Quanterra Incorporated
5815 Middlebrook Pike
Knoxville, Tennessee 37921

423 588-6401 Telephone
423 584-4315 Fax

0051987

CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352

May 20, 1999

Attention: Rich Weiss

JUN 1999 RECEIVED Data Log In

SAF Number	:	B99-053
Date Samples Received	:	May 5, 1999
Number of Samples	:	Four (4)
Sample Type	:	Air
SDG Number	:	W02766
Data Deliverable	:	45 Day Data Package

NOV 1999 RECEIVED EDMC

I. Introduction

Four (4) air samples were received on May 5, 1999 by the Quanterra Environmental Services Knoxville Laboratory (QESKL) for analysis. A duplicate sample was assigned for each analysis. Upon receipt, the samples were assigned the following laboratory ID number to correspond with the Bechtel Hanford, Inc. (BHI) specific ID:

QESRL ID#	BHI ID#	MATRIX	DATE OF RECEIPT
CVFXP	B0V810	Air	5/5/99
CVFXQ	B0V811	Air	5/5/99
CVFXR	B0V812	Air	5/5/99
CVFXT	B0V813	Air	5/5/99
CVMCV	B0V810 DUPLICATE	Air	5/5/99
CVMD5	B0V811 DUPLICATE	Air	5/5/99

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Knoxville, Tennessee 37921
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II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information and analytical results.

The requested analysis was:

Volatile Organics by TO-14
Reformed Gases by ASTM D 1946/E260

III. Quality Control

The analytical results for the analysis performed includes a minimum of one Laboratory Control Sample (LCS) and duplicate.

Quality control sample results are reported in the same units as sample results.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Jamie McKinney
Project Manager

BECHTEL HANFORD, INC.

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9E060113 002
Method: EPA-2 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL Date Received: 05/06/99
Work Order: CVFXQ101 Date Extracted:05/12/99
Dilution factor: 158177.3 Date Analyzed: 05/12/99

QC Batch: 9132163

Client Sample Id: B0V811

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
75-71-8	Dichlorodifluoromethane	32000	U
75-45-6	Chlorodifluoromethane	32000	U
76-14-2	1,2-Dichloro-1,1,2,2-tetrafl	32000	U
74-87-3	Chloromethane	79000	U
75-01-4	Vinyl chloride	32000	U
106-97-8	n-Butane	32000	U
106-99-0	1,3-Butadiene	32000	U
74-83-9	Bromomethane	32000	U
75-00-3	Chloroethane	32000	U
75-69-4	Trichlorofluoromethane	32000	U
109-66-0	Pentane	79000	U
75-35-4	1,1-Dichloroethene	32000	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	32000	U
75-15-0	Carbon disulfide	32000	U
107-05-1	3-Chloropropene	32000	U
75-09-2	Methylene chloride	32000	U
156-60-5	trans-1,2-Dichloroethene	32000	U
110-54-3	n-Hexane	32000	U
75-34-3	1,1-Dichloroethane	32000	U
156-59-2	cis-1,2-Dichloroethene	32000	U
67-66-3	Chloroform	32000	U
71-55-6	1,1,1-Trichloroethane	32000	U
110-82-7	Cyclohexane	79000	U
56-23-5	Carbon tetrachloride	32000	U
71-43-2	Benzene	32000	U
107-06-2	1,2-Dichloroethane	32000	U
142-82-5	n-Heptane	32000	U
79-01-6	Trichloroethene	32000	U

BECHTEL HANFORD, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) AIR

Lab Sample ID:H9E060113 .002

Method: EPA-2 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL
Work Order: CVFXQ101
Dilution factor: 158177.3

Date Received: 05/06/99
Date Extracted:05/12/99
Date Analyzed: 05/12/99

QC Batch: 9132163

Client Sample Id: B0V811

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
78-87-5	1,2-Dichloropropane	32000	U
74-95-3	Dibromomethane	32000	U
75-27-4	Bromodichloromethane	32000	U
10061-01-5	cis-1,3-Dichloropropene	32000	U
108-88-3	Toluene	32000	U
111-65-9	n-Octane	32000	U
10061-02-6	trans-1,3-Dichloropropene	32000	U
79-00-5	1,1,2-Trichloroethane	32000	U
127-18-4	Tetrachloroethene	32000	U
124-48-1	Dibromochloromethane	32000	U
106-93-4	1,2-Dibromoethane (EDB)	32000	U
108-90-7	Chlorobenzene	32000	U
100-41-4	Ethylbenzene	32000	U
136777-61-2	m-Xylene & p-Xylene	32000	U
111-84-2	Nonane	32000	U
95-47-6	o-Xylene	32000	U
100-42-5	Styrene	32000	U
75-25-2	Bromoform	32000	U
98-82-8	Cumene	32000	U
79-34-5	1,1,2,2-Tetrachloroethane	32000	U
103-65-1	n-Propylbenzene	32000	U
108-67-8	1,3,5-Trimethylbenzene	32000	U
124-18-5	n-Decane	32000	U
98-83-9	alpha-Methylstyrene	32000	U
95-63-6	1,2,4-Trimethylbenzene	32000	U
541-73-1	1,3-Dichlorobenzene	32000	U
106-46-7	1,4-Dichlorobenzene	32000	U
100-44-7	Benzyl chloride	32000	U

BECHTEL HANFORD, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) AIR

Lab Sample ID:H9E060113 002

Method: EPA-2 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL
Work Order: CVFXQ101
Dilution factor: 158177.3

Date Received: 05/06/99
Date Extracted:05/12/99
Date Analyzed: 05/12/99

QC Batch: 9132163

Client Sample Id: B0V811

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
95-50-1	1,2-Dichlorobenzene	32000	U
1120-21-4	n-Undecane	32000	U
112-40-3	n-Dodecane	32000	U
120-82-1	1,2,4-Trichlorobenzene	32000	U
87-68-3	Hexachlorobutadiene	32000	U
91-20-3	Naphthalene	32000	U
67-56-1	Methanol	1600000	U
60-29-7	Ethyl ether	79000	U
67-64-1	Acetone	790000	U
107-13-1	Acrylonitrile	79000	U
108-05-4	Vinyl acetate	79000	U
78-93-3	2-Butanone (MEK)	79000	U
71-36-3	1-Butanol	79000	U
108-10-1	**4-Methyl-2-pentanone (MIBK)**	**7100000**	
591-78-6	2-Hexanone	79000	U
1634-04-4	Methyl tert-butyl ether	79000	U
107-02-8	Acrolein	79000	U
75-05-8	Acetonitrile	160000	U

BECHTEL HANFORD, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) AIR

Lab Sample ID:H9E060113 004

Method: EPA-2 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL
Work Order: CVFXT101
Dilution factor: 706225

Date Received: 05/06/99
Date Extracted:05/12/99
Date Analyzed: 05/12/99

QC Batch: 9132163

Client Sample Id: B0V813

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
75-71-8	Dichlorodifluoromethane	140000	U
75-45-6	Chlorodifluoromethane	140000	U
76-14-2	1,2-Dichloro-1,1,2,2-tetrafl	140000	U
74-87-3	Chloromethane	350000	U
75-01-4	Vinyl chloride	140000	U
106-97-8	n-Butane	140000	U
106-99-0	1,3-Butadiene	140000	U
74-83-9	Bromomethane	140000	U
75-00-3	Chloroethane	140000	U
75-69-4	Trichlorofluoromethane	140000	U
109-66-0	Pentane	350000	U
75-35-4	1,1-Dichloroethene	140000	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	140000	U
75-15-0	Carbon disulfide	140000	U
107-05-1	3-Chloropropene	140000	U
75-09-2	Methylene chloride	140000	U
156-60-5	trans-1,2-Dichloroethene	140000	U
110-54-3	n-Hexane	140000	U
75-34-3	1,1-Dichloroethane	140000	U
156-59-2	cis-1,2-Dichloroethene	140000	U
67-66-3	Chloroform	140000	U
71-55-6	1,1,1-Trichloroethane	140000	U
110-82-7	Cyclohexane	350000	U
56-23-5	Carbon tetrachloride	140000	U
71-43-2	Benzene	140000	U
107-06-2	1,2-Dichloroethane	140000	U
142-82-5	n-Heptane	140000	U
79-01-6	Trichloroethene	140000	U

BECHTEL HANFORD, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) AIR

Lab Sample ID:H9E060113 004

Method: EPA-2 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL
Work Order: CVFXT101
Dilution factor: 706225

Date Received: 05/06/99
Date Extracted:05/12/99
Date Analyzed: 05/12/99

QC Batch: 9132163

Client Sample Id: B0V813

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
78-87-5	1,2-Dichloropropane	140000	U
74-95-3	Dibromomethane	140000	U
75-27-4	Bromodichloromethane	140000	U
10061-01-5	cis-1,3-Dichloropropene	140000	U
108-88-3	Toluene	140000	U
111-65-9	n-Octane	140000	U
10061-02-6	trans-1,3-Dichloropropene	140000	U
79-00-5	1,1,2-Trichloroethane	140000	U
127-18-4	Tetrachloroethene	140000	U
124-48-1	Dibromochloromethane	140000	U
106-93-4	1,2-Dibromoethane (EDB)	140000	U
108-90-7	Chlorobenzene	140000	U
100-41-4	Ethylbenzene	140000	U
136777-61-2	m-Xylene & p-Xylene	140000	U
111-84-2	Nonane	140000	U
95-47-6	o-Xylene	140000	U
100-42-5	Styrene	140000	U
75-25-2	Bromoform	140000	U
98-82-8	Cumene	140000	U
79-34-5	1,1,2,2-Tetrachloroethane	140000	U
103-65-1	n-Propylbenzene	140000	U
108-67-8	1,3,5-Trimethylbenzene	140000	U
124-18-5	n-Decane	140000	U
98-83-9	alpha-Methylstyrene	140000	U
95-63-6	1,2,4-Trimethylbenzene	140000	U
541-73-1	1,3-Dichlorobenzene	140000	U
106-46-7	1,4-Dichlorobenzene	140000	U
100-44-7	Benzyl chloride	140000	U

BECHTEL HANFORD, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) AIR

Lab Sample ID:H9E060113 004

Method: EPA-2 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL
Work Order: CVFXT101
Dilution factor: 706225

Date Received: 05/06/99
Date Extracted:05/12/99
Date Analyzed: 05/12/99

QC Batch: 9132163

Client Sample Id: B0V813

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
95-50-1	1,2-Dichlorobenzene	140000	U
1120-21-4	n-Undecane	140000	U
112-40-3	n-Dodecane	140000	U
120-82-1	1,2,4-Trichlorobenzene	140000	U
87-68-3	Hexachlorobutadiene	140000	U
91-20-3	Naphthalene	140000	U
67-56-1	Methanol	7100000	U
60-29-7	Ethyl ether	350000	U
67-64-1	Acetone	3500000	U
107-13-1	Acrylonitrile	350000	U
108-05-4	Vinyl acetate	350000	U
78-93-3	2-Butanone (MEK)	350000	U
71-36-3	1-Butanol	350000	U
108-10-1	**4-Methyl-2-pentanone (MIBK)**	**15000000**	
591-78-6	2-Hexanone	350000	U
1634-04-4	Methyl tert-butyl ether	350000	U
107-02-8	Acrolein	350000	U
75-05-8	Acetonitrile	710000	U

BECHTEL HANFORD, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) AIR

Lab Sample ID:H9E060113 006

Method: EPA-2 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL
Work Order: CVMD5101
Dilution factor: 158177.3

Date Received: 05/06/99
Date Extracted:05/12/99
Date Analyzed: 05/12/99

QC Batch: 9132163

Client Sample Id: B0V811 DUPLICATE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
75-71-8	Dichlorodifluoromethane	32000	U
75-45-6	Chlorodifluoromethane	32000	U
76-14-2	1,2-Dichloro-1,1,2,2-tetrafl	32000	U
74-87-3	Chloromethane	79000	U
75-01-4	Vinyl chloride	32000	U
106-97-8	n-Butane	32000	U
106-99-0	1,3-Butadiene	32000	U
74-83-9	Bromomethane	32000	U
75-00-3	Chloroethane	32000	U
75-69-4	Trichlorofluoromethane	32000	U
109-66-0	Pentane	79000	U
75-35-4	1,1-Dichloroethene	32000	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	32000	U
75-15-0	Carbon disulfide	32000	U
107-05-1	3-Chloropropene	32000	U
75-09-2	Methylene chloride	32000	U
156-60-5	trans-1,2-Dichloroethene	32000	U
110-54-3	n-Hexane	32000	U
75-34-3	1,1-Dichloroethane	32000	U
156-59-2	cis-1,2-Dichloroethene	32000	U
67-66-3	Chloroform	32000	U
71-55-6	1,1,1-Trichloroethane	32000	U
110-82-7	Cyclohexane	79000	U
56-23-5	Carbon tetrachloride	32000	U
71-43-2	Benzene	32000	U
107-06-2	1,2-Dichloroethane	32000	U
142-82-5	n-Heptane	32000	U
79-01-6	Trichloroethene	32000	U

BECHTEL HANFORD, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) AIR

Lab Sample ID:H9E060113 006

Method: EPA-2 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL
Work Order: CVMD5101
Dilution factor: 158177.3

Date Received: 05/06/99
Date Extracted:05/12/99
Date Analyzed: 05/12/99

QC Batch: 9132163

Client Sample Id: B0V811 DUPLICATE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
78-87-5	1,2-Dichloropropane	32000	U
74-95-3	Dibromomethane	32000	U
75-27-4	Bromodichloromethane	32000	U
10061-01-5	cis-1,3-Dichloropropene	32000	U
108-88-3	Toluene	32000	U
111-65-9	n-Octane	32000	U
10061-02-6	trans-1,3-Dichloropropene	32000	U
79-00-5	1,1,2-Trichloroethane	32000	U
127-18-4	Tetrachloroethene	32000	U
124-48-1	Dibromochloromethane	32000	U
106-93-4	1,2-Dibromoethane (EDB)	32000	U
108-90-7	Chlorobenzene	32000	U
100-41-4	Ethylbenzene	32000	U
136777-61-2	m-Xylene & p-Xylene	32000	U
111-84-2	Nonane	32000	U
95-47-6	o-Xylene	32000	U
100-42-5	Styrene	32000	U
75-25-2	Bromoform	32000	U
98-82-8	Cumene	32000	U
79-34-5	1,1,2,2-Tetrachloroethane	32000	U
103-65-1	n-Propylbenzene	32000	U
108-67-8	1,3,5-Trimethylbenzene	32000	U
124-18-5	n-Decane	32000	U
98-83-9	alpha-Methylstyrene	32000	U
95-63-6	1,2,4-Trimethylbenzene	32000	U
541-73-1	1,3-Dichlorobenzene	32000	U
106-46-7	1,4-Dichlorobenzene	32000	U
100-44-7	Benzyl chloride	32000	U

BECHTEL HANFORD, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) AIR

Lab Sample ID:H9E060113 006

Method: EPA-2 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL
Work Order: CVMD5101
Dilution factor: 158177.3

Date Received: 05/06/99
Date Extracted:05/12/99
Date Analyzed: 05/12/99

QC Batch: 9132163

Client Sample Id: B0V811 DUPLICATE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
95-50-1	1,2-Dichlorobenzene	32000	U
1120-21-4	n-Undecane	32000	U
112-40-3	n-Dodecane	32000	U
120-82-1	1,2,4-Trichlorobenzene	32000	U
87-68-3	Hexachlorobutadiene	32000	U
91-20-3	Naphthalene	32000	U
67-56-1	Methanol	1600000	U
60-29-7	Ethyl ether	79000	U
67-64-1	Acetone	790000	U
107-13-1	Acrylonitrile	79000	U
108-05-4	Vinyl acetate	79000	U
78-93-3	2-Butanone (MEK)	79000	U
71-36-3	1-Butanol	79000	U
108-10-1	**4-Methyl-2-pentanone (MIBK)**	**7300000**	
591-78-6	2-Hexanone	79000	U
1634-04-4	Methyl tert-butyl ether	79000	U
107-02-8	Acrolein	79000	U
75-05-8	Acetonitrile	160000	U

BECHTEL HANFORD, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9E120000 163
Method: EPA-2 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL Date Received: 04/16/99
Work Order: CVN8V101 Date Extracted:05/12/99
Dilution factor: 1 Date Analyzed: 05/12/99

QC Batch: 9132163

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
75-71-8	Dichlorodifluoromethane	0.20	U
75-45-6	Chlorodifluoromethane	0.20	U
76-14-2	1,2-Dichloro-1,1,2,2-tetrafl	0.20	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl chloride	0.20	U
106-97-8	n-Butane	0.20	U
106-99-0	1,3-Butadiene	0.20	U
74-83-9	Bromomethane	0.20	U
75-00-3	Chloroethane	0.20	U
75-69-4	Trichlorofluoromethane	0.20	U
109-66-0	Pentane	0.50	U
75-35-4	1,1-Dichloroethene	0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	0.20	U
75-15-0	Carbon disulfide	0.20	U
107-05-1	3-Chloropropene	0.20	U
75-09-2	Methylene chloride	0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	U
110-54-3	n-Hexane	0.20	U
75-34-3	1,1-Dichloroethane	0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	U
67-66-3	Chloroform	0.20	U
71-55-6	1,1,1-Trichloroethane	0.20	U
110-82-7	Cyclohexane	0.50	U
56-23-5	Carbon tetrachloride	0.20	U
71-43-2	Benzene	0.20	U
107-06-2	1,2-Dichloroethane	0.20	U
142-82-5	n-Heptane	0.20	U
79-01-6	Trichloroethene	0.20	U

BECHTEL HANFORD, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9E120000 163
Method: EPA-2 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL Date Received: 04/16/99
Work Order: CVN8V101 Date Extracted:05/12/99
Dilution factor: 1 Date Analyzed: 05/12/99

QC Batch: 9132163

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
78-87-5	1,2-Dichloropropane	0.20	U
74-95-3	Dibromomethane	0.20	U
75-27-4	Bromodichloromethane	0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	U
108-88-3	Toluene	0.20	U
111-65-9	n-Octane	0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	U
127-18-4	Tetrachloroethene	0.20	U
124-48-1	Dibromochloromethane	0.20	U
106-93-4	1,2-Dibromoethane (EDB)	0.20	U
108-90-7	Chlorobenzene	0.20	U
100-41-4	Ethylbenzene	0.20	U
136777-61-2	m-Xylene & p-Xylene	0.20	U
111-84-2	Nonane	0.20	U
95-47-6	o-Xylene	0.20	U
100-42-5	Styrene	0.20	U
75-25-2	Bromoform	0.20	U
98-82-8	Cumene	0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	U
103-65-1	n-Propylbenzene	0.20	U
108-67-8	1,3,5-Trimethylbenzene	0.20	U
124-18-5	n-Decane	0.20	U
98-83-9	alpha-Methylstyrene	0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	U
100-44-7	Benzyl chloride	0.20	U

BECHTEL HANFORD, INC.
METHOD BLANK COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9E120000 163
Method: EPA-2 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL Date Received: 04/16/99
Work Order: CVN8V101 Date Extracted:05/12/99
Dilution factor: 1 Date Analyzed: 05/12/99

QC Batch: 9132163

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
95-50-1	1,2-Dichlorobenzene	0.20	U
1120-21-4	n-Undecane	0.20	U
112-40-3	n-Dodecane	0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.20	U
87-68-3	Hexachlorobutadiene	0.20	U
91-20-3	Naphthalene	0.20	U
67-56-1	Methanol	10	U
60-29-7	Ethyl ether	0.50	U
67-64-1	Acetone	5.0	U
107-13-1	Acrylonitrile	0.50	U
108-05-4	Vinyl acetate	0.50	U
78-93-3	2-Butanone (MEK)	0.50	U
71-36-3	1-Butanol	0.50	U
108-10-1	4-Methyl-2-pentanone (MIBK)	0.50	U
591-78-6	2-Hexanone	0.50	U
1634-04-4	Methyl tert-butyl ether	0.50	U
107-02-8	Acrolein	0.50	U
75-05-8	Acetonitrile	1.0	U

BECHTEL HANFORD, INC.
CHECK SAMPLE COMPOUNDS

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9E120000 163
Method: EPA-2 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL Date Received: 04/16/99
Work Order: CVN8V102 Date Extracted:05/12/99
Dilution factor: 1 Date Analyzed: 05/12/99

QC Batch: 9132163

Client Sample Id: CHECK SAMPLE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
71-43-2	Benzene	8.1	
108-90-7	Chlorobenzene	8.1	
75-35-4	1,1-Dichloroethene	8.1	
108-88-3	Toluene	8.5	
79-01-6	Trichloroethene	8.2	

EPA-2 TO-14 SURROGATE RECOVERY

~~Lab Name: QUANTERRA Client: BECHTEL HANFORD, INC.~~

Lab Code: QESKNX QESSDG:

Lot #: H9E060113

	CLIENT ID.	SRG01	SRG02	SRG03	TOT OUT
01	B0V811	98	98	98	00
02	B0V813	99	101	97	00
03	B0V811 DUPLICATE	97	96	97	00
04	METHOD BLK. CVN8V101	98	102	96	00
05	LCS CVN8V102	100	103	100	00

SURROGATES		QC LIMITS
SRG01	= 1,2-Dichloroethane-d4	(70-130)
SRG02	= Toluene-d8	(70-130)
SRG03	= 4-Bromofluorobenzene	(70-130)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

EPA-2 TO-14 CHECK SAMPLE RECOVERY

Lab Name: QUANTERRA Client: BECHTEL HANFORD, INC.

Lab Code: QESKNX SDG No:

Lot #: H9E120000 WO #: CVN8V102
BATCH: 9132163

COMPOUND	SPIKE ADDED (ppb(v)	SAMPLE CONCENT. (ppb(v)	% REC	QC LIMITS REC	QUAL
Benzene	10	8.1	81	70 - 130	
Chlorobenzene	10	8.1	81	70 - 130	
1,1-Dichloroethene	10	8.1	81	70 - 130	
Toluene	10	8.5	85	70 - 130	
Trichloroethene	10	8.2	82	70 - 130	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III

BLANK WORKORDER NO.

CVN8V101

EPA-2 TO-14 METHOD BLANK SUMMARY

Lab Name: QUANTERRA

Lab Code: QESKNX

SDG Number:

Lab File ID: ABLKB3.d

Lot Number: H9E060113

Date Analyzed: 05/12/99

Time Analyzed: 13:29

Matrix: AIR

Date Extracted:05/12/99

GC Column: DB-5 ID: .32

Extraction Method: TO-14

Instrument ID: MM

Level:(low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	B0V811	CVFXQ101	CVFXQR.d	05/12/99	15:25
02	B0V813	CVFXT101	CVFXTR.d	05/12/99	16:24
03	B0V811 DUPLICATE	CVMD5101	CVMD5.d	05/12/99	15:54
04	CHECK SAMPLE	CVN8V102 C	LC0512M.d	05/12/99	12:00
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
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27					
28					
29					
30					

COMMENTS:

FORM IV

Sample Data Summary

BECHTEL HANFORD, INC.

Client Sample ID: B0V810

GC Volatiles

Lot-Sample #...: H9E060113-001 **Work Order #...:** CVFXP101 **Matrix.....:** AIR
Date Sampled...: 05/04/99 **Date Received..:** 05/06/99
Prep Date.....: 05/13/99 **Analysis Date..:** 05/13/99
Prep Batch #...: 9134151
Dilution Factor: 4.24 **Method.....:** ASTM D 1946/E 260

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Carbon dioxide	ND	0.42	%
Carbon monoxide	ND	0.42	%
Methane	ND	0.42	%
Oxygen	**22**	**0.42**	**%**
Nitrogen	**79**	**0.42**	**%**

BECHTEL HANFORD, INC.

Client Sample ID: B0V810

GC Volatiles

Lot-Sample #...: H9E060113-001 **Work Order #...:** CVFXP201 **Matrix.....:** AIR
Date Sampled...: 05/04/99 **Date Received..:** 05/06/99
Prep Date.....: 05/14/99 **Analysis Date..:** 05/14/99
Prep Batch #...: 9134157
Dilution Factor: 2.12 **Method.....:** ASTM D 1946/E 260

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Ethane	ND	0.21	%
Ethene	ND	0.21	%

BECHTEL HANFORD, INC.

Client Sample ID: B0V812

GC Volatiles

Lot-Sample #...: H9E060113-003 **Work Order #...:** CVFXR101 **Matrix.....:** AIR
Date Sampled...: 05/04/99 **Date Received..:** 05/06/99
Prep Date.....: 05/13/99 **Analysis Date..:** 05/13/99
Prep Batch #...: 9134151
Dilution Factor: 4.26 **Method.....:** ASTM D 1946/E 260

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Carbon dioxide	ND	0.43	%
Carbon monoxide	ND	0.43	%
Methane	ND	0.43	%
Oxygen	**22**	**0.43**	**%**
Nitrogen	**79**	**0.43**	**%**

BECHTEL HANFORD, INC.

Client Sample ID: B0V812

GC Volatiles

Lot-Sample #...: H9E060113-003 **Work Order #...:** CVFXR201 **Matrix.....:** AIR
Date Sampled...: 05/04/99 **Date Received..:** 05/06/99
Prep Date.....: 05/14/99 **Analysis Date..:** 05/14/99
Prep Batch #...: 9134157
Dilution Factor: 2.13 **Method.....:** ASTM D 1946/E 260

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Ethane	ND	0.21	%
Ethene	ND	0.21	%

BECHTEL HANFORD, INC.

Client Sample ID: B0V810 DUPLICATE

GC Volatiles

Lot-Sample #...: H9E060113-005 **Work Order #...:** CVMCV101 **Matrix.....:** AIR
Date Sampled...: 05/04/99 **Date Received..:** 05/06/99
Prep Date.....: 05/13/99 **Analysis Date..:** 05/13/99
Prep Batch #...: 9134151
Dilution Factor: 4.24 **Method.....:** ASTM D 1946/E 260

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Carbon dioxide	ND	0.42	%
Carbon monoxide	ND	0.42	%
Methane	ND	0.42	%
Oxygen	**21**	**0.42**	**%**
Nitrogen	**78**	**0.42**	**%**

BECHTEL HANFORD, INC.

Client Sample ID: B0V810 DUPLICATE

GC Volatiles

Lot-Sample #...: H9E060113-005 **Work Order #...:** CVMCV201 **Matrix.....:** AIR
Date Sampled...: 05/04/99 **Date Received..:** 05/06/99
Prep Date.....: 05/14/99 **Analysis Date..:** 05/14/99
Prep Batch #...: 9134157
Dilution Factor: 2.12 **Method.....:** ASTM D 1946/E 260

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Ethane	ND	0.21	%
Ethene	ND	0.21	%

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: H9E060113 **Work Order #...:** CVR7D101 **Matrix.....:** AIR
MB Lot-Sample #: H9E140000-151

Prep Date.....: 05/13/99
Analysis Date..: 05/13/99 **Prep Batch #...:** 9134151
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Carbon dioxide	ND	0.10	%	ASTM D 1946/E 260
Carbon monoxide	ND	0.10	%	ASTM D 1946/E 260
Methane	ND	0.10	%	ASTM D 1946/E 260
Oxygen	ND	0.10	%	ASTM D 1946/E 260
Nitrogen	ND	0.10	%	ASTM D 1946/E 260

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: H9E060113 **Work Order #...:** CVR89101 **Matrix.....:** AIR
MB Lot-Sample #: H9E140000-157

Prep Date.....: 05/14/99
Analysis Date..: 05/14/99 **Prep Batch #...:** 9134157
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Ethane	ND	0.10	%	ASTM D 1946/E 260
Ethene	ND	0.10	%	ASTM D 1946/E 260

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: H9E060113 **Work Order #...:** CVR7D102 **Matrix.....:** AIR
LCS Lot-Sample#: H9E140000-151
Prep Date.....: 05/13/99 **Analysis Date..:** 05/13/99
Prep Batch #...: 9134151
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Methane	**4.0**	**3.8**	**%**	**94**	**ASTM D 1946/E**
Carbon dioxide	**5.0**	**4.7**	**%**	**94**	**ASTM D 1946/E**
Nitrogen	**5.0**	**5.2**	**%**	**105**	**ASTM D 1946/E**

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: H9E060113 **Work Order #...:** CVR7D102 **Matrix.....:** AIR
LCS Lot-Sample#: H9E140000-151
Prep Date.....: 05/13/99 **Analysis Date..:** 05/13/99
Prep Batch #...: 9134151
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Methane	**94**	**(70 - 130)**	**ASTM D 1946/E 260**
Carbon dioxide	**94**	**(75 - 125)**	**ASTM D 1946/E 260**
Nitrogen	**105**	**(70 - 130)**	**ASTM D 1946/E 260**

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: H9E060113 **Work Order #...:** CVR89102 **Matrix.....:** AIR
LCS Lot-Sample#: H9E140000-157
Prep Date.....: 05/14/99 **Analysis Date..:** 05/14/99
Prep Batch #...: 9134157
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Ethene	**5.0**	**4.4**	**%**	**88**	**ASTM D 1946/E**

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: H9E060113 **Work Order #...:** CVR89102 **Matrix.....:** AIR
LCS Lot-Sample#: H9E140000-157
Prep Date.....: 05/14/99 **Analysis Date..:** 05/14/99
Prep Batch #...: 9134157
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Ethene	**88**	**(70 - 130)**	**ASTM D 1946/E 260**

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Sample Receipt Documentation

H9F060113

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-053-04	Page 1 of 1

Collector Doug Bowers	Company Contact Tom Brown Telephone No. 376-1547	Project Coordinator TRENT, SJ	Price Code Data Turnaround 45 Days
Project Designation 276-S Hexone Storage Tank	Sampling Location 276-S Hexone tanks (200 West)	SAF No. B99-053	
Ice Chest No.	Field Logbook No. EFL 1133-7	Method of Shipment Gov Vehicle	
Shipped To Quanterra Incorporated	Offsite Property No.	Bill of Lading/Air Bill No.	
		COA BAERRP 9600	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None									
	Type of Container	Summa Canister									
Special Handling and/or Storage	No. of Container(s)	1						Rec'd Ambient Custody seals intact D.F. 5-6-99			
	Volume	6L									
SAMPLE ANALYSIS		VOA - T0-14 (Add-on) (4-Methyl-2-Pentanone)									

	Sample No.	Matrix *	Sample Date	Sample Time									
*	B0V810	Vapor	5-4-99	1416	X			Tank	276-S	142	@ 5' 7"	B0V873	
	B0V811	Vapor	5-4-99	1427	X			Tank	276-S	142	@ 14'	B0V873	
*	B0V812	Vapor	5-4-99	1448	X			Tank	276-S	141	@ 5' 7"	B0V872	
	B0V813	Vapor	5-4-99	1457	X			Tank	276-S	141	@ 14'	B0V872	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers / Doug Bowers	Date/Time 5-4-99/1600	Received By RF IC 3728	Date/Time 5-4-99/1600
Relinquished By RF IC 3728	Date/Time 5-5-99/0715	Received By Doug Bowers	Date/Time 5-5-99/0715
Relinquished By Doug Bowers / Doug Bowers	Date/Time 5-5-99/0726	Received By Heidelberg	Date/Time 5-5-99 0726
Relinquished By Heidelberg	Date/Time 5-5-99 1600	Received By David D. Flora	Date/Time 5-6-99 0915

SPECIAL INSTRUCTIONS
** Close SDG upon receipt of samples.

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

0034

Quanterra
Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(423) 588-6401

KY060113

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 5927
Page 1 of ____

Project Name/No. 1
Sample Team Members 2
Profit Center No. 3
Project Manager 4
Purchase Order No. 6
Required Report Date 11

Samples Shipment Date 7
Lab Destination 8 Oak Ridge
Lab Contact 9
Project Contact/Phone 12
Carrier/Waybill No. 13

Bill to: 5
Report to: 10

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Preservative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
CAN# 11417	Summa Can	NA	NA	NA	NA	Sent out for testing	FOR LAB USE ONLY Rec'd Ambient Custody seals intact DF. 5-6-99	
CAN# 1039								
CAN# 02300								
CAN#0174								

Special Instructions: 23

Possible Hazard Identification: 24
Non-hazard ☒ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: 25
Return to Client ☐ Disposal by Lab ☐ Archive (mos

Turnaround Time Required: 26
Normal ☐ Rush ☐

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by 28 (Signature/Affiliation) [signature]	Date: 5-3-99 Time: 17:00	1. Received by 28 (Signature/Affiliation) [signature]	Date: 5-4-99 Time: 10:00
2. Relinquished by (Signature/Affiliation) [signature]	Date: 5-4-99 Time: 10:00	2. Received by (Signature/Affiliation) Doug Barnes ERC [signature]	Date: 5-4-99 Time: 1010
3. Relinquished by (Signature/Affiliation) Doug Barnes ERC [signature]	Date: 5-5-99 Time: 0726	3. Received by (Signature/Affiliation) [signature]	Date: 5-5-99 Time: 0726

Comments: 29

Rec'd by David D. Flores 5-6-99 0915

0035

ERC Radiological Counting Facility Analysis Report

RCF Number RCF5729

Sample Date & Time 4/8/99 1339

Project ID: 276-S (RadScreen) SAF Number: B99-053 Date Analyzed 4/9/99

Sample ID: B0V872

Gamma Energy Analysis

Nuclide		Activity (pCi/g)	Error (pCi/g)	MDC (pCi/g)
K-40 #	<	3.3E+01		3.3E+01
Co-60	<	2.2E+00		2.2E+00
Cs-137	<	2.5E+00		2.5E+00
Eu-152	<	6.0E+00		6.0E+00
Eu-154	<	3.2E+00		3.2E+00
Eu-155	<	6.3E+00		6.3E+00
Th-232d	<	5.1E+01		5.1E+01
U-235	<	1.5E+01		1.5E+01
Np-237	<	5.2E+00		5.2E+00
U-238d#	<	5.4E+00		5.4E+00
U-238 #	<	1.4E+02		1.4E+02
Am-241	<	3.1E+00		3.1E+00

Post-it® Fax Note 7671	Date	# of pages ▶
To Dave St. John	From K.A. Robertson-DeMers	
Co./Dept.	Co.	
Phone #	Phone # 373-9731	
Fax # 372-9487	Fax #	

Total GEA (pCi/g) +/-

		Activity (pCi/g)		Error (pCi/g)
Gross Alpha**		1.7E-01	+/-	3.4E-01
Gross Beta	<	6.7E-02		

Alpha MDC (pCi/g)
1.4E-01
Beta MDC (pCi/g)
6.7E-02

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDC = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDC GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorbtion
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Kathryn Robertson-DeMers

Analyst Kathryn A. Robertson-DeMers 4/12/99

Report To	Fax
Tom Brown	372-7711
Dave St John	372-9487

Report Printed: Monday, April 12, 1999

ERC Radiological Counting Facility Analysis Report

RCF Number RCF5730

Sample Date & Time 4/8/99 1358

Project ID: 276-S (RadScreen) SAF Number: B99-053 Date Analyzed 4/12/99

Sample ID: B0V873

Gamma Energy Analysis

Nuclide		Activity (pCi/g)	Error (pCi/g)	MDC (pCi/g)
K-40	<	4.4E+01		4.4E+01
Co-60	<	2.9E+00		2.9E+00
Cs-137	<	2.9E+00		2.9E+00
Eu-152	<	6.0E+00		6.0E+00
Eu-154	<	1.3E+01		1.3E+01
Eu-155	<	3.7E+00		3.7E+00
Th-232d#	<	3.8E+01		3.8E+01
U-235	<	1.8E+01		1.8E+01
Np-237	<	8.1E+00		8.1E+00
U-238d	<	9.2E+00		9.2E+00
U-238 #	<	4.8E+02		4.8E+02
Am-241	<	4.2E+00		4.2E+00

Total GEA (pCi/g) +/-

		Activity (pCi/g)	Error (pCi/g)
Gross Alpha**	<	9.9E-02	
Gross Beta	<	2.5E-01	

Alpha MDC (pCi/g)	Beta MDC (pCi/g)
9.9E-02	2.5E-01

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDC = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDC GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorbtion
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Kathryn Robertson-DeMers

Analyst Kathryn A. Robertson-DeMers 4/12/99

Report To	Fax
Tom Brown	372-7711
Dave St John	372-9487

Report Printed: Monday, April 12, 1999

Jean Marshall
BHI Sample Management
Phone: (509) 372-9346
FAX: (509) 372-9487

facsimile transmittal

To: Jamie McKinney
Fax: 423-584-4315
From: Rich Weiss
Date: May 10, 1999
Re: Gas Analysis
Pages: 2
CC:

☑ Quick Turn / Priority Data
☐ Final Data Package

Jamie,

Begin analysis ~~on~~ of the samples on the following sheet as marked. We will provide formal documentation via an SDR shortly.

Call me if you have any questions

Rich Weiss

509-372-9592

SAMPLE SUMMARY

Project ID:	276-S Hexone Storage Tank	Sampling Team:	ERC Sampling
Task ID:	1	Sampling Mgr/Coordinator:	TRENT, SJ
Opperable Unit:	200-RO-2	Samplers:	BOWERS, DL
SAF Number:	B99-053	Field Logbook ID:	EFL 1133-7
		Sampling Media:	Vapor

Sample Number	SDG Number	Location	Analyte Code	Laboratory	Date Collected	Date Shipped	Comments
B0V806	W0FAKE02	276-S Hexone Tank #141	1	Quanterra Incorporated	4/8/99 1:39 PM	4/15/99 12:10 PM	5'7" Light Gas
B0V807	W0FAKE02	276-S Hexone Tank #141	1	Quanterra Incorporated	4/8/99 1:58 PM	4/15/99 12:10 PM	14' TO-14
B0V808	W0FAKE02	276-S Hexone Tank #142	1	Quanterra Incorporated	4/15/99 9:49 AM	4/15/99 12:10 PM	5'7" Light Gas
B0V809	W0FAKE02	276-S Hexone Tank #142	1	Quanterra Incorporated	4/15/99 9:39 AM	4/15/99 12:10 PM	14' TO-14
B0V810	W0FAKE02	276-S Hexone Tank #142	1	Quanterra Incorporated	5/4/99 2:16 PM	5/5/99 7:26 AM	5'7" Light Gas
B0V811	W0FAKE02	276-S Hexone Tank #142	1	Quanterra Incorporated	5/4/99 2:27 PM	5/5/99 7:26 AM	14' TO-14
B0V812	W0FAKE02	276-S Hexone Tank #141	1	Quanterra Incorporated	5/4/99 2:48 PM	5/5/99 7:26 AM	5'7" Light Gas
B0V813	W0FAKE02	276-S Hexone Tank #141	1	Quanterra Incorporated	5/4/99 2:57 PM	5/5/99 7:26 AM	14' TO-14
~~B0V872~~	~~RCF99053~~	~~276-S HEXONE TANK #141~~	~~2~~	~~Radiological Counting Facility~~	~~4/8/99 1:39 PM~~	~~4/9/99 9:20 AM~~	~~Rad. Screen for (B0V806,B0V807)~~
~~B0V873~~	~~RCF99053~~	~~276-S HEXONE TANK #141~~	~~2~~	~~Radiological Counting Facility~~	~~4/8/99 2:16 PM~~	~~4/9/99 9:20 AM~~	~~Rad. Screen for (B0V808,B0V809)~~

alyte Codes:

Date: 5/10/99 10:41:55 AM

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-053-04	Page 1 of 1

Collector: Doug Bowers	Company Contact: Tom Brown — Telephone No.: 376-1547	Project Coordinator: TRENT, SJ	Price Code / Data Turnaround: 45 Days
Project Designation: 276-S Hexone Storage Tank	Sampling Location: 276-S Hexone tanks (200 West)	SAF No.: B99-053	
Ice Chest No.	Field Logbook No.: EFL 1133-7	Method of Shipment: Gov Vehicle	
Shipped To: Quanterra Incorporated	Offsite Property No.	Bill of Lading/Air Bill No.	
		COA BAERRP 9600	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None										
Type of Container	Summa Canister										
No. of Container(s)	1										
Volume	6L										
SAMPLE ANALYSIS	VOA - T0-14 (Add-on) {4-Methyl-2-Pentanone}										

Rec'd Ambient Custody seals intact DF 5-6-99

	Sample No.	Matrix *	Sample Date	Sample Time									
*	B0V810	Vapor	5-4-99	1416	X			Tank	276-S	142	@ 5' 7"	B0U873
	B0V811	Vapor	5-4-99	1427	X			Tank	276-S	142	@ 14'	B0U873
*	B0V812	Vapor	5-4-99	1448	X			Tank	276-S	141	@ 5' 7"	B0U872
	B0V813	Vapor	5-4-99	1457	X			Tank	276-S	141	@ 14'	B0U872

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	Doug Bowers / Doug Bowers	5-4-99/1600	Received By: R.F. IC 3728	5-4-99/1600
Relinquished By	R.F. IC 3728	5-5-99/0715	Received By: Doug Bowers	5-5-99/0715
Relinquished By	Doug Bowers / Doug Bowers	5-5-99/0726	Received By: Heidelberg	5-5-99 0726
Relinquished By	Heidelberg	5-5-99 1600	Received By: David D. Flora	5-6-99 0915

SPECIAL INSTRUCTIONS
** Close SDG upon receipt of samples.

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

* changed to period cases per fax from [illegible]

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(423) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 5927
Page 1 of ___

Project Name/No. 1
Sample Team Members 2
Profit Center No. 3
Project Manager 4
Purchase Order No. 6
Required Report Date 11

Samples Shipment Date 7
Lab Destination 8 Qes Richland
Lab Contact 9
Project Contact/Phone 12
Carrier/Waybill No. 13

Bill to: 5
Report to: 10

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
CAN# 11417	Summa Can	NA	NA	NA	NA	Sent out for testing		
CAN# 1139							FOR LAB USE ONLY	
CAN# 02300							Rec'd Ambient	
CAN# 01701							Custody seals intact	
							DF. 5-6-99	
							FOR LAB USE ONLY	

Special Instructions: 23

Possible Hazard Identification: 24
Non-hazard ☒ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: 25
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required: 26
Normal ☐ Rush ☐

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by 28 (Signature/Affiliation) Justin Wells	Date: 5-3-99 Time: 17:00	1. Received by 28 (Signature/Affiliation) Karen DeBerry	Date: 5-4-99 Time: 10:00
2. Relinquished by (Signature/Affiliation) Karen DeBerry	Date: 5/4/99 Time: 1010	2. Received by (Signature/Affiliation) Doug Barnes ERC / Doug Barnes	Date: 5-4-99 Time: 1010
3. Relinquished by (Signature/Affiliation) Doug Barnes ERC / Doug Barnes	Date: 5-5-99 Time: 0726	3. Received by (Signature/Affiliation) D. Heidelberg	Date: 5-5-99 Time: 0726

Comments: 29

Rec'd by David D. Flores 5-6-99 0915

MCA 3/15/91

ERC Radiological Counting Facility Analysis Report

RCF Number RCF5729

Sample Date & Time 4/8/99 1339

Project ID: 276-S (RadScreen) **SAF Number:** B99-053 **Date Analyzed** 4/9/99

Sample ID: B0V872

Gamma Energy Analysis

Nuclide		Activity (pCi/g)	Error (pCi/g)	MDC (pCi/g)
K-40 #	<	3.3E+01		3.3E+01
Co-60	<	2.2E+00		2.2E+00
Cs-137	<	2.5E+00		2.5E+00
Eu-152	<	6.0E+00		6.0E+00
Eu-154	<	3.2E+00		3.2E+00
Eu-155	<	6.3E+00		6.3E+00
Th-232d	<	5.1E+01		5.1E+01
U-235	<	1.5E+01		1.5E+01
Np-237	<	5.2E+00		5.2E+00
U-238d#	<	5.4E+00		5.4E+00
U-238 #	<	1.4E+02		1.4E+02
Am-241	<	3.1E+00		3.1E+00

Post-it® Fax Note 7671	Date	# of pages ▶
To Dave St. John	From K.A. Robertson-DeMers	
Co./Dept.	Co.	
Phone #	Phone # 373-9731	
Fax # 372-9487	Fax #	

Total GEA (pCi/g) +/-

		Activity (pCi/g)		Error (pCi/g)
Gross Alpha**		1.7E-01	+/-	3.4E-01
Gross Beta	<	6.7E-02		

Alpha MDC (pCi/g)
1.4E-01
Beta MDC (pCi/g)
6.7E-02

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDC = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDC GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorbtion
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Kathryn Robertson-DeMers

Analyst Kathryn A. Robertson-DeMers 4/12/99

Report To	Fax
Tom Brown	372-7711
Dave St John	372-9487

Report Printed: Monday, April 12, 1999

ERC Radiological Counting Facility Analysis Report

RCF Number RCF5730

Sample Date & Time 4/8/99 1358

Project ID: 276-S (RadScreen) **SAF Number:** B99-053 **Date Analyzed** 4/12/99

Sample ID: B0V873

Gamma Energy Analysis

Nuclide		Activity (pCi/g)	Error (pCi/g)	MDC (pCi/g)
K-40	<	4.4E+01		4.4E+01
Co-60	<	2.9E+00		2.9E+00
Cs-137	<	2.9E+00		2.9E+00
Eu-152	<	6.0E+00		6.0E+00
Eu-154	<	1.3E+01		1.3E+01
Eu-155	<	3.7E+00		3.7E+00
Th-232d# KMRD 4/12/99	<	3.8E+01		3.8E+01
U-235	<	1.8E+01		1.8E+01
Np-237	<	8.1E+00		8.1E+00
U-238d	<	9.2E+00		9.2E+00
U-238 #	<	4.8E+02		4.8E+02
Am-241	<	4.2E+00		4.2E+00

Total GEA (pCi/g) +/-

		Activity (pCi/g)	Error (pCi/g)
Gross Alpha**	<	9.9E-02	
Gross Beta	<	2.5E-01	

Alpha MDC (pCi/g)
9.9E-02
Beta MDC (pCi/g)
2.5E-01

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDC = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDC GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorbtion
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Kathryn Robertson-DeMers

Analyst Kathryn A. Robertson-DeMers 4/12/99

Report To	Fax
Tom Brown	372-7711
Dave St John	372-9487

Report Printed: Monday, April 12, 1999

CS

Jean Marshall
BHI Sample Management
Phone: (509) 372-9346
FAX: (509) 372-9487

facsimile transmittal

To: Jamie McKinney Fax: 423-~~5~~84-4215

From: Rich Weiss Date: May 10, 1999

Re: Gas Analysis Pages: 2

CC:

☑ Quick Turn / Priority Data ☐ Final Data Package

Jamie,

Begin analysis ~~on~~ of the samples on the following sheet as marked. We will provide formal documentation via an SDR shortly.

Call me if you have any questions.

Rich Weiss

509-372-9592

SAMPLE SUMMARY

Project ID:	*276-S Hexone Storage Tank*	Sampling Team:	*ERC Sampling*
Task ID:	*1*	Sampling Mgr/Coordinator:	*TRENT, SJ*
Operable Unit:	*200-RO-2*	Samplers:	*BOWERS, DL*
SAF Number:	*B99-053*	Field Logbook ID:	*EFL 1133-7*
		Sampling Media:	*Vapor*

Sample Number	SDG Number	Location	Analyte Code	Laboratory	Date Collected	Date Shipped	Comments
B0V806	W0FAKE02	276-S Hexone Tank #141	1	Quanterra Incorporated	4/8/99 1:39 PM	4/15/99 12:10 PM	5'7" Light Gas
B0V807	W0FAKE02	276-S Hexone Tank #141	1	Quanterra Incorporated	4/8/99 1:58 PM	4/15/99 12:10 PM	14' TO-14
B0V808	W0FAKE02	276-S Hexone Tank #142	1	Quanterra Incorporated	4/15/99 9:49 AM	4/15/99 12:10 PM	5'7" Light Gas
B0V809	W0FAKE02	276-S Hexone Tank #142	1	Quanterra Incorporated	4/15/99 9:39 AM	4/15/99 12:10 PM	14' TO-14
B0V810	W0FAKE02	276-S Hexone Tank #142	1	Quanterra Incorporated	5/4/99 2:16 PM	5/5/99 7:26 AM	5'7" Light Gas
B0V811	W0FAKE02	276-S Hexone Tank #142	1	Quanterra Incorporated	5/4/99 2:27 PM	5/5/99 7:26 AM	14' TO-14
B0V812	W0FAKE02	276-S Hexone Tank #141	1	Quanterra Incorporated	5/4/99 2:48 PM	5/5/99 7:26 AM	5'7" Light Gas
B0V813	W0FAKE02	276-S Hexone Tank #141	1	Quanterra Incorporated	5/4/99 2:57 PM	5/5/99 7:26 AM	14' TO-14
~~B0V872~~	~~RCF99053~~	~~276-S HEXONE TANK #141~~	~~2~~	~~Radiological Counting Facility~~	~~4/8/99 1:39 PM~~	~~4/9/99 9:20 AM~~	~~Rad. Screen for (B0V806,B0V807)~~
~~B0V873~~	~~RCF99053~~	~~276-S HEXONE TANK #141~~	~~2~~	~~Radiological Counting Facility~~	~~4/8/99 2:16 PM~~	~~4/9/99 9:20 AM~~	~~Rad. Screen for (B0V808,B0V809)~~

Analyte Codes: