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FINAL REPORT FOR SOIL SAMPLES RECEIVED FROM THE VISTA ENGINEERING DNAPL STUDY IN SEPTEMBER 2006

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222-S LABORATORY

FINAL REPORT FOR SOIL SAMPLES RECEIVED FROM THE VISTA ENGINEERING DNAPL STUDY IN SEPTEMBER 2006

1.0 INTRODUCTION

One sample and a trip blank from the Vista Engineering DNAPL Study were received at the 222-S Laboratory on September 21, 2006. The samples were analyzed in accordance with SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (SW846), verbal and electronic communication from the client, and ATL-MP-1011, *ATL Quality Assurance Project Plan for 222-S Laboratory*.

A Data Summary Report is included as Attachment 1. Surrogate recoveries for the volatile organic analysis (VOA) and tracer recoveries for radiochemical analyses are reported in Attachment 2. The correlation between the customer sample identification numbers and laboratory identification numbers is presented in the Sample Breakdown Diagram included as Attachment 3.

2.0 SAMPLE DESCRIPTION AND HANDLING

One sample (B1KH07) and a trip blank (B1KKX0) were received with paperwork. The 222-S sample custodian was unable to measure the temperature of the samples because a temperature blank was placed in the sealed bag with the samples. The sample cooler contained blue ice. Samples were refrigerated after receipt.

3.0 HOLDING TIMES

SW-846 holding times were referenced for all of the requested analytes. As presented in Table 1, all holding times except volatile organic compounds (VOC) analysis were met for this project.

Due to a temporary analytical work stoppage, caused by a lapse in re-qualification based on compliance with DOE requirements for 5480.20A, VOC were analyzed beyond the holding time.

All the volatile organic compounds are flagged as estimated using a “J” or “UJ” due to analysis after the holding time. This is based on HNF-20433, “Data Validation Procedure For Chemical Analysis”. HNF-20433 states that if storage and preservation are acceptable and the holding times were less than or equal to, twice the project holding time (2 x 14 = 28 days), data are qualified with a J or UJ as estimated. The same policy is published in both the 1999 and 2005 EPA National Functional Guidelines for Organics.

The literature cites studies done by the EPA with sediments, soils and water that would indicate minimal degradation (equal to or less than the normal statistical variation of the methodology) would occur in the 8 days holding time exceedance. In fact, for the majority of

organic analytes (except ketones, carbon tetrachloride and cis-1,3 dichloropropene) little degradation was shown in 30 days to 12 weeks after sampling. Dr. Bottrell of EPA authored the summary in ASTM STP.

Table 1. Holding Times.

Analyte	Sampling Date	Leach Date	Analysis Date	SW-846 Holding Time	Elapsed Time
pH	9/18/06	10/3/06	10/3/06	As soon as possible after leach	<3 hour
VOC	9/18/06	NA	10/23/06	14 days	35 Days

4.0 ANALYTICAL RESULTS

The Data Summary Report in Attachment 1 presents the analytical results for the requested analytes. The column labeled "A#" indicate the aliquot class or the method used for sample preparation before analysis. The "A" and "E" indicate an acid digestion of a solid sample. The pH analysis does not have an aliquot class because the sample preparation is performed as a part of the procedure steps. The total organic carbon (TOC) and % moisture do not have an aliquot class because there is no preparation prior to analysis.

The "Qual Flags" column in the Data Summary Report contains data qualifier flags that are defined as follows:

a. "U" indicates that the reported result is less than the calculated method detection limit (MDL).

b. "J" is applied to reported results that are between the MDL and the laboratory's quantitation limit. Results with a "J" flag should be considered an estimate because of increased uncertainty near the method detection limit. In addition VOC results have been flagged with a "J" due to the holding time exceedence.

4.1 QUALITY CONTROL RESULTS

4.1.1 Laboratory Control Samples

The accuracy of the analyses was evaluated from the recovery of a laboratory control sample (LCS). All LCS recoveries were acceptable in accordance with ATL-MP-1011.

4.1.2 Method Blanks

No required analytes were detected in the method blanks for the $^{239/240}$Pu, ^{241}Am, VOC or total organic carbon (TOC) analyses. A low level of ^{235}U and ^{238}U were detected in the preparation

blank, but were less than 5% of the sample result and the result was not qualified, in accordance with ATL-MP-1011.

4.1.3 Duplicate and Matrix Spike Duplicate

The relative percent difference (RPD) between sample and duplicate or matrix spike (MS) and matrix spike duplicate (MSD) results all met the criteria in ATL-MP-1011. The Data Summary Report does not present the recoveries for the MSD analysis or the RPD for the MS/MSD for the VOC analysis. This information is provided in Table 2.

Table 2. MS/MSD Recoveries for Sample B1KH07.

Compound	MS (%)	MSD (%)	RPD (%)
Benzene	109	106	3
Chlorobenzene	108	102	6
1,1 Dichloroethene	109	106	3
Toluene	110	106	4
1,1,2-Trichloroethylene	103	99	4
Acetone[1]	97	78	22
2-Butanone[1]	126	93	30
Methyl Isobutyl Ketone[1]	112	101	10
2-Hexanone[1]	111	99	11

1) Spike compounds not required by method

4.1.4 Matrix Spike

All MS and MSD recoveries were acceptable in accordance with ATL-MP-1011.

4.1.5 Surrogate and Tracer Recoveries

A surrogate standard was added to all field and quality control (QC) samples for VOC. All surrogate recoveries met the requirements in ATL-MP-1011. Tracer standards were add to all field and QC samples for $^{239/240}$Pu and ^{241}Am analyses. All tracer recoveries met the requirements in ATL-MP-1011. The surrogate and trace recoveries for all samples are reported in Attachment 2.

5.0 ANALYTICAL PROCEDURES

Table 3 presents the 222-S Laboratory analytical procedures used for the analysis of the swipe samples.

Table 3. Analytical Procedures.

Analysis	Preparation Procedure	Analysis Procedure
Inorganic		
pH	Direct	LA-212-105 Rev. E-0
TOC	Direct	LA-322-100 Rev. I-0
ICPMS-Isotopic U	LA-505-163 Rev. E-0	LA-506-102 Rec. C-0
% Moisture	Direct	LA-564-101 Rev. H-0
Organic		
VOC	Direct	LA-523-118 Rev. E-0
Radiochemistry		
^{241}Am, $^{239/240}$Pu	LA-544-101 Rev. E-0	LA-953-104 Rev. F-0

6.0 REFERENCES

ATL-MP-1011, 2006, *ATL Quality Assurance Project Plan for 222-S Laboratory*, Revision 5, Advanced Technologies and Laboratories International, Inc., Richland, Washington.

SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, Third Edition, as amended, U.S. Environmental Protection Agency, Washington, D.C., September 1986.

HNF-20433-Data Validation For Chemical Analyses, Rev. 0, June 2004

USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review OSWER 9240.1-05A-P PB99-963506 EPA540/R-99/008 October 1999

USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review OSWER 9240.1-46-P EPA540/R-40/009 January 2005

Holding Times of Volatile Organics in Water D.W. Bottrell et al.(performed at Oak Ridge National Laboratory) Waste Testing and Quality Assurance Third Volume ASTM STP 1075, 1995

Attachment 1

DATA SUMMARY REPORT

Vista Eng. DNAPL Study
Z9 VISTA

Category: R

Customer Group or SDG Number: 20060973

Customer Sample ID: B1KH07 (A)

Sample Portion: Acid Digest

Sample# R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err %	Qual Flags
S06M001083	A	Uranium-233	ug/g	n/a	<1.00E-07	<1.29E-04	1.85E-04	1.57E-04	35.6	n/a	1.29E-04	n/a	U
S06M001083	A	Uranium-234	ug/g	n/a	<5.00E-08	1.05E-03	1.10E-03	1.07E-03	5.34	n/a	6.44E-05	n/a	
S06M001083	A	Uranium-235	ug/g	n/a	1.53E-07	0.0616	0.0640	0.0628	3.84	n/a	1.42E-04	n/a	
S06M001083	A	Uranium-236	ug/g	n/a	<4.00E-08	7.05E-03	6.78E-03	6.92E-03	3.84	n/a	5.16E-05	n/a	
S06M001083	A	Uranium-238	ug/g	105	2.67E-05	4.80	5.00	4.90	4.17	113	7.09E-03	n/a	

Sample Portion: Parent

Sample# R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err %	Qual Flags
S06M001082		pH	pH	n/a	n/a	6.92	6.94	6.93	0.289	n/a	0.0100	n/a	
S06M001082		1,1,1-Trichloroethane	ug/Kg	n/a	<0.200	<0.201	n/a	n/a	n/a	n/a	0.201	n/a	JU
S06M001082		1,1,2,2-Tetrachloroethane	ug/Kg	n/a	<0.500	<0.503	n/a	n/a	n/a	n/a	0.503	n/a	JU
S06M001082		1,1,2-Trichloroethane	ug/Kg	n/a	<0.380	<0.382	n/a	n/a	n/a	n/a	0.382	n/a	JU
S06M001082		1,1-Dichloroethane	ug/Kg	n/a	<0.280	<0.282	n/a	n/a	n/a	n/a	0.282	n/a	JU
S06M001082		1,1-Dichloroethene	ug/Kg	112	<0.340	<0.342	n/a	n/a	n/a	109	0.342	n/a	JU
S06M001082		1,2-Dichlorobenzene	ug/Kg	n/a	<0.400	<0.402	n/a	n/a	n/a	n/a	0.402	n/a	JU
S06M001082		1,2-Dichloroethane	ug/Kg	n/a	<0.180	<0.181	n/a	n/a	n/a	n/a	0.181	n/a	JU
S06M001082		1,2-Dichloroethene (cis & trans)	ug/Kg	n/a	<0.600	<0.604	n/a	n/a	n/a	n/a	0.604	n/a	JU
S06M001082		1,2-Dichloropropane	ug/Kg	n/a	<0.400	<0.402	n/a	n/a	n/a	n/a	0.402	n/a	JU
S06M001082		1,3-Dichlorobenzene	ug/Kg	n/a	<0.320	<0.322	n/a	n/a	n/a	n/a	0.322	n/a	JU
S06M001082		1,4-Dichlorobenzene	ug/Kg	n/a	<0.340	<0.342	n/a	n/a	n/a	n/a	0.342	n/a	JU
S06M001082		2-Butanone	ug/Kg	n/a	<2.66	<2.68	n/a	n/a	n/a	n/a	2.68	n/a	JU
S06M001082		2-Hexanone	ug/Kg	n/a	<1.72	<1.73	n/a	n/a	n/a	n/a	1.73	n/a	JU
S06M001082		2-Pentanone	ug/Kg	n/a	<3.02	<3.04	n/a	n/a	n/a	n/a	3.04	n/a	JU
S06M001082		4-Methyl-2-pentanone	ug/Kg	n/a	<1.76	<1.77	n/a	n/a	n/a	n/a	1.77	n/a	JU
S06M001082		Acetone	ug/Kg	n/a	<4.38	7.36	n/a	n/a	n/a	n/a	4.41	n/a	J
S06M001082		Benzene	ug/Kg	105	<0.320	<0.322	n/a	n/a	n/a	109	0.322	n/a	JU
S06M001082		Bromodichloromethane	ug/Kg	n/a	<0.140	<0.141	n/a	n/a	n/a	n/a	0.141	n/a	JU
S06M001082		Bromoform	ug/Kg	n/a	<0.360	<0.362	n/a	n/a	n/a	n/a	0.362	n/a	JU
S06M001082		Bromomethane	ug/Kg	n/a	<0.980	<0.986	n/a	n/a	n/a	n/a	0.986	n/a	JU

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Vista Eng. DNAPL Study
Z9 VISTA

Category: R
Customer Group or SDG Number: 20060973
Customer Sample ID: B1KH07 (A)
Sample Portion: Parent

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err %	Qual Flags
S06M001082			Carbon Disulfide	ug/Kg	n/a	<0.300	<0.302	n/a	n/a	n/a	n/a	0.302	n/a	JU
S06M001082			Carbon Tetrachloride	ug/Kg	n/a	<0.300	<0.302	n/a	n/a	n/a	n/a	0.302	n/a	JU
S06M001082			Chlorobenzene	ug/Kg	106	<0.220	0.265	n/a	n/a	n/a	108	0.221	n/a	J
S06M001082			Chloroethane	ug/Kg	n/a	<1.60	<1.61	n/a	n/a	n/a	n/a	1.61	n/a	JU
S06M001082			Chloroform	ug/Kg	n/a	<0.180	<0.181	n/a	n/a	n/a	n/a	0.181	n/a	JU
S06M001082			Chloromethane	ug/Kg	n/a	<0.620	<0.624	n/a	n/a	n/a	n/a	0.624	n/a	JU
S06M001082			Dibromochloromethane	ug/Kg	n/a	<0.260	<0.262	n/a	n/a	n/a	n/a	0.262	n/a	JU
S06M001082			Ethylbenzene	ug/Kg	n/a	<0.240	<0.241	n/a	n/a	n/a	n/a	0.241	n/a	JU
S06M001082			Methylene Chloride	ug/Kg	n/a	<0.340	<0.342	n/a	n/a	n/a	n/a	0.342	n/a	JU
S06M001082			Styrene	ug/Kg	n/a	<0.200	<0.201	n/a	n/a	n/a	n/a	0.201	n/a	JU
S06M001082			Tetrachloroethene	ug/Kg	n/a	<0.400	<0.402	n/a	n/a	n/a	n/a	0.402	n/a	JU
S06M001082			Tetrahydrofuran	ug/Kg	n/a	<15.6	<15.7	n/a	n/a	n/a	n/a	15.7	n/a	JU
S06M001082			Toluene	ug/Kg	107	<0.240	0.721	n/a	n/a	n/a	110	0.241	n/a	J
S06M001082			Total Trihalomethanes	ug/Kg	n/a	<0.920	<0.926	n/a	n/a	n/a	n/a	0.926	n/a	JU
S06M001082			Trichloroethene	ug/Kg	101	<0.300	<0.302	n/a	n/a	n/a	103	0.302	n/a	JU
S06M001082			Vinyl Chloride	ug/Kg	n/a	<0.640	<0.644	n/a	n/a	n/a	n/a	0.644	n/a	JU
S06M001082			Xylenes (total)	ug/Kg	n/a	<0.620	<0.624	n/a	n/a	n/a	n/a	0.624	n/a	JU
S06M001082			cis-1,3-Dichloropropene	ug/Kg	n/a	<0.240	<0.241	n/a	n/a	n/a	n/a	0.241	n/a	JU
S06M001082			trans-1,3-Dichloropropene	ug/Kg	n/a	<0.140	<0.141	n/a	n/a	n/a	n/a	0.141	n/a	JU
S06M001082			Total Organic Carbon	ug/g	92.0	<20.0	282	238	260	16.9	88.0	35.0	n/a	J

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Vista Eng. DNAPL Study
Z9 VISTA

Category: R

Customer Group or SDG Number: 20060973

Customer Sample ID: B1KH07 (B)

Sample Portion: Env Digest

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err %	Qual Flags
S06M001085		E	Plutonium-238	uCi/g	n/a	<2.06E-03	<5.21E-03	<5.33E-03	n/a	2.28	n/a	5.21E-03	8.66	U
S06M001085		E	Plutonium-239/240	uCi/g	93.9	<2.06E-03	0.104	0.106	0.105	1.90	n/a	5.21E-03	1.93	
S06M001085		E	Americium-241	uCi/g	98.7	<5.37E-03	0.0595	0.0610	0.0602	2.49	n/a	0.0124	2.89	

Sample Portion: Parent

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err %	Qual Flags
S06M001084			%WATER	%	97.8	n/a	2.95	2.84	2.90	3.80	n/a	0.0100	n/a	

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Vista Eng. DNAPL Study
Z9 VISTA

Category: R
Customer Group or SDG Number: 20060973
Customer Sample ID: B1KKX0 (vial 4)
Sample Portion: Parent

Sample# R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err %	Qual Flags
S06M001086		1,1,1-Trichloroethane	ug/L	n/a	<0.100	<0.100	n/a	n/a	n/a	n/a	0.100	n/a	JU
S06M001086		1,1,2,2-Tetrachloroethane	ug/L	n/a	<0.250	<0.250	n/a	n/a	n/a	n/a	0.250	n/a	JU
S06M001086		1,1,2-Trichloroethane	ug/L	n/a	<0.190	<0.190	n/a	n/a	n/a	n/a	0.190	n/a	JU
S06M001086		1,1-Dichloroethane	ug/L	n/a	<0.140	<0.140	n/a	n/a	n/a	n/a	0.140	n/a	JU
S06M001086		1,1-Dichloroethene	ug/L	116	<0.170	<0.170	n/a	n/a	n/a	n/a	0.170	n/a	JU
S06M001086		1,2-Dichlorobenzene	ug/L	n/a	<0.200	<0.200	n/a	n/a	n/a	n/a	0.200	n/a	JU
S06M001086		1,2-Dichloroethane	ug/L	n/a	<0.0900	<0.0900	n/a	n/a	n/a	n/a	0.0900	n/a	JU
S06M001086		1,2-Dichloroethene (cis & trans)	ug/L	n/a	<0.300	<0.300	n/a	n/a	n/a	n/a	0.300	n/a	JU
S06M001086		1,2-Dichloropropane	ug/L	n/a	<0.200	<0.200	n/a	n/a	n/a	n/a	0.200	n/a	JU
S06M001086		1,3-Dichlorobenzene	ug/L	n/a	<0.160	<0.160	n/a	n/a	n/a	n/a	0.160	n/a	JU
S06M001086		1,4-Dichlorobenzene	ug/L	n/a	<0.170	<0.170	n/a	n/a	n/a	n/a	0.170	n/a	JU
S06M001086		2-Butanone	ug/L	n/a	<1.33	<1.33	n/a	n/a	n/a	n/a	1.33	n/a	JU
S06M001086		2-Hexanone	ug/L	n/a	<0.860	<0.860	n/a	n/a	n/a	n/a	0.860	n/a	JU
S06M001086		2-Pentanone	ug/L	n/a	<1.51	<1.51	n/a	n/a	n/a	n/a	1.51	n/a	JU
S06M001086		4-Methyl-2-pentanone	ug/L	n/a	<0.880	<0.880	n/a	n/a	n/a	n/a	0.880	n/a	JU
S06M001086		Acetone	ug/L	n/a	<2.19	<2.19	n/a	n/a	n/a	n/a	2.19	n/a	JU
S06M001086		Benzene	ug/L	104	<0.160	<0.160	n/a	n/a	n/a	n/a	0.160	n/a	JU
S06M001086		Bromodichloromethane	ug/L	n/a	<0.0700	<0.0700	n/a	n/a	n/a	n/a	0.0700	n/a	JU
S06M001086		Bromoform	ug/L	n/a	<0.180	<0.180	n/a	n/a	n/a	n/a	0.180	n/a	JU
S06M001086		Bromomethane	ug/L	n/a	<0.490	<0.490	n/a	n/a	n/a	n/a	0.490	n/a	JU
S06M001086		Carbon Disulfide	ug/L	n/a	<0.150	<0.150	n/a	n/a	n/a	n/a	0.150	n/a	JU
S06M001086		Carbon Tetrachloride	ug/L	n/a	<0.150	<0.150	n/a	n/a	n/a	n/a	0.150	n/a	JU
S06M001086		Chlorobenzene	ug/L	103	<0.110	<0.110	n/a	n/a	n/a	n/a	0.110	n/a	JU
S06M001086		Chloroethane	ug/L	n/a	<0.800	<0.800	n/a	n/a	n/a	n/a	0.800	n/a	JU
S06M001086		Chloroform	ug/L	n/a	<0.0900	<0.0900	n/a	n/a	n/a	n/a	0.0900	n/a	JU
S06M001086		Chloromethane	ug/L	n/a	<0.310	<0.310	n/a	n/a	n/a	n/a	0.310	n/a	JU
S06M001086		Dibromochloromethane	ug/L	n/a	<0.130	<0.130	n/a	n/a	n/a	n/a	0.130	n/a	JU
S06M001086		Ethylbenzene	ug/L	n/a	<0.120	<0.120	n/a	n/a	n/a	n/a	0.120	n/a	JU
S06M001086		Methylene Chloride	ug/L	n/a	<0.170	2.33	n/a	n/a	n/a	n/a	0.170	n/a	J

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Vista Eng. DNAPL Study
Z9 VISTA

Category: R

Customer Group or SDG Number: 20060973

Customer Sample ID: B1KKX0 (vial 4)

Sample Portion: Parent

Sample# R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err %	Qual Flags
S06M001086		Styrene	ug/L	n/a	<0.100	<0.100	n/a	n/a	n/a	n/a	0.100	n/a	JU
S06M001086		Tetrachloroethene	ug/L	n/a	<0.200	<0.200	n/a	n/a	n/a	n/a	0.200	n/a	JU
S06M001086		Tetrahydrofuran	ug/L	n/a	<0.250	<0.250	n/a	n/a	n/a	n/a	0.250	n/a	JU
S06M001086		Toluene	ug/L	106	<0.120	<0.120	n/a	n/a	n/a	n/a	0.120	n/a	JU
S06M001086		Total Trihalomethanes	ug/L	n/a	<0.460	<0.460	n/a	n/a	n/a	n/a	0.460	n/a	JU
S06M001086		Trichloroethene	ug/L	99.3	<0.150	<0.150	n/a	n/a	n/a	n/a	0.150	n/a	JU
S06M001086		Vinyl Chloride	ug/L	n/a	<0.320	<0.320	n/a	n/a	n/a	n/a	0.320	n/a	JU
S06M001086		Xylenes (total)	ug/L	n/a	<0.310	<0.310	n/a	n/a	n/a	n/a	0.310	n/a	JU
S06M001086		cis-1,3-Dichloropropene	ug/L	n/a	<0.120	<0.120	n/a	n/a	n/a	n/a	0.120	n/a	JU
S06M001086		trans-1,3-Dichloropropene	ug/L	n/a	<0.0700	<0.0700	n/a	n/a	n/a	n/a	0.0700	n/a	JU

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Attachment 2

SURROGATE AND TRACER RECOVERIES

2B

SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: 20060973

Level: (low/med) LOW

	EPA SAMPLE NO.	SMC1 #	SMC2 (DCE) #	SMC3 (TOL) #	OTHER (BFB) #	TOT OUT
01	CCB	104	105	110	109	0
02	LCS	113	125	118	120	0
03	S06M01082	108	121	106	118	0
04	S06M01082MS	107	117	111	113	0
05	S06M01082MSD	102	112	106	105	0
06	S06M01082	104	114	105	111	0
07	S06M01082	104	115	107	112	0
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

		QC LIMITS
SMC1	= Dibromofluoromethane	(70-130)
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(70-130)
SMC3 (TOL)	= Toluene-d8	(70-130)
OTHER (BFB)	= Bromofluorobenzene	(70-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

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WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: 20060973LIQ

	EPA SAMPLE NO.	SMC1 #	SMC2 (DCE)#	SMC3 (TOL)#	OTHER (BFB)#	TOT OUT
01	CCB	99	104	104	101	0
02	LCS	98	110	105	103	0
03	S06M001086	102	103	104	107	0
04	S06M001086	102	108	106	111	0
05						
06						
07						
08						
09						
10						
11						
12						
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30						

		QC LIMITS
SMC1	= Dibromofluoromethane	(70-130)
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(70-130)
SMC3 (TOL)	= Toluene-d8	(70-130)
OTHER(BFB)	= Bromofluorobenzene	(70-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

Attachment 3

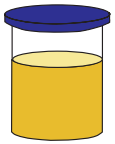
SAMPLE BREAKDOWN DIAGRAM

Lab Project ID: Z9 VISTA
Sample Group No.: 20060973

B1KH07

60 mL glass

Store in VOA Frig



A

S06M001082

VOA 222S(MS/MSD)
TIC/TOC(DUP)
pH(DUP)

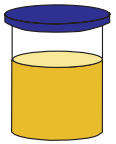
ACID Digest

S06M001083

MS URANIUM(SPK, DUP)

B1KH07

60 mL glass



B

S06M001084

% Moisture (Dup)

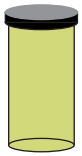
Environmental Digest

S06M0001085

PLUTONIUM (DUP)
AMERICIUM (DUP)
(assign Environmental Digest)

B1KKX0

40 mL VOA Vial(4)



S06M001086

VOA 222

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Attachment 4

RECEIPT PAPERWORK

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F06-025-014	PAGE 1 OF 1
COLLECTOR HULSE, KB	**COMPANY CONTACT** **TELEPHONE NO.** BRATTON, W		**PROJECT COORDINATOR** TRENT, SJ	**PRICE CODE** 7O **AIR QUALITY** ☐
SAMPLING LOCATION P67	**PROJECT DESIGNATION** 216-Z-9, 216-Z-1A, & 216-Z-18 DPT Samples - Vista Engineering DNAPL St		**SAF NO.** F06-025	**DATA TURNAROUND** 60 Days / 60 Days
ICE CHEST NO. #010	**FIELD LOGBOOK NO.** DTS-SAWS-H87	**COA** 119305ES10	**METHOD OF SHIPMENT** GOVERNMENT VEHICLE	
SHIPPED TO 222-S Lab Operations	**OFFSITE PROPERTY NO.**		**BILL OF LADING/AIR BILL NO.**	

MATRIX*
OL = OTHER LIQUID
OS = OTHER SOLID
S = SOIL
W = WATER

SPECIAL HANDLING AND/OR STORAGE

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

SAMPLE NO.	LAB ID	MATRIX*	SAMPLE DATE	SAMPLE TIME	NO./TYPE CONTAINER(S)	ANALYSIS	PRESERVATION
B1KKX0		W	9/19/06	0800	4X40mL aGs*	VOA - 8260B - COMPLETE;	HCl or H2SO4 to pH <2/Cool 4C

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**	
KB Hulse KB Hulse	9/21/06 1030	KJ. Young KJ Young	9/21/06 1030	
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**	
KJ. Young KJ Young	9/21/06 1100	RT Steele RT Steele	9/21/06 1100	
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**	
RELINQUISHED BY/REMOVED FROM	**DATE/TIME**	**RECEIVED BY/STORED IN**	**DATE/TIME**	

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

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Fluor Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F06-007-055	PAGE 1 OF 1
COLLECTOR: KB Hulse / KJ. Young	COMPANY CONTACT: BRATTON, W	TELEPHONE NO.	PROJECT COORDINATOR: TRENT, SJ	PRICE CODE: 8N; DATA TURNAROUND: 45 Days / 45 Days
SAMPLING LOCATION	PROJECT DESIGNATION: 216-Z-9, 216-Z-1A, & 216-Z-18 DPT Samples - Vista Engineering DNAPL S		SAF NO.: F06-007	AIR QUALITY: ☐
ICE CHEST NO.: #010	FIELD LOGBOOK NO.: DTS-SAWS-H87	COA: 119305ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	
SHIPPED TO: Severn Trent St. Louis	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.	

MATRIX*
OL = OTHER LIQUID
OS = OTHER SOLID
S = SOIL
W = WATER

SPECIAL HANDLING AND/OR STORAGE

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

SAMPLE NO.	LAB ID	MATRIX*	SAMPLE DATE	SAMPLE TIME	NO./TYPE CONTAINER(S)	ANALYSIS	PRESERVATION
B1KH07		S	9/18/06	0845	1X60mL aG	VOA - 8260B (TCL);	Cool 4C
B1KH07		S			1X60mL G/P	Americium-241; Isotopic Plutonium; Isotopic Uranium;	None
B1KH07		S			1X60mL aG	~~TOC - 415.1 (TOC); pH (Soil) - 9045;~~ KJ	Cool 4C

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

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
KJ. Young KJ Young	9/21/06 1100	RStteele RStteele	9/21/06 1100
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
Only (2) Sample bottles Shipped
Combine Americium-241 And
TOC, from (1) 60ml G

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

NOVEMBER 2, 2006
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Group #: 20060923

222-S Laboratory
Sample Receipt and Chain of Custody Verification Checklist

COC #: _____ Date Samples Received: 9/21/06

Customer Project Name: _____ Number of Samples: 2

Sample Custodian: _____

Sample Custodian to Complete:

Action	OK? (Y/N)	N/A	Comments
RSA or COC provided?	✓		
RSR provided?	✓		
Verify GKI is complete	✓		
Check that outer custody seal is intact, if present	✓		
Record cooler temperature, as appropriate		✓	☐ check if no cooler & no ice
Samples are intact & in good condition	✓		If no, provide comments on back
Verify that COC or RSA is accurate & complete, containing the following information:			
• Client name & client sample number	✓		
• Date & time of sampling	✓		
• Sampling location or origin	✓		
• Container type, size, and number	✓		
• Sample preservation, as appropriate		✓	Stored in VoA Fridge
• Analysis request is clear	✓		
• Signature of persons relinquishing & receiving samples	✓		
• Date & time of sample custody exchange	✓		
Verify that sample numbers on containers match the COC and/or RSA	✓		
Samples stored properly (e.g., refrigeration)	✓		upon recpt

Notify the PC immediately if any problems are noted. Temp. Blank was in bag w/ samples unable to check temp @ Recpt. Blue ice present.

PC to Complete:

Samples acceptable for release? yes PC Initials DPR Date 9/25/06

If no, comment on communication and resolution: Alpha worksheet signed by HPT prior to release

Version 5/23/06

GENERATOR KNOWLEDGE INFORMATION

1. Chain of Custody Number F06-007-060 F06-007-658 CACN/COA VET PO Customer Identification Number B1KH08 & B1KH80

2. List generator knowledge or description of process that produced sample. Or list description of sample source:
Push Sampling at 2-9 CRIB

MSDS Available? (X) No ( ) Yes Hanford MSDS No. _____

3. List all waste codes and constituents associated with the waste or media that was sampled, regardless of CERCLA status.

a) Does the sample contain any of the following listed waste codes?

By checking "unknown" the customer understands that no knowledge is available following a careful search.

	List Federal Waste Code(s):	List Constituent(s):			
P Codes:			( ) Yes	(X) No	( ) Unknown
U Codes:			( ) Yes	(X) No	( ) Unknown
K Codes:			( ) Yes	(X) No	( ) Unknown
F Codes:	F001	Carbontet	(X) Yes	( ) No	( ) Unknown

b) List applicable characteristic waste codes, flash point, pH, constituents, and concentrations as appropriate.

D001:	[ ] FP <100°F	[ ] FP ≥100 <140°F	[ ] DOT Oxidizer	( ) Yes	(X) No	( ) Unknown
D002:	[ ] pH ≤2	[ ] pH ≥12.5	[ ] Solid Corrosive (WSC2)	( ) Yes	(X) No	( ) Unknown
D003:	[ ] Cyanide	[ ] Sulfide	[ ] Water Reactive	[ ] Other _____ (i.e., peroxide former, explosive, air reactive)	( ) Yes	(X) No	( ) Unknown
D004-D043 (Identify applicable waste codes and concentrations):					( ) Yes	(X) No	( ) Unknown

c) If characteristic, list any known underlying hazardous constituents (UHCs) reasonably expected to be present, and their concentrations that may be present above the LDR treatment standard (40 CFR 268.48):

NONE

d) List any known Land Disposal Restrictions (LDR) subcategories, if applicable (40 CFR 268.40):

NONE

e) List any applicable Washington State dangerous waste codes: (not required if federally regulated)

WT01:	( ) Yes	(X) No	( ) Unknown
WT02:	( ) Yes	(X) No	( ) Unknown
W001:	( ) Yes	(X) No	( ) Unknown

List constituents and concentrations:

(*State mixture rule for ignitability)

WP01:	( ) Yes	(X) No	( ) Unknown
WP02:	( ) Yes	(X) No	( ) Unknown
WP03:	( ) Yes	(X) No	( ) Unknown
F003:*	( ) Yes	(X) No	( ) Unknown

4. Is this material TSCA regulated for PCBs? ( ) Yes (X) No ( ) Unknown ( ) Analysis Requested

List concentration if applicable: _____

If yes, what is the source of the PCBs? (see TSCA PCB Hanford Site User Guide, DOE/RL-2001-50)

[ ] PCB Liquid Waste [ ] PCB Bulk Product Waste [ ] PCB Transformer ≥500 ppm [ ] Unknown
[ ] PCB Remediation Waste [ ] PCB R&D Waste [ ] PCB contaminated electrical equipment (capacitor/ballast) <500 ppm
[ ] PCB Spill Material [ ] PCB Item [ ] Other PCB Waste (list) _____

5. Is this material TRU? ( ) Yes ( ) No (X) Unknown

6 ACCURACY OF INFORMATION

Based on my inquiry of those individuals immediately responsible for obtaining this information, that to the best of my knowledge, the information entered in this document is true, accurate, and complete.

Print & Sign Rochelle Hales Rochelle Hales Date 9/26/06