NOVEMBER 30, 2006

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

Sample Group No. 20061133

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

1.0 INTRODUCTION

One soil sample, a trip blank, and an equipment blank from the Vista Engineering DNAPL Study were received at the 222-S Laboratory on November 2, 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 and recoveries for the volatile organic compounds (VOC) analysis 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. Receipt paperwork in presented in Attachment 4. Attachment 5 contains an email communication.

2.0 SAMPLE DESCRIPTION AND HANDLING

The samples were received at 6° C with adequate paperwork. Percent moisture analysis was added to the chain of custody by the ATL project coordinator based on verbal communication with the client.

3.0 HOLDING TIMES

SW-846 holding times were referenced for all of the analyses and are presented in Table 1. All holding times were met. In the original analysis of the equipment blank (B1KX34), the methylene chloride result was beyond the calibration range at 40 µg/Kg. The reanalysis of the diluted sample was 30 µg/Kg, but was performed two days beyond the holding time. Since the results are essentially the same and there is a possibility of low bias in the diluted sample due to expired holding, the client instructed the laboratory to report the original results (see email dated November 14, 2006)

4.0 ANALYTICAL RESULTS

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

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 MDL.

c. "c" the relative percent difference (RPD) between the sample and its duplicate is greater than 20%

d. "E" the reported result for an analyte exceeds the instrument calibration range and should be considered as estimated.

Table 1. Holding Times.

Client Sample ID No.	Analyte	Sampling Date	Preparation Date	Analysis Date	SW-846 Holding Time	Elapsed Time
B1L1D8	pH	10/27/06	11/20/06	11/20/6	As soon as possible after leach	<24 hours
B1L1D8	VOC	10/27/06	NA	11/5/06	14 days	9 days
B1KX34	VOC	10/26/06	NA	11/5/06	14 days	10 days
B1L5M5	VOC	11/2/06	NA	11/5/06	14 days	3 Days

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 VOC, the $Pu^{239/240}$, the Am^{241} or the 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 results were not qualified, in accordance with ATL-MP-1011.

4.1.3 Duplicate and Matrix Spike Duplicate

The RPD between sample and duplicate or matrix spike (MS) and matrix spike duplicate (MSD) results all met the criteria in ATL-MP-1011 for the VOC, pH, percent moisture, and inductively coupled mass spectrometer (ICPMS) analyses. 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 and Table 3.

The RPD for the $Pu^{239/240}$ and the Am^{241} analyses exceed the 20% requirement. With the client's consent reanalysis was performed on sample B1L1D7 due to depletion of sample B1L1D8. The results and the RPDs for these analyses were essentially the same as the original. This is indicative of a non-homogeneous matrix. It should be noted that due to the alpha content of these samples, homogenization techniques are limited. The results of the original analysis have been reported in Attachment 1

The RPD for the TOC analysis exceeded the 20% requirement. However since the result for this test were below the quantitation level the requirement does not apply. The RPD for the total inorganic carbon, which is not reported but required to determine TOC, was 1.7%.

4.1.4 Matrix Spike

All MS and MSD recoveries were acceptable in accordance with ATL-MP-1011. The data summary report only displays recoveries for the five method required spiking compounds for the VOC analysis. Four ketone compounds were also in the spiking solution and their recoveries are presented in Table 2 and Table 3 along with the five method required compounds.

Table 2. MS/MSD Recoveries for Sample B1L1D8.

Compound	MS (%)	MSD (%)	RPD (%)
1,1 Dichloroethene	102	98	4
Benzene	102	102	0
1,1,2-Trichloroethylene	97	98	1
Toluene	105	102	3
Chlorobenzene	101	100	1
Acetone[1]	104	114	9
2-Butanone[1]	107	120	11
Methyl Isobutyl Ketone[1]	110	118	7
2-Hexanone[1]	111	122	9

1) Spike compounds not required by method

Table 3. MS/MSD Recoveries for Sample B1L5M5

Compound	MS (%)	MSD (%)	RPD (%)
1,1 Dichloroethene	92	90	2
Benzene	103	103	0
1,1,2-Trichloroethylene	94	93	1
Toluene	99	98	1
Chlorobenzene	100	99	1
Acetone[1]	99	102	3
2-Butanone[1]	104	104	0
Methyl Isobutyl Ketone[1]	111	108	3
2-Hexanone[1]	110	110	0

1) Spike compounds not required by method

4.1.5 Surrogates and Tracers

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 samples presented in this report.

Table 3. Analytical Procedures.

Analysis	Preparation Procedure	Analysis Procedure
Inorganic		
pH	Direct	LA-212-105 Rev. E-0
TOC	Direct	LA-342-100 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		

Table 3. Analytical Procedures.

Analysis	Preparation Procedure	Analysis Procedure
^{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.

Attachment 1

DATA SUMMARY REPORT

Vista Engineering DNPL Study
Z9 VISTA

Sample Group: 20061133

Customer Group or SDG Number: 20061133

Customer Sample ID: B1L1D8

Sample Portion: Acid Digest

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err %	Qual Flags
S06M001127		A	Uranium-233	ug/g	n/a	<2.00E-08	1.34E-04	<1.33E-04	1.34E-04	n/a	n/a	1.33E-04	n/a	J
S06M001127		A	Uranium-234	ug/g	n/a	<1.00E-08	<6.65E-05	<6.64E-05	n/a	n/a	n/a	6.65E-05	n/a	U
S06M001127		A	Uranium-235	ug/g	100	2.70E-08	5.60E-03	6.08E-03	5.84E-03	8.26	97.7	1.46E-04	n/a	
S06M001127		A	Uranium-236	ug/g	n/a	<8.00E-09	1.55E-04	1.28E-04	1.42E-04	19.0	n/a	5.32E-05	n/a	J
S06M001127		A	Uranium-238	ug/g	102	3.63E-06	0.745	0.791	0.768	6.10	98.9	7.31E-03	n/a	

Sample Portion: Environmental Digest

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err %	Qual Flags
S06M001128		E	Americium-241	uCi/g	98.7	<3.81E-04	2.78E-03	2.07E-03	2.42E-03	29.3	n/a	4.74E-04	2.42	c
S06M001128		E	Plutonium-238	uCi/g	n/a	<1.12E-04	<1.01E-03	<8.84E-04	n/a	n/a	n/a	1.01E-03	4.78	U
S06M001128		E	Plutonium-239/240	uCi/g	113	<1.12E-04	0.0256	0.0202	0.0229	23.6	n/a	1.01E-03	1.81	c

Sample Portion: Parent

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err %	Qual Flags
S06M001122			1,1,1-Trichloroethane	ug/Kg	n/a	<0.200	<0.191	n/a	n/a	n/a	n/a	0.191	n/a	U
S06M001122			1,1,2,2-Tetrachloroethane	ug/Kg	n/a	<0.500	<0.478	n/a	n/a	n/a	n/a	0.478	n/a	U
S06M001122			1,1,2-Trichloroethane	ug/Kg	n/a	<0.380	<0.364	n/a	n/a	n/a	n/a	0.364	n/a	U
S06M001122			1,1-Dichloroethane	ug/Kg	n/a	<0.280	<0.268	n/a	n/a	n/a	n/a	0.268	n/a	U
S06M001122			1,1-Dichloroethene	ug/Kg	95.0	<0.340	<0.325	n/a	n/a	n/a	102	0.325	n/a	U
S06M001122			1,2-Dichlorobenzene	ug/Kg	n/a	<0.400	<0.383	n/a	n/a	n/a	n/a	0.383	n/a	U
S06M001122			1,2-Dichloroethane	ug/Kg	n/a	<0.180	<0.172	n/a	n/a	n/a	n/a	0.172	n/a	U
S06M001122			1,2-Dichloroethene (cis & trans)	ug/Kg	n/a	<0.600	<0.574	n/a	n/a	n/a	n/a	0.574	n/a	U
S06M001122			1,2-Dichloropropane	ug/Kg	n/a	<0.400	<0.383	n/a	n/a	n/a	n/a	0.383	n/a	U
S06M001122			1,3-Dichlorobenzene	ug/Kg	n/a	<0.320	<0.306	n/a	n/a	n/a	n/a	0.306	n/a	U
S06M001122			1,4-Dichlorobenzene	ug/Kg	n/a	<0.340	<0.325	n/a	n/a	n/a	n/a	0.325	n/a	U
S06M001122			1-Butanol	ug/Kg	n/a	0.0	0.0	n/a	n/a	n/a	n/a	0.0	n/a	U
S06M001122			2-Butanone	ug/Kg	n/a	<2.66	<2.55	n/a	n/a	n/a	n/a	2.55	n/a	U
S06M001122			2-Hexanone	ug/Kg	n/a	<1.72	<1.65	n/a	n/a	n/a	n/a	1.65	n/a	U

NOVEMBER 30, 2006
20061133

Vista Engineering DNPL Study
Z9 VISTA

Sample Group: 20061133
Customer Group or SDG Number: 20061133
Customer Sample ID: B1L1D8
Sample Portion: Parent

Sample# R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err %	Qual Flags
S06M001122		2-Pentanone	ug/Kg	n/a	<3.02	<2.89	n/a	n/a	n/a	n/a	2.89	n/a	U
S06M001122		4-Methyl-2-pentanone	ug/Kg	n/a	<1.76	<1.68	n/a	n/a	n/a	n/a	1.68	n/a	U
S06M001122		Acetone	ug/Kg	n/a	<4.38	4.52	n/a	n/a	n/a	n/a	4.19	n/a	J
S06M001122		Benzene	ug/Kg	100	<0.320	<0.306	n/a	n/a	n/a	102	0.306	n/a	U
S06M001122		Bromodichloromethane	ug/Kg	n/a	<0.140	<0.134	n/a	n/a	n/a	n/a	0.134	n/a	U
S06M001122		Bromoform	ug/Kg	n/a	<0.360	<0.345	n/a	n/a	n/a	n/a	0.345	n/a	U
S06M001122		Bromomethane	ug/Kg	n/a	<0.980	<0.938	n/a	n/a	n/a	n/a	0.938	n/a	U
S06M001122		Carbon Disulfide	ug/Kg	n/a	<0.300	<0.287	n/a	n/a	n/a	n/a	0.287	n/a	U
S06M001122		Carbon Tetrachloride	ug/Kg	n/a	<0.300	<0.287	n/a	n/a	n/a	n/a	0.287	n/a	U
S06M001122		Chlorobenzene	ug/Kg	101	<0.220	<0.211	n/a	n/a	n/a	101	0.211	n/a	U
S06M001122		Chloroethane	ug/Kg	n/a	<1.60	<1.53	n/a	n/a	n/a	n/a	1.53	n/a	U
S06M001122		Chloroform	ug/Kg	n/a	<0.180	<0.172	n/a	n/a	n/a	n/a	0.172	n/a	U
S06M001122		Chloromethane	ug/Kg	n/a	<0.620	<0.593	n/a	n/a	n/a	n/a	0.593	n/a	U
S06M001122		Dibromochloromethane	ug/Kg	n/a	<0.260	<0.249	n/a	n/a	n/a	n/a	0.249	n/a	U
S06M001122		Ethylbenzene	ug/Kg	n/a	<0.240	<0.230	n/a	n/a	n/a	n/a	0.230	n/a	U
S06M001122		Methylene Chloride	ug/Kg	n/a	<0.340	<0.325	n/a	n/a	n/a	n/a	0.325	n/a	U
S06M001122		Styrene	ug/Kg	n/a	<0.200	<0.191	n/a	n/a	n/a	n/a	0.191	n/a	U
S06M001122		Tetrachloroethene	ug/Kg	n/a	<0.400	<0.383	n/a	n/a	n/a	n/a	0.383	n/a	U
S06M001122		Tetrahydrofuran	ug/Kg	n/a	<15.6	26.7	n/a	n/a	n/a	n/a	14.9	n/a	J
S06M001122		Toluene	ug/Kg	102	<0.240	<0.230	n/a	n/a	n/a	105	0.230	n/a	U
S06M001122		Total Trihalomethanes	ug/Kg	n/a	<0.920	<0.880	n/a	n/a	n/a	n/a	0.880	n/a	U
S06M001122		Trichloroethene	ug/Kg	97.9	<0.300	<0.287	n/a	n/a	n/a	96.9	0.287	n/a	U
S06M001122		Vinyl Chloride	ug/Kg	n/a	<0.640	<0.612	n/a	n/a	n/a	n/a	0.612	n/a	U
S06M001122		Xylenes (total)	ug/Kg	n/a	<0.620	<0.593	n/a	n/a	n/a	n/a	0.593	n/a	U
S06M001122		cis-1,3-Dichloropropene	ug/Kg	n/a	<0.240	<0.230	n/a	n/a	n/a	n/a	0.230	n/a	U
S06M001122		trans-1,3-Dichloropropene	ug/Kg	n/a	<0.140	<0.134	n/a	n/a	n/a	n/a	0.134	n/a	U
S06M001123		pH	pH	n/a	n/a	8.34	8.36	8.35	0.240	n/a	0.0100	n/a	
S06M001123		Total Organic Carbon	ug/g	94.0	<20.0	225	166	196	30.2	93.9	61.0	n/a	J
S06M001124		%WATER	%	98.2	n/a	13.1	13.5	13.3	3.01	n/a	0.0100	n/a	

NOVEMBER 30, 2006
20061133

Vista Engineering DNPL Study
Z9 VISTA

Sample Group: 20061133
Customer Group or SDG Number: 20061133
Customer Sample ID: B1KX34
Sample Portion: Parent

Sample# R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err %	Qual Flags
S06M001126		1,1,1-Trichloroethane	ug/L	n/a	<0.100	<0.100	n/a	n/a	n/a	n/a	0.100	n/a	U
S06M001126		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	U
S06M001126		1,1,2-Trichloroethane	ug/L	n/a	<0.190	<0.190	n/a	n/a	n/a	n/a	0.190	n/a	U
S06M001126		1,1-Dichloroethane	ug/L	n/a	<0.140	<0.140	n/a	n/a	n/a	n/a	0.140	n/a	U
S06M001126		1,1-Dichloroethene	ug/L	99.6	<0.170	<0.170	n/a	n/a	n/a	n/a	0.170	n/a	U
S06M001126		1,2-Dichlorobenzene	ug/L	n/a	<0.200	<0.200	n/a	n/a	n/a	n/a	0.200	n/a	U
S06M001126		1,2-Dichloroethane	ug/L	n/a	<0.0900	<0.0900	n/a	n/a	n/a	n/a	0.0900	n/a	U
S06M001126		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	U
S06M001126		1,2-Dichloropropane	ug/L	n/a	<0.200	<0.200	n/a	n/a	n/a	n/a	0.200	n/a	U
S06M001126		1,3-Dichlorobenzene	ug/L	n/a	<0.160	<0.160	n/a	n/a	n/a	n/a	0.160	n/a	U
S06M001126		1,4-Dichlorobenzene	ug/L	n/a	<0.170	<0.170	n/a	n/a	n/a	n/a	0.170	n/a	U
S06M001126		1-Butanol	ug/L	n/a	0.0	0.0	n/a	n/a	n/a	n/a	0.0	n/a	U
S06M001126		2-Butanone	ug/L	n/a	<1.33	<1.33	n/a	n/a	n/a	n/a	1.33	n/a	U
S06M001126		2-Hexanone	ug/L	n/a	<0.860	<0.860	n/a	n/a	n/a	n/a	0.860	n/a	U
S06M001126		2-Pentanone	ug/L	n/a	<1.51	<1.51	n/a	n/a	n/a	n/a	1.51	n/a	U
S06M001126		4-Methyl-2-pentanone	ug/L	n/a	<0.880	<0.880	n/a	n/a	n/a	n/a	0.880	n/a	U
S06M001126		Acetone	ug/L	n/a	<2.19	<2.19	n/a	n/a	n/a	n/a	2.19	n/a	U
S06M001126		Benzene	ug/L	102	<0.160	<0.160	n/a	n/a	n/a	n/a	0.160	n/a	U
S06M001126		Bromodichloromethane	ug/L	n/a	<0.0700	<0.0700	n/a	n/a	n/a	n/a	0.0700	n/a	U
S06M001126		Bromoform	ug/L	n/a	<0.180	<0.180	n/a	n/a	n/a	n/a	0.180	n/a	U
S06M001126		Bromomethane	ug/L	n/a	<0.490	<0.490	n/a	n/a	n/a	n/a	0.490	n/a	U
S06M001126		Carbon Disulfide	ug/L	n/a	<0.150	<0.150	n/a	n/a	n/a	n/a	0.150	n/a	U
S06M001126		Carbon Tetrachloride	ug/L	n/a	<0.150	<0.150	n/a	n/a	n/a	n/a	0.150	n/a	U
S06M001126		Chlorobenzene	ug/L	103	<0.110	<0.110	n/a	n/a	n/a	n/a	0.110	n/a	U
S06M001126		Chloroethane	ug/L	n/a	<0.800	<0.800	n/a	n/a	n/a	n/a	0.800	n/a	U
S06M001126		Chloroform	ug/L	n/a	<0.0900	<0.0900	n/a	n/a	n/a	n/a	0.0900	n/a	U
S06M001126		Chloromethane	ug/L	n/a	<0.310	<0.310	n/a	n/a	n/a	n/a	0.310	n/a	U
S06M001126		Dibromochloromethane	ug/L	n/a	<0.130	<0.130	n/a	n/a	n/a	n/a	0.130	n/a	U
S06M001126		Ethylbenzene	ug/L	n/a	<0.120	<0.120	n/a	n/a	n/a	n/a	0.120	n/a	U

NOVEMBER 30, 2006
20061133

Vista Engineering DNPL Study
Z9 VISTA

Sample Group: 20061133
Customer Group or SDG Number: 20061133
Customer Sample ID: B1KX34
Sample Portion: Parent

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err %	Qual Flags
S06M001126			Methylene Chloride	ug/L	n/a	<0.170	40.3	n/a	n/a	n/a	n/a	0.170	n/a	E
S06M001126			Styrene	ug/L	n/a	<0.100	<0.100	n/a	n/a	n/a	n/a	0.100	n/a	U
S06M001126			Tetrachloroethene	ug/L	n/a	<0.200	<0.200	n/a	n/a	n/a	n/a	0.200	n/a	U
S06M001126			Tetrahydrofuran	ug/L	n/a	<0.250	<0.250	n/a	n/a	n/a	n/a	0.250	n/a	U
S06M001126			Toluene	ug/L	105	<0.120	<0.120	n/a	n/a	n/a	n/a	0.120	n/a	U
S06M001126			Total Trihalomethanes	ug/L	n/a	<0.460	<0.460	n/a	n/a	n/a	n/a	0.460	n/a	U
S06M001126			Trichloroethene	ug/L	101	<0.150	<0.150	n/a	n/a	n/a	n/a	0.150	n/a	U
S06M001126			Vinyl Chloride	ug/L	n/a	<0.320	<0.320	n/a	n/a	n/a	n/a	0.320	n/a	U
S06M001126			Xylenes (total)	ug/L	n/a	<0.310	<0.310	n/a	n/a	n/a	n/a	0.310	n/a	U
S06M001126			cis-1,3-Dichloropropene	ug/L	n/a	<0.120	<0.120	n/a	n/a	n/a	n/a	0.120	n/a	U
S06M001126			trans-1,3-Dichloropropene	ug/L	n/a	<0.0700	<0.0700	n/a	n/a	n/a	n/a	0.0700	n/a	U

NOVEMBER 30, 2006
20061133

Vista Engineering DNPL Study
Z9 VISTA

Sample Group: 20061133
Customer Group or SDG Number: 20061133
Customer Sample ID: B1L5M5
Sample Portion: Parent

Sample# R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err %	Qual Flags
S06M001125		1,1,1-Trichloroethane	ug/L	n/a	<0.100	<0.100	n/a	n/a	n/a	n/a	0.100	n/a	U
S06M001125		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	U
S06M001125		1,1,2-Trichloroethane	ug/L	n/a	<0.190	<0.190	n/a	n/a	n/a	n/a	0.190	n/a	U
S06M001125		1,1-Dichloroethane	ug/L	n/a	<0.140	<0.140	n/a	n/a	n/a	n/a	0.140	n/a	U
S06M001125		1,1-Dichloroethene	ug/L	99.6	<0.170	<0.170	n/a	n/a	n/a	91.8	0.170	n/a	U
S06M001125		1,2-Dichlorobenzene	ug/L	n/a	<0.200	<0.200	n/a	n/a	n/a	n/a	0.200	n/a	U
S06M001125		1,2-Dichloroethane	ug/L	n/a	<0.0900	<0.0900	n/a	n/a	n/a	n/a	0.0900	n/a	U
S06M001125		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	U
S06M001125		1,2-Dichloropropane	ug/L	n/a	<0.200	<0.200	n/a	n/a	n/a	n/a	0.200	n/a	U
S06M001125		1,3-Dichlorobenzene	ug/L	n/a	<0.160	<0.160	n/a	n/a	n/a	n/a	0.160	n/a	U
S06M001125		1,4-Dichlorobenzene	ug/L	n/a	<0.170	<0.170	n/a	n/a	n/a	n/a	0.170	n/a	U
S06M001125		1-Butanol	ug/L	n/a	0.0	0.0	n/a	n/a	n/a	n/a	0.0	n/a	U
S06M001125		2-Butanone	ug/L	n/a	<1.33	<1.33	n/a	n/a	n/a	n/a	1.33	n/a	U
S06M001125		2-Hexanone	ug/L	n/a	<0.860	<0.860	n/a	n/a	n/a	n/a	0.860	n/a	U
S06M001125		2-Pentanone	ug/L	n/a	<1.51	<1.51	n/a	n/a	n/a	n/a	1.51	n/a	U
S06M001125		4-Methyl-2-pentanone	ug/L	n/a	<0.880	<0.880	n/a	n/a	n/a	n/a	0.880	n/a	U
S06M001125		Acetone	ug/L	n/a	<2.19	<2.19	n/a	n/a	n/a	n/a	2.19	n/a	U
S06M001125		Benzene	ug/L	102	<0.160	<0.160	n/a	n/a	n/a	103	0.160	n/a	U
S06M001125		Bromodichloromethane	ug/L	n/a	<0.0700	<0.0700	n/a	n/a	n/a	n/a	0.0700	n/a	U
S06M001125		Bromoform	ug/L	n/a	<0.180	<0.180	n/a	n/a	n/a	n/a	0.180	n/a	U
S06M001125		Bromomethane	ug/L	n/a	<0.490	<0.490	n/a	n/a	n/a	n/a	0.490	n/a	U
S06M001125		Carbon Disulfide	ug/L	n/a	<0.150	<0.150	n/a	n/a	n/a	n/a	0.150	n/a	U
S06M001125		Carbon Tetrachloride	ug/L	n/a	<0.150	<0.150	n/a	n/a	n/a	n/a	0.150	n/a	U
S06M001125		Chlorobenzene	ug/L	103	<0.110	<0.110	n/a	n/a	n/a	100	0.110	n/a	U
S06M001125		Chloroethane	ug/L	n/a	<0.800	<0.800	n/a	n/a	n/a	n/a	0.800	n/a	U
S06M001125		Chloroform	ug/L	n/a	<0.0900	<0.0900	n/a	n/a	n/a	n/a	0.0900	n/a	U
S06M001125		Chloromethane	ug/L	n/a	<0.310	<0.310	n/a	n/a	n/a	n/a	0.310	n/a	U
S06M001125		Dibromochloromethane	ug/L	n/a	<0.130	<0.130	n/a	n/a	n/a	n/a	0.130	n/a	U
S06M001125		Ethylbenzene	ug/L	n/a	<0.120	<0.120	n/a	n/a	n/a	n/a	0.120	n/a	U

NOVEMBER 30, 2006
20061133

Vista Engineering DNPL Study
Z9 VISTA

Sample Group: 20061133
Customer Group or SDG Number: 20061133
Customer Sample ID: B1L5M5
Sample Portion: Parent

Sample# R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err %	Qual Flags
S06M001125		Methylene Chloride	ug/L	n/a	<0.170	4.01	n/a	n/a	n/a	n/a	0.170	n/a	
S06M001125		Styrene	ug/L	n/a	<0.100	<0.100	n/a	n/a	n/a	n/a	0.100	n/a	U
S06M001125		Tetrachloroethene	ug/L	n/a	<0.200	<0.200	n/a	n/a	n/a	n/a	0.200	n/a	U
S06M001125		Tetrahydrofuran	ug/L	n/a	<0.250	<0.250	n/a	n/a	n/a	n/a	0.250	n/a	U
S06M001125		Toluene	ug/L	105	<0.120	<0.120	n/a	n/a	n/a	98.7	0.120	n/a	U
S06M001125		Total Trihalomethanes	ug/L	n/a	<0.460	<0.460	n/a	n/a	n/a	n/a	0.460	n/a	U
S06M001125		Trichloroethene	ug/L	101	<0.150	<0.150	n/a	n/a	n/a	93.6	0.150	n/a	U
S06M001125		Vinyl Chloride	ug/L	n/a	<0.320	<0.320	n/a	n/a	n/a	n/a	0.320	n/a	U
S06M001125		Xylenes (total)	ug/L	n/a	<0.310	<0.310	n/a	n/a	n/a	n/a	0.310	n/a	U
S06M001125		cis-1,3-Dichloropropene	ug/L	n/a	<0.120	<0.120	n/a	n/a	n/a	n/a	0.120	n/a	U
S06M001125		trans-1,3-Dichloropropene	ug/L	n/a	<0.0700	<0.0700	n/a	n/a	n/a	n/a	0.0700	n/a	U

NOVEMBER 30, 2006
20061133

Attachment 2

SURROGATE AND TRACER RECOVERIES

2B
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: 20061133

Level:(low/med) LOW

	EPA SAMPLE NO.	SMC1 #	SMC2 (DCE) #	SMC3 (TOL) #	OTHER (BFB) #	TOT OUT
01	CCB	98	104	99	100	0
02	LCS	97	101	101	101	0
03	S06M001122	107	118	108	113	0
04	S06M001122MS	103	114	102	108	0
05	S06M001122MS	104	116	100	105	0
06						
07						
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

2A
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: 20061133

	EPA SAMPLE NO.	SMC1 #	SMC2 (DCE) #	SMC3 (TOL) #	OTHER (BFB) #	TOT OUT
01	CCB	96	100	100	105	0
02	LCS	96	99	102	102	0
03	S06M001125	102	112	101	100	0
04	S06M001125MS	102	108	98	104	0
05	S06M001125MS	105	112	97	107	0
06	S06M001126	104	114	102	105	0
07						
08						
09						
10						
11						
12						
13						
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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

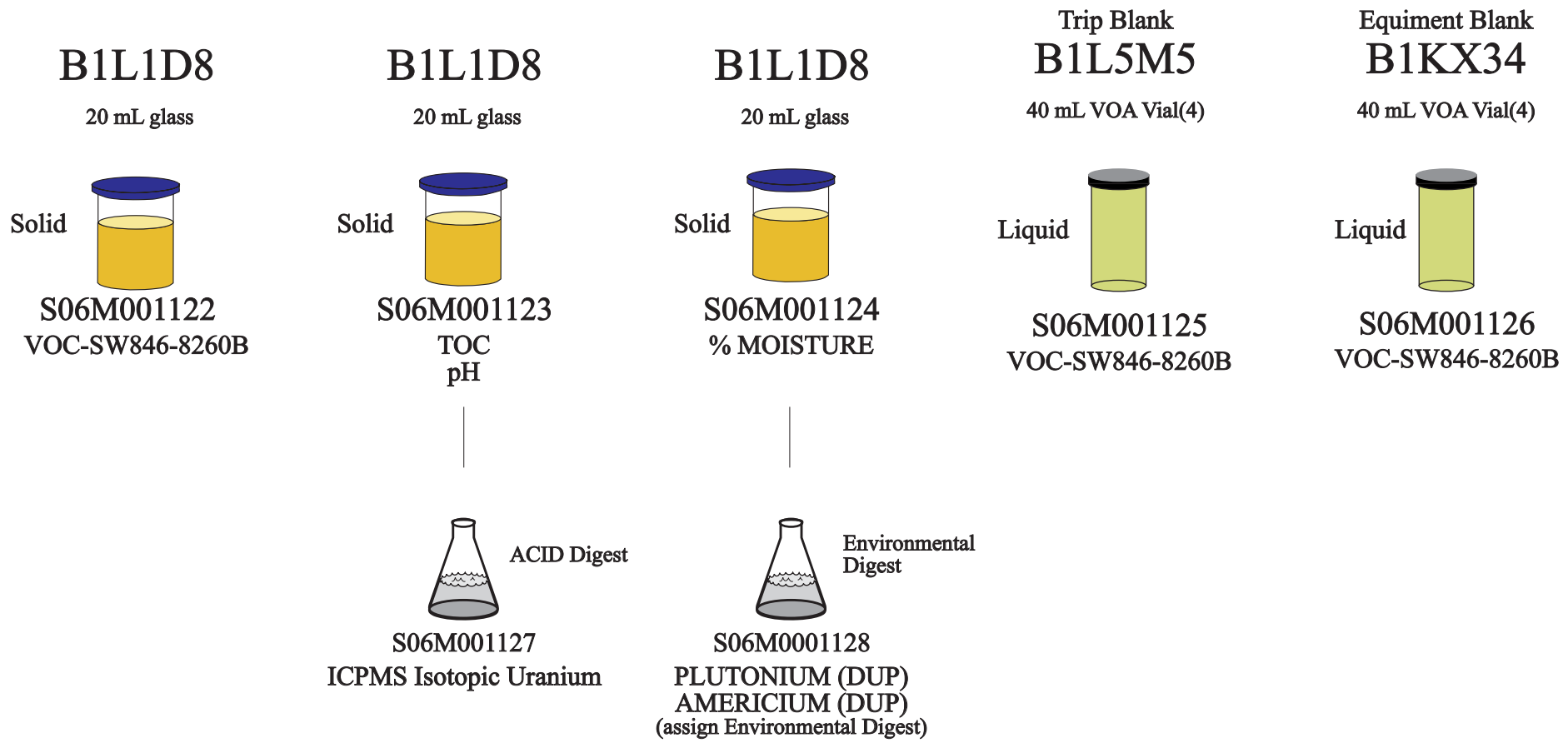
TRACER RECOVERIES

Sample	^{236}Pu Tracer Recovery	^{243}Am Tracer Recovery
Laboratory Control Sample	85%	68%
Preparation Blank	89%	57%
S06M001128 (B1L1D8)	88%	76%
Sample Duplicate	84%	61

Attachment 3

SAMPLE BREAKDOWN DIAGRAM

Project: Z9 VISTA
Sample Group No.: 200601133



Attachment 4

RECEIPT PAPERWORK

Fluor Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F06-007-092	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8N	DATA TURNAROUND
HULSE, KB	BRATTON, W		TRENT, SJ		
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**	**AIR QUALITY** ☐	45 Days / 45 Days
P69B 59'-61'	216-Z-9, 216-Z-1A, & 216-Z-18 DPT Samples - Vista Engineering DNAPL S		F06-007		
ICE CHEST NO.	**FIELD LOGBOOK NO.**	**COA**	**METHOD OF SHIPMENT**		
SAWS-391	DTS-SAWS-H87	119305ES10	~~FEDERAL EXPRESS~~ Gov. Vehicle		
SHIPPED TO	**OFFSITE PROPERTY NO.**		**BILL OF LADING/AIR BILL NO.**		
222-S Lab Operations	N/A		N/A		

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

SPECIAL HANDLING AND/OR STORAGE
RAD Screen B1L1D7

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
B1L1D8	S06M001124	S	10-27-06	0738	1X20mL G/P	Americium-241; Isotopic Plutonium; Isotopic Uranium; 6.6g %Moisture DPR 11/7/06 per email	None
B1L1D8	S06M001123	S			1X20mL aG	TOC - 9060; pH (Soil) - 9045; 18.4g	Cool 4C
B1L1D8	S06M001122	S			1X20mL aG	VOA - 8260B - COMPLETE; 30.1g	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	11/2/06 1336	RL Chambers RL Chambers	11-2-06 1336	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	

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

NOVEMBER 30, 2006
20061133

Fluor Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F06-025-045	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 7O	DATA TURNAROUND
HULSE, KB	BRATTON, W		TRENT, SJ	AIR QUALITY ☐	60 Days / 60 Days
SAMPLING LOCATION P 69 B TRIP	**PROJECT DESIGNATION** 216-Z-9, 216-Z-1A, & 216-Z-18 DPT Samples - Vista Engineering DNAPL St		**SAF NO.** F06-025		
ICE CHEST NO. SAWS-391	**FIELD LOGBOOK NO.** DTS-SAWS-H87	**COA** 119305ES10	**METHOD OF SHIPMENT** ~~FEDERAL EXPRESS~~ Box-Vehicle		
SHIPPED TO 222-S Lab Operations	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A		

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

SPECIAL HANDLING AND/OR STORAGE

POSSIBLE SAMPLE HAZARDS/ REMARKS

SAMPLE NO.	LAB ID	MATRIX*	SAMPLE DATE	SAMPLE TIME	NO./TYPE CONTAINER(S)	ANALYSIS	PRESERVATION
B1L5M5	S06 M00125	W	11-02-06	1055	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	11/2/06 1336	RL Chambers / RL Chambers	11-2-06 1336	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	

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

NOVEMBER 30, 2006
20061133

Fluor Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F06-025-036	PAGE 1 OF 1

COLLECTOR HULSE, KB	**COMPANY CONTACT** BRATTON, W	**TELEPHONE NO.**	**PROJECT COORDINATOR** TRENT, SJ
PRICE CODE 7N	**DATA TURNAROUND** 45 Days / 45 Days	**AIR QUALITY** ☐	
SAMPLING LOCATION P 69 B 59'-61' Equip	**PROJECT DESIGNATION** 216-Z-9, 216-Z-1A, & 216-Z-18 DPT Samples - Vista Engineering DNAPL St	**SAF NO.** F06-025	
ICE CHEST NO. SAWS-391	**FIELD LOGBOOK NO.** DTS-SAWS-H87	**COA** 119305ES10	**METHOD OF SHIPMENT** ~~FEDERAL EXPRESS~~ Gov. Vehicle
SHIPPED TO Severn Trent St. Louis	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A

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

SPECIAL HANDLING AND/OR STORAGE

POSSIBLE SAMPLE HAZARDS/ REMARKS

SAMPLE NO.	LAB ID	MATRIX*	SAMPLE DATE	SAMPLE TIME	NO./TYPE CONTAINER(S)	ANALYSIS	PRESERVATION
B1KX34	S06M001126	W	10-26-06	1210	4X40mL aGs*	VOA - 8260B (TCL);	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	11/2/06 1336	RL Chambers / RL Chambers	1336 11-2-06	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	

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

NOVEMBER 30, 2006
20061133

Group #: 20061133

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

COC #: _____ Date Samples Received: 11-2-06

Customer Project Name: 29 Vista Number of Samples: 5

Sample Custodian: RL Chambers

Sample Custodian to Complete:

Action	OK? (Y/N)	N/A	Comments
RSA or COC provided?	Y		
RSR provided?		✓	
Verify GKI is complete	Y		
Check that outer custody seal is intact, if present	Y		
Record cooler temperature, as appropriate	6°C		☐ check if no cooler & no ice
Samples are intact & in good condition	Y		If no, provide comments on back
Verify that COC or RSA is accurate & complete, containing the following information:			
• Client name & client sample number	Y		
• Date & time of sampling	Y		
• Sampling location or origin	Y		
• Container type, size, and number	Y		
• Sample preservation, as appropriate	Y		
• Analysis request is clear	Y		
• Signature of persons relinquishing & receiving samples	Y		
• Date & time of sample custody exchange	Y		
Verify that sample numbers on containers match the COC and/or RSA	Y		
Samples stored properly (e.g., refrigeration)	Y		

Notify the PC immediately if any problems are noted.

PC to Complete:

Samples acceptable for release? yes PC Initials JPR Date 11/2/06

If no, comment on communication and resolution:

Version 5/23/06

GENERATOR KNOWLEDGE INFORMATION

1. Chain of Custody Number F06-007-092 CACN/COA VET PC Customer Identification Number BILLUS

2. List generator knowledge or description of process that produced sample. Or list description of sample source:
VET HHR Investigation of Vadose Zone south of 216-2-9. Soil Sample collected 59-61 ft. bgs.

MSDS Available? ◯ 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	☒ No	◯ Unknown
U Codes:			◯ Yes	☒ No	◯ Unknown
K Codes:			◯ Yes	☒ No	◯ Unknown
F Codes:	F001	CCl4	☒ 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	☒ No	◯ Unknown
D002:	☐ pH ≤2	☐ pH ≥12.5	☐ Solid Corrosive (WSC2)	◯ Yes	☒ No	◯ Unknown
D003:	☐ Cyanide	☐ Sulfide	☐ Water Reactive ☐ Other _____ (i.e., peroxide former, explosive, air reactive)	◯ Yes	☒ No	◯ Unknown
D004-D043 (Identify applicable waste codes and concentrations):				◯ Yes	☒ 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):

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

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

WT01:	◯ Yes	☒ No	◯ Unknown
WT02:	◯ Yes	☒ No	◯ Unknown
W001:	◯ Yes	☒ No	◯ Unknown

List constituents and concentrations:

(*State mixture rule for ignitability)

WP01:	◯ Yes	☒ No	◯ Unknown
WP02:	◯ Yes	☒ No	◯ Unknown
WP03:	◯ Yes	☒ No	◯ Unknown
F003:*	◯ Yes	☒ No	◯ Unknown

4. Is this material TSCA regulated for PCBs? ◯ Yes ☒ 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 ☒ 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 Holm Rochelle Holm Date 11/2/06

Attachment 5

CORRESPONDENCE

Ritenour, Gerald P

From: Rochelle Holm [holm@vistaengr.com]
Sent: Tuesday, November 14, 2006 5:10 PM
To: Ritenour, Gerald P; Wes Bratton
Subject: RE: Sample B1KX34

Hi JR,
Please report the original value within the holding time with a clarification note.

Also, two GEA samples will be delivered midmorning Wednesday to 222-S.

Thank you,
Rochelle

From: Ritenour, Gerald P [mailto:Gerald_P_Ritenour@RL.gov]
Sent: Monday, November 13, 2006 11:31 AM
To: Wes Bratton; Rochelle Holm
Subject: Sample B1KX34

Wes, Rochelle,
This is an equipment blank that was initially analyzed within the prescribed holding time. However after review, the chemist noted that the methylene chloride was over range at 40 ug/L (high cal point was 10ug/L). We reanalyzed a dilution one day beyond the holding time with a result of 27 ug/L. I would prefer to report the original result since it is within the holding time and note the reanalysis in the narrative. Is this expectable?
Thanks JR

Gerald "JR" Ritenour
Project Coordinator
ATL International, Inc.
(509) 372-2742 office
(509) 438-8837 cell
gerald_p_ritenour@rl.gov

Ritenour, Gerald P

From: Rochelle Holm [holm@vistaengr.com]
Sent: Tuesday, November 14, 2006 5:11 PM
To: Ritenour, Gerald P
Cc: Wes Bratton
Subject: RE: Sample B1L1D7

Hi JR,
Yes, that is fine to take an aliquot from sample B1L1D7 for B1L1D8 Am and Pu. Please place a clarification note in the report.

Thank you,
Rochelle

From: Ritenour, Gerald P [mailto:Gerald_P_Ritenour@RL.gov]
Sent: Tuesday, November 14, 2006 4:55 PM
To: Rochelle Holm
Cc: Wes Bratton
Subject: Sample B1L1D7

Rochelle, Wes,
I would like to reanalyze B1L1D8 for Am and Pu, due to duplicate failures and we may be short sample. I am assume I can take an aliquot from sample B1L1D7 for these tests. Please let me know .
Thanks JR

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