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FLUOR GLOBAL SERVICES

April 11, 2001

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Ms. J. H. Kessner, Program Manager
Analytical Services
Bechtel Hanford
3190 George Washington Way H9-03
Richland, Washington 99352

Dear Ms. Kessner:

FINAL RESULTS FOR THE 221-U CANYON DRAIN PIPE SLUDGE SAMPLE – SDG2

References:
(1) Letter, J. J. McGuire (BHI) to J. L. Jacobsen (FDH), "Letter of Instruction for the 221-U Canyon Disposition Initiative Sample Analysis", 081727, August 31, 2000.

(2) HNF-SD-CD-QAPP-016, Rev. 4A, *222-S Laboratory Quality Assurance Plan*, January 4, 2001.

This letter and attachments present the final results for the unknown liquid sample (B116Y3) received from the 221-U Facility on January 9, 2001. The sample was for those analytes indicated on the attached copy of the chain of custody form in accordance with the *Letter of Instruction for the 221-U Canyon Disposition Initiative Sample Analysis* referenced above.

If you have any questions regarding this report, please feel free to call me on 373-4314.

Sincerely,

Ruth A Esch, Project Coordinator
Analytical Services

RAE:lda

Attachments (7)

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ATTACHMENT 1

NARRATIVE

Consisting of 6 pages,
Including cover page

FINAL RESULTS FOR THE 221-U UNKNOWN LIQUID SAMPLE – SDG2

A sample of unknown liquid (B116Y3) was received from the 221-U Facility on January 9, 2001. The sample was analyzed for those analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Letter of Instruction for the 221-U Canyon Disposition Initiative Sample Analysis* (LOI), referenced in the cover letter.

A Data Summary Report was included as Attachment 2. The correlation between customer sample identification numbers and laboratory identification numbers was presented in the sample breakdown diagrams included as Attachment 3. Tentatively identified compounds (TICs) for the semi-volatile organic analysis were included as Attachment 4. Quality control data and TICs for the volatile organic analysis were included as Attachment 5. Copies of the chain of custody and Request for Sample Analysis forms were included as Attachment 6.

The sample was analyzed for polychlorinated biphenyls (PCB). No Aroclors were observed in the sample. The highest detection limit was 150 µg/L. The 222-S Laboratory PCB Status of the unused sample, sample digests and waste generated from the analyses was changed to "No Regulated Amount".

Sample Appearance and Handling

B116Y3: The sample was a cloudy black liquid with no visible settled solids.

Analytical Results

Holding Times

As indicated in the email correspondence (Attachment 7), there was an initial 5-day delay in shipping sample B116Y3 to the 222-S Laboratory and special radiological work screening was required prior to handling this sample because of the high dose rate. In addition, the non-standard sample vial configuration (i.e. a vial inside of a vial) required special breakdown techniques. The initial 5-day delay in shipping resulted in missing the SW-846 holding times for pH (24 hours) and nitrate (48 hours). The special handling measures taken to reduce the radiological exposure to the workers caused a delay in analysis that resulted in missing the SW-846 holding times for volatile organic analysis (VOA) (14 days) and PCB and semi-volatile organic analysis (SVOA) extractions (14 days).

Quality Control Results

Standard Recovery

All laboratory control standard (LCS) recoveries were acceptable in accordance with the 222-S Laboratory Quality Assurance Plan (QAPP-016 2000).

The recoveries for most of the SVOA LCS compounds were between 43% and 60% recovery. These recoveries were lower than the default acceptance limits of 70% - 130% recovery that were set in the Laboratory LIMS system. The lower recovery might be due to volatilization during the concentration process prior to analysis. These compounds have a wider acceptance range listed in SW-846 method 8270. With the procedure currently available, a reanalysis would not improve the sample results because of the dilution and would not necessarily improve the LCS recoveries.

Preparation Blanks

Low levels of contamination from chloride and neptunium-237 (^{237}Np) were detected in the method blanks analyzed with the ion chromatography (IC) and ^{237}Np analyses. Since the concentration of these analytes detected in the blanks were less than 5% of those detected for the sample, the contamination was considered insignificant and no reanalysis was requested.

For the VOA analysis, acetone, 2-butanone and benzene were detected in the method blank at concentrations above the sample detection limits. The contamination was significant with respect to the results reported for the sample. Since the level of contamination from acetone and 2-butanone were the same order of magnitude as the results reported for the sample, the contamination was attributed to vapors picked up by the gas chromatograph from analyses taking place elsewhere in the laboratory or from maintenance activities outside of the laboratory. The sample results reported were likely attributable to the same contamination. Contamination from these sources was difficult to avoid, so no reanalysis was requested. The contamination source for benzene was unknown. However, since no benzene was detected in the sample, no reanalysis was requested.

Relative Percent Difference (RPD)

The relative percent difference (RPD) between sample and duplicate results for all analytes were less than the limit of <20% listed in QAPP-016 (Clark 2001) except for acetone and 2-butanone. Since the detection of these two compounds was attributed to unavoidable contamination during the analysis on the instrument, the RPD criterion was considered non-applicable. No reanalysis was requested due to the high RPDs.

Matrix Spike Recoveries

The matrix spike recoveries for many analytes were outside of the acceptance limits listed in QAPP-016. The analytes that failed were aluminum (Al), chromium (Cr), mercury (Hg), uranium-235 (^{235}U), uranium-238 (^{238}U), ^{237}Np and plutonium-239 (^{239}Pu). The failures were attributed to analyte concentrations that were greater than four times the concentration of the

matrix spike added. In this situation, the recovery criteria were not applicable, and no reanalyses were requested. The post-digest spike recoveries for Al, Cr, ^{235}U, ^{237}Np and ^{239}Pu were all within the appropriate acceptance limits.

The matrix spike recoveries for most of the SVOA compounds were between 42% and 67% recovery, most were above 60% recovery. As discussed with the LCS standard recoveries, these were lower than the default acceptance limits, but were acceptable within the guidelines of QAPP-016 (Clark 2001) and SW-846 method 8270. With the procedure currently available, a reanalysis would not improve the spike recoveries, so no reanalysis was requested.

Surrogate Recoveries

For the PCB and semi-volatile organic analysis (SVOA), surrogate standards were added to the samples to assess the accuracy of the method. Surrogate recoveries were presented in Tables 1, 2 and 3.

For the SVOA, surrogate recoveries for phenol-d5 were outside of the default acceptance in the Laboratory LIMS for the LCS and preparation blank. The surrogate recovery for 2,4,6-tribromophenol was low for the preparation blank, the sample and the duplicate aliquots. However, the sample results were considered acceptable based on the recoveries of the other surrogate standards and the other quality control results.

For the PCB analysis, the surrogate standard recoveries of tetrachloro-m-xylene (TCX) for the LCS (30.9%) and matrix spike (34.8%) aliquots were outside of the acceptance limits. However, the TCX is a lower molecular weight surrogate that was not required for the PCB analysis by SW-846. Since all of the recoveries for decachlorobiphenyl (DCB) were within the acceptance limits and the recovery for TCX in the sample aliquot was with the acceptance limits, the sample results were considered acceptable and no reanalysis was requested.

Practical Quantitation Limits (PQL)

For those analytes reported as non-detected, the customer requested practical quantitation limits (PQL) or detection limits (DL) were not met for many of the analytes requested. For the ICP/MS, ICP and gamma energy (GEA) analyses, the high reported detection limits were the result of dilutions required to reduce the concentration of other analytes in the sample. For PCB, the reported detection limits were high due to the small sample size required to reduce the activity of the sample. A reanalysis was not performed because the laboratory used the least dilution, or the largest sample size possible.

Dibromofluoromethane	(Surr)	120	112	104	106
4-Bromofluorobenzene	(Surr)	110	116	110	116
Toluene-d8	(Surr)	120	112	102	110

2-Fluorophenol	(Surr)	52	50	57	62	62
Phenol-d5	(Surr)	53	52	60	62	63
Nitrobenzene-d5	(Surr)	60	60	70	70	73
2-Fluorobepheny	(Surr)	67	67	73	80	80
2,4,6-Tribromophenol	(Surr)	63	50	55	57	63
Terphenyl-d14	(Surr)	87	83	83	87	90

Tetrachloro-m-xylene	(Surr)	30.9	64.4	79.1	73.6	34.8
Decachlorobiphenyl	(Surr)	89.3	89.2	87.8	95.1	77.0

Analytical Procedures

Table 4 presents the 222-S Laboratory analytical procedures used to generate the reported results.

Table 4. Analytical Procedures

Analysis	Preparation Procedure	Analysis Procedure
Inorganic Analyses		
pH	Direct	LA-212-106 Rev. C-4
Hg	Direct	LA-325-106 Rev. A-4
NH_3	Direct	LA-631-001 Rev. D-2
IC	Direct	LA-533-107 Rev. A-0
ICP	Acid Digest	LA-505-161 Rev. C-5
ICP-MS	Acid Digest	LA-506-101 Rev. A-4
Radionuclide Analyses		
GEA	Direct	LA-548-121 Rev. F-2
^{90}Sr	Direct	LA-220-101 Rev. E-5
^{237}Np	Direct	LA-933-141 Rev. H-5
^{241}Am	Direct	LA-953-104 Rev. B-4
Organic Analyses		
VOA	Direct	LA-523-118 Rev. A-0
SVOA	LA-523-115 Rev. B-3	LA-523-456 Rev. B-2
PCB	LA-523-115 Rev. B-3	LA-523-140 Rev. A-0

Acid digest procedure – LA-505-158 Rev. F-0

Abbreviations

NH_3 – ammonia
Hg – mercury
IC – ion chromatography
ICP – inductively coupled plasma
ICP-MS – ICP-mass spectrometry
GEA – gamma energy analysis
^{90}Sr – strontium-90
^{237}Np – neptunium-237
^{241}Am – americium-241
VOA – volatile organic analysis
SVOA – semi-volatile organic analysis
PCB – polychlorinated biphenyl

Attachment 2. Data Summary Report
221U SDG2

CORE NUMBER: n/a
SEGMENT #: B116Y3

SEGMENT PORTION: Inorganic

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000007			Ammonia by ISE-Std Additions	ug/mL	113.8	<2.50E+2	<2.50e+02	<2.50E+2	n/a	n/a	115.4	250.0	n/a
S01M000007			pH Direct	pH	n/a	n/a	< 1.000	<1.0	n/a	n/a	n/a	1.000	n/a
S01M000007			Fluoride IC SW846	ug/mL	96.72	<0.0120	4.79e+03	4.79e+03	4.79e+03	0.06	101.6	486.0	n/a
S01M000007			Chloride SW-846	ug/mL	99.88	0.100	2.65e+03	2.60e+03	2.62e+03	1.79	98.24	688.5	n/a
S01M000007			Nitrite IC SW846	ug/mL	92.10	<0.108	<4.37e+03	<4.37e+03	n/a	n/a	91.52	4.37e+03	n/a
S01M000007			Nitrate by IC SW846	ug/mL	102.4	<0.139	5.73e+05	5.75e+05	5.74e+05	0.40	106.0	5.63e+03	n/a
S01M000007			Phosphate by IC SW846	ug/mL	99.68	<0.120	<4.86e+03	<4.86e+03	n/a	n/a	91.59	4.86e+03	n/a
S01M000007			Sulfate by IC SW846	ug/mL	98.09	<0.138	9.33e+03	1.01e+04	9.72e+03	7.88	95.74	5.59e+03	n/a

Metals: Metals

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000008			Mercury by CVAA (PE) with FIAS	ug/mL	98.84	<6.0e-5	99.66	103.0	101.3	3.30	132.2	1.200	n/a
S01M000009	B		Protactinium-231 by ICP/MS	ug/mL	n/a	<0.0621	< 6.212	<6.21	n/a	n/a	n/a	6.212	n/a
S01M000009	B		Thorium-229 by ICP/MS	ug/mL	n/a	<0.0621	< 6.212	<6.21	n/a	n/a	n/a	6.212	n/a
S01M000009	B		Thorium-230 by ICP/MS	ug/mL	n/a	<0.207	< 20.71	<20.7	n/a	n/a	n/a	20.71	n/a
S01M000009	B		Thorium-232 by ICP/MS	ug/mL	94.40	<0.207	< 20.71	<20.7	n/a	n/a	83.40	20.71	n/a
S01M000009	B		Uranium-233 by ICP/MS AcidD158	ug/mL	n/a	<0.0497	< 4.969	<4.97	n/a	n/a	n/a	4.969	n/a
S01M000009	B		Uranium-234 by ICP/MS AcidD158	ug/mL	n/a	<0.0497	5.922	7.040	6.481	17.3	n/a	4.969	n/a
S01M000009	B		Uranium-235 by ICP/MS AcidD158	ug/mL	102.4	<0.0497	6.28e+02	704.0	666.1	11.4	-8.40e+02	4.969	n/a
S01M000009	B		Uranium-236 by ICP/MS AcidD158	ug/mL	n/a	<0.0663	31.64	38.60	35.12	19.8	n/a	6.626	n/a
S01M000009	B		Uranium-238 by ICP/MS AcidD158	ug/mL	100.0	<0.0497	7.48e+04	8.14e+04	7.81e+04	8.52	-8.90e-01	4.969	n/a
S01M000009	B		Neptunium-237 by ICP/MS	ug/mL	97.38	<0.207	1.53e+02	165.0	159.2	7.35	63.63	20.71	n/a
S01M000009	B		Plutonium-239 by ICP/MS	ug/mL	88.23	<0.207	1.91e+03	2.13e+03	2.02e+03	10.9	-3.44e+02	20.71	n/a
S01M000009	B		Plutonium-240 by ICP/MS	ug/mL	n/a	<0.207	1.34e+02	145.0	139.2	8.26	n/a	20.71	n/a
S01M000009	B		Plutonium-242 by ICP/MS	ug/mL	n/a	<0.207	< 20.71	<20.7	n/a	n/a	n/a	20.71	n/a
S01M000009	B		Pu/Am-241 by ICP/MS	ug/mL	n/a	<0.207	< 20.71	<20.7	n/a	n/a	n/a	20.71	n/a
S01M000009	B		Am 243/Cm 243 by ICP/MS	ug/mL	n/a	<0.207	< 20.71	<20.7	n/a	n/a	n/a	20.71	n/a
S01M000009	B		Pu 244/Cm 244 by ICP/MS	ug/mL	n/a	<0.207	< 20.71	<20.7	n/a	n/a	n/a	20.71	n/a
S01M000009	B		Silver -ICP-Acid Digest-Liquid	ug/mL	97.50	<0.0100	66.80	63.60	65.20	4.91	102.0	4.000	n/a
S01M000009	B		Aluminium -ICP-Acid Digest-Liq	ug/mL	97.30	<0.0500	3.04e+04	3.04e+04	3.04e+04	0.00	-7.80e+00	200.0	n/a
S01M000009	B		Arsenic -ICP-Acid Digest-Liq	ug/mL	97.20	<0.100	< 40.00	<40.0	n/a	n/a	101.6	40.00	n/a
S01M000009	B		Barium -ICP-Acid Digest-Liquid	ug/mL	96.40	<0.0500	1.35e+02	131.0	133.0	3.01	97.20	20.00	n/a
S01M000009	B		Bismuth -ICP-Acid Digest/Liq	ug/mL	95.40	<0.100	4.42e+03	4.32e+03	4.37e+03	2.29	89.00	40.00	n/a
S01M000009	B		Cadmium -ICP-Acid Digest-Liq	ug/mL	96.70	<0.00500	31.40	29.40	30.40	6.58	100.0	2.000	n/a
S01M000009	B		Chromium -ICP-Acid Digest-Liq	ug/mL	96.20	<0.0100	1.64e+04	1.64e+04	1.64e+04	0.00	30.00	40.00	n/a
S01M000009	B		Phosphorus-ICP-Acid Adjust-Liq	ug/mL	95.30	<0.200	2.09e+02	206.0	207.5	1.45	99.60	80.00	n/a
S01M000009	B		Lead -ICP-Acid Digest-Liquid	ug/mL	94.60	<0.100	2.91e+03	2.83e+03	2.87e+03	2.79	86.80	40.00	n/a
S01M000009	B		Selenium -ICP-Acid Digest-Liq	ug/mL	96.40	<0.100	< 40.00	<40.0	n/a	n/a	101.0	40.00	n/a

PCB and SVOA: PCB and SVOA

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000011			Aroclor-1016 by SW-846 8082	ug/L	n/a	<50	<50	<50	n/a	n/a	n/a	50.00	n/a
S01M000011			Aroclor-1221 by SW-846 8082	ug/L	n/a	<150	<150	<150	n/a	n/a	n/a	150.0	n/a
S01M000011			Aroclor-1232 by SW-846 8082	ug/L	n/a	<140	<140	<140	n/a	n/a	n/a	140.0	n/a
S01M000011			Aroclor-1242 by SW-846 8082	ug/L	n/a	<80	<80	<80	n/a	n/a	n/a	80.00	n/a
S01M000011			Aroclor-1248 by SW-846 8082	ug/L	n/a	<40	<40	<40	n/a	n/a	n/a	40.00	n/a
S01M000011			Aroclor-1254 by SW-846 8082	ug/L	98.34	<40	<40	<40	n/a	n/a	83.70	40.00	n/a
S01M000011			Aroclor-1260 by SW-846 8082	ug/L	n/a	<50	<50	<50	n/a	n/a	n/a	50.00	n/a
S01M000011			Aroclor-1262 by SW-846 8082	ug/L	n/a	<40	<40	<40	n/a	n/a	n/a	40.00	n/a
S01M000011			bis-(2-Chloroethyl) ether	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.50e+03	n/a
S01M000011			1,3-Dichlorobenzene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	2.67e+03	n/a
S01M000011			1,2-Dichlorobenzene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	2.98e+03	n/a
S01M000011			2,2'-oxybis(1-Chloropropane)	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	2.15e+03	n/a
S01M000011			Isophorone	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.48e+03	n/a
S01M000011			2,4-Dimethylphenol	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.86e+03	n/a
S01M000011			bis(2-Chloroethoxy)methane	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.86e+03	n/a
S01M000011			4-Chloroaniline	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	3.59e+03	n/a
S01M000011			2-Methylnaphthalene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	2.66e+03	n/a
S01M000011			Hexachlorocyclopentadiene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	2.50e+03	n/a
S01M000011			2,4,6-Trichlorophenol	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	2.37e+03	n/a
S01M000011			2-Chloronaphthalene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	2.57e+03	n/a
S01M000011			2-Nitroaniline	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.63e+03	n/a
S01M000011			Dimethylphthalate	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	3.75e+03	n/a
S01M000011			Acenaphthylene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	2.10e+03	n/a
S01M000011			2,6-Dinitrotoluene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.82e+03	n/a
S01M000011			3-Nitroaniline	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.50e+03	n/a
S01M000011			2,4-Dinitrophenol	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.07e+03	n/a
S01M000011			Dibenzofuran	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	2.06e+03	n/a
S01M000011			Diethylphthalate	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	2.46e+03	n/a
S01M000011			4-Chlorophenyl-phenylether	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	2.07e+03	n/a
S01M000011			Fluorene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.89e+03	n/a
S01M000011			4-Nitroaniline	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	2.82e+03	n/a
S01M000011			4,6-Dinitro-2-methylphenol	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	617.0	n/a
S01M000011			N-Nitrosodiphenylamine	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.72e+03	n/a
S01M000011			4-Bromophenyl-phenylether	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	2.04e+03	n/a
S01M000011			Hexachlorobenzene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.26e+03	n/a
S01M000011			Pentachlorophenol	ug/L	48.00	ND	ND	ND	n/a	n/a	53.00	7.16e+03	n/a
S01M000011			Phenol	ug/L	57.00	ND	ND	ND	n/a	n/a	63.00	1.14e+03	n/a
S01M000011			Phenanthrene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.58e+03	n/a
S01M000011			Anthracene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.36e+03	n/a
S01M000011			Di-n-butylphthalate	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	2.35e+03	n/a
S01M000011			Fluoranthene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.68e+03	n/a
S01M000011			Butylbenzylphthalate	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.49e+03	n/a
S01M000011			3,3'-Dichlorobenzidine	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	2.50e+03	n/a
S01M000011			Benzo(a)anthracene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.16e+03	n/a
S01M000011			Chrysene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.45e+03	n/a
S01M000011			bis(2-Ethylhexyl)phthalate	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.54e+03	n/a
S01M000011			2,4-Dichlorophenol	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.31e+03	n/a
S01M000011			2-Nitrophenol	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.72e+03	n/a
S01M000011			2-Chlorophenol	ug/L	53.00	ND	ND	ND	n/a	n/a	60.00	970.0	n/a

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000011			Pyrene	ug/L	80.00	ND	ND	ND	n/a	n/a	80.00	1.20e+03	n/a
S01M000011			N-Nitroso-di-n-propylamine	ug/L	53.00	ND	ND	ND	n/a	n/a	60.00	1.40e+03	n/a
S01M000011			1,2,4-Trichlorobenzene SV	ug/L	47.00	ND	ND	ND	n/a	n/a	67.00	2.50e+03	n/a
S01M000011			4-Chloro-3-methylphenol	ug/L	60.00	ND	ND	ND	n/a	n/a	62.00	2.03e+03	n/a
S01M000011			Acenaphthene	ug/L	57.00	ND	ND	ND	n/a	n/a	67.00	2.41e+03	n/a
S01M000011			4-Nitrophenol	ug/L	45.00	ND	ND	ND	n/a	n/a	42.00	8.00e+03	n/a
S01M000011			2,4-Dinitrotoluene	ug/L	57.00	ND	ND	ND	n/a	n/a	60.00	1.56e+03	n/a
S01M000011			2-Methylphenol	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.76e+03	n/a
S01M000011			3 & 4 Methylphenol Total	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.51e+03	n/a
S01M000011			1,4-Dichlorobenzene	ug/L	43.00	ND	ND	ND	n/a	n/a	63.00	2.68e+03	n/a
S01M000011			Di-n-octylphthalate	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.51e+03	n/a
S01M000011			Hexachloroethane	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	3.04e+03	n/a
S01M000011			Naphthalene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	2.68e+03	n/a
S01M000011			Tri-n-butylphosphate	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	700.0	n/a
S01M000011			Benzo(b)fluoranthene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.15e+03	n/a
S01M000011			Benzo(k)fluoranthene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.66e+03	n/a
S01M000011			Benzo(a)pyrene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.20e+03	n/a
S01M000011			Indeno(1,2,3-cd)pyrene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	950.0	n/a
S01M000011			Dibenz(a,h)anthracene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.32e+03	n/a
S01M000011			Benzo(g,h,i)perylene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	1.42e+03	n/a
S01M000011			Nitrobenzene	ug/L	n/a	n/a	ND	n/a	n/a	n/a	n/a	2.35e+03	n/a
S01M000011			Hexachlorobutadiene	ug/L	n/a	n/a	ND	n/a	n/a	n/a	n/a	3.04e+03	n/a
S01M000011			2,4,5-Trichlorophenol	ug/L	n/a	n/a	ND	n/a	n/a	n/a	n/a	2.09e+03	n/a

Parent: Parent

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000005			Appearance of Sample-Smpl Prep		n/a	n/a	cloudy	n/a	n/a	n/a	n/a	n/a	n/a
S01M000005			Color of Sample		n/a	n/a	black	n/a	n/a	n/a	n/a	n/a	n/a

Radionuclides: Radionuclides

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000006			Strontium-89/90 High Level	uCi/mL	97.20	<1.69E-1	1.95e+03	2.16e+03	2.06e+03	10.2	n/a	2.17e-01	3.55E-01
S01M000006			Np237 by TTA Extraction	uCi/mL	77.06	3.93E-3	8.03e-02	8.08e-02	8.05e-02	0.62	n/a	4.56e-03	6.73E+00
S01M000006			Cobalt-60 by GEA	uCi/mL	102.2	<1.81e-2	<5.24e-02	<5.63e-2	n/a	n/a	n/a	5.24e-02	n/a
S01M000006			Cesium-137 by GEA	uCi/mL	104.3	<4.32e-2	2.10e+03	2.09e+03	2.10e+03	0.48	n/a	n/a	0.100
S01M000006			Europium-152 by GEA	uCi/mL	n/a	<3.56e-2	<8.19e-01	<8.19e-1	n/a	n/a	n/a	8.19e-01	n/a
S01M000006			Europium-154 by GEA	uCi/mL	n/a	<5.52e-2	1.460	1.350	1.405	7.83	n/a	n/a	20.0
S01M000006			Europium-155 by GEA	uCi/mL	n/a	<4.00e-2	<9.62e-01	<9.60e-1	n/a	n/a	n/a	9.62e-01	n/a
S01M000006			Am-241 by TRU-SPEC Resin IonEx	uCi/mL	98.57	<2.64E+1	53.20	57.50	55.35	7.77	n/a	25.80	3.18E+00

VOA: VOA

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000010			Vinyl Chloride	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			Chloromethane	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			Bromomethane	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			Chloroethane	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			Methylene Chloride	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			Acetone	ug/L	n/a	500.0	6.00e+02	500.0	550.0	18.0	n/a	250.0	n/a

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S01M000010			1,1-Dichloroethane	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			1,2-Dichloroethene (cis & tran	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			Chloroform	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			1,2-Dichloroethane	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			2-Butanone	ug/L	n/a	100.	4.00e+02	300.0	350.0	29.0	n/a	250.0	n/a
S01M000010			1,1,1-Trichloroethane	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			Carbon Tetrachloride	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			Bromodichloromethane	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			1,2-Dichloropropane	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			Trichloroethene	ug/L	n/a	ND	ND	ND	n/a	n/a	102.0	250.0	n/a
S01M000010			Dibromochloromethane	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			1,1,2-Trichloroethane	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			Benzene	ug/L	n/a	500.00	ND	ND	n/a	n/a	116.0	250.0	n/a
S01M000010			Bromoform	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			4-Methyl-2-pentanone	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			2-Hexanone	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			Tetrachloroethene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			Toluene	ug/L	n/a	86	ND	ND	n/a	n/a	92.00	250.0	n/a
S01M000010			1,1,2,2-Tetrachloroethane	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			Chlorobenzene	ug/L	n/a	54.0	ND	ND	n/a	n/a	96.00	250.0	n/a
S01M000010			Ethylbenzene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			Styrene	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	250.0	n/a
S01M000010			Xylenes (total)	ug/L	n/a	ND	ND	ND	n/a	n/a	n/a	500.0	n/a
S01M000010			1,1-Dichloroethene	ug/L	n/a	ND	ND	ND	n/a	n/a	120.0	250.0	n/a

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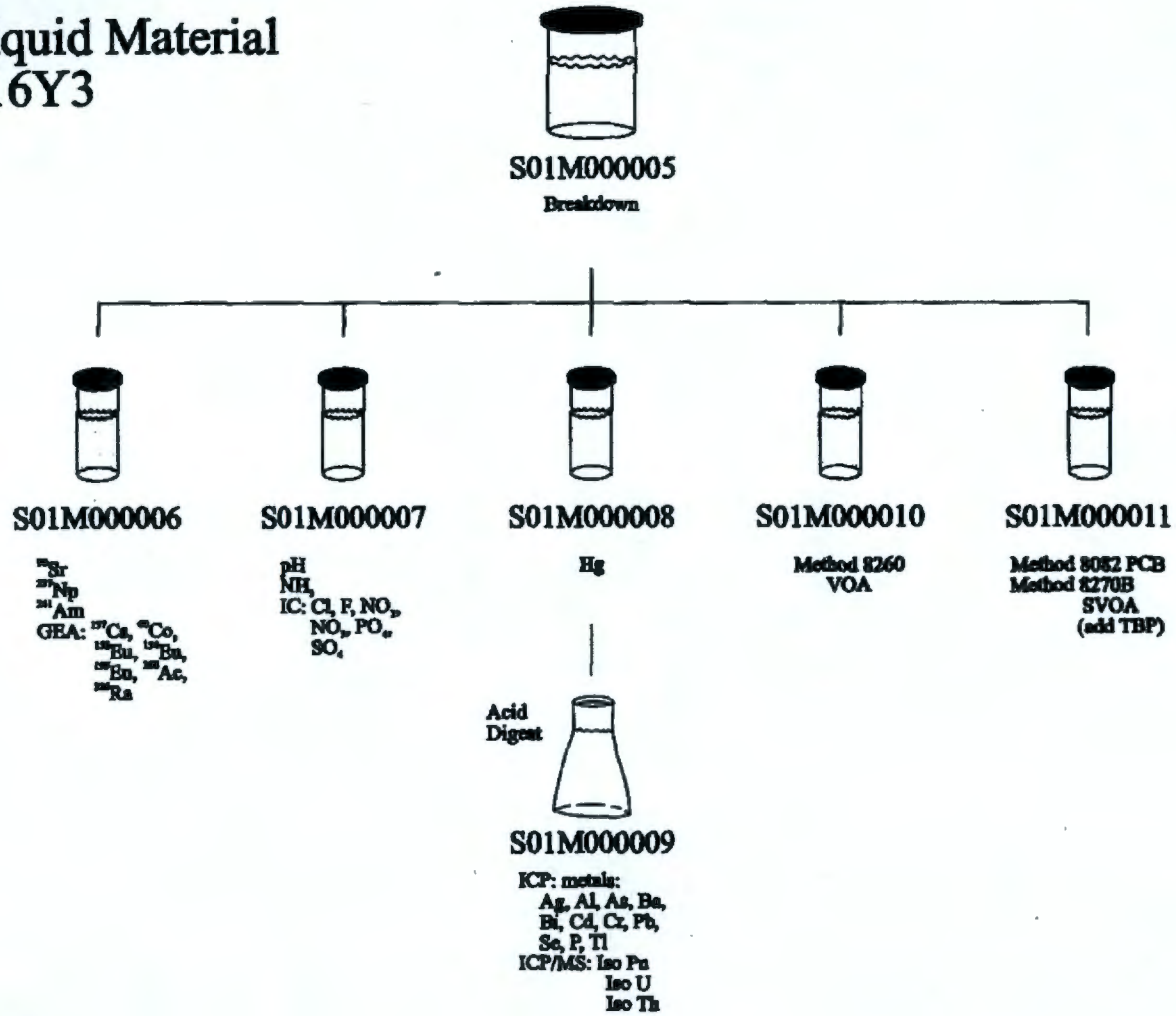
ATTACHMENT 3

SAMPLE BREAKDOWN DIAGRAM

Consisting of 2 pages,
Including cover page

221-U Facility Samples
SDG2

Unknown Liquid Material
B116Y3



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ATTACHMENT 4

TENTATIVELY IDENTIFIED COMPOUNDS (TICs) FOR SEMI-VOLATILE ORGANIC ANALYSIS

Consisting of 5 pages,
Including cover page

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLK420

Lab Name: WSCF Contract:

Lab Code: Case No.: SAS No.: SDG No.: SDG010206S

Matrix: (soil/water) WATER Lab Sample ID: SBLK420

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: SBLK420

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/30/01

Concentrated Extract Volume: 2000(uL) Date Analyzed: 02/06/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 2.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	29.24	39000	J
2.				
3.				
4.				
5.				
6.				
7.				
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FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

LCS420

Lab Name: WSCF Contract:

Lab Code: Case No.: SAS No.: SDG No.: SDG010206S

Matrix: (soil/water) WATER Lab Sample ID: LCS420

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: LCS420

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/30/01

Concentrated Extract Volume: 2000(uL) Date Analyzed: 02/06/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 2.0

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	25.57	23000	J
2.	UNKNOWN	28.99	5800	J
3.				
4.				
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FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

S01M000011

Lab Name: WSCF Contract:

Lab Code: Case No.: SAS No.: SDG No.: SDG010206S

Matrix: (soil/water) WATER Lab Sample ID: S01M000011

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: S01M000011

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/30/01

Concentrated Extract Volume: 2000(uL) Date Analyzed: 02/06/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 2.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	29.22	34000	JB
2.				
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FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

S01M000011DUP

Lab Name: WSCF Contract:

Lab Code: Case No.: SAS No.: SDG No.: SDG010206S

Matrix: (soil/water) WATER Lab Sample ID: S01M000011DUP

Sample wt/vol: 1.000 (g/mL) ML Lab File ID: S01M000011DUP

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/30/01

Concentrated Extract Volume: 2000(uL) Date Analyzed: 02/06/01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 2.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	27.08	20000	J
2.					
3.					
4.					
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ATTACHMENT 5

QUALITY CONTROL INFORMATION AND TICs FOR VOLATILE ORGANIC ANALYSIS

Consisting of 10 pages,
Including cover page

FORM 7
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: 222-S LABORATORY Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: SDGA24843

Instrument ID: TROI Calibration Date: 01/24/01 - Time: 1407

Lab File ID: VCCV Init. Calib. Date(s): 01/15/01 01/15/01

Heated Purge: (Y/N) N Init. Calib. Times: 1100 1726

GC Column: ID: 2.00 (mm)

COMPOUND	SAMPLE AMOUNT	CAL500 AMOUNT	CURVE	%D	MAX %d	
Chloromethane	0.0	500	LINR	100.0	20.0	<-
Vinyl Chloride	430	500	LINR	14.0	20.0	
Bromomethane	0.0	500	2ORDR	100.0	20.0	<-
Benzene	0.0	500	LINR	100.0	20.0	<-
Bromodichloromethane	0.0	500	AVRG	100.0	20.0	<-
Bromoform	0.0	500	AVRG	100.0	20.0	<-
Carbon Tetrachloride	0.0	500	LINR	100.0	20.0	<-
Chlorobenzene	0.0	500	AVRG	100.0	20.0	<-
Chloroethane	0.0	500	2ORDR	100.0	20.0	<-
Chloroform	460	500	LINR	8.0	20.0	
Dibromochloromethane	0.0	500	AVRG	100.0	20.0	<-
1,1-Dichloroethane	0.0	500	LINR	100.0	20.0	<-
1,2-Dichloroethane	0.0	500	LINR	100.0	20.0	<-
1,1-Dichloroethene	500	500	LINR	0.0	20.0	
cis-1,2-Dichloroethene	0.0	500	LINR	100.0	20.0	<-
trans-1,2-Dichloroethene	0.0	500	LINR	100.0	20.0	<-
1,2-Dichloropropane	430	500	AVRG	14.0	20.0	
Ethylbenzene	460	500	AVRG	8.0	20.0	
Methylene Chloride	0.0	500	LINR	100.0	20.0	<-
Styrene	0.0	500	AVRG	100.0	20.0	<-
1,1,2,2-Tetrachloroethane	0.0	500	AVRG	100.0	20.0	<-
Tetrachloroethene	0.0	500	AVRG	100.0	20.0	<-
Toluene	450	500	AVRG	10.0	20.0	
1,1,1-Trichloroethane	0.0	500	LINR	100.0	20.0	<-
1,1,2-Trichloroethane	0.0	500	AVRG	100.0	20.0	<-
Trichloroethene	0.0	500	LINR	100.0	20.0	<-
o-Xylene	0.0	500	AVRG	100.0	20.0	<-
m,p-Xylene	0.0	500	AVRG	100.0	20.0	<-
Acetone	0.0	500	LINR	100.0	20.0	<-
2-Butanone	0.0	500	LINR	100.0	20.0	<-
Methyl Isobutyl Ketone	0.0	500	LINR	100.0	20.0	<-
2-Hexanone	0.0	500	2ORDR	100.0	20.0	<-
Total 1,2-Dichloroethene	0.0	500	LINR	100.0	20.0	<-
Total Xylenes	0.0	500	LINR	100.0	20.0	<-
Bromofluorobenzene	530	500	LINR	6.0	20.0	
Dibromofluoromethane	500	500	LINR	0.0	20.0	

FORM 7
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: 222-S LABORATORY Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: SDGA24843

Instrument ID: TROI Calibration Date: 01/24/01 - Time: 1407

Lab File ID: VCCV Init. Calib. Date(s): 01/15/01 01/15/01

Heated Purge: (Y/N) N Init. Calib. Times: 1100 1726

GC Column: ID: 2.00 (mm)

COMPOUND	SAMPLE AMOUNT	CAL500 AMOUNT	CURVE	%D	MAX %d
Toluene-d8	540	500	LINR	8.0	20.0

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: 222-S LABORATORY Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: SDGA24843

Lab File ID (Standard): VCCV Date Analyzed: 01/24/01

Instrument ID: TROI Time Analyzed: 1407

GC Column: ID: 2.00 (mm) Heated Purge: (Y/N) N

		IS1 AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	363968	15.31	691234	17.12	619989	24.60
	UPPER LIMIT	727936	15.81	1382468	17.62	1239978	25.10
	LOWER LIMIT	181984	14.81	345617	16.62	309995	24.10
	CLIENT SAMPLE NO.						
01	BLANK	305669	15.33	602573	17.14	550927	24.60
02	S01M000010	337181	15.33	656677	17.13	582213	24.60
03	S01M000010DU	338425	15.33	652802	17.13	558403	24.60
04	S01M000010SP	294774	15.32	598406	17.13	518738	24.59
05							
06							
07							
08							
09							
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16							
17							
18							
19							
20							
21							
22							

IS1 = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: 222-S LABORATORY Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: SDGA24843

Lab File ID (Standard): VCCV Date Analyzed: 01/24/01

Instrument ID: TROI Time Analyzed: 1407

GC Column: ID: 2.00 (mm) Heated Purge: (Y/N) N

		IS4(DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	317208	30.49				
	UPPER LIMIT	634416	30.99				
	LOWER LIMIT	158604	29.99				
	CLIENT SAMPLE NO.						
01	BLANK	290529	30.49				
02	S01M000010	296957	30.48				
03	S01M000010DU	267318	30.48				
04	S01M000010SP	249290	30.49				
05							
06							
07							
08							
09							
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12							
13							
14							
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17							
18							
19							
20							
21							
22							

IS4 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM 8
VOLATILE ANALYTICAL SEQUENCE

Lab Name: 222-S LABORATORY Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: SDGA24843

GC Column: ID: 2.00 (mm) Init. Calib. Date(s): 01/15/01 01/15/01

Instrument ID: TROI

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 27.65 S2 : 15.26

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	S2 RT #
01	CCV	CCV	01/24/01	1407	27.70	15.32
02	BLANK	BLANK	01/24/01	1455	27.70	15.33
03	S01M000010	S01M000010	01/24/01	1542	27.70	15.33
04	S01M000010DU	S01M000010DU	01/24/01	1630	27.70	15.33
05	S01M000010SP	S01M000010SP	01/24/01	1718	27.70	15.33
06						
07						
08						
09						
10						
11						
12						
13						
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29						
30						
31						
32						

		QC LIMITS
S1	= Bromofluorobenzene	(+/- 0.55 MINUTES)
S2	= Dibromofluoromethane	(+/- 0.31 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE ANALYTICAL SEQUENCE

Lab Name: 222-S LABORATORY Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: SDGA24843

GC Column: ID: 2.00 (mm) Init. Calib. Date(s): 01/15/01 01/15/01

Instrument ID: TROI

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 20.74

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01	CCV	CCV	01/24/01	1407	20.80	
02	BLANK	BLANK	01/24/01	1455	20.80	
03	S01M000010	S01M000010	01/24/01	1542	20.80	
04	S01M000010DU	S01M000010DU	01/24/01	1630	20.80	
05	S01M000010SP	S01M000010SP	01/24/01	1718	20.80	
06						
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S3 = Toluene-d8 QC LIMITS (+/- 0.41 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BLANK

Lab Name: 222-S LABORATORY Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: SDGA24843

Matrix: (soil/water) WATER Lab Sample ID: BLANK

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: VBLNK

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 01/24/01

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) ng

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.84	180	J
2.	UNKNOWN	5.08	2000	J
3. 78-93-3	2-BUTANONE	14.21	12	NJ
4.	UNKNOWN	16.15	46	J
5. 556-67-2	CYCLOTETRASILOXANE, OCTAMETH	27.90	13	NJ
6. 3789-85-3	BENZOIC ACID, 2-[(TRIMETHYLS	32.14	14	NJ
7. 1873-88-7	1,1,1,3,5,5,5-HEPTAMETHYLTRI	40.84	1600	NJ
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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

S01M000010

Lab Name: 222-S LABORATORY Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: SDGA24843

Matrix: (soil/water) WATER Lab Sample ID: S01M000010

Sample wt/vol: 0.100 (g/mL) ML Lab File ID: VS01M000010

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 01/24/01

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.84	7600	J
2.	UNKNOWN	5.08	99000	J
3.	UNKNOWN	16.15	2100	J
4. 556-67-2	CYCLOTETRASILOXANE, OCTAMETH	27.90	610	NJ
5. 3789-85-3	BENZOIC ACID, 2-[(TRIMETHYLS	32.13	760	NJ
6. 541-05-9	CYCLOTRISILOXANE, HEXAMETHYL	40.89	84000	NJ
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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

S01M000010DUP

Lab Name: 222-S LABORATORY Contract:

Lab Code: VOA Case No.: SAS No.: SDG No.: SDGA24843

Matrix: (soil/water) WATER Lab Sample ID: S01M000010DUP

Sample wt/vol: 0.100 (g/mL) ML Lab File ID: VS01M000010DUP

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 01/24/01

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.85	7500	J
2.	UNKNOWN	5.09	120000	J
3. 78-84-2	PROPANAL, 2-METHYL-	14.21	510	NJ
4.	UNKNOWN	16.15	2100	J
5. 556-67-2	CYCLOTETRASILOXANE, OCTAMETH	27.90	910	NJ
6. 3789-85-3	BENZOIC ACID, 2-[(TRIMETHYLS	32.14	800	NJ
7. 541-05-9	CYCLOTRISILOXANE, HEXAMETHYL	40.91	91000	NJ
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FH-0102165

ATTACHMENT 6

CHAIN OF CUSTODY AND REQUEST FOR SAMPLE ANALYSIS FORMS

Consisting of 3 pages,
Including cover page

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-025-01	Page 1 of 1
Collector Fahlberg / RF 1/8/00 J. Beach	Company Contact D Jacques	Telephone No. 373-5299	Project Coordinator TRENT, SJ	Price Code 9N / Air Quality ☐ / Data Turnaround 60 Days
Project Designation 221-U Unknown Liquid Material Sampling	Sampling Location 221 U		SAF No. B01-025	
Ice Chest No. Pig	Field Logbook No. EL 1517-1	COA B200CS671C	Method of Shipment Government Vehicle	
Shipped To 222-S Lab Operations	Offsite Property No. NA		Bill of Lading/Air Bill No. NA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage
Cooling Requirements Will Not Be Met

Preservation	Cool 4C										
Type of Container	~~SG~~ G RF 1/8/01										
No. of Container(s)	1										
Volume	120mL										

SAMPLE ANALYSIS

See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B116Y3	OTHER LIQUID	01/04/01	1420	X								

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
M J Beach	1-9-01 1300	[illegible]	1/9/01 1310
[illegible]	1-9-01 1400	[illegible]	1-9-01 1405

SPECIAL INSTRUCTIONS

** If a limited quantity of sample material is received, perform analyses in order listed on the FSR.
** The ERC acknowledges the 48-hour holding time for Nitrate by EPA Method 300.0 will not be met.

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Actinium-228, Radium-226); Isotopic Plutonium; Isotopic Uranium; Isotopic Thorium; Strontium-90; Neptunium-237; Americium-241; ICP Metals - 6010A (SW)-8440); ICP metals - 6010A (Add-on) {Bismuth, Lead, Phosphorus, Selenium, Thallium}; mercury - 7471 - (CV); IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; Ph (soil) - 9045; PCB's - 8082; Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-on) {Tributyl Phosphate}; VOA - 8260A - Complete

Matrix *
S=Soil
SE=Sediment
SO=Solid
S=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

REQUEST FOR SAMPLE ANALYSIS (RSA)

Group ID No. (For Laboratory Use Only): 115106

1. Sample Origin	2. Date Sampled	4. Requestor's Name	6. CACN/COA	7. Cost Center
221-U Facility (BHI)	01/04/01	SJ TRENT	DB1138	

Customer/Project Code	3. Submitted By	5. Requestor's Phone/MSIN/FAX
	R. Fahlberg L. Aguilar	2-9651/H9-03/2-9487

8. Customer ID No.	9. Laboratory Sample No.	10. Volume of Sample	11. Matrix of Sample	12. Requested Analyses	13. Expected Range
B716Y3		50 mL	other liquid	See chain of custody	

14. Does sample have a MSDS?

○ Yes HEHF assigned MSDS No. _____

☑ No Description of process that produced waste/sample:

Tank liquids

Will radiochemistry results be used for unconditional release? ○ Yes ☑ No

15. Is this sample RCRA listed? ○ Yes ☑ No

Applicable Listed Waste Codes:

○ Yes ○ No P Codes: (list) _____

○ Yes ○ No U Codes: (list) _____

○ Yes ○ No K Codes: (list) _____

○ Yes ○ No F Codes: (list) _____

Applicable Characteristic Codes:

○ Yes ○ No D001: (how determined) _____ Ignitable

○ Yes ○ No D002: (how determined) _____ Corrosive

○ Yes ○ No D003: (how determined) _____ Reactive

○ Yes ○ No Toxic: (list codes) _____

PCB: Does this waste/sample contain PCBs?

☐ Yes Over 500 ppm

☐ Yes Over 50 ppm

☑ Yes PCBs are suspected

☐ No PCBs are suspected

If YES, what is the source of the PCBs?

☐ Transformer, capacitor, or ballast

☐ Other, specify _____

☑ Unknown

16. Sample Disposition

☑ Return to Customer

☐ Samples found to contain PCBs will be returned to the customer

☐ Dispose of per facility procedures with applied charges for analyses and disposal

Sample(s) Does Fitness Contact: _____

HPT Signature: _____

17. QC Required ☐ Per 222-S Laboratory Quality Assurance Plan (HNF-SD-CP-QAPP-016) LOI for the 221-U Canyon

☑ Other (list reference document or attach) Disposition Initiative Sampling & Analysis

18. Special Instructions (Special Storage Requirements, Reporting format, holding times, etc.)

See chain of custody

approved for analysis Manifest waste DAW LO1W-114.

Lucinda E. Bierman 1/10/01

19. Requested Turnaround Time

☐ 2 Weeks ☐ 4 Weeks

☑ Other 45 days Preliminary 60 days final

20. Sample Received By: _____ Date: 1-9-01 Time: 1405

21. Chain of Custody

○ No ☑ Yes

Number: B07-025-01

A-6002-365 (01/99)

FH-0102165

ATTACHMENT 7

INTERNAL EMAIL
"HOLDING TIMES FOR 221U SAMPLE B116Y3 ANALYSES"

Consisting of 2 pages
Including cover page

Esch, Ruth A

From: Esch, Ruth A
Sent: Wednesday, January 10, 2001 10:17 AM
To: Trent, Stephen J
Cc: Powell, Katherine L; Fuller, Richard K (Keith); Prilucik, John R; Clark, Glen A
Subject: Holding Times for 221U Sample B116Y3 Analyses

Importance: High

Steve,

Sample B116Y3 was sampled on 1/4/01 and received at the 222-S Laboratory on 1/9/01. The chain of custody (COC) and Sampling Authorization Form (SAF) request of full suite of analyses for radionuclides, inorganics and organics. Several of these requested analyses have relatively short holding times.

Analysis	Holding Time
pH	ASAP
nitrate	48 hours
PCB	14 days to extraction
SVOA	14 days to extraction
VOA	14 days

The delay in delivery has already consumed 5 days of these very short holding times.

A very small sample volume (35 mL) was received, which will either limit the number of analyses that we can perform, or require us to use greatly reduced sample aliquots for analysis, thus increasing reported detection limits. With the limited quantity of sample, the SAF provides a priority listing for the order in which the analyses should be performed to meet the customer's needs. The analytes with the shortest holding times are listed at the end of that priority list.

In addition to delays caused by running the analysis in the requested priority order, the high dose rate of the sample requires that special radiological work screening be performed prior to beginning work on this sample. Preparation and review of this paper work will cause some additional delay to the start of analysis.

The SAF only indicates that the ERC acknowledges the fact that the 48-hour holding time for nitrate will not be met. The intent of this message is to inform you that the combination of the issues discussed above will cause the 222-S Laboratory to miss all of the short holding times for the analyses listed above.

Ruth Esch

Project Coordinator, 222-S Laboratory
373-4314

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-010-11	Page 1 of 2

Collector Baechler/Johansen	Company Contact Bill McMahon	Telephone No. 375-9434	Project Coordinator TRENT, SJ	Price Code 7N	Data Turnaround Field
Project Designation 100-HR-3 Treatment System - Quarterly Sampling	Sampling Location 100 HR-3 P&T		SAF No. B02-010	Air Quality ☐	
Ice Chest No. N/A	Field Logbook No. EL1390-8	COA R10HR3C560	Method of Shipment Gov vehicle		
Shipped To Field Analysis Activities	Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A		

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS

Preservation	None											
Type of Container	aG											
No. of Container(s)	1											
Volume	60mL											
	Chromium - Hex											
Sample No.	Matrix *	Sample Date	Sample Time									
B14L49	WATER	5/21/02	0842	X								
B14L50	WATER	5/21/02	0945	X								
B14L51	WATER	5/21/02	0945	X								
B14L52	WATER	5/21/02	1002	X								
B14L53	WATER	5/21/02	1011	X								

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

** Cr VI holding times MUST BE MET. Sample Management must be contacted immediately if there is a problem.

** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 will not be met.

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method: Return to Project	Disposed By: [illegible]	Date/Time: 5/31/02 1140

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-010-11	Page 2 of 2
Collector Baechler/Johansen	Company Contact Bill McMahon Telephone No. 375-9434	Project Coordinator TRENT, SJ	Price Code 7N Data Turnaround Field
Project Designation 100-HR-3 Treatment System - Quarterly Sampling	Sampling Location 100 HR-3 P&T	SAF No. B02-010	Air Quality ☐
Ice Chest No. N/A	Field Logbook No. CL1390-8 COA R10HR3C560	Method of Shipment Gov vehicle	
Shipped To Field Analysis Activities	Offsite Property No. N/A	Bill of Lading/Air Bill No. N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None										
Type of Container	nG										
No. of Container(s)	1										
Volume	60mL										
SAMPLE ANALYSIS	Chromium - Hex										
Sample No. / Matrix * / Sample Date / Sample Time											
B14L54 / WATER / 5/21/02 / 1030	X										
B14L55 / WATER / 5/21/02 / 0757	X										
B14L56 / WATER / 5/21/02 / 0806	X										
~~B14L57 / WATER / 1105 5/21~~											

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

** Cr VI holding times MUST BE MET. Sample Management must be contacted immediately if there is a problem.

** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 will not be met.

Matrix *

S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method: Return to Project [illegible]	Disposed By: 5/21/02 1140	Date/Time

BHI-EE-011 (03/01/2002)