 days. In addition (per instruction in Validation Services Request VSR06-007), phosphate, nitrate, and nitrite must be analyzed within 48 hr of the time at which the anions are leached from the soil sample. The samples must be shipped and stored at 4 degrees C.

All holding times and storage requirements were met.

Blanks

- Method blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one method blank per analytical batch of samples must be analyzed. The method blank consists of pure water and is processed through each set of the sample preparation and analysis procedures.

The laboratory blank shall be less than or equal to the required detection limit and less than or equal to three times the instrument detection limit.

All method blank results met these criteria.

- Field Blanks

No field blanks were submitted for analysis

Accuracy

- Matrix Spikes

Matrix spike (MS) analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spikes must be analyzed at least one per analytical batch and must be taken through the same procedures and added as early in the sample preparation process as possible. MS recoveries must fall within the range of 70 to 130%. If the sample concentration exceeds the spike concentration by a factor of 4 or more, no qualification is required.

The MS and MSD recoveries for phosphate were 60.3% and 62.6%, which are not within the 70-130% range allowed. Therefore, the phosphate result was qualified as approximate and flagged "UJ." All other matrix spike recovery results were within limits.

- Laboratory Control Sample (LCS) or Blank Spike Sample (BBS)

LCSs /BSSs are also used to measure accuracy. They are analyzed at a frequency of one per analytical batch. The acceptable limits for the LCS/ BSS are 70-130%.

All LCS/BSS met the acceptance criteria.

Precision

- Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the

analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the required detection limit (RDL) and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the RDL, the control limit is two times the RDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Both duplicate and MS duplicate results were collected for each anion and all were acceptable. Even though the MS and MS duplicate for phosphate were both unacceptable for accuracy, they were acceptable for precision (RPD = 3.7%).

- Field Duplicate Samples

No field duplicates were submitted for analysis

Analytical Detection Limits

Reported analytical detection levels were compared against the required detection limits (RDLs) given in DOE/RL-2001-01, App. B.

Detection limits for non-detect results were all less than or equal to the RDLs

Completeness

Data package WSCF20060389 was submitted for validation and verified for completeness. Completeness is based on the percentage of requested data that were reported and determined to be valid (i.e., not rejected).

The completeness percentage was 100%

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The MS recoveries for phosphate were low. Therefore, the phosphate result was flagged "UJ."

REFERENCES

HNF-20433, Rev. 0, *Data Validation Procedure for Chemical Analysis,* Fluor Hanford, Inc., Richland, Washington (2004).

DOE/RL-2001-01, Rev. 0, App. B, *Plutonium/Organic-Rich Process Condensate/Process Waste Group Operable Unit Representative Sites Sample and Analysis Plan*, U.S. Department of Energy, Richland, Washington (2004).

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the data validation procedure are as follows:

U - Indicates the compound or analysis was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data was usable for decision making purposes.

J – Indicates the compound or analyte was analyzed and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data was usable for the decision making purposes.

R – Indicates the compound or analyte was analyzed for, detected and due to identified major QC deficiency, the data are unusable.

UR – Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to a major QC deficiency.

Appendix 2

Summary of Data Qualifiers

DATA QUALIFICATIONS SUMMARY

SDG: WSCF20060389	REVIEWER: JRJ	DATE: 7/21/06	PAGE 1 OF 1
COMMENTS:			
SAMPLES AFFECTED	QUALIFIER	COMPOUND	REASON
B1HK57	UJ	Phosphate	Matrix Spike

Appendix 3

Qualified Data summary and Annotated Laboratory Reports

GENERAL CHEMISTRY ANALYSIS, SOIL (UG/KG)

Project: FLUOR HANFORD				
Laboratory: WSCF				
Case:	SDG: WSCF20060389			
Sample Number		B1HK57		
Remarks				
Sample Date		4/18/2006		
Analytes	**RTQL**	**Result**	**Q**	**Analysis Date**
Chloride	2000	5690		5/11/2006
Fluoride	5000	35300		5/11/2006
Nitrogen in ammonia	500	18300		5/9/2006
Nitrogen in nitrate	2500	828000	J	5/17/2006
Nitrogen in nitrite	2500	1610	U	5/11/2006
Phosphate	5000	3900	UJ	5/11/2006
Sulfate	5000	10600		5/11/2006

RTQL = required target quantitation limit
Q = validation qualifier; laboratory-applied non-detect qualifiers "U" have been included for clarity.

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
Project: F06-005: F06-005

Group #: WSCF20060389

Validation Qualifier

Sample #	Client ID		CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
Inorganic														
W060000954	B1HK57	TRENT	NH4-N	Nitrogen in ammonium	SOIL	LA-503-401		14.2	mg/kg	49.00	0.20	05/09/06	04/18/06	04/27/06
~~W060000954~~	~~B1HK57~~	~~TRENT~~	~~TS~~	~~Total solids~~	~~SOIL~~	~~LA-510-412~~		~~88.4~~	~~%~~	~~1.00~~	~~0.0~~	~~05/08/06~~	~~04/18/06~~	~~04/27/06~~
W060000954	B1HK57	TRENT	16984-48-8	Fluoride	SOIL	LA-533-410		35.3	mg/kg	50.00	2.0	05/11/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	16887-00-6	Chloride	SOIL	LA-533-410		5.69	mg/kg	50.00	1.7	05/11/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	NO2-N	Nitrogen in Nitrite	SOIL	LA-533-410	U	< 0.490	mg/kg	50.00	0.49	05/11/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	NO3-N	Nitrogen in Nitrate	SOIL	LA-533-410	D	187	mg/kg	1.97e+002	3.5	05/17/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	PO4-P	Phosphate (P) by IC	SOIL	LA-533-410	U	< 3.90	mg/kg	50.00	3.9	05/11/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	14808-79-8	Sulfate	SOIL	LA-533-410	B	10.6	mg/kg	50.00	6.5	05/11/06	04/18/06	04/27/06
~~W060000954~~	~~B1HK57~~	~~TRENT~~	~~7429-90-5~~	~~Aluminum~~	~~SOIL~~	~~LA-505-411~~		~~1.28e+04~~	~~mg/kg~~	~~9.87e+003~~	~~2.7e+02~~	~~05/10/06~~	~~04/18/06~~	~~04/27/06~~
W060000954	B1HK57	TRENT	7439-89-6	Iron	SOIL	LA-505-411		2.08e+04	mg/kg	9.87e+003	2.1e+02	05/10/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	7439-95-4	Magnesium	SOIL	LA-505-411		7.14e+03	mg/kg	98.74	1.9	05/10/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	7439-96-5	Manganese	SOIL	LA-505-411	E	508	mg/kg	9.87e+003	9.8	05/10/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	7440-02-0	Nickel	SOIL	LA-505-411		15.7	mg/kg	98.74	0.099	05/10/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	7440-09-7	Potassium	SOIL	LA-505-411		1.99e+03	mg/kg	98.74	11	05/10/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	7440-22-4	Silver	SOIL	LA-505-411	U	< 0.197	mg/kg	98.74	0.20	05/10/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	7440-23-5	Sodium	SOIL	LA-505-411	U	< 1.95e+03	mg/kg	9.87e+003	2.0e+03	05/10/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	7440-36-0	Antimony	SOIL	LA-505-411	U	< 2.47	mg/kg	98.74	2.5	05/10/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	7440-39-3	Barium	SOIL	LA-505-411		66.1	mg/kg	98.74	0.099	05/10/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	7440-43-9	Cadmium	SOIL	LA-505-411		118	mg/kg	98.74	0.099	05/10/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	7440-47-3	Chromium	SOIL	LA-505-411		14.8	mg/kg	98.74	0.30	05/10/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	7440-48-4	Cobalt	SOIL	LA-505-411		8.29	mg/kg	98.74	0.099	05/10/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	7440-50-8	Copper	SOIL	LA-505-411		19.9	mg/kg	98.74	0.30	05/10/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	7440-62-2	Vanadium	SOIL	LA-505-411		32.7	mg/kg	98.74	0.30	05/10/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	7440-66-6	Zinc	SOIL	LA-505-411		83.7	mg/kg	98.74	0.30	05/10/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	7440-70-2	Calcium	SOIL	LA-505-411		1.32e+04	mg/kg	9.87e+003	1.6e+02	05/10/06	04/18/06	04/27/06
~~W060000954~~	~~B1HK57~~	~~TRENT~~	~~7439-92-1~~	~~Lead~~	~~SOIL~~	~~LA-505-411~~		~~17.0~~	~~mg/kg~~	~~98.74~~	~~2.1~~	~~05/10/06~~	~~04/18/06~~	~~04/27/06~~

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MDL = Minimum Detection Limit
RQ = Result Qualifier

B - The analyte < the RDL but > = the IDL/MDL (Inorganic)
C - The Analyte was found in the Associated Blank.
D - Analyte was identified at a secondary dilution factor
E - Analyte is an estimate, has potentially larger errors
U - Analyzed for but not detected above limiting criteria.

DF = Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

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Report WGPP/ver. 1.3.1
Groundwater Remediation Program

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Sample Delivery Group	WSCF20060389, Rev. 2
Sample Matrix	Soil
Sample Visual	N/A
SAF Number	F06-005
Data Deliverable	Summary Report

Introduction

Two (2) 216-Z-9 Trench Slant Characterization Borehole (C3427, I22), soil samples (B1HK57 and B1HK62) were received at the WSCF Laboratory on April 27, 2006. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Groundwater Remediation Program – Letter of Instruction*, referenced in the cover letter.

The narrative (Attachment 1) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 2) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information. Copies of the chain of custody and sample receipt are included as Attachment 3.

It should be noted that the attached chain of custody was stamped "iced", initialed and dated by the WSCF Laboratory Sample Custodian during sample receiving, indicating the presence of ice in the sample container.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report,* pages 37 through 38, for a complete listing of approved analytical methods.

Inorganic Comments

Ammonia - The hold time for this analysis was met. A Blank, Duplicate, Laboratory Control Sample, Matrix Spike and Matrix Spike Duplicate were analyzed with each delivery group per GRP Letter of Instruction. See page 12 for QC details. Analytical Note:

- Duplicate, Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018).

All QC controls are within the established limits.

Anions - The hold times for this analysis were met. A Blank, Duplicate, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per GRP Letter of Instruction. See pages 13 through 14 for QC details. Analytical Notes:

- Preparation Date: 10-may-2006.

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- Duplicate, Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018) for fluoride, nitrogen in nitrate, phosphate and sulfate. Offered below is the QC data for chloride.

Sample (B1HY24) Result	2.8294 ppm
Duplicate (B1HY24) Result	2.8261 ppm
Relative Percent Difference (RPD)	.117%
Matrix Spike	99.50%
Matrix Spike Duplicate	92.96%
Spike (RPD)	6.79%

All chloride QC results are within established laboratory control limits.

- Sample results that were less than the lowest calibration standard but greater than the detection limit were B flagged.

- Phosphate – Matrix Spike and Matrix Spike Duplicate recoveries were less than established laboratory limits. Low recoveries were due to probable matrix interference.

All other QC controls are within the established laboratory limits.

Anions (Nitrate-N, Sample B1HK57 and B1HK62) – The hold time requirement for this analysis was met. A Blank, Duplicate, Laboratory Control Sample, Matrix Spike and Matrix Spike Duplicate were analyzed with this delivery group. See page 14 for QC details. Analytical Notes:

- Preparation Date: 17-may-2006. Note: Reanalysis was required on samples B1HK57 and B1HK62 because the Nitrate-N results exceeded the calibration range on the first analysis. Samples were diluted, reanalyzed and D flagged.

- Duplicate, Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HK77 (SDG# 20060478, SAF# F06-005).

All other QC controls are within the established limits.

ICP-AES Metals – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per GRP Letter of Instruction. See pages 15 through 19 for QC details. Analytical Notes:

- Preparation Date: 09-may-2006.

- Manganese – Matrix Spike and Matrix Spike Duplicate recoveries were less than established laboratory limits. Sample results (B1HK57 and B1HK62) were E flagged.

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- Sodium – Matrix Spike and Matrix Spike Duplicate recoveries exceeded established laboratory limits. Sample result (B1HK62) was E flagged.

- Aluminum, Calcium, Iron, Magnesium, and Phosphorus – insufficient spike concentrations. Sample concentration was greater than four times the spike concentration.

- Bismuth, Copper, Potassium, Manganese, Phosphorus and Vanadium – Analytes detected in the associated preparation Blank sample were evaluated and there was no significant affect on sample results except for Phosphorus. Phosphorus sample results were C flagged.

All other QC controls are within the established limits.

ICP-MS Metals – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See page 20 for QC details. Analytical Notes:

- Preparation Date: 17-may-2006.

- Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018).

- Mercury – Analyte detected in the associated preparation Blank sample was evaluated and sample results were C flagged.

All other QC controls are within the established limits.

Percent Solids – analyzed for organic moisture correction.

Organic Comments

- Sample results are moisture corrected and reported on dry weight basis.

PCBs – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See pages 27 through 28 for QC details. Analytical Notes:

- Preparation Date: 01-may-2006.

- Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018).

All QC controls are within the established limits.

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Semi-VOA – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See pages 29 through 34 for QC details. Analytical Notes:

- Preparation Date: 01-may-2006.
- Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018).
- 1,4-Dichlorobenzene – Matrix Spike and Matrix Spike Duplicate sample recoveries slightly exceeded established laboratory limits.
- 4-Chloro-3-methylphenol – Matrix Spike Duplicate and Laboratory Control Sample recoveries slightly exceeded established laboratory limits.
- 2-Chlorophenol – Laboratory Control Sample recovery slightly exceeded established laboratory limits.
- 2-Fluorophenyl (B1HK62) – Surrogate sample recovery slightly exceeded established laboratory limits.
- 2-Fluorobiphenyl – Laboratory Control Sample recovery slightly exceeded established laboratory limits.
- Phenol – Laboratory Control Sample recovery slightly exceeded established laboratory limits.

All other QC controls are within the established limits.

This Summary Report is in compliance with the SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the WSCF Laboratory Analytical Manager and Client Services, as verified by the following signature.

Pauline D. Mix
WSCF Client Services

Abbreviations
Hg – mercury
IC – ion chromatography
ICP – inductively coupled plasma
ICP/AES – ICP/atomic emission spectroscopy
ICP/MS – ICP/mass spectrometry
Total U – total uranium
AT/TB – total alpha/total beta
AEA – Alpha Energy Analysis
WTPH-G – Total Hydrocarbons-Gasoline
Am – americium
Cm - curium
Pu – plutonium
Np – neptunium
GEA – gamma energy analysis
H3 – Tritium
Sr – Strontium 89, 90
WTPH-D – Total Hydrocarbons-Diesel
TSS – Total Suspended Solids

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Page 44B

Fluor Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F06-005-061 PAGE 1 OF 1

COLLECTOR Molder/Pope/Pfister	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ
SAMPLING LOCATION C3427, Slant, 1-22	PROJECT DESIGNATION 216-Z-9 Trench Slant Characterization Borehole - Soil		SAF NO. F06-005
ICE CHEST NO.	FIELD LOGBOOK NO. HNF-N-360-1	COA 121618ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE
SHIPPED TO Waste Sampling & Characterization	OFFSITE PROPERTY NO.		BILL OF LADING/AIR BILL NO.

PRICE CODE 8N

AIR QUALITY

DATA TURNAROUND 45 Days / 45 Days

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

ITEM #1 - 241g
ITEM #2 - 245g
ITEM #3 - 248g
PCB'S - 238g

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool 4C	Cool 4C	Cool 4C	Cool 4C
TYPE OF CONTAINER	aG	aG	G/P	G
NO. OF CONTAINER(S)	1	1	1	1
VOLUME	120mL	120mL	120mL	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	PCBs - 8082;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS

20060389

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B1HK57	SOIL	4-18-06	1025	X	X	X	X
W06000954							

CHAIN OF POSSESSION — SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
JSPope/ [signature]	4-18-06 1130	Site Rma	4-18-06 1130
2-9 Site [signature]	4-27-06 1300	5-5 Site [signature]	4-27-06 1300
5-5 Site [signature]	4-27-06 1240	TA FRAZIER [signature]	4-27-06 1240

SPECIAL INSTRUCTIONS

(1)Semi-VOA - 8270B (TCL); Semi-VOA - 8270B (Add-On) {1,2,4-Trimethylbenzene, Cyclohexanone, Dibutyl Butylphosphonate, Tributyl phosphate}
(2)ICP Metals - 6010B (TAL); ICP Metals - 6010B (Add-On) {Arsenic, Beryllium, Bismuth, Lead, Lithium, Phosphorus, Selenium, Strontium} ICP/MS - 200.8 (Hg);
(3)IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphorous in phosphate, Sulfate} Cations (IC) - 300.7 {Nitrogen in ammonium}

ICED Initial [initials] Date 4-27-06

REVISED [signature] 9/15/06

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(03/03)

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 216-Z-9 Crib Slant (C3427)			DATA PACKAGE: WSCF20060389		
VALIDATOR: JRJ		LAB: WSCF		DATE: 7/21/06	
			SDG: WSCF20060389		
ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate		
SAMPLES/MATRIX					
B1HK57/Soil					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No (N/A)
ICB and CCB results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... (Yes) No N/A
Field blanks analyzed? (Levels C, D, E) ..... Yes (No) N/A
Field blank results acceptable? (Levels C, D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: _____

4. ACCURACY (Levels C, D, and E)

Spike samples analyzed? ..... (Yes) No N/A
Spike recoveries acceptable? ..... Yes (No) N/A
Sike standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
Spike standards expired? (Levels D, E) ..... Yes No (N/A)
LCS/BSS samples analyzed? ..... (Yes) No N/A
LCS/BSS results acceptable? ..... (Yes) No N/A
Standards traceable? (Levels D, E) ..... Yes No (N/A)
Standards expired? (Levels D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Performance audit sample(s) analyzed? ..... Yes No (N/A)
Performance audit sample results acceptable? ..... Yes No (N/A)
Comments: MS + MSD for PO_4^{3-} = 60.3% + 62.6%
< 70% limit

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

5. PRECISION (Levels C, D, and E)

Duplicate RPD values ~~acceptable?~~ obtained	(Yes)	No	N/A
Duplicate results acceptable?	(Yes)	No	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	(N/A)
MS/MSD standards expired? (Levels D, E)	Yes	No	(N/A)
Field duplicate RPD values acceptable?	Yes	No	(N/A)
Field split RPD values acceptable?	Yes	No	(N/A)
Transcription/calculation errors? (Levels D, E)	Yes	No	(N/A)

Comments: PO_4^{3-} MS & MSD were low, but RPD ok (≈3.7%)

6. HOLDING TIMES (all levels)

Samples properly preserved?	(Yes)	No	N/A
Sample holding times acceptable?	(Yes)	No	N/A

Comments:

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GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... (Yes) No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No (N/A)

Samples properly prepared? (Levels D, E) ..... Yes No (N/A)

Detection limits meet RDL? ..... (Yes) No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: _____

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

Comments (attach additional sheets as necessary):

Appendix 6

Additional Documentation Requested
(Quality Control Data)

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: Ammonia (N) by IC

SAF Number: F06-005
Sample Date: 04/27/06
Receive Date:04/27/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
Lab ID: W060000944									
BATCH QC ASSOCIATED WITH SAMPLE									
DUP	Ammonia (N) by IC	7664-41-7	4.35e-01	7.309	RPD	05/09/06	0.000	20.000	
MS	Ammonia (N) by IC	7664-41-7	3.83e-01	92.961	% Recov	05/09/06	75.000	125.000	
MSD	Ammonia (N) by IC	7664-41-7	4.21e-01	102.184	% Recov	05/09/06	75.000	125.000	
BATCH QC									
BLANK	Ammonia (N) by IC	7664-41-7	<4.00e-3	n/a	mg/L	05/09/06	0.000	30.000	U
BLANK	Ammonia (N) by IC	7664-41-7	<4.00e-3	n/a	mg/L	05/09/06	0.000	30.000	U
LCS	Ammonia (N) by IC	7664-41-7	8.29e+01	101.098	% Recov	05/09/06	80.000	120.000	

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WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: Anions by Ion Chromatography

SAF Number: F06-005
Sample Date: 04/27/06
Receive Date:04/27/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
Lab ID: W060000944									
BATCH QC ASSOCIATED WITH SAMPLE									
DUP	Fluoride	16984-48-8	<1.96	n/a	RPD	05/11/06	0.000	20.000	U
DUP	Nitrogen in Nitrite	NO2-N	<0.4802	n/a	RPD	05/11/06	0.000	20.000	U
DUP	Phosphate (P) by IC	PO4-P	<3.822	n/a	RPD	05/11/06	0.000	20.000	U
DUP	Sulfate	14808-79-8	141.8777	5.671	RPD	05/11/06	0.000	20.000	
MS	Fluoride	16984-48-8	0.446154	89.231	% Recov	05/11/06	75.000	125.000	
MS	Nitrogen in Nitrite	NO2-N	0.493054	99.007	% Recov	05/11/06	75.000	125.000	
MS	Phosphate (P) by IC	PO4-P	0.579808	60.271	% Recov	05/11/06	75.000	125.000	*
MS	Sulfate	14808-79-8	2.211158	110.558	% Recov	05/11/06	75.000	125.000	
MSD	Fluoride	16984-48-8	0.425422	85.084	% Recov	05/11/06	75.000	125.000	
MSD	Nitrogen in Nitrite	NO2-N	0.459768	92.122	% Recov	05/11/06	75.000	125.000	
MSD	Phosphate (P) by IC	PO4-P	0.802292	82.608	% Recov	05/11/06	75.000	125.000	*
MSD	Sulfate	14808-79-8	2.039892	102.000	% Recov	05/11/06	75.000	125.000	
BATCH QC									
BLANK	Chloride	16887-00-6	<3.4e-2	n/a	mg/L	05/11/06	0.000	300.000	U
BLANK	Chloride	16887-00-6	<3.4e-2	n/a	mg/L	05/11/06	0.000	300.000	U
BLANK	Fluoride	16984-48-8	<4e-2	n/a	mg/L	05/11/06	0.000	300.000	U
BLANK	Fluoride	16984-48-8	<4e-2	n/a	mg/L	05/11/06	0.000	300.000	U
BLANK	Nitrogen in Nitrite	NO2-N	<9.8e-3	n/a	mg/L	05/11/06	0.000	300.000	U
BLANK	Nitrogen in Nitrite	NO2-N	<9.8e-3	n/a	mg/L	05/11/06	0.000	300.000	U
BLANK	Phosphate (P) by IC	PO4-P	<7.8e-2	n/a	mg/L	05/11/06	0.000	300.000	U
BLANK	Phosphate (P) by IC	PO4-P	<7.8e-2	n/a	mg/L	05/11/06	0.000	300.000	U
BLANK	Sulfate	14808-79-8	<0.13	n/a	mg/L	05/11/06	0.000	300.000	U
BLANK	Sulfate	14808-79-8	<0.13	n/a	mg/L	05/11/06	0.000	300.000	U
LCS	Chloride	16887-00-6	190.443	97.165	% Recov	05/11/06	80.000	120.000	
LCS	Fluoride	16984-48-8	80.3993	90.399	% Recov	05/11/06	80.000	120.000	

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WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: Anions by Ion Chromatography

SAF Number: F06-005
Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
LCS	Nitrogen in Nitrite	NO2-N	98.3727	98.760	% Recov	05/11/06	80.000	120.000	
LCS	Phosphate (P) by IC	PO4-P	177.3606	92.135	% Recov	05/11/06	80.000	120.000	
LCS	Sulfate	14808-79-8	360.6744	90.169	% Recov	05/11/06	80.000	120.000	
Lab ID: W060001184									
BATCH QC ASSOCIATED WITH SAMPLE									
DUP	Nitrogen in Nitrate	NO3-N	16.0031	15.058	RPD	05/17/06	0.000	20.000	
MS	Nitrogen in Nitrate	NO3-N	0.490207	111.411	% Recov	05/17/06	75.000	125.000	
MSD	Nitrogen in Nitrate	NO3-N	0.47546	108.059	% Recov	05/17/06	75.000	125.000	
BATCH QC									
BLANK	Nitrogen in Nitrate	NO3-N	<1.8e-2	n/a	mg/L	05/17/06	0.000	300.000	U
BLANK	Nitrogen in Nitrate	NO3-N	<1.8e-2	n/a	mg/L	05/17/06	0.000	300.000	U
LCS	Nitrogen in Nitrate	NO3-N	82.8575	94.263	% Recov	05/17/06	80.000	120.000	

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METHOD REFERENCES REPORT

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory or industry methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though the WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

LA-503-401	LA-503-401: ANALYSIS OF CATIONS BY ION CHROMATOGRAPHY	
	EPA-600/4-86-024 300.7	Dissolved Sodium, Ammonium, Potassium, and Calcium in Wet Deposition by Chemical
	HEIS 300.7_IC	Determination of Ammonium by Ion Chromatography
LA-505-411	LA-505-411: ELEMENTAL ANALYSIS BY INDUCTIVELY COUPLED PLASMA ATOMIC EMISSION SPE	
	EPA SW-846 6010B	INDUCTIVELY COUPLED PLASMA-ATOMIC EMISSION SPECTROMETRY
	HEIS 6010_METALS_ICP	Inductively Coupled Plasma-Atomic Emmision Spectrometry
LA-505-412	LA-505-412: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY	
	EPA-600/R-94-111 200.8	DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY COUPLED PLAS
	HEIS 200.8_METALS_ICPMS	Inductively Coupled Plasma - Mass Spectrometry
LA-519-412	LA-519-412: TOTAL RESIDUE/% SOLIDS DRIED AT 103 - 105 C	
	EPA-600/4-79-020 160.3	RESIDUE, TOTAL
	HEIS 160.1_TDS	Residue, Filterable
	Standard Methods 2540B	Total Solids Dried at 103-105 C
LA-523-427	LA-523-427: POLYCHLORINATED BIPHENYLS (PCBs) BY GAS CHROMATOGRAPHY	
	EPA SW-846 3510C	SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION
	EPA SW-846 3545	PRESSURIZED FLUID EXTRACTION (PFE)
	EPA SW-846 3665A	SULFURIC ACID/PERMANGANATE CLEANUP
	EPA SW-846 8000B	DETERMINATIVE CHROMATOGRAPHIC SEPARATIONS
	EPA SW-846 8082A	POLYCHLORINATED BIPHENYLS (PCBs) BY GAS CHROMATOGRAPHY
	HEIS 8082_PCB_GC	Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at \\ap006\aspdocs\WSCF\Sample Mgmt\ProcedureMethodCrossReference.pdf. This document includes on-line links to full-text versions of the procedures and methods, where available.

WSCF
METHOD REFERENCES REPORT

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory or industry methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though the WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

LA-523-456	LA-523-456: SEMIVOLATILE SAMPLE ANALYSIS BY SW-846, METHOD 8270C	
	EPA SW-846 8000B	DETERMINATIVE CHROMATOGRAPHIC SEPARATIONS
	EPA SW-846 8270C	SEMIVOLATILE ORGANIC COMPOUNDS BY GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)
	HEIS 8270_SVOA_GCMS	Semivolatile Organoc Compounds By Gas Chromatography/Mass Spectrometry (GC/MS)
LA-533-410	LA-533-410: ANION ANALYSIS BY ION CHROMATOGRAPHY	
	EPA-600/R-94-111 300.0	DETERMINATION OF INORGANIC ANIONS BY ION CHROMATOGRAPHY
	HEIS 300.0_ANIONS_IC	Determination of Inorganic Anions by Ion Chromatography

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at \\ap006\aspdocs\WSCF\Sample Mgmt\ProcedureMethodCrossReference.pdf. This document includes on-line links to full-text versions of the procedures and methods, where available.

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w13qlog v1 13-sep-2006 11:58:52

W13q Worklist/Batch/QC Report for Group# WSCF20060389

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
				SAMPLE	W060000954	Percent Solids
				SAMPLE	W060000955	Percent Solids
			32800	BLANK		PCBs complete list
			32800	LCS		PCBs complete list
			32800	MS	W060000944	PCBs complete list
			32800	MSD	W060000944	PCBs complete list
			32800	SPK-RPD	W060000944	PCBs complete list
			32800	SAMPLE	W060000954	PCBs complete list
			32800	SURR	W060000954	PCBs complete list
			32800	SAMPLE	W060000955	PCBs complete list
			32800	SURR	W060000955	PCBs complete list
			32804	BLANK		SW-846 8270C Semi-Vols
			32804	LCS		SW-846 8270C Semi-Vols
			32804	MS	W060000944	SW-846 8270C Semi-Vols
			32804	MSD	W060000944	SW-846 8270C Semi-Vols
			32804	SPK-RPD	W060000944	SW-846 8270C Semi-Vols
			32804	SAMPLE	W060000954	SW-846 8270C Semi-Vols
			32804	SURR	W060000954	SW-846 8270C Semi-Vols
			32804	SAMPLE	W060000955	SW-846 8270C Semi-Vols
			32804	SURR	W060000955	SW-846 8270C Semi-Vols
28592	1	28963	32815	BLANK		ICP Metals Analysis, Grd H20 P
28592	2	28963	32815	LCS		ICP Metals Analysis, Grd H20 P
28592	5	28963	32815	MS	W060000954	ICP Metals Analysis, Grd H20 P
28592	6	28963	32815	MSD	W060000954	ICP Metals Analysis, Grd H20 P
28592	4	28963	32815	SAMPLE	W060000954	ICP Metals Analysis, Grd H20 P
28592	6	28963	32815	SPK-RPD	W060000954	ICP Metals Analysis, Grd H20 P
28592	7	28963	32815	SAMPLE	W060000955	ICP Metals Analysis, Grd H20 P
28613	2	28984	32824	BLANK		Ammonia (N) by IC
28613	10	28984	32824	BLANK		Ammonia (N) by IC
28613	3	28984	32824	LCS		Ammonia (N) by IC
28613	5	28984	32824	DUP	W060000944	Ammonia (N) by IC
28613	6	28984	32824	MS	W060000944	Ammonia (N) by IC
28613	7	28984	32824	MSD	W060000944	Ammonia (N) by IC
28613	8	28984	32824	SAMPLE	W060000954	Ammonia (N) by IC
28613	9	28984	32824	SAMPLE	W060000955	Ammonia (N) by IC
28674	1	29045	32885	BLANK		ICP-2008 MS All possible metal
28674	2	29045	32885	LCS		ICP-2008 MS All possible metal
28674	4	29045	32885	MS	W060000944	ICP-2008 MS All possible metal
28674	5	29045	32885	MSD	W060000944	ICP-2008 MS All possible metal
28674	5	29045	32885	SPK-RPD	W060000944	ICP-2008 MS All possible metal
28674	6	29045	32885	SAMPLE	W060000954	ICP-2008 MS All possible metal
28674	7	29045	32885	SAMPLE	W060000955	ICP-2008 MS All possible metal
29570	2	29935	33860	BLANK		Anions by Ion Chromatography
29570	10	29935	33860	BLANK		Anions by Ion Chromatography
29570	3	29935	33860	LCS		Anions by Ion Chromatography
29570	5	29935	33860	DUP	W060000944	Anions by Ion Chromatography
29570	6	29935	33860	MS	W060000944	Anions by Ion Chromatography
29570	7	29935	33860	MSD	W060000944	Anions by Ion Chromatography

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29570	8	29935	33860	SAMPLE	W060000954	Anions by Ion Chromatography
29570	9	29935	33860	SAMPLE	W060000955	Anions by Ion Chromatography
29584	2	29949	33864	BLANK		Anions by Ion Chromatography
29584	12	29949	33864	BLANK		Anions by Ion Chromatography
29584	3	29949	33864	LCS		Anions by Ion Chromatography
29570	8	29949	33864	SAMPLE	W060000954	Anions by Ion Chromatography
29570	9	29949	33864	SAMPLE	W060000955	Anions by Ion Chromatography
29584	5	29949	33864	DUP	W060001184	Anions by Ion Chromatography
29584	6	29949	33864	MS	W060001184	Anions by Ion Chromatography
29584	7	29949	33864	MSD	W060001184	Anions by Ion Chromatography

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REVIEW COMMENT RECORD (RCR)

1. Date 08/14/06	2. Review No.
3. Project No. 216-Z-9 Crib	4. Page 1 of 2

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
Validation Package for SDG WSCF20060389	Borehole C3427	RL Weiss	WCH - S&DM	Sigma 1 372-9631

17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. Closed
Organization Manager (Optional) Date	R. L. Weiss Reviewer/Point of Contract 0814/06 Date R. L. Weiss Author/Originator	Reviewer/Point of Contact 9-20-06 Date Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Reviewer Concurrence Required	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	All (General Chemistry, SVOA, Metals, PCB): Laboratory Case Narrative contains the following for all analytical sections; "A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spike Duplicate were analyzed for each delivery group per GRP Letter of instruction.". For all analyses except ICP/AES, the Case Narrative further notes that MS/MSDs were run on samples from different delivery groups (all but anions from different SAFs). There is insufficient information provided to determine if the ICP-AES MS/MDSs were run on the sample or to identify which analytes were run by ICP-AES versus ICP-MS. Without additional information or clarification, all results should be flagged "J" for MS/MSD issues.		Suggestion to flag all results is rejected: The MS/MSD and samples for each batch are given on pp. 39-40 of the lab report. These pages have been added to the data validation report. The samples are identified on these pages by the lab sample number, which is given for the samples on lab report pp.9-10, 21-23 and for the MS/MSD on lab report pp. 12-20, 27-35. The analytical method numbers for each analysis are given on lab report pp.9-10, 21-23. The analytical method descriptions are given on lab report pp 37-38 and were clarified in the response to Data Package Validation Discrepancy Report and Information Request #3 for VSR06-007. This information has been added to App. 6 of the DV reports.	Accept RLW 9-20-06

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Reviewer Concurrence Required	15. Disposition (Provide justification if NOT accepted.)	16. Status
2	General Chemistry, Pages 2, 3, 8, 10, 19, & 20: Results on page 10 show analysis dates of 5/11 & 5/17 (Nitrate only) for anions. Provided QC information is only for analysis on 5/17. Without additional information or clarification, all anion results run on ~~5/5~~ 5/11 [JRJ] results should be flagged "J" for missing QC.		Rejected: The DV procedure requires that the MS, MSD, and sample be prepared at the same time. The lab narrative says that the preparation date is 5/10/06 for anion analysis. In the case cited here, the analysis dates of the samples and MS/MSD differ, but they are not required to be the same per MS/MSD criteria. However, since hold time for nitrate is now being calculated as the difference between analysis date and prep date (per Data Package Validation Discrepancy Report and Information Request VSR06-007-2), the hold time is 7 days, more than double the allotted 48 hr. Since nitrate was detected, the result should be flagged "J" for hold time. The DV report has been revised accordingly.	
3	SVOA, Page 9; Validator should "X-out" PCB section of result page.		Accepted	

Project Hanford Management System **COMMENT RESOLUTION SHEET**		Sheet 1 of 2
Document Number: WSCF20060389	**Revision Number** N/A	**Date:** Aug 22, 2006

Document Title:
Data Validation 216-Z-9 Crib Slant Borehole C3427

Corrections Completed WT Thackaberry 9/19/06

Reviewer:	**Project/Organization:**
Bill Thackaberry	FH/GRP/QA
Reviewers, if other than original:	**Responsible Manager:** Dana Farwick

Initials (If other than listed reviewer)	Section/ Step	Comments/Discrepancies	COMMENT(S) Basis	Recommendation	Resolution
	General Chem	No Data summary presented		Provide the table	Accepted, although not required by DV procedure.
	Metals	No Data summary presented			Accepted, although not required by DV procedure.
	Metals	Pg 20, checklist item 3, Field/trip blank analyzed? has been marked N/A. Should be No			Accepted
	Metals	pg 20, checklist item 4, Performance audit samples analyzed? has been marked N/A. Should be No			Accepted
	PCBs	No Data summary presented			Accepted, although not required by DV procedure.

Project Hanford Management System COMMENT RESOLUTION SHEET (continued)					Sheet 2 of 2
Document Number: WSCF20060389			Revision Number N/A		Date: Aug 22, 2006
	PCBs	pg 18, checklist item 3, comment that "validation instruction requires flagging as UR" This is not consistent with statement on page 3.			Accepted. All comments have been deleted for this item. Answer to checklist question "blank acceptable?" changed to "yes".
	PCBs	Pg 18, checklist item 3, Field/trip blank analyzed? has been marked N/A. Should be No			Accepted
	PCBs	Pg 18, checklist item 4, Performance audit samples analyzed? has been marked N/A. Should be No.			Accepted
	SemiVOA	No Data summary presented			Accepted, although not required by DV procedure.
	SemiVOA	Pg 20, checklist item 3, Field/trip blank analyzed? has been marked N/A. Should be No			Accepted
	SemiVOA	pg 20, checklist item 4, Performance audit samples analyzed? has been marked N/A. Should be No			Accepted

Date: July 22, 2006, Revised August 25, 2006
To: Fluor Hanford, Inc
From: Environmental Quality Management, Inc.
Project: 216-Z-9 Crib Slant Borehole C3427
Subject: Data Validation for Data Package WSCF20060389 Semivolatile Organics

INTRODUCTION

This memo presents the results of data validation on Data Package WSCF20060389, prepared by the Waste Sampling and Characterization Facility (WSCF). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analysis
B1HK57	4/18/06	Soil	C	EPA 8270

Data validation was conducted in accordance with HNF-20433, Rev. 0, *Data Validation Procedure for Chemical Analyses* and DOE/RL-2001-01, Rev. 0, App. B, *Plutonium/Organic-Rich Process Condensate/Process Waste Group Operable Unit Representative Sites Sample and Analysis Plan*. Appendices 1 through 6 provide additional information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

The analytical holding time for determining semivolatile organic compounds (SVOCs) is specified in DOE/RL-2001-01, Rev. 0, App. B, as "ASAP." No preservation requirements were specified.

The sample was prepared (extracted) 13 days after sampling and analyzed three days later.

Blanks

- Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one method blank analysis must be conducted for every 20 samples and/or for every analytical batch of samples. The blank is processed through all steps of the sample preparation and analysis

procedures. The blank results are not to exceed either the required detection limit (RDL) or three times the method detection limit (MDL).

The blank results met these criteria.

- Field Blanks

No field blanks were submitted for analysis

Accuracy

- Surrogates

Surrogates are used to assess the accuracy of the method. Acceptable results for organic surrogates are 50-150%.

All surrogate recoveries were acceptable.

- Matrix Spikes

Matrix spike analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spikes must be analyzed at least once per batch of samples, using the same procedures as samples and added as early in the sample preparation process as possible.

Matrix spike recoveries must fall within the range of 70-130%.

All matrix spike recovery results were within limits

- Laboratory Control Samples (LCS)/Blank Spike Sample (BSS)

BSS/LCSs are also a measure of accuracy. Blank spikes or LCS recoveries must be within 70-130%.

All BSS/LCS recovery results were within limits

Precision

- Matrix Spike Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the required detection limit (RDL) and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the RDL, the

control limit is two times the RDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All MS/MSD results were acceptable.

- Field Duplicate Samples

No field duplicates were submitted for analysis

Analytical Detection Limits

Reported analytical detection levels were compared against the required detection limits (RDLs) given in DOE/RL-2001-01, Rev. 0, App. B.

Detection limits for non-detect results were less than or equal to the PQLs.

Completeness

Data package WSCF20060389 was submitted for validation and verified for completeness. Completeness is based on the percentage of requested data that were reported and determined to be valid (i.e., not rejected).

The completeness percentage was 100%

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

HNF-20433, Rev. 0, *Data Validation Procedure for Chemical Analysis,* Fluor Hanford, Inc., Richland, Washington (2004).

DOE/RL-2001-01, Rev. 0, App. B, *Plutonium/Organic-Rich Process Condensate/Process Waste Group Operable Unit Representative Sites Sample and Analysis Plan*, U.S. Department of Energy, Richland, Washington (2004).

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the data validation procedure are as follows:

U - Indicates the compound or analysis was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data was usable for decision making purposes.

J – Indicates the compound or analyte was analyzed and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data was usable for the decision making purposes.

R – Indicates the compound or analyte was analyzed for, detected and due to identified major QC deficiency, the data are unusable.

UR – Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to a major QC deficiency.

Appendix 2

Summary of Data Qualifiers

DATA QUALIFICATION SUMMARY

SDG: WSCF20060389	REVIEWER: JRJ	DATE: 7/22/06	PAGE 1 OF 1
COMMENTS: No data were qualified.			
SAMPLES AFFECTED	**QUALIFIER**	**COMPOUND**	**REASON**

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

SEMIVOLATILE ORGANIC ANALYSIS, SOIL (UG/KG) (2 pages)

Project: FLUOR-HANFORD			
Laboratory: WSCF			
SDG: WSCF20060389			
Sample Number		B1HK57	
Remarks			
Sample Date		4/18/2006	
Extraction Date		5/1/2006	
Analysis Date		5/4/2006	
Semivolatile Organic Compounds	RTQL	Result	Q
1,2,4-Trichlorobenzene		320	U
1,2,4-Trimethylbenzene		120	U
1,2-Dichlorobenzene		450	U
1,3-Dichlorobenzene		570	U
1,4-Dichlorobenzene		480	U
2,4,5-Trichlorophenol		160	U
2,4,6-Trichlorophenol		150	U
2,4-Dichlorophenol		160	U
2,4-Dimethylphenol		320	U
2,4-Dinitrophenol		630	U
2,4-Dinitrotoluene		190	U
2,6-Dinitrotoluene		250	U
2-Chloronaphthalene		230	U
2-Chlorophenol		270	U
2-Methylnaphthalene		270	U
2-Methylphenol (cresol, o-)		290	U
2-Nitroaniline		180	U
2-Nitrophenol		320	U
3,3'-Dichlorobenzidine		120	U
3+4 Methylphenol (cresol, m+p)		380	U
3-Nitroaniline		210	U
4,6-Dinitro-2-methylphenol		450	U
4-Bromophenylphenyl ether		180	U
4-Chloro-3-methylphenol		170	U
4-Chloroaniline		540	U
4-Chlorophenylphenyl ether		180	U
4-Nitroaniline		310	U
4-Nitrophenol		310	U
Acenaphthene		250	U
Acenaphthylene		260	U
Anthracene		270	U
Benzo(a)anthracene		230	U
Benzo(a)pyrene		220	U
Benzo(b)fluoranthene		270	U
Benzo(ghi)perylene		270	U
Benzo(k)fluoranthene		190	U

SEMIVOLATILE ORGANIC ANALYSIS, SOIL (UG/KG) (2 pages)

Project: FLUOR-HANFORD			
Laboratory: WSCF			
SDG: WSCF20060389			
Sample Number		**B1HK57**	
Remarks			
Sample Date		**4/18/2006**	
Extraction Date		**5/1/2006**	
Analysis Date		**5/4/2006**	
Semivolatile Organic Compounds	**RTQL**	**Result**	**Q**
Bis(2-chloro-1-methylethyl)ether		320	U
Bis(2-Chloroethoxy)methane		220	U
Bis(2-chloroethyl) ether		360	U
Bis(2-ethylhexyl) phthalate		180	U
Butylbenzylphthalate		150	U
Carbazole		280	U
Chrysene		250	U
Cyclohexanone		140	U
Dibenz[a,h]anthracene		330	U
Dibenzofuran		220	U
Dibutyl Butylphosphonate		300	U
Diethylphthalate		600	
Dimethyl phthalate		230	U
Di-n-butylphthalate		1300	
Di-n-octylphthalate		300	U
Fluoranthene		290	U
Fluorene		240	U
Hexachlorobenzene		250	U
Hexachlorobutadiene		300	U
Hexachlorocyclopentadiene		580	U
Hexachloroethane		430	U
Indeno(1,2,3-cd)pyrene		290	U
Isophorone		300	U
Naphthalene		290	U
Nitrobenzene		300	U
n-Nitrosodi-n-dipropylamine		270	U
n-Nitrosodiphenylamine		260	U
Pentachlorophenol		260	U
Phenanthrene		250	U
Phenol	330	250	U
Pyrene		1300	U
Tributyl phosphate	3300	98	U

RTQL = required target quantitation limit
Q = validation qualifier; laboratory-applied non-detect qualifiers "U" have been included for clarity.

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
Project: F06-005: F06-005

Group #: WSCF20060389

Sample #	Client ID		CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
Organic														
W060000954	B1HK57	TRENT	12674-11-2	Aroclor-1016	SOIL	LA-523-427	U	< 12.0	ug/kg	1.00	12	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	11104-28-2	Aroclor-1221	SOIL	LA-523-427	U	< 23.0	ug/kg	1.00	23	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	11141-16-5	Aroclor-1232	SOIL	LA-523-427	U	< 12.0	ug/kg	1.00	12	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	53469-21-9	Aroclor-1242	SOIL	LA-523-427	U	< 12.0	ug/kg	1.00	12	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	12672-29-6	Aroclor-1248	SOIL	LA-523-427	U	< 12.0	ug/kg	1.00	12	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	11097-69-1	Aroclor-1254	SOIL	LA-523-427	U	< 12.0	ug/kg	1.00	12	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	11096-82-5	Aroclor-1260	SOIL	LA-523-427	U	< 12.0	ug/kg	1.00	12	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	37324-23-5	Aroclor-1262	SOIL	LA-523-427	U	< 12.0	ug/kg	1.00	12	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	11100-14-4	Aroclor-1268	SOIL	LA-523-427	U	< 12.0	ug/kg	1.00	12	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	100-02-7	4-Nitrophenol	SOIL	LA-523-456	U	< 310	ug/kg	1.00	3.1e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	106-46-7	1,4-Dichlorobenzene	SOIL	LA-523-456	U	< 480	ug/kg	1.00	4.8e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	108-95-2	Phenol	SOIL	LA-523-456	U	< 250	ug/kg	1.00	2.5e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	120-82-1	1,2,4-Trichlorobenzene	SOIL	LA-523-456	U	< 320	ug/kg	1.00	3.2e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	121-14-2	2,4-Dinitrotoluene	SOIL	LA-523-456	U	< 190	ug/kg	1.00	1.9e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	129-00-0	Pyrene	SOIL	LA-523-456	U	< 1.30e+03	ug/kg	1.00	1.3e+03	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	59-50-7	4-Chloro-3-methylphenol	SOIL	LA-523-456	U	< 170	ug/kg	1.00	1.7e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	621-64-7	N-Nitrosodi-n-dipropylamine	SOIL	LA-523-456	U	< 270	ug/kg	1.00	2.7e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	83-32-9	Acenaphthene	SOIL	LA-523-456	U	< 250	ug/kg	1.00	2.5e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	87-86-5	Pentachlorophenol	SOIL	LA-523-456	U	< 260	ug/kg	1.00	2.6e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	95-57-8	2-Chlorophenol	SOIL	LA-523-456	U	< 270	ug/kg	1.00	2.7e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	100-01-6	4-Nitroaniline	SOIL	LA-523-456	U	< 310	ug/kg	1.00	3.1e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	101-55-3	4-Bromophenylphenyl ether	SOIL	LA-523-456	U	< 180	ug/kg	1.00	1.8e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	105-67-9	2,4-Dimethylphenol	SOIL	LA-523-456	U	< 320	ug/kg	1.00	3.2e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	106-47-8	4-Chloroaniline	SOIL	LA-523-456	U	< 540	ug/kg	1.00	5.4e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	108-60-1	Bis(2-chloro-1-methylethyl)eth	SOIL	LA-523-456	U	< 320	ug/kg	1.00	3.2e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	111-44-4	Bis(2-chloroethyl) ether	SOIL	LA-523-456	U	< 360	ug/kg	1.00	3.6e+02	05/04/06	04/18/06	04/27/06

MDL = Minimum Detection Limit
RQ = Result Qualifier

B - The analyte < the RDL but > = the IDL/MDL (inorganic)
E - Analyte is an estimate, has potentially larger errors
C - The Analyte was found in the Associated Blank.
U - Analyzed for but not detected above limiting criteria.

DF = Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
Project: F06-005: F06-005

Group #: WSCF20060389

Sample #	Client ID		CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W060000954	B1HK57	TRENT	111-91-1	Bis(2-Chloroethoxy)methane	SOIL	LA-523-456	U	< 220	ug/kg	1.00	2.2e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	117-81-7	Bis(2-ethylhexyl) phthalate	SOIL	LA-523-456	U	< 180	ug/kg	1.00	1.8e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	117-84-0	Di-n-octylphthalate	SOIL	LA-523-456	U	< 300	ug/kg	1.00	3.0e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	118-74-1	Hexachlorobenzene	SOIL	LA-523-456	U	< 260	ug/kg	1.00	2.6e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	120-12-7	Anthracene	SOIL	LA-523-456	U	< 270	ug/kg	1.00	2.7e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	120-83-2	2,4-Dichlorophenol	SOIL	LA-523-456	U	< 160	ug/kg	1.00	1.6e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	131-11-3	Dimethyl phthalate	SOIL	LA-523-456	U	< 230	ug/kg	1.00	2.3e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	132-64-9	Dibenzofuran	SOIL	LA-523-456	U	< 220	ug/kg	1.00	2.2e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	191-24-2	Benzo(ghi)perylene	SOIL	LA-523-456	U	< 270	ug/kg	1.00	2.7e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	193-39-5	Indeno(1,2,3-cd)pyrene	SOIL	LA-523-456	U	< 290	ug/kg	1.00	2.9e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	205-99-2	Benzo(b)fluoranthene	SOIL	LA-523-456	U	< 270	ug/kg	1.00	2.7e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	206-44-0	Fluoranthene	SOIL	LA-523-456	U	< 290	ug/kg	1.00	2.9e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	207-08-9	Benzo(k)fluoranthene	SOIL	LA-523-456	U	< 190	ug/kg	1.00	1.9e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	208-96-8	Acenaphthylene	SOIL	LA-523-456	U	< 260	ug/kg	1.00	2.6e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	218-01-9	Chrysene	SOIL	LA-523-456	U	< 250	ug/kg	1.00	2.5e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	50-32-8	Benzo(a)pyrene	SOIL	LA-523-456	U	< 220	ug/kg	1.00	2.2e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	51-28-5	2,4-Dinitrophenol	SOIL	LA-523-456	U	< 630	ug/kg	1.00	6.3e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	53-70-3	Dibenz[a,h]anthracene	SOIL	LA-523-456	U	< 330	ug/kg	1.00	3.3e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	534-52-1	4,6-Dinitro-2-methylphenol	SOIL	LA-523-456	U	< 450	ug/kg	1.00	4.5e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	541-73-1	1,3-Dichlorobenzene	SOIL	LA-523-456	U	< 570	ug/kg	1.00	5.7e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	56-55-3	Benzo(a)anthracene	SOIL	LA-523-456	U	< 230	ug/kg	1.00	2.3e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	606-20-2	2,6-Dinitrotoluene	SOIL	LA-523-456	U	< 250	ug/kg	1.00	2.5e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	7005-72-3	4-Chlorophenylphenyl ether	SOIL	LA-523-456	U	< 180	ug/kg	1.00	1.8e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	77-47-4	Hexachlorocyclopentadiene	SOIL	LA-523-456	U	< 580	ug/kg	1.00	5.8e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	78-59-1	Isophorone	SOIL	LA-523-456	U	< 300	ug/kg	1.00	3.0e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	84-66-2	Diethylphthalate	SOIL	LA-523-456		600	ug/kg	1.00	4.7e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	84-74-2	Di-n-butylphthalate	SOIL	LA-523-456		1.30e+03	ug/kg	1.00	5.8e+02	05/04/06	04/18/06	04/27/06

MDL = Minimum Detection Limit
RQ = Result Qualifier

B - The analyte < the RDL but > = the IDL/MDL (inorganic)
E - Analyte is an estimate, has potentially larger errors
C - The Analyte was found in the Associated Blank.
U - Analyzed for but not detected above limiting criteria.

DF = Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

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Groundwater Remediation Program

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
Project: F06-005: F06-005

Group #: WSCF20060389

Sample #	Client ID		CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W060000954	B1HK57	TRENT	85-01-8	Phenanthrene	SOIL	LA-523-456	U	< 250	ug/kg	1.00	2.5e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	85-68-7	Butylbenzylphthalate	SOIL	LA-523-456	U	< 180	ug/kg	1.00	1.5e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	86-30-6	N-Nitrosodiphenylamine	SOIL	LA-523-456	U	< 260	ug/kg	1.00	2.6e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	86-73-7	Fluorene	SOIL	LA-523-456	U	< 240	ug/kg	1.00	2.4e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	86-74-8	Carbazole	SOIL	LA-523-456	U	< 280	ug/kg	1.00	2.8e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	87-68-3	Hexachlorobutadiene	SOIL	LA-523-456	U	< 300	ug/kg	1.00	3.0e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	88-74-4	2-Nitroaniline	SOIL	LA-523-456	U	< 180	ug/kg	1.00	1.8e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	88-75-5	2-Nitrophenol	SOIL	LA-523-456	U	< 320	ug/kg	1.00	3.2e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	91-20-3	Naphthalene	SOIL	LA-523-456	U	< 290	ug/kg	1.00	2.9e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	91-57-6	2-Methylnaphthalene	SOIL	LA-523-456	U	< 270	ug/kg	1.00	2.7e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	91-58-7	2-Chloronaphthalene	SOIL	LA-523-456	U	< 230	ug/kg	1.00	2.3e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	91-94-1	3,3'-Dichlorobenzidine	SOIL	LA-523-456	U	< 120	ug/kg	1.00	1.2e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	95-48-7	2-Methylphenol (cresol, o-)	SOIL	LA-523-456	U	< 280	ug/kg	1.00	2.0e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	95-50-1	1,2-Dichlorobenzene	SOIL	LA-523-456	U	< 450	ug/kg	1.00	4.5e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	95-95-4	2,4,5-Trichlorophenol	SOIL	LA-523-456	U	< 160	ug/kg	1.00	1.6e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	98-95-3	Nitrobenzene	SOIL	LA-523-456	U	< 300	ug/kg	1.00	3.0e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	99-09-2	3-Nitroaniline	SOIL	LA-523-456	U	< 210	ug/kg	1.00	2.1e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	65794-96-9	3 & 4 Methylphenol Total	SOIL	LA-523-456	U	< 380	ug/kg	1.00	3.8e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	67-72-1	Hexachloroethane	SOIL	LA-523-456	U	< 430	ug/kg	1.00	4.3e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	88-06-2	2,4,6-Trichlorophenol	SOIL	LA-523-456	U	< 150	ug/kg	1.00	1.5e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	126-73-8	Tributyl phosphate	SOIL	LA-523-456	U	< 98.0	ug/kg	1.00	96	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	108-94-1	Cyclohexanone	SOIL	LA-523-456	U	< 140	ug/kg	1.00	1.4e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	95-63-6	1,2,4-Trimethylbenzene	SOIL	LA-523-456	U	< 120	ug/kg	1.00	1.2e+02	05/04/06	04/18/06	04/27/06
W060000954	B1HK57	TRENT	78-48-8	Dibutyl butylphosphonate	SOIL	LA-523-456	U	< 3.0e+02	ug/kg	1.00	3.0e+02	05/04/06	04/18/06	04/27/06
~~W060000955~~	~~B1HK62~~	~~TRENT~~	~~12674-11-2~~	~~Aroclor-1016~~	~~SOIL~~	~~LA-523-427~~	~~U~~	~~< 12.0~~	~~ug/kg~~	~~1.00~~	~~12~~	~~05/04/06~~	~~04/24/06~~	~~04/27/06~~
~~W060000955~~	~~B1HK62~~	~~TRENT~~	~~11104-28-2~~	~~Aroclor-1221~~	~~SOIL~~	~~LA-523-427~~	~~U~~	~~< 25.0~~	~~ug/kg~~	~~1.00~~	~~25~~	~~05/04/06~~	~~04/24/06~~	~~04/27/06~~
~~W060000955~~	~~B1HK62~~	~~TRENT~~	~~11141-16-5~~	~~Aroclor-1232~~	~~SOIL~~	~~LA-523-427~~	~~U~~	~~< 12.0~~	~~ug/kg~~	~~1.00~~	~~12~~	~~05/04/06~~	~~04/24/06~~	~~04/27/06~~

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MDL = Minimum Detection Limit
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B - The analyte < the RDL but > = the IDL/MDL (inorganic)
E - Analyte is an estimate, has potentially larger errors
C - The Analyte was found in the Associated Blank.
U - Analyzed for but not detected above limiting criteria.

DF = Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

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Groundwater Remediation Program

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Appendix 4

Laboratory Narrative and Chain of Custody Documentation

Sample Delivery Group	**WSCF20060389, Rev. 1**
Sample Matrix	**Soil**
Sample Visual	**N/A**
SAF Number	**F06-005**
Data Deliverable	**Summary Report**

Introduction

Two (2) 216-Z-9 Trench Slant Characterization Borehole (C3427, I22), soil samples (B1HK57 and B1HK62) were received at the WSCF Laboratory on April 27, 2006. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Groundwater Remediation Program – Letter of Instruction*, referenced in the cover letter.

The narrative (Attachment 1) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 2) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information. Copies of the chain of custody and sample receipt are included as Attachment 3.

It should be noted that the attached chain of custody was stamped "iced", initialed and dated by the WSCF Laboratory Sample Custodian during sample receiving, indicating the presence of ice in the sample container.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report,* pages 37 through 38, for a complete listing of approved analytical methods.

Inorganic Comments

Ammonia - The hold time for this analysis was met. A Blank, Duplicate, Laboratory Control Sample, Matrix Spike and Matrix Spike Duplicate were analyzed with each delivery group per GRP Letter of Instruction. See page 12 for QC details. Analytical Note:

- Duplicate, Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018).

All QC controls are within the established limits.

Anions - The hold times for this analysis were met. A Blank, Duplicate, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per GRP Letter of Instruction. See pages 13 through 14 for QC details. Analytical Notes:

- Preparation Date: 10-may-2006.

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- Duplicate, Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HK77 (SDG# 20060478, SAF# F06-005).

- Sample results that were less than the lowest calibration standard but greater than the detection limit were B flagged.

- Phosphate – Matrix Spike and Matrix Spike Duplicate recoveries were less than established laboratory limits. Low recoveries were due to probable matrix interference.

All other QC controls are within the established limits.

ICP-AES Metals – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per GRP Letter of Instruction. See pages 15 through 19 for QC details. Analytical Notes:

- Preparation Date: 09-may-2006.

- Manganese – Matrix Spike and Matrix Spike Duplicate recoveries were less than established laboratory limits. Sample results (B1HK57 and B1HK62) were E flagged.

- Sodium – Matrix Spike and Matrix Spike Duplicate recoveries exceeded established laboratory limits. Sample result (B1HK62) was E flagged.

- Aluminum, Calcium, Iron, Magnesium, and Phosphorus – insufficient spike concentrations. Sample concentration was greater than four times the spike concentration.

- Bismuth, Copper, Potassium, Manganese, Phosphorus and Vanadium – Analytes detected in the associated preparation Blank sample were evaluated and there was no significant affect on sample results except for Phosphorus. Phosphorus sample results were C flagged.

All other QC controls are within the established limits.

ICP-MS Metals – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See page 20 for QC details. Analytical Notes:

- Preparation Date: 17-may-2006.

- Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018).

- Mercury – Analyte detected in the associated preparation Blank sample was evaluated and sample results were C flagged.

All other QC controls are within the established limits.

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Percent Solids – analyzed for organic moisture correction.

Organic Comments

- Sample results are moisture corrected and reported on dry weight basis.

PCBs – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See pages 27 through 28 for QC details. Analytical Notes:

- Preparation Date: 01-may-2006.
- Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018).

All QC controls are within the established limits.

Semi-VOA – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See pages 29 through 34 for QC details. Analytical Notes:

- Preparation Date: 01-may-2006.
- Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1HY24 (SDG# 20060384, SAF# F06-018).
- 1,4-Dichlorobenzene – Matrix Spike and Matrix Spike Duplicate sample recoveries slightly exceeded established laboratory limits.
- 4-Chloro-3-methylphenol – Matrix Spike Duplicate and Laboratory Control Sample recoveries slightly exceeded established laboratory limits.
- 2-Chlorophenol – Laboratory Control Sample recovery slightly exceeded established laboratory limits.
- 2-Fluorophenyl (B1HK62) – Surrogate sample recovery slightly exceeded established laboratory limits.
- 2-Fluorobiphenyl – Laboratory Control Sample recovery slightly exceeded established laboratory limits.
- Phenol – Laboratory Control Sample recovery slightly exceeded established laboratory limits.

All other QC controls are within the established limits.

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This Summary Report is in compliance with the SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the WSCF Laboratory Analytical Manager and Client Services, as verified by the following signature.

Pauline D. Mix
WSCF Client Services

Abbreviations

Hg – mercury
IC – ion chromatography
ICP – inductively coupled plasma
ICP/AES – ICP/atomic emission spectroscopy
ICP/MS – ICP/mass spectrometry
Total U – total uranium
AT/TB – total alpha/total beta
ABA – Alpha Energy Analysis
WTPH-G – Total Hydrocarbons-Gasoline
Am – americium
Cm - curium
Pu – plutonium
Np – neptunium
GEA – gamma energy analysis
H3 – Tritium
Sr – Strontium 89, 90
WTPH-D – Total Hydrocarbons-Diesel
TSS – Total Suspended Solids

REVISED
6/6/06

Fluor Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST F06-005-061 PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE	DATA TURNAROUND
Holder/Pope/Pfister	TRENT, SJ	373-5869	TRENT, SJ	8N	45 Days / 45 Days

SAMPLING LOCATION	PROJECT DESIGNATION	SAF NO.	AIR QUALITY
C3427, Slant, I-22	216-Z-9 Trench Slant Characterization Borehole - Soil	F06-005	[ ]

ICE CHEST NO.	FIELD LOGBOOK NO.	COA	METHOD OF SHIPMENT
	HNF-N-360-1	121618ES10	GOVERNMENT VEHICLE

SHIPPED TO	OFFSITE PROPERTY NO.	BILL OF LADING/AIR BILL NO.
Waste Sampling & Characterization		

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

ITEM #1 – 241g
ITEM #2 – 245g
ITEM #3 – 248g
PCB'S – 238g

SPECIAL HANDLING AND/OR STORAGE

20060389

PRESERVATION	Cool 4C	Cool 4C	Cool 4C	Cool 4C
TYPE OF CONTAINER	aG	aG	G/P	G
NO. OF CONTAINER(S)	1	1	1	1
VOLUME	120mL	120mL	120mL	120mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	PCBs - 8082;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B1HK67	SOIL	4-18-06	1025	X	X	X	X

W06000954

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
JSPobe/ [signature]	4-18-06 1130	Site Rm	4-18-06 1130
2-9 Site [signature]	4-27-06 1300	S.S. Afe [signature]	4-27-06 1300
S.S. Afe [signature]	4-27-06 ~~1240~~ 1840	TA-PROZIOZ [signature]	4-27-06 ~~1240~~ 1840

SPECIAL INSTRUCTIONS

(1)Semi-VOA - 8270B (TCL); Semi-VOA - 8270B (Add-On) {1,2,4-Trimethylbenzene, Cyclohexanone, Dibutyl Butylphosphonate, Tributyl phosphate}
(2)ICP Metals - 6010B (TAL); ICP Metals - 6010B (Add-On) {Arsenic, Beryllium, Bismuth, Lead, Lithium, Phosphorus, Selenium, Strontium} ICP/MS - 200.8 (Hg);
(3)IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphorous in phosphate, Sulfate} Cations (IC) - 300.7 {Nitrogen in ammonium}

1840 [initials] 5-2-06

ICED
[initials] Initial
4-27-06 Date

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(03/03)

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 216-Z-9 Crib Sbnt (C3427)			DATA PACKAGE: WSCF20060389		
VALIDATOR: JRJ		LAB: WSCF		DATE: 7/21/06	
			SDG: WSCF20060389		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX B1HK57 / Soil					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... (Yes) No N/A

Comments: _____

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

GC/MS tuning/performance check acceptable? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No (N/A)
Calibration blank results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... (Yes) No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes (No) (N/A) 2/24/06
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: _____

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... (Yes) No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... (Yes) No N/A
Surrogates traceable? (Levels D, E) ..... Yes No (N/A)
Surrogates expired? (Levels D, E) ..... Yes No (N/A)
MS/MSD samples analyzed? ..... (Yes) No N/A
MS/MSD results acceptable? ..... (Yes) No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards? (Levels D, E) ..... Yes No (N/A)
LCS/BSS samples analyzed? ..... (Yes) No N/A
LCS/BSS results acceptable? ..... (Yes) No N/A
Standards traceable? (Levels D, E) ..... Yes No (N/A)
Standards expired? (Levels D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Performance audit sample(s) analyzed? ..... Yes (No) (N/A) 2/24/06
Performance audit sample results acceptable? ..... Yes No (N/A)
Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

MS/MSD samples analyzed? (Yes) No N/A
MS/MSD RPD values acceptable? (Yes) No N/A
MS/MSD standards NIST traceable? (Levels D, E) Yes No (N/A)
MS/MSD standards expired? (Levels D, E) Yes No (N/A)
Field duplicate RPD values acceptable? Yes No (N/A)
Field split RPD values acceptable? Yes No (N/A)
Transcription/calculation errors? (Levels D, E) Yes No (N/A)
Comments:

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? Yes No (N/A)
Iinternal standard areas acceptable? Yes No (N/A)
Internal standard retention times acceptable? Yes No (N/A)
Standards traceable? Yes No (N/A)
Standards expired? Yes No (N/A)
Transcription/calculation errors? Yes No (N/A)
Comments:

7. HOLDING TIMES (all levels)

Samples properly preserved? (Yes) No N/A
Sample holding times acceptable? (Yes) No N/A
Comments:

A-3

GC/MS ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) ..... Yes No (N/A)
Compound quantitation acceptable? (Levels D, E) ..... Yes No (N/A)
Results reported for all requested analyses? ..... (Yes) No N/A
Results supported in the raw data? (Levels D, E) ..... Yes No (N/A)
Samples properly prepared? (Levels D, E) ..... Yes No (N/A)
Laboratory properly identified and coded all TIC? (Levels D, E) ..... Yes No (N/A)
Detection limits meet RDL? ..... (Yes) No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed? ..... Yes No (N/A)
GPC check performed? ..... Yes No (N/A)
GPC check recoveries acceptable? ..... Yes No (N/A)
GPC calibration performed? ..... Yes No (N/A)
GPC calibration check performed? ..... Yes No (N/A)
GPC calibration check retention times acceptable? ..... Yes No (N/A)
Check/calibration materials traceable? ..... Yes No (N/A)
Check/calibration materials Expired? ..... Yes No (N/A)
Analytical batch QC given similar cleanup? ..... Yes No (N/A)
Transcription/Calculation Errors? ..... Yes No (N/A)
Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

Comments (attach additional sheets as necessary):

Appendix 6

Additional Documentation Requested by Client
(Quality Control Data)

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: SW-846 8270C Semi-Vols

SAF Number: F06-005
Sample Date: 04/27/06
Receive Date:04/27/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
Lab ID: W060000944									
BATCH QC ASSOCIATED WITH SAMPLE									
MS	1,2,4-Trichlorobenzene	120-82-1	2118.4	102.000	% Recov	05/04/06	46.000	107.000	
MS	1,4-Dichlorobenzene	106-46-7	2106.4	102.000	% Recov	05/04/06	30.000	96.000	*
MS	2,4-Dinitrotoluene	121-14-2	1953.4	94.500	% Recov	05/04/06	59.000	106.000	
MS	2-Fluorophenol	367-12-4	2073.6	100.000	% Recov	05/04/06	42.000	105.000	
MS	Acenaphthene	83-32-9	2133.3	103.000	% Recov	05/04/06	61.000	116.000	
MS	4-Chloro-3-methylphenol	59-50-7	3139.2	101.000	% Recov	05/04/06	61.000	106.000	
MS	2-Chlorophenol	95-57-8	3146.5	101.000	% Recov	05/04/06	66.000	106.000	
MS	N-Nitrosodi-n-dipropylamine	621-64-7	2153.2	104.000	% Recov	05/04/06	71.000	114.000	
MS	2-Fluorobiphenyl	321-60-8	2130.5	103.000	% Recov	05/04/06	56.000	122.000	
MS	Phenol	108-95-2	3127.8	101.000	% Recov	05/04/06	42.000	111.000	
MS	Nitrobenzene-d5	4165-60-0	2083.3	101.000	% Recov	05/04/06	64.000	111.000	
MS	4-Nitrophenol	100-02-7	3163.9	102.000	% Recov	05/04/06	32.000	118.000	
MS	Pentachlorophenol	87-86-5	2867.9	92.500	% Recov	05/04/06	62.000	114.000	
MS	Phenol-d5	4165-62-2	2146.4	104.000	% Recov	05/04/06	54.000	120.000	
MS	Pyrene	129-00-0	2273.6	110.000	% Recov	05/04/06	66.000	118.000	
MS	2,4,6-Tribromophenol	118-79-6	2250.3	109.000	% Recov	05/04/06	24.000	122.000	
MS	Terphenyl-d14 (TCI)	98904-43-9	2240.7	108.000	% Recov	05/04/06	36.000	150.000	
MSD	1,2,4-Trichlorobenzene	120-82-1	2216.3	107.000	% Recov	05/04/06	46.000	107.000	
MSD	1,4-Dichlorobenzene	106-46-7	2214.3	107.000	% Recov	05/04/06	30.000	96.000	*
MSD	2,4-Dinitrotoluene	121-14-2	2066.6	99.700	% Recov	05/04/06	59.000	106.000	
MSD	2-Fluorophenol	367-12-4	2040.6	98.500	% Recov	05/04/06	42.000	105.000	
MSD	Acenaphthene	83-32-9	2243.4	108.000	% Recov	05/04/06	61.000	116.000	
MSD	4-Chloro-3-methylphenol	59-50-7	3420.7	110.000	% Recov	05/04/06	61.000	106.000	*
MSD	2-Chlorophenol	95-57-8	3310.1	106.000	% Recov	05/04/06	66.000	106.000	
MSD	N-Nitrosodi-n-dipropylamine	621-64-7	2281.4	110.000	% Recov	05/04/06	71.000	114.000	
MSD	2-Fluorobiphenyl	321-60-8	2169.1	105.000	% Recov	05/04/06	56.000	122.000	

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6/6/06

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: SW-846 8270C Semi-Vols

SAF Number: F06-005
Sample Date: 04/27/06
Receive Date:04/27/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
MSD	Phenol	108-95-2	3285.9	106.000	% Recov	05/04/06	42.000	111.000	
MSD	Nitrobenzene-d5	4165-60-0	2053.2	99.100	% Recov	05/04/06	64.000	111.000	
MSD	4-Nitrophenol	100-02-7	3204.4	103.000	% Recov	05/04/06	32.000	118.000	
MSD	Pentachlorophenol	87-86-5	2735.1	88.000	% Recov	05/04/06	62.000	114.000	
MSD	Phenol-d5	4165-62-2	2177.5	105.000	% Recov	05/04/06	54.000	120.000	
MSD	Pyrene	129-00-0	2435.6	118.000	% Recov	05/04/06	66.000	118.000	
MSD	2,4,6-Tribromophenol	118-79-6	2291.7	111.000	% Recov	05/04/06	24.000	122.000	
MSD	Terphenyl-d14 (7Cl)	98904-43-9	2435.2	117.000	% Recov	05/04/06	35.000	150.000	
SPK-RPD	1,2,4-Trichlorobenzene	120-82-1	107.000	4.785	RPD	05/04/06	0.000	20.000	
SPK-RPD	1,4-Dichlorobenzene	106-46-7	107.000	4.785	RPD	05/04/06	0.000	20.000	
SPK-RPD	2,4-Dinitrotoluene	121-14-2	99.700	5.355	RPD	05/04/06	0.000	20.000	
SPK-RPD	2-Fluorophenol	367-12-4	88.500	1.511	RPD	05/04/06	0.000	20.000	
SPK-RPD	Acenaphthene	83-32-9	108.000	4.739	RPD	05/04/06	0.000	20.000	
SPK-RPD	4-Chloro-3-methylphenol	59-50-7	110.000	8.531	RPD	05/04/06	0.000	20.000	
SPK-RPD	2-Chlorophenol	95-57-8	106.000	4.831	RPD	05/04/06	0.000	20.000	
SPK-RPD	N-Nitrosodi-n-dipropylamine	621-64-7	110.000	5.607	RPD	05/04/06	0.000	20.000	
SPK-RPD	2-Fluorobiphenyl	321-60-8	105.000	1.923	RPD	05/04/06	0.000	20.000	
SPK-RPD	Phenol	108-95-2	108.000	4.831	RPD	05/04/06	0.000	20.000	
SPK-RPD	Nitrobenzene-d5	4165-60-0	99.100	1.899	RPD	05/04/06	0.000	20.000	
SPK-RPD	4-Nitrophenol	100-02-7	103.000	0.978	RPD	05/04/06	0.000	20.000	
SPK-RPD	Pentachlorophenol	87-86-5	88.000	4.988	RPD	05/04/06	0.000	20.000	
SPK-RPD	Phenol-d5	4165-62-2	105.000	0.957	RPD	05/04/06	0.000	20.000	
SPK-RPD	Pyrene	129-00-0	118.000	7.018	RPD	05/04/06	0.000	20.000	
SPK-RPD	2,4,6-Tribromophenol	118-79-6	111.000	1.818	RPD	05/04/06	0.000	20.000	
SPK-RPD	Terphenyl-d14 (7Cl)	98904-43-9	117.000	8.000	RPD	05/04/06	0.000	20.000	

Lab ID: W060000954
BATCH QC ASSOCIATED WITH SAMPLE

SURR	2-Fluorophenol	367-12-4	1345.3	88.000	% Recov	05/04/06	42.000	105.000	
SURR	2-Fluorobiphenyl	321-60-8	1184.8	77.500	% Recov	05/04/06	56.000	122.000	

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6/6/06

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: SW-846 8270C Semi-Vols

SAF Number: F06-005
Sample Date: 04/18/06
Receive Date:04/27/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
SURR	Nitrobenzene-d5	4165-60-0	1414.2	92.500	% Recov	05/04/06	64.000	111.000	
SURR	Phenol-d5	4165-62-2	1359.4	88.900	% Recov	05/04/06	54.000	120.000	
SURR	2,4,6-Tribromophenol	118-79-6	1304.8	85.300	% Recov	05/04/06	24.000	122.000	
SURR	Terphenyl-d14 (7Cl)	98904-43-9	1503.4	98.300	% Recov	05/04/06	35.000	150.000	
Lab ID: W060000955									
BATCH QC ASSOCIATED WITH SAMPLE									
SURR	2-Fluorophenol	367-12-4	1688.5	100.000	% Recov	05/04/06	42.000	105.000	
SURR	2-Fluorobiphenyl	321-60-8	1285.8	80.400	% Recov	05/04/06	56.000	122.000	
SURR	Nitrobenzene-d5	4165-60-0	1745.4	109.000	% Recov	05/04/06	64.000	111.000	
SURR	Phenol-d5	4165-62-2	1726.4	108.000	% Recov	05/04/06	54.000	120.000	
SURR	2,4,6-Tribromophenol	118-79-6	1317.3	82.300	% Recov	05/04/06	24.000	122.000	
SURR	Terphenyl-d14 (7Cl)	98904-43-9	1719.7	107.000	% Recov	05/04/06	35.000	150.000	
BATCH QC									
BLANK	1,2-Dichlorobenzene	95-50-1	< 380	n/a	ug/Kg	05/04/06			U
BLANK	1,2,4-Trimethylbenzene	95-63-6	< 100	n/a	ug/Kg	05/04/06			U
BLANK	1,2,4-Trichlorobenzene	120-82-1	< 270	n/a	ug/Kg	05/04/06			U
BLANK	1,3-Dichlorobenzene	541-73-1	< 480	n/a	ug/Kg	05/04/06			U
BLANK	1,4-Dichlorobenzene	106-46-7	< 400	n/a	ug/Kg	05/04/06			U
BLANK	2,4-Dichlorophenol	120-83-2	< 130	n/a	ug/Kg	05/04/06			U
BLANK	2,4-Dinitrotoluene	121-14-2	< 180	n/a	ug/Kg	05/04/06			U
BLANK	2,4,5-Trichlorophenol	95-95-4	< 140	n/a	ug/Kg	05/04/06			U
BLANK	2,4,6-Trichlorophenol	88-06-2	< 130	n/a	ug/Kg	05/04/06			U
BLANK	2,4-Dimethylphenol	105-67-9	< 270	n/a	ug/Kg	05/04/06			U
BLANK	2,6-Dinitrotoluene	606-20-2	< 210	n/a	ug/Kg	05/04/06			U
BLANK	2-Chloronaphthalene	91-58-7	< 200	n/a	ug/Kg	05/04/06			U
BLANK	2-Fluorophenol	367-12-4	2094.8	105.000	% Recov	05/04/06	42.000	105.000	
BLANK	2-Methylnaphthalene	91-57-6	< 220	n/a	ug/Kg	05/04/06			U
BLANK	2-Methylphenol (cresol, o-)	95-48-7	< 240	n/a	ug/Kg	05/04/06			U

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6/6/06

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: SW-846 8270C Semi-Vols

SAF Number: F06-005
Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
BLANK	2-Nitroaniline	88-74-4	< 150	n/a	ug/Kg	05/04/06			U
BLANK	2-Nitrophenol	88-75-5	< 270	n/a	ug/Kg	05/04/06			U
BLANK	3 & 4 Methylphenol Total	65794-96-9	< 310	n/a	ug/Kg	05/04/06			U
BLANK	3-Nitroaniline	99-09-2	< 170	n/a	ug/Kg	05/04/06			U
BLANK	4,6-Dinitro-2-methylphenol	534-52-1	< 390	n/a	ug/Kg	05/04/06			U
BLANK	4-Bromophenylphenyl ether	101-55-3	< 150	n/a	ug/Kg	05/04/06			U
BLANK	4-Chlorophenylphenyl ether	7005-72-3	< 150	n/a	ug/Kg	05/04/06			U
BLANK	Acenaphthene	83-32-9	< 210	n/a	ug/Kg	05/04/06			U
BLANK	Acenaphthylene	208-96-8	< 220	n/a	ug/Kg	05/04/06			U
BLANK	Anthracene	120-12-7	< 230	n/a	ug/Kg	05/04/06			U
BLANK	Bis(2-chloroethyl) ether	111-44-4	< 300	n/a	ug/Kg	05/04/06			U
BLANK	Benzo(a)anthracene	56-55-3	< 190	n/a	ug/Kg	05/04/06			U
BLANK	Benzo(b)fluoranthene	205-99-2	< 220	n/a	ug/Kg	05/04/06			U
BLANK	Benzo(ghi)perylene	191-24-2	< 230	n/a	ug/Kg	05/04/06			U
BLANK	Benzo(a)pyrene	50-32-8	< 180	n/a	ug/Kg	05/04/06			U
BLANK	Bis(2-Chloroethoxy)methane	111-91-1	< 180	n/a	ug/Kg	05/04/06			U
BLANK	Bis(2-ethylhexyl) phthalate	117-81-7	< 150	n/a	ug/Kg	05/04/06			U
BLANK	Bis(2-chloro-1-methylethyl)eth	108-60-1	< 260	n/a	ug/Kg	05/04/06			U
BLANK	Benzo(k)fluoranthene	207-08-9	< 160	n/a	ug/Kg	05/04/06			U
BLANK	Butylbenzylphthalate	85-68-7	< 130	n/a	ug/Kg	05/04/06			U
BLANK	Carbazole	86-74-8	< 230	n/a	ug/Kg	05/04/06			U
BLANK	4-Chloroaniline	106-47-8	< 450	n/a	ug/Kg	05/04/06			U
BLANK	4-Chloro-3-methylphenol	59-50-7	< 140	n/a	ug/Kg	05/04/06			U
BLANK	2-Chlorophenol	95-57-8	< 230	n/a	ug/Kg	05/04/06			U
BLANK	Chrysene	218-01-9	< 210	n/a	ug/Kg	05/04/06			U
BLANK	Cyclohexanone	108-94-1	< 110	n/a	ug/Kg	05/04/06			U
BLANK	3,3'-Dichlorobenzidine	91-94-1	< 100	n/a	ug/Kg	05/04/06			U
BLANK	Dibenz(a,h)anthracene	53-70-3	< 280	n/a	ug/Kg	05/04/06			U
BLANK	Dibutyl butylphosphonate	78-46-6	< 250	n/a	ug/kg	05/04/06			U
BLANK	Dibenzofuran	132-64-9	< 180	n/a	ug/Kg	05/04/06			U

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WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: SW-846 8270C Semi-Vols

SAF Number: F06-005
Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
BLANK	Di-n-butylphthalate	84-74-2	< 480	n/a	ug/Kg	05/04/06			U
BLANK	Diethylphthalate	84-66-2	< 400	n/a	ug/Kg	05/04/06			U
BLANK	Dimethyl phthalate	131-11-3	< 190	n/a	ug/Kg	05/04/06			U
BLANK	2,4-Dinitrophenol	51-28-5	< 530	n/a	ug/Kg	05/04/06			U
BLANK	Di-n-octylphthalate	117-84-0	< 260	n/a	ug/Kg	05/04/06			U
BLANK	N-Nitrosodi-n-dipropylamine	621-64-7	< 220	n/a	ug/Kg	05/04/06			U
BLANK	2-Fluorobiphenyl	321-60-8	2079.1	104.000	% Recov	05/04/06	56.000	122.000	
BLANK	Fluorene	86-73-7	< 200	n/a	ug/Kg	05/04/06			U
BLANK	Fluoranthene	206-44-0	< 240	n/a	ug/Kg	05/04/06			U
BLANK	Hexachlorobenzene	118-74-1	< 210	n/a	ug/Kg	05/04/06			U
BLANK	Hexachlorobutadiene	87-68-3	< 250	n/a	ug/Kg	05/04/06			U
BLANK	Hexachlorocyclopentadiene	77-47-4	< 490	n/a	ug/Kg	05/04/06			U
BLANK	Hexachloroethane	67-72-1	< 360	n/a	ug/Kg	05/04/06			U
BLANK	Indeno(1,2,3-cd)pyrene	193-39-5	< 250	n/a	ug/Kg	05/04/06			U
BLANK	Isophorone	78-59-1	< 250	n/a	ug/Kg	05/04/06			U
BLANK	Phenol	108-95-2	< 210	n/a	ug/Kg	05/04/06			U
BLANK	Naphthalene	91-20-3	< 250	n/a	ug/Kg	05/04/06			U
BLANK	Nitrobenzene-d5	4165-60-0	2148.6	107.000	% Recov	05/04/06	64.000	111.000	
BLANK	Nitrobenzene	98-95-3	< 250	n/a	ug/Kg	05/04/06			U
BLANK	4-Nitrophenol	100-02-7	< 280	n/a	ug/Kg	05/04/06			U
BLANK	4-Nitroaniline	100-01-6	< 280	n/a	ug/Kg	05/04/06			U
BLANK	N-Nitrosodiphenylamine	86-30-6	< 220	n/a	ug/Kg	05/04/06			U
BLANK	Pentachlorophenol	87-86-5	< 220	n/a	ug/Kg	05/04/06			U
BLANK	Phenanthrene	85-01-8	< 210	n/a	ug/Kg	05/04/06			U
BLANK	Phenol-d6	4165-62-2	2181.6	109.000	% Recov	05/04/06	54.000	120.000	
BLANK	Pyrene	129-00-0	< 1100	n/a	ug/Kg	05/04/06			U
BLANK	Tributyl phosphate	126-73-8	< 82	n/a	ug/Kg	05/04/06			U
BLANK	2,4,6-Tribromophenol	118-79-6	1794.0	89.700	% Recov	05/04/06	24.000	122.000	
BLANK	Terphenyl-d14 (7C)	98904-43-9	2163.1	108.000	% Recov	05/04/06	35.000	150.000	
LCS	1,2,4-Trichlorobenzene	120-82-1	2145.5	107.000	% Recov	05/04/06	46.000	107.000	

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WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20060389
Matrix: SOLID
Test: SW-846 8270C Semi-Vols

SAF Number: F06-005
Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
LCS	1,4-Dichlorobenzene	106-46-7	2142.1	107.000	% Recov	05/04/06	42.000	111.000	
LCS	2,4-Dinitrotoluene	121-14-2	1998.6	99.900	% Recov	05/04/06	59.000	108.000	
LCS	2-Fluorophenol	367-12-4	2142.9	107.000	% Recov	05/04/06	50.000	110.000	
LCS	Acenaphthene	83-32-9	2228.7	111.000	% Recov	05/04/06	61.000	118.000	
LCS	4-Chlom-3-methylphenol	59-50-7	3237.0	108.000	% Recov	05/04/06	61.000	108.000	*
LCS	2-Chlorophenol	95-57-8	3228.1	108.000	% Recov	05/04/06	66.000	108.000	*
LCS	N-Nitrosodi-n-dipropylamine	621-64-7	2145.4	107.000	% Recov	05/04/06	71.000	114.000	
LCS	2-Fluorobiphenyl	321-60-8	2193.8	110.000	% Recov	05/04/06	58.000	109.000	*
LCS	Phenol	108-95-2	3231.1	108.000	% Recov	05/04/06	67.000	105.000	*
LCS	Nitrobenzene-d5	4165-60-0	2179.1	109.000	% Recov	05/04/06	60.000	118.000	
LCS	4-Nitrophenol	100-02-7	3005.8	100.000	% Recov	05/04/06	32.000	118.000	
LCS	Pentachlorophenol	87-86-5	2808.9	93.600	% Recov	05/04/06	62.000	114.000	
LCS	Phenol-d5	4165-62-2	2178.0	109.000	% Recov	05/04/06	59.000	116.000	
LCS	Pyrene	129-00-0	2247.4	112.000	% Recov	05/04/06	66.000	118.000	
LCS	2,4,6-Tribromophenol	118-79-6	2063.8	103.000	% Recov	05/04/06	60.000	120.000	
LCS	Terphenyl-d14 (7Cl)	98904-43-9	2314.5	116.000	% Recov	05/04/06	60.000	120.000	

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WSCF
ANALYTICAL COMMENT REPORT

Attention: Steve Trent
Project Number F06-005

Group #: WSCF20060389

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		ORGANICS: Sample concentrations are corrected for moisture and reported as dry weight basis. gac SVOC: One surrogate and several matrix spike compound recoveries slightly exceeded upper control limits. Process improvements have increased spike recoveries. The statistical QC limits will increase when sufficient data points are in the LIMS to allow updating the QC database. cgc ICP-AES: High preparation blank results for phosphorus, bismuth, vanadium, copper, manganese, and potassium; "C" flags if applicable. High antimony and zinc LCS recoveries; no flags issued because other QC is acceptable. High sodium and low manganese spike recoveries; "E" flag if applicable. Aluminum, iron, magnesium, calcium, and phosphorus sample results beyond effective spike range (spike results marked "NA"). ICP-MS: Mercury prep blank above the MDL and more than 10% of the sample results. C-flag IC Anions: Samples re-extracted for reanalysis of Nitrate-N which was over calibration range on first analysis

Lab Areas: VALGROUP - Group Validation
LOGSAMP - Login for Sample
VALTEST - Test Validation
LOGTEST - Login for Tests
TESTDATA - Test Data Entry

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w13qlog v1 01-jun-2006 09:48:18

W13q Worklist/Batch/QC Report for Group# WSCF20060389

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
				SAMPLE	W060000954	Percent Solids
				SAMPLE	W060000955	Percent Solids
			32800	BLANK		PCBs complete list
			32800	LCS		PCBs complete list
			32800	MS	W060000944	PCBs complete list
			32800	MSD	W060000944	PCBs complete list
			32800	SPK-RPD	W060000944	PCBs complete list
			32800	SAMPLE	W060000954	PCBs complete list
			32800	SURR	W060000954	PCBs complete list
			32800	SAMPLE	W060000955	PCBs complete list
			32800	SURR	W060000955	PCBs complete list
			32804	BLANK		SW-846 8270C Semi-Vols
			32804	LCS		SW-846 8270C Semi-Vols
			32804	MS	W060000944	SW-846 8270C Semi-Vols
			32804	MSD	W060000944	SW-846 8270C Semi-Vols
			32804	SPK-RPD	W060000944	SW-846 8270C Semi-Vols
			32804	SAMPLE	W060000954	SW-846 8270C Semi-Vols
			32804	SURR	W060000954	SW-846 8270C Semi-Vols
			32804	SAMPLE	W060000955	SW-846 8270C Semi-Vols
			32804	SURR	W060000955	SW-846 8270C Semi-Vols
28592	1	28963	32815	BLANK		ICP Metals Analysis, Grd H20 P
28592	2	28963	32815	LCS		ICP Metals Analysis, Grd H20 P
28592	5	28963	32815	MS	W060000954	ICP Metals Analysis, Grd H20 P
28592	6	28963	32815	MSD	W060000954	ICP Metals Analysis, Grd H20 P
28592	4	28963	32815	SAMPLE	W060000954	ICP Metals Analysis, Grd H20 P
28592	6	28963	32815	SPK-RPD	W060000954	ICP Metals Analysis, Grd H20 P
28592	7	28963	32815	SAMPLE	W060000955	ICP Metals Analysis, Grd H20 P
28613	2	28984	32824	BLANK		Ammonia (N) by IC
28613	10	28984	32824	BLANK		Ammonia (N) by IC
28613	3	28984	32824	LCS		Ammonia (N) by IC
28613	5	28984	32824	DUP	W060000944	Ammonia (N) by IC
28613	6	28984	32824	MS	W060000944	Ammonia (N) by IC
28613	7	28984	32824	MSD	W060000944	Ammonia (N) by IC
28613	8	28984	32824	SAMPLE	W060000954	Ammonia (N) by IC
28613	9	28984	32824	SAMPLE	W060000955	Ammonia (N) by IC
28669	2	29040	32883	BLANK		Anions by Ion Chromatography
28669	12	29040	32883	BLANK		Anions by Ion Chromatography
28669	3	29040	32883	LCS		Anions by Ion Chromatography
28669	8	29040	32883	SAMPLE	W060000954	Anions by Ion Chromatography
28669	9	29040	32883	SAMPLE	W060000955	Anions by Ion Chromatography
28669	5	29040	32883	DUP	W060001184	Anions by Ion Chromatography
28669	6	29040	32883	MS	W060001184	Anions by Ion Chromatography
28669	7	29040	32883	MSD	W060001184	Anions by Ion Chromatography
28674	1	29045	32885	BLANK		ICP-2008 MS All possible metal
28674	2	29045	32885	LCS		ICP-2008 MS All possible metal
28674	4	29045	32885	MS	W060000944	ICP-2008 MS All possible metal
28674	5	29045	32885	MSD	W060000944	ICP-2008 MS All possible metal
28674	5	29045	32885	SPK-RPD	W060000944	ICP-2008 MS All possible metal

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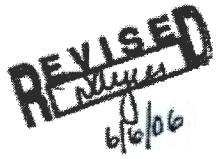
28674	6	29045	32885	SAMPLE	W060000954	ICP-2008 MS All possible metal
28674	7	29045	32885	SAMPLE	W060000955	ICP-2008 MS All possible metal



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WSCF
METHOD REFERENCES REPORT

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory or industry methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though the WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

LA-503-401	LA-503-401: ANALYSIS OF CATIONS BY ION CHROMATOGRAPHY	
	EPA-600/4-86-024 300.7	Dissolved Sodium, Ammonium, Potassium, and Calcium in Wet Deposition by Chemical
	HEIS 300.7_IC	Determination of Ammonium by Ion Chromatography
LA-505-411	LA-505-411: ELEMENTAL ANALYSIS BY INDUCTIVELY COUPLED PLASMA ATOMIC EMISSION SPE	
	EPA SW-846 6010B	INDUCTIVELY COUPLED PLASMA-ATOMIC EMISSION SPECTROMETRY
	HEIS 6010_METALS_ICP	Inductively Coupled Plasma-Atomic Emmision Spectrometry
LA-505-412	LA-505-412: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY	
	EPA-600/R-94-111 200.8	DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY COUPLED PLAS
	HEIS 6010_METALS_ICP	Inductively Coupled Plasma-Atomic Emmision Spectrometry
LA-519-412	LA-519-412: TOTAL RESIDUE/% SOLIDS DRIED AT 103 - 105 C	
	EPA-600/4-79-020 160.3	RESIDUE, TOTAL
	HEIS 160.1_TDS	Residue, Filterable
	Standard Methods 2540B	Total Solids Dried at 103-105 C
LA-523-427	LA-523-427: POLYCHLORINATED BIPHENYLS (PCBs) BY GAS CHROMATOGRAPHY	
	EPA SW-846 3510C	SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION
	EPA SW-846 3545	PRESSURIZED FLUID EXTRACTION (PFE)
	EPA SW-846 3665A	SULFURIC ACID/PERMANGANATE CLEANUP
	EPA SW-846 8000B	DETERMINATIVE CHROMATOGRAPHIC SEPARATIONS
	EPA SW-846 8082	POLYCHLORINATED BIPHENYLS (PCBs) BY GAS CHROMATOGRAPHY
	HEIS 8082_PCB_GC	Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at \\ap006\aspdocs\WSCF\Sample Mgmt\ProcedureMethodCrossReference.pdf. This document includes on-line links to full-text versions of the procedures and methods, where available.

Report Date: 1-Jun-2006
Report#: WSCF20060389
Report WGPPM/0

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WSCF
METHOD REFERENCES REPORT

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LA-523-456	LA-523-456: SEMIVOLATILE SAMPLE ANALYSIS BY SW-846, METHOD 8270C	
	EPA SW-846 8000B	DETERMINATIVE CHROMATOGRAPHIC SEPARATIONS
	EPA SW-846 8270C	SEMIVOLATILE ORGANIC COMPOUNDS BY GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)
	HEIS 8270_SVOA_GCMS	Semivolatile Orgamoc Compounds By Gas Chromatography/Mass Spectrometry (GC/MS)
LA-533-410	LA-533-410: ANION ANALYSIS BY ION CHROMATOGRAPHY	
	EPA-600/R-94-111 300.0	DETERMINATION OF INORGANIC ANIONS BY ION CHROMATOGRAPHY
	HEIS 300.0_ANIONS_IC	Determination of Inorganic Anions by Ion Chromatography

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at \\ap006\aspdocs\WSCF\Sample Mgmt\ProcedureMethodCrossReference.pdf. This document includes on-line links to full-text versions of the procedures and methods, where available.

Report Date: 1-jun-2006
Report#: WSCF20060389
Report WGPPM/O

REVISED Revised 6/6/06

WSCF
ANALYTICAL LABORATORY REPORT

Revised: Matrix

Report #: 20061103
Report Date: 09/27/06

WSCF
ANALYTICAL RESULTS REPORT

for

Groundwater Remediation Program

Richland, WA 99354

Attention: Steve Trent

Analytical: S. Fitzgerald

Client Services: P.B. Mix 9/27/2006

All results are reported on an "as received" basis unless otherwise noted in the comment section.

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Contract#: FH-EIS-2003-MEM-001
Report#: WSCF20061103
Report Date: 26-sep-2006
Report WGPP/ver. 1.3.1
Groundwater Remediation Program

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
Project: F06-058: F06-058
Group #: WSCF20061103

Sample #	Client ID		CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
Radiochemistry														
W060003180	B1KKP3	TRENT	12587-48-1	Gross alpha	WATER	LA-508-421	U	-0.100	pCi/mL	1.00	0.20	09/25/06	09/14/06	09/14/06
W060003180	B1KKP3	TRENT	E,T,C	Alpha error by LC	WATER	LA-508-421		+- 0.48	pCi/mL	1.00	0.0	09/25/06	09/14/06	09/14/06
W060003180	B1KKP3	TRENT	12587-47-2	Gross beta	WATER	LA-508-421	U	0.300	pCi/mL	1.00	0.30	09/25/06	09/14/06	09/14/06
W060003180	B1KKP3	TRENT	E,T,C	Beta error by LC	WATER	LA-508-421		+- 0.87	pCi/mL	1.00	0.0	09/25/06	09/14/06	09/14/06

MDL=Minimum Detection Limit U - Analyzed for but not detected above limiting criteria.
RQ=Result Qualifier

DF=Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF
ANALYTICAL COMMENT REPORT

Attention:
Project Number

Group #: 20061103

Sample #	Client ID	Lab Area	Test	Comment

Lab Areas: VALGROUP - Group Validation
LOGSAMP - Login for Sample
VALTEST - Test Validation
LOGTEST - Login for Tests
TESTDATA - Test Data Entry

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WSCF
TENTATIVELY IDENTIFIED PEAK REPORT

Attention:
Project Number :

Group #: 20061103

Sample #	Client ID	Test Name	Peak Name	CAS#	RT	RQ	Result	Units

RQ=Result Qualifier

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WSCF
METHOD REFERENCES REPORT

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LA-508-421 LA-508-421: OPERATION OF THE TRI-CARB MODEL 2500TR LIQUID SCINTILLATION ANALYZER

None No reference to any industry method.

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at \\ap006\aspdocs\WSCF\Sample Mgmt\ProcedureMethodCrossReference.pdf. This document includes on-line links to full-text versions of the procedures and methods, where available.

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20061103 SAF Number:

Matrix: Sample Date:
Test: Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ

Lab ID:
BATCH QC ASSOCIATED WITH SAMPLE

w13qlog v1 26-sep-2006 14:05:04

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
29753	1	30118		SAMPLE	W060003180	A/B by Liquid Scintillation