John Young

TA-21 Groundwater

From: Chris Vick [chris_vick@nmenv.state.nm.us]
Sent: Thursday, February 10, 2005 1:17 PM
To: John Young (E-mail); Whitacre, Thomas
Cc: Kurt Vollbrecht; Enz, Robert D.; Johansen, Mathew
Subject: RE: NOI Request for R-6

Tom:

This email confirms NMED approval for the discharge of drilling and development water from regional well R-6 (described herein). The drilling and development water must be discharged as described in the Hydrogeologic Workplan NOI dated August 7, 2002.

Chris

-----Original Message-----
From: Whitacre, Thomas [mailto:twhitacre@doeal.gov]
Sent: Thursday, February 03, 2005 7:18 AM
To: 'chris_vick@nmenv.state.nm.us'; John Young (E-mail)
Cc: Johansen, Mathew; Whitacre, Thomas; Enz, Robert D.
Subject: NOI Request for R-6

Dear Chris Vick (NMED-GWQB) and John Young (NMED-HWB),

I am transmitting the analytical screening data from the sampling of Workplan Well R-6 drilling and development water. Workplan Well R-6, a regional well, is located below the mesa top near the confluence of Los Alamos and DP Canyons. The details are as follows.

R-6 Drilling and Development Water
Approximately 30,000 gallons of drilling and development water is currently being stored in frac tanks near the R-6 drill site. Screening analysis of the stored water produced the following results:

1) No PCBs were detected at concentrations greater than Method Detection Limits (MDLs).

2) No VOAs or SVOAs were detected at concentrations greater than Method Detection Limits (MDLs).

3) Gross alpha activity is 7.8 pCi/L (+/- 2.4 pCi/L). The EPA Drinking Water MCL for Gross Alpha=15 pCi/L.

4) Gross beta activity is non-detect (MDA=6.0 pCi/L).

5) Tritium is non-detect (MDA=600 pCi/L).

6) No perchlorate was detected in the sample at a Reporting Limit of 40 ppb (Dilution Factor=10X). The sample was diluted in order to minimize matrix interferences.

7) Analysis of a filtered sample showed that no contaminants exceeded NM WQCC Regulation 3103 ground water standards.

DOE proposes to land apply the R-6 drilling and development water on the mesa top near the drill site using irrigation sprinklers. The land application of R-6 drilling and development water will be conducted in accordance with the terms and conditions of the Hydrogeologic Workplan NOI dated August 7, 2002, and subsequently amended on November 4, 2004. The depth to regional ground water at the drill site is approximately 1160 ft below ground surface. Intermediate ground water was encountered at approximately 600 feet below ground surface. The land application site is approximately 100 feet higher in elevation than the R-6 well location.

A copy of the analytical report is attached.

10814

Please contact Bob Beers at 667-7969 (office) or 699-2342 (cell) should you have any questions regarding this notification. This notification will be formally transmitted to you via a letter signed by Mat Johansen, DOE Ground Water Compliance Manager.

<<R-6 Pit Water.pdf>>

Tom Whitacre
Project Manager
DOE - Los Alamos Site Office

(P) 505-665-5042
(F) 505-667-9998
twhitacre@doeal.gov

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HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

COVER LETTER

January 10, 2005

Mark Everett
Kleinfelder
8300 Jefferson, NE Suite B
Albuquerque, NM 87113
TEL: (505) 344-7373
FAX (505) 344-1711

RE: DOE Deep Wells

Order No.: 0412154

Dear Mark Everett:

Hall Environmental Analysis Laboratory received 4 samples on 12/16/2004 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Business Manager
Nancy McDuffie, Laboratory Manager

4901 Hawkins NE ■ Suite D ■ Albuquerque, NM 87109
505.345.3975 ■ Fax 505.345.4107
www.hallenvironmental.com

Hall Environmental Analysis Laboratory

Date: *10-Jan-05*

CLIENT: Kleinfelder
Lab Order: 0412154
Project: DOE Deep Wells
Lab ID: 0412154-01

Client Sample ID: R-6 Water
Collection Date: 12/15/2004 9:45:00 AM
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: MAP
Fluoride	1.5	0.50		mg/L	5	12/16/2004
Chloride	14	0.50		mg/L	5	12/16/2004
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	12/16/2004
Bromide	ND	2.5		mg/L	5	12/16/2004
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	12/16/2004
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	12/16/2004
Sulfate	87	2.5		mg/L	5	12/16/2004
EPA METHOD 8082: PCB'S						Analyst: JMP
Aroclor 1016	ND	25		µg/L	1	12/21/2004 2:29:19 AM
Aroclor 1221	ND	130		µg/L	1	12/21/2004 2:29:19 AM
Aroclor 1232	ND	25		µg/L	1	12/21/2004 2:29:19 AM
Aroclor 1242	ND	25		µg/L	1	12/21/2004 2:29:19 AM
Aroclor 1248	ND	25		µg/L	1	12/21/2004 2:29:19 AM
Aroclor 1254	ND	25		µg/L	1	12/21/2004 2:29:19 AM
Aroclor 1260	ND	25		µg/L	1	12/21/2004 2:29:19 AM
Surr: Decachlorobiphenyl	61.6	45.3-140		%REC	1	12/21/2004 2:29:19 AM
Surr: Tetrachloro-m-xylene	57.2	28.1-139		%REC	1	12/21/2004 2:29:19 AM
EPA METHOD 8260B: VOLATILES						Analyst: KTM
Benzene	ND	1000		µg/L	1000	12/17/2004
Toluene	ND	1000		µg/L	1000	12/17/2004
Ethylbenzene	ND	1000		µg/L	1000	12/17/2004
Methyl tert-butyl ether (MTBE)	ND	1000		µg/L	1000	12/17/2004
1,2,4-Trimethylbenzene	ND	1000		µg/L	1000	12/17/2004
1,3,5-Trimethylbenzene	ND	1000		µg/L	1000	12/17/2004
1,2-Dichloroethane (EDC)	ND	1000		µg/L	1000	12/17/2004
1,2-Dibromoethane (EDB)	ND	1000		µg/L	1000	12/17/2004
Naphthalene	ND	2000		µg/L	1000	12/17/2004
1-Methylnaphthalene	ND	4000		µg/L	1000	12/17/2004
2-Methylnaphthalene	ND	4000		µg/L	1000	12/17/2004
Acetone	ND	10000		µg/L	1000	12/17/2004
Bromobenzene	ND	1000		µg/L	1000	12/17/2004
Bromochloromethane	ND	1000		µg/L	1000	12/17/2004
Bromodichloromethane	ND	1000		µg/L	1000	12/17/2004
Bromoform	ND	1000		µg/L	1000	12/17/2004
Bromomethane	ND	2000		µg/L	1000	12/17/2004
2-Butanone	ND	10000		µg/L	1000	12/17/2004
Carbon disulfide	ND	10000		µg/L	1000	12/17/2004
Carbon Tetrachloride	ND	1000		µg/L	1000	12/17/2004
Chlorobenzene	ND	1000		µg/L	1000	12/17/2004
Chloroethane	ND	2000		µg/L	1000	12/17/2004

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *10-Jan-05*

CLIENT: Kleinfelder
Lab Order: 0412154
Project: DOE Deep Wells
Lab ID: 0412154-01

Client Sample ID: R-6 Water
Collection Date: 12/15/2004 9:45:00 AM
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Chloroform	ND	1000		µg/L	1000	12/17/2004
Chloromethane	ND	1000		µg/L	1000	12/17/2004
2-Chlorotoluene	ND	1000		µg/L	1000	12/17/2004
4-Chlorotoluene	ND	1000		µg/L	1000	12/17/2004
cis-1,2-DCE	ND	1000		µg/L	1000	12/17/2004
cis-1,3-Dichloropropene	ND	1000		µg/L	1000	12/17/2004
1,2-Dibromo-3-chloropropane	ND	2000		µg/L	1000	12/17/2004
Dibromochloromethane	ND	1000		µg/L	1000	12/17/2004
Dibromomethane	ND	2000		µg/L	1000	12/17/2004
1,2-Dichlorobenzene	ND	1000		µg/L	1000	12/17/2004
1,3-Dichlorobenzene	ND	1000		µg/L	1000	12/17/2004
1,4-Dichlorobenzene	ND	1000		µg/L	1000	12/17/2004
Dichlorodifluoromethane	ND	1000		µg/L	1000	12/17/2004
1,1-Dichloroethane	ND	1000		µg/L	1000	12/17/2004
1,1-Dichloroethene	ND	1000		µg/L	1000	12/17/2004
1,2-Dichloropropane	ND	1000		µg/L	1000	12/17/2004
1,3-Dichloropropane	ND	1000		µg/L	1000	12/17/2004
2,2-Dichloropropane	ND	1000		µg/L	1000	12/17/2004
1,1-Dichloropropene	ND	1000		µg/L	1000	12/17/2004
Hexachlorobutadiene	ND	1000		µg/L	1000	12/17/2004
2-Hexanone	ND	10000		µg/L	1000	12/17/2004
Isopropylbenzene	ND	1000		µg/L	1000	12/17/2004
4-Isopropyltoluene	ND	1000		µg/L	1000	12/17/2004
4-Methyl-2-pentanone	ND	10000		µg/L	1000	12/17/2004
Methylene Chloride	ND	3000		µg/L	1000	12/17/2004
n-Butylbenzene	ND	1000		µg/L	1000	12/17/2004
n-Propylbenzene	ND	1000		µg/L	1000	12/17/2004
sec-Butylbenzene	ND	1000		µg/L	1000	12/17/2004
Styrene	ND	1000		µg/L	1000	12/17/2004
tert-Butylbenzene	ND	1000		µg/L	1000	12/17/2004
1,1,1,2-Tetrachloroethane	ND	1000		µg/L	1000	12/17/2004
1,1,2,2-Tetrachloroethane	ND	1000		µg/L	1000	12/17/2004
Tetrachloroethene (PCE)	ND	1000		µg/L	1000	12/17/2004
trans-1,2-DCE	ND	1000		µg/L	1000	12/17/2004
trans-1,3-Dichloropropene	ND	1000		µg/L	1000	12/17/2004
1,2,3-Trichlorobenzene	ND	1000		µg/L	1000	12/17/2004
1,2,4-Trichlorobenzene	ND	1000		µg/L	1000	12/17/2004
1,1,1-Trichloroethane	ND	1000		µg/L	1000	12/17/2004
1,1,2-Trichloroethane	ND	1000		µg/L	1000	12/17/2004
Trichloroethene (TCE)	ND	1000		µg/L	1000	12/17/2004
Trichlorofluoromethane	ND	1000		µg/L	1000	12/17/2004
1,2,3-Trichloropropane	ND	2000		µg/L	1000	12/17/2004

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E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *10-Jan-05*

CLIENT: Kleinfelder
Lab Order: 0412154
Project: DOE Deep Wells
Lab ID: 0412154-01

Client Sample ID: R-6 Water
Collection Date: 12/15/2004 9:45:00 AM
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Vinyl chloride	ND	1000		µg/L	1000	12/17/2004
Xylenes, Total	ND	1000		µg/L	1000	12/17/2004
Surr: 1,2-Dichloroethane-d4	105	74.7-113		%REC	1000	12/17/2004
Surr: 4-Bromofluorobenzene	104	86.1-120		%REC	1000	12/17/2004
Surr: Dibromofluoromethane	101	93.1-112		%REC	1000	12/17/2004
Surr: Toluene-d8	99.6	83.1-112		%REC	1000	12/17/2004
EPA METHOD 8270C: SEMIVOLATILES						Analyst: GAB
Acenaphthene	ND	250		µg/L	1	12/21/2004
Acenaphthylene	ND	250		µg/L	1	12/21/2004
Aniline	ND	250		µg/L	1	12/21/2004
Anthracene	ND	250		µg/L	1	12/21/2004
Azobenzene	ND	250		µg/L	1	12/21/2004
Benz(a)anthracene	ND	380		µg/L	1	12/21/2004
Benzo(a)pyrene	ND	250		µg/L	1	12/21/2004
Benzo(b)fluoranthene	ND	250		µg/L	1	12/21/2004
Benzo(g,h,i)perylene	ND	250		µg/L	1	12/21/2004
Benzo(k)fluoranthene	ND	250		µg/L	1	12/21/2004
Benzoic acid	ND	1300		µg/L	1	12/21/2004
Benzyl alcohol	ND	500		µg/L	1	12/21/2004
Bis(2-chloroethoxy)methane	ND	250		µg/L	1	12/21/2004
Bis(2-chloroethyl)ether	ND	380		µg/L	1	12/21/2004
Bis(2-chloroisopropyl)ether	ND	380		µg/L	1	12/21/2004
Bis(2-ethylhexyl)phthalate	ND	380		µg/L	1	12/21/2004
4-Bromophenyl phenyl ether	ND	250		µg/L	1	12/21/2004
Butyl benzyl phthalate	ND	380		µg/L	1	12/21/2004
Carbazole	ND	250		µg/L	1	12/21/2004
4-Chloro-3-methylphenol	ND	500		µg/L	1	12/21/2004
4-Chloroaniline	ND	500		µg/L	1	12/21/2004
2-Chloronaphthalene	ND	250		µg/L	1	12/21/2004
2-Chlorophenol	ND	250		µg/L	1	12/21/2004
4-Chlorophenyl phenyl ether	ND	380		µg/L	1	12/21/2004
Chrysene	ND	380		µg/L	1	12/21/2004
Di-n-butyl phthalate	ND	250		µg/L	1	12/21/2004
Di-n-octyl phthalate	ND	380		µg/L	1	12/21/2004
Dibenz(a,h)anthracene	ND	250		µg/L	1	12/21/2004
Dibenzofuran	ND	250		µg/L	1	12/21/2004
1,2-Dichlorobenzene	ND	250		µg/L	1	12/21/2004
1,3-Dichlorobenzene	ND	250		µg/L	1	12/21/2004
1,4-Dichlorobenzene	ND	250		µg/L	1	12/21/2004
3,3'-Dichlorobenzidine	ND	380		µg/L	1	12/21/2004
Diethyl phthalate	ND	250		µg/L	1	12/21/2004
Dimethyl phthalate	ND	250		µg/L	1	12/21/2004

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R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *10-Jan-05*

CLIENT: Kleinfelder
Lab Order: 0412154
Project: DOE Deep Wells
Lab ID: 0412154-01

Client Sample ID: R-6 Water
Collection Date: 12/15/2004 9:45:00 AM
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
2,4-Dichlorophenol	ND	250		µg/L	1	12/21/2004
2,4-Dimethylphenol	ND	250		µg/L	1	12/21/2004
4,6-Dinitro-2-methylphenol	ND	1300		µg/L	1	12/21/2004
2,4-Dinitrophenol	ND	1300		µg/L	1	12/21/2004
2,4-Dinitrotoluene	ND	250		µg/L	1	12/21/2004
2,6-Dinitrotoluene	ND	250		µg/L	1	12/21/2004
Fluoranthene	ND	250		µg/L	1	12/21/2004
Fluorene	ND	250		µg/L	1	12/21/2004
Hexachlorobenzene	ND	250		µg/L	1	12/21/2004
Hexachlorobutadiene	ND	250		µg/L	1	12/21/2004
Hexachlorocyclopentadiene	ND	250		µg/L	1	12/21/2004
Hexachloroethane	ND	250		µg/L	1	12/21/2004
Indeno(1,2,3-cd)pyrene	ND	250		µg/L	1	12/21/2004
Isophorone	ND	250		µg/L	1	12/21/2004
2-Methylnaphthalene	ND	250		µg/L	1	12/21/2004
2-Methylphenol	ND	380		µg/L	1	12/21/2004
3+4-Methylphenol	ND	250		µg/L	1	12/21/2004
N-Nitrosodi-n-propylamine	ND	250		µg/L	1	12/21/2004
N-Nitrosodimethylamine	ND	250		µg/L	1	12/21/2004
N-Nitrosodiphenylamine	ND	250		µg/L	1	12/21/2004
Naphthalene	ND	250		µg/L	1	12/21/2004
2-Nitroaniline	ND	1300		µg/L	1	12/21/2004
3-Nitroaniline	ND	1300		µg/L	1	12/21/2004
4-Nitroaniline	ND	500		µg/L	1	12/21/2004
Nitrobenzene	ND	250		µg/L	1	12/21/2004
2-Nitrophenol	ND	380		µg/L	1	12/21/2004
4-Nitrophenol	ND	1300		µg/L	1	12/21/2004
Pentachlorophenol	ND	1300		µg/L	1	12/21/2004
Phenanthrene	ND	250		µg/L	1	12/21/2004
Phenol	ND	250		µg/L	1	12/21/2004
Pyrene	ND	380		µg/L	1	12/21/2004
Pyridine	ND	750		µg/L	1	12/21/2004
1,2,4-Trichlorobenzene	ND	250		µg/L	1	12/21/2004
2,4,5-Trichlorophenol	ND	250		µg/L	1	12/21/2004
2,4,6-Trichlorophenol	ND	380		µg/L	1	12/21/2004
Surr: 2,4,6-Tribromophenol	0	16.6-115	S	%REC	1	12/21/2004
Surr: 2-Fluorobiphenyl	46.3	37-95.7		%REC	1	12/21/2004
Surr: 2-Fluorophenol	0	9.54-89.8	S	%REC	1	12/21/2004
Surr: 4-Terphenyl-d14	47.7	47.9-115	S	%REC	1	12/21/2004
Surr: Nitrobenzene-d5	37.0	38-106	S	%REC	1	12/21/2004
Surr: Phenol-d6	0	10.7-63.4	S	%REC	1	12/21/2004

EPA METHOD 7470: MERCURY Analyst: **CMC**

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Hall Environmental Analysis Laboratory

Date: *10-Jan-05*

CLIENT: Kleinfelder
Lab Order: 0412154
Project: DOE Deep Wells
Lab ID: 0412154-01

Client Sample ID: R-6 Water
Collection Date: 12/15/2004 9:45:00 AM
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 7470: MERCURY						Analyst: CMC
Mercury	ND	0.00040		mg/L	2	12/21/2004
EPA METHOD 6010C: DISSOLVED METALS						Analyst: NMO
Aluminum	0.20	0.020		mg/L	1	12/21/2004 11:37:24 AM
Antimony	ND	0.010		mg/L	1	12/21/2004 11:37:24 AM
Arsenic	ND	0.020		mg/L	1	12/21/2004 11:37:24 AM
Barium	0.14	0.0020		mg/L	1	12/21/2004 11:37:24 AM
Beryllium	ND	0.0030		mg/L	1	12/21/2004 11:37:24 AM
Cadmium	ND	0.0020		mg/L	1	12/21/2004 11:37:24 AM
Calcium	100	10		mg/L	10	12/28/2004 11:18:45 AM
Chromium	ND	0.0060		mg/L	1	12/21/2004 11:37:24 AM
Cobalt	ND	0.0060		mg/L	1	12/21/2004 11:37:24 AM
Copper	ND	0.0060		mg/L	1	12/21/2004 11:37:24 AM
Iron	0.063	0.020		mg/L	1	12/21/2004 11:37:24 AM
Lead	ND	0.0050		mg/L	1	12/21/2004 11:37:24 AM
Magnesium	18	1.0		mg/L	1	12/21/2004 11:37:24 AM
Manganese	0.064	0.0020		mg/L	1	12/21/2004 11:37:24 AM
Nickel	ND	0.010		mg/L	1	12/21/2004 11:37:24 AM
Potassium	3.1	1.0		mg/L	1	12/21/2004 11:37:24 AM
Selenium	ND	0.050		mg/L	1	12/21/2004 11:37:24 AM
Silver	ND	0.0050		mg/L	1	12/21/2004 11:37:24 AM
Sodium	390	10		mg/L	10	12/21/2004 1:28:55 PM
Thallium	ND	0.020		mg/L	1	12/21/2004 11:37:24 AM
Uranium	ND	0.10		mg/L	1	12/21/2004 3:34:52 PM
Vanadium	ND	0.050		mg/L	1	12/21/2004 11:37:24 AM
Zinc	0.016	0.0050		mg/L	1	12/21/2004 11:37:24 AM

Qualifiers:

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Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0412161
Client Name: Hall Environmental Analysis Laboratory
Client Project Name: R-6
Client Project Number:
Client PO Number:

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
R-6 Water	0412161-1		WATER	15-Dec-04	9:45
R-6 Cuttings	0412161-2		SOIL	15-Dec-04	9:37
I-4 Water	0412161-3		WATER	15-Dec-04	14:37
I-4 D	0412161-4		SOIL	15-Dec-04	14:49

Perchlorate

Method EPA314.0

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0412161
Client Name: Hall Environmental Analysis Laboratory
ClientProject ID: R-6

Field ID: R-6 Water
Lab ID: 0412161-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 15-Dec-04
Date Extracted: 21-Dec-04
Date Analyzed: 21-Dec-04
Prep Method: NONE

Prep Batch: PC041221-1
QCBatchID: PC041221-1-1
Run ID: IC041221-7A
Cleanup: NONE
Basis: As Received

Sample Aliquot: 5 ml
Final Volume: 5 ml
Result Units: mg/l
Clean DF: 1
File Name: p\dec_21_0

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
	PERCHLORATE	10	0.04	0.04	U	

Data Package ID: *IC0412161-1*

Gamma Spectroscopy Results

PAI 713 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0412161
Client Name: Hall Environmental Analysis Laboratory
ClientProject ID: R-6

Field ID: R-6 Water
Lab ID: 0412161-1

Library: FANP

Sample Matrix: WATER
Prep SOP: PAI 739 Rev 8
Date Collected: 15-Dec-04
Date Prepared: 21-Dec-04
Date Analyzed: 22-Dec-04

Prep Batch: GS041221-2
QCBatchID: GS041221-2-4
Run ID: GS041221-2B
Count Time: 600 minutes
Report Basis: Unfiltered

Final Aliquot: 885 ml
Prep Basis: Unfiltered
Moisture(%): NA
Result Units: pCi/l
File Name: 041202D06A

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14331-83-0	Ag-228	-1 +/- 29	49	U
14391-76-5	Ag-110m	-1.2 +/- 3.6	6.2	U
14682-66-7	Al-26	3.2 +/- 4.1	6.7	U
14596-10-2	Am-241	-26 +/- 37	63	U
13966-02-4	Be-7	-12 +/- 30	52	U
14913-49-6	Bi-212	7 +/- 57	98	U
14733-03-0	Bi-214	5 +/- 13	22	U,J
13982-30-4	Ce-139	-2.5 +/- 2.7	4.7	U
14762-78-8	Ce-144	9 +/- 19	32	U
14093-03-9	Co-56	-0.8 +/- 6.7	11.8	U
13981-50-5	Co-57	-1.5 +/- 2.6	4.4	U
13981-38-9	Co-58	-1.2 +/- 4.1	7.2	U
10198-40-0	Co-60	0.4 +/- 3.9	6.8	U
14392-02-0	Cr-51	-34 +/- 35	60	U
13967-70-9	Cs-134	-1.0 +/- 3.9	6.8	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *GSW0412161-1*

Gamma Spectroscopy Results

PAI 713 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0412161
Client Name: Hall Environmental Analysis Laboratory
ClientProject ID: R-6

Field ID: R-6 Water
Lab ID: 0412161-1

Library: FANP

Sample Matrix: WATER
Prep SOP: PAI 739 Rev 8
Date Collected: 15-Dec-04
Date Prepared: 21-Dec-04
Date Analyzed: 22-Dec-04

Prep Batch: GS041221-2
QCBatchID: GS041221-2-4
Run ID: GS041221-2B
Count Time: 600 minutes
Report Basis: Unfiltered

Final Aliquot: 885 ml
Prep Basis: Unfiltered
Moisture(%): NA
Result Units: pCi/l
File Name: 041202D06A

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
10045-97-3	Cs-137	2.0 +/- 3.9	6.5	U
14683-23-9	Eu-152	3 +/- 20	35	U
15585-10-1	Eu-154	5 +/- 21	36	U
14391-16-3	Eu-155	2 +/- 12	19	U
14596-12-4	Fe-59	-4.5 +/- 8.4	15.1	U
10043-66-0	I-131	-1.9 +/- 6.7	11.6	U
13966-00-2	K-40	-40 +/- 100	170	U
13966-31-9	Mn-54	3.1 +/- 3.7	6.1	U
13966-32-0	Na-22	-1.4 +/- 4.2	7.5	U
14681-63-1	Nb-94	-2.2 +/- 4.3	7.5	U
13967-76-5	Nb-95	-0.4 +/- 3.9	6.8	U
15100-28-4	Pa-234m	0 +/- 630	1100	U
15092-94-1	Pb-212	3.0 +/- 8.0	13.3	U
15067-28-4	Pb-214	-7 +/- 12	20	U,J
13967-48-1	Ru-106	-26 +/- 35	62	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *GSW0412161-1*

Gamma Spectroscopy Results

PAI 713 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0412161
Client Name: Hall Environmental Analysis Laboratory
ClientProject ID: R-6

Field ID: R-6 Water
Lab ID: 0412161-1

Library: FANP

Sample Matrix: WATER
Prep SOP: PAI 739 Rev 8
Date Collected: 15-Dec-04
Date Prepared: 21-Dec-04
Date Analyzed: 22-Dec-04

Prep Batch: GS041221-2
QCBatchID: GS041221-2-4
Run ID: GS041221-2B
Count Time: 600 minutes
Report Basis: Unfiltered

Final Aliquot: 885 ml
Prep Basis: Unfiltered
Moisture(%): NA
Result Units: pCi/l
File Name: 041202D06A

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
14683-10-4	Sb-124	1.4 +/- 4.2	7.1	U
14234-35-6	Sb-125	6.2 +/- 9.0	14.8	U
13967-63-0	Sc-46	-2.7 +/- 3.8	6.9	U
15623-47-9	Th-227	-3 +/- 19	33	U
15065-10-8	Th-234	85 +/- 59	94	U
14913-50-9	Tl-208	1.1 +/- 6.3	10.6	U
15117-96-1	U-235	11 +/- 23	50	U
13982-39-3	Zn-65	-0.6 +/- 8.1	14.1	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *GSW0412161-1*

Tritium Analysis By Liquid Scintillation

PAI 704 Rev 7

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0412161
Client Name: Hall Environmental Analysis Laboratory
ClientProject ID: R-6

Field ID: R-6 Water
Lab ID: 0412161-1

Sample Matrix: WATER
Prep SOP: PAI 700 Rev 9
Date Collected: 15-Dec-04
Date Prepared: 20-Dec-04
Date Analyzed: 23-Dec-04

Prep Batch: 3H041220-1
QCBatchID: 3H041220-1-1
Run ID: 3h041220-1a
Count Time: 30 minutes
Report Basis: Unfiltered

Final Aliquot: 10.0 ml
Prep Basis: Unfiltered
Moisture(%): 100.000
Result Units: pCi/l
File Name: yu03c2301

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
10028-17-8	H-3	-210 +/- 340	600	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *H3W0412161-1*

Gross Alpha/Beta Analysis by GFPC

PAI 724 Rev 8

Sample Results

Lab Name: Paragon Analytics
Work Order Number: 0412161
Client Name: Hall Environmental Analysis Laboratory
ClientProject ID: R-6

Field ID: R-6 Water
Lab ID: 0412161-1

Sample Matrix: WATER
Prep SOP: PAI 702 Rev 16
Date Collected: 15-Dec-04
Date Prepared: 17-Dec-04
Date Analyzed: 26-Dec-04

Prep Batch: AB041217-3
QCBatchID: AB041217-3-1
Run ID: AB041217-3A
Count Time: 1000 minutes
Report Basis: Unfiltered

Final Aliquot: 40.0 ml
Prep Basis: Unfiltered
Moisture(%): NA
Result Units: pCi/l
File Name: ABA1226

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Lab Qualifier
12587-46-1	GROSS ALPHA	7.8 +/- 2.4	2.6	
12587-47-2	GROSS BETA	5.2 +/- 3.8	6.0	U,M

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty (see PAI SOP 743)

MDC - Minimum Detectable Concentration (see PAI SOP 709)

BDL - Below Detection Limit

Data Package ID: *ABW0412161-1*

Hall Environmental Analysis Laboratory

Date: *10-Jan-05*

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Method Blank

Sample ID: **MBLK** Batch ID: **R14062** Test Code: E300 Units: mg/L Analysis Date: **12/16/2004** Prep Date:

Client ID: Run ID: **LC_041216A** SeqNo: **326901**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	ND	0.1									
Chloride	ND	0.1									
Nitrogen, Nitrite (As N)	ND	0.1									
Bromide	ND	0.5									
Nitrogen, Nitrate (As N)	ND	0.1									
Phosphorus, Orthophosphate (As P)	ND	0.5									
Sulfate	ND	0.5									

Sample ID: **MBLK** Batch ID: **R14062** Test Code: E300 Units: mg/L Analysis Date: **12/16/2004** Prep Date:

Client ID: Run ID: **LC_041216A** SeqNo: **326916**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	ND	0.1									
Chloride	ND	0.1									
Nitrogen, Nitrite (As N)	ND	0.1									
Bromide	ND	0.1									
Nitrogen, Nitrate (As N)	ND	0.1									
Phosphorus, Orthophosphate (As P)	ND	0.5									
Sulfate	ND	0.5									

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Method Blank

Sample ID: MB-7079 Batch ID: 7079 Test Code: SW8080A Units: µg/L Analysis Date: 12/20/2004 7:31:55 PM Prep Date: 12/17/2004

Client ID: Run ID: ECD(17A)_041220A SeqNo: 327631

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	1									
Aroclor 1221	ND	5									
Aroclor 1232	ND	1									
Aroclor 1242	ND	1									
Aroclor 1248	ND	1									
Aroclor 1254	ND	1									
Aroclor 1260	ND	1									
Surr: Decachlorobiphenyl	2.58	0	2.5	0	103	45.3	140	0			
Surr: Tetrachloro-m-xylene	2.04	0	2.5	0	81.6	28.1	139	0			

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Method Blank

Sample ID: **5mL rb** Batch ID: **R14076** Test Code: **SW8260B** Units: **µg/L** Analysis Date: **12/17/2004** Prep Date:

Client ID: Run ID: **VAL_041217A** SeqNo: **327235**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1									
Toluene	ND	1									
Ethylbenzene	ND	1									
Methyl tert-butyl ether (MTBE)	ND	1									
1,2,4-Trimethylbenzene	ND	1									
1,3,5-Trimethylbenzene	ND	1									
1,2-Dichloroethane (EDC)	ND	1									
1,2-Dibromoethane (EDB)	ND	1									
Naphthalene	ND	2									
1-Methylnaphthalene	ND	4									
2-Methylnaphthalene	ND	4									
Acetone	ND	10									
Bromobenzene	ND	1									
Bromochloromethane	ND	1									
Bromodichloromethane	ND	1									
Bromoform	ND	1									
Bromomethane	ND	2									
2-Butanone	ND	10									
Carbon disulfide	ND	10									
Carbon Tetrachloride	ND	1									
Chlorobenzene	ND	1									
Chloroethane	ND	2									
Chloroform	ND	1									
Chloromethane	ND	1									
2-Chlorotoluene	ND	1									
4-Chlorotoluene	ND	1									
cis-1,2-DCE	ND	1									
cis-1,3-Dichloropropene	ND	1									

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Method Blank

1,2-Dibromo-3-chloropropane	ND	2
Dibromochloromethane	ND	1
Dibromomethane	ND	2
1,2-Dichlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
Dichlorodifluoromethane	ND	1
1,1-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
1,2-Dichloropropane	ND	1
1,3-Dichloropropane	ND	1
2,2-Dichloropropane	ND	1
1,1-Dichloropropene	ND	1
Hexachlorobutadiene	ND	1
2-Hexanone	ND	10
Isopropylbenzene	ND	1
4-Isopropyltoluene	ND	1
4-Methyl-2-pentanone	ND	10
Methylene Chloride	ND	3
n-Butylbenzene	ND	1
n-Propylbenzene	ND	1
sec-Butylbenzene	ND	1
Styrene	ND	1
tert-Butylbenzene	ND	1
1,1,1,2-Tetrachloroethane	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Tetrachloroethene (PCE)	ND	1
trans-1,2-DCE	ND	1
trans-1,3-Dichloropropene	ND	1
1,2,3-Trichlorobenzene	ND	1
1,2,4-Trichlorobenzene	ND	1
1,1,1-Trichloroethane	ND	1
1,1,2-Trichloroethane	ND	1

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Method Blank

Trichloroethene (TCE)	ND	1						
Trichlorofluoromethane	ND	1						
1,2,3-Trichloropropane	ND	2						
Vinyl chloride	ND	1						
Xylenes, Total	ND	1						
Surr: 1,2-Dichloroethane-d4	9.924	0	10	0	99.2	74.7	113	0
Surr: 4-Bromofluorobenzene	10.66	0	10	0	107	86.1	120	0
Surr: Dibromofluoromethane	10.14	0	10	0	101	93.1	112	0
Surr: Toluene-d8	10.04	0	10	0	100	83.1	112	0

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Method Blank

Sample ID: **mb-7081** Batch ID: 7081 Test Code: **SW8270C** Units: **µg/L** Analysis Date: **12/21/2004** Prep Date: **12/17/2004**

Client ID: Run ID: **ELMO_041221A** SeqNo: **327952**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	ND	10									
Acenaphthylene	ND	10									
Aniline	ND	10									
Anthracene	ND	10									
Azobenzene	ND	10									
Benz(a)anthracene	ND	15									
Benzo(a)pyrene	ND	10									
Benzo(b)fluoranthene	ND	10									
Benzo(g,h,i)perylene	ND	10									
Benzo(k)fluoranthene	ND	10									
Benzoic acid	ND	50									
Benzyl alcohol	ND	20									
Bis(2-chloroethoxy)methane	ND	10									
Bis(2-chloroethyl)ether	ND	15									
Bis(2-chloroisopropyl)ether	ND	15									
Bis(2-ethylhexyl)phthalate	ND	15									
4-Bromophenyl phenyl ether	ND	10									
Butyl benzyl phthalate	ND	15									
Carbazole	ND	10									
4-Chloro-3-methylphenol	ND	20									
4-Chloroaniline	ND	20									
2-Chloronaphthalene	ND	10									
2-Chlorophenol	ND	10									
4-Chlorophenyl phenyl ether	ND	15									
Chrysene	ND	15									
Di-n-butyl phthalate	ND	10									
Di-n-octyl phthalate	ND	15									
Dibenz(a,h)anthracene	ND	10									

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Method Blank

Dibenzofuran	ND	10
1,2-Dichlorobenzene	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
3,3'-Dichlorobenzidine	ND	15
Diethyl phthalate	ND	10
Dimethyl phthalate	ND	10
2,4-Dichlorophenol	ND	10
2,4-Dimethylphenol	ND	10
4,6-Dinitro-2-methylphenol	ND	50
2,4-Dinitrophenol	ND	50
2,4-Dinitrotoluene	ND	10
2,6-Dinitrotoluene	ND	10
Fluoranthene	ND	10
Fluorene	ND	10
Hexachlorobenzene	ND	10
Hexachlorobutadiene	ND	10
Hexachlorocyclopentadiene	ND	10
Hexachloroethane	ND	10
Indeno(1,2,3-cd)pyrene	ND	10
Isophorone	ND	10
2-Methylnaphthalene	ND	10
2-Methylphenol	ND	15
3+4-Methylphenol	ND	10
N-Nitrosodi-n-propylamine	ND	10
N-Nitrosodimethylamine	ND	10
N-Nitrosodiphenylamine	ND	10
Naphthalene	ND	10
2-Nitroaniline	ND	50
3-Nitroaniline	ND	50
4-Nitroaniline	ND	20
Nitrobenzene	ND	10
2-Nitrophenol	ND	15

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT
Method Blank

4-Nitrophenol	ND	50						
Pentachlorophenol	ND	50						
Phenanthrene	ND	10						
Phenol	ND	10						
Pyrene	ND	15						
Pyridine	ND	30						
1,2,4-Trichlorobenzene	ND	10						
2,4,5-Trichlorophenol	ND	10						
2,4,6-Trichlorophenol	ND	15						
Surr: 2,4,6-Tribromophenol	152.2	0	200	0	76.1	16.6	115	0
Surr: 2-Fluorobiphenyl	80.52	0	100	0	80.5	37	95.7	0
Surr: 2-Fluorophenol	145	0	200	0	72.5	9.54	89.8	0
Surr: 4-Terphenyl-d14	91.38	0	100	0	91.4	51.2	125	0
Surr: Nitrobenzene-d5	84.96	0	100	0	85.0	38	106	0
Surr: Phenol-d6	107.1	0	200	0	53.6	10.7	63.4	0

Sample ID: **MB-7107** Batch ID: **7107** Test Code: **SW7470** Units: **mg/L** Analysis Date: **12/21/2004** Prep Date: **12/21/2004**

Client ID: Run ID: **MI-LA254_041221B** SeqNo: **327858**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.0002									

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Method Blank

Sample ID: MB | Batch ID: R14094 | Test Code: SW6010A | Units: mg/L | Analysis Date: 12/21/2004 10:50:09 A | Prep Date:

Client ID: | Run ID: ICP_041221B | SeqNo: 327692

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.02									
Antimony	ND	0.01									
Arsenic	ND	0.02									
Barium	ND	0.002									
Beryllium	ND	0.003									
Cadmium	ND	0.002									
Calcium	ND	1									
Chromium	ND	0.006									
Cobalt	ND	0.006									
Copper	ND	0.006									
Iron	ND	0.02									
Lead	ND	0.005									
Magnesium	ND	1									
Manganese	ND	0.002									
Nickel	ND	0.01									
Potassium	ND	1									
Selenium	ND	0.05									
Silver	ND	0.005									
Sodium	ND	1									
Thallium	ND	0.02									
Uranium	ND	0.1									
Vanadium	ND	0.05									
Zinc	ND	0.005									
Yttrium	104.1	0	100	0	104	70	130	0			
Yttrium Radial	109.1	0	100	0	109	70	130	0			

Qualifiers: ND - Not Detected at the Reporting Limit | S - Spike Recovery outside accepted recovery limits | B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits | R - RPD outside accepted recovery limits

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Method Blank

Sample ID: MB | Batch ID: R14107 | Test Code: SW6010A | Units: mg/L | Analysis Date: 12/21/2004 3:24:16 PM | Prep Date:

Client ID: | Run ID: ICP_041221C | SeqNo: 328022

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Uranium	ND	0.1									

Qualifiers: ND - Not Detected at the Reporting Limit | S - Spike Recovery outside accepted recovery limits | B - Analyte detected in the associated Method Blank

J - Analyte detected below quantitation limits | R - RPD outside accepted recovery limits

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: LCS | Batch ID: R14062 | Test Code: E300 | Units: mg/L | Analysis Date: 12/16/2004 | Prep Date:
Client ID: | Run ID: LC_041216A | SeqNo: 326902

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	0.506	0.1	0.5	0	101	90	110	0			
Chloride	4.575	0.1	5	0	91.5	90	110	0			
Nitrogen, Nitrite (As N)	1.001	0.1	1	0	100	90	110	0			
Bromide	2.355	0.5	2.5	0	94.2	90	110	0			
Nitrogen, Nitrate (As N)	2.352	0.1	2.5	0	94.1	90	110	0			
Phosphorus, Orthophosphate (As P)	4.79	0.5	5	0	95.8	90	110	0			
Sulfate	9.528	0.5	10	0	95.3	90	110	0			

Sample ID: LCS | Batch ID: R14062 | Test Code: E300 | Units: mg/L | Analysis Date: 12/16/2004 | Prep Date:
Client ID: | Run ID: LC_041216A | SeqNo: 326917

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	0.492	0.1	0.5	0	98.4	90	110	0			
Chloride	4.505	0.1	5	0	90.1	90	110	0			
Nitrogen, Nitrite (As N)	0.974	0.1	1	0	97.4	90	110	0			
Bromide	2.362	0.1	2.5	0	94.5	90	110	0			
Nitrogen, Nitrate (As N)	2.308	0.1	2.5	0	92.3	90	110	0			
Phosphorus, Orthophosphate (As P)	4.749	0.5	5	0	95.0	90	110	0			
Sulfate	9.502	0.5	10	0	95.0	90	110	0			

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: **LCS-7079** Batch ID: **7079** Test Code: **SW8080A** Units: **µg/L** Analysis Date: **12/20/2004 8:18:11 PM** Prep Date: **12/17/2004**
Client ID: Run ID: **ECD(17A)_041220A** SeqNo: **327633**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	3.226	1	5	0	64.5	27.4	132	0			
Aroclor 1260	4.504	1	5	0	90.1	52.1	148	0			
Surr: Decachlorobiphenyl	2.56	0	2.5	0	102	45.3	140	0			
Surr: Tetrachloro-m-xylene	2.18	0	2.5	0	87.2	28.1	139	0			

Sample ID: **LCSD-7079** Batch ID: **7079** Test Code: **SW8080A** Units: **µg/L** Analysis Date: **12/20/2004 9:04:29 PM** Prep Date: **12/17/2004**
Client ID: Run ID: **ECD(17A)_041220A** SeqNo: **327636**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	3.396	1	5	0	67.9	27.4	132	3.226	5.13	45.7	
Aroclor 1260	4.632	1	5	0	92.6	52.1	148	4.504	2.80	30	
Surr: Decachlorobiphenyl	2.58	0	2.5	0	103	45.3	140	2.56	0.776	0	
Surr: Tetrachloro-m-xylene	2.24	0	2.5	0	89.6	28.1	139	2.18	2.71	0	

Sample ID: **100ng lcs** Batch ID: **R14076** Test Code: **SW8260B** Units: **µg/L** Analysis Date: **12/17/2004** Prep Date:
Client ID: Run ID: **VAL_041217A** SeqNo: **327238**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	23.13	1	20	0	116	80	130	0			
Toluene	23.96	1	20	0	120	77.8	122	0			
Chlorobenzene	23	1	20	0	115	76.2	130	0			
1,1-Dichloroethene	22.28	1	20	0	111	73.3	130	0			
Trichloroethene (TCE)	20.36	1	20	0	102	76.9	130	0			
Surr: 1,2-Dichloroethane-d4	10.19	0	10	0	102	74.7	113	0			
Surr: 4-Bromofluorobenzene	10.68	0	10	0	107	86.1	120	0			
Surr: Dibromofluoromethane	10.09	0	10	0	101	93.1	112	0			
Surr: Toluene-d8	10.29	0	10	0	103	83.1	112	0			

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: lcs-7081 | Batch ID: 7081 | Test Code: SW8270C | Units: µg/L | Analysis Date: 12/21/2004 | Prep Date: 12/17/2004

Client ID: | Run ID: ELMO_041221A | SeqNo: 327953

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	80.4	10	100	0	80.4	11	123	0			
4-Chloro-3-methylphenol	169.5	20	200	0	84.8	15.4	119	0			
2-Chlorophenol	172.2	10	200	0	86.1	12.2	122	0			
1,4-Dichlorobenzene	81.06	10	100	0	81.1	16.9	100	0			
2,4-Dinitrotoluene	84.08	10	100	0	84.1	13	138	0			
N-Nitrosodi-n-propylamine	75.76	10	100	0	75.8	9.93	122	0			
4-Nitrophenol	86.86	50	200	0	43.4	-20.5	87.4	0			
Pentachlorophenol	162.1	50	200	0	81.1	-0.355	114	0			
Phenol	98.58	10	200	0	49.3	7.53	73.1	0			
Pyrene	90.82	15	100	0	90.8	12.6	140	0			
1,2,4-Trichlorobenzene	77.66	10	100	0	77.7	17.4	98.7	0			
Surr: 2,4,6-Tribromophenol	162.5	0	200	0	81.2	16.6	115	0			
Surr: 2-Fluorobiphenyl	86.58	0	100	0	86.6	37	95.7	0			
Surr: 2-Fluorophenol	131.7	0	200	0	65.8	9.54	89.8	0			
Surr: 4-Terphenyl-d14	92.56	0	100	0	92.6	47.9	115	0			
Surr: Nitrobenzene-d5	86	0	100	0	86.0	38	106	0			
Surr: Phenol-d6	98.5	0	200	0	49.3	10.7	63.4	0			

Qualifiers: ND - Not Detected at the Reporting Limit | S - Spike Recovery outside accepted recovery limits | B - Analyte detected in the associated Method Blank

J - Analyte detected below quantitation limits | R - RPD outside accepted recovery limits

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID: lcsd-7081 | Batch ID: 7081 | Test Code: SW8270C | Units: µg/L | Analysis Date: 12/21/2004 | Prep Date: 12/17/2004
Client ID: | Run ID: ELMO_041221A | SeqNo: 327958

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	82.72	10	100	0	82.7	11	123	80.4	2.84	30.5	
4-Chloro-3-methylphenol	162.4	20	200	0	81.2	15.4	119	169.5	4.30	28.6	
2-Chlorophenol	162.1	10	200	0	81.1	12.2	122	172.2	6.01	107	
1,4-Dichlorobenzene	82.06	10	100	0	82.1	16.9	100	81.06	1.23	62.1	
2,4-Dinitrotoluene	86.48	10	100	0	86.5	13	138	84.08	2.81	14.7	
N-Nitrosodi-n-propylamine	74.64	10	100	0	74.6	9.93	122	75.76	1.49	30.3	
4-Nitrophenol	49.82	50	200	0	24.9	12.5	87.4	86.86	0	36.3	J
Pentachlorophenol	80.31	50	200	0	40.2	3.55	114	162.1	67.5	49	R
Phenol	92.98	10	200	0	46.5	7.53	73.1	98.58	5.85	52.4	
Pyrene	90.24	15	100	0	90.2	12.6	140	90.82	0.641	16.3	
1,2,4-Trichlorobenzene	80.88	10	100	0	80.9	17.4	98.7	77.66	4.06	36.4	
Surr: 2,4,6-Tribromophenol	151.7	0	200	0	75.9	16.6	115	162.5	6.86	0	
Surr: 2-Fluorobiphenyl	85.9	0	100	0	85.9	37	95.7	86.58	0.788	0	
Surr: 2-Fluorophenol	120.1	0	200	0	60.1	9.54	89.8	131.7	9.15	0	
Surr: 4-Terphenyl-d14	87.78	0	100	0	87.8	47.9	115	92.56	5.30	0	
Surr: Nitrobenzene-d5	83.38	0	100	0	83.4	38	106	86	3.09	0	
Surr: Phenol-d6	97.68	0	200	0	48.8	10.7	63.4	98.5	0.836	0	

Sample ID: LCS-7107 | Batch ID: 7107 | Test Code: SW7470 | Units: mg/L | Analysis Date: 12/21/2004 | Prep Date: 12/21/2004
Client ID: | Run ID: MI-LA254_041221B | SeqNo: 327859

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.004669	0.0002	0.005	0	93.4	75.2	134	0			

Qualifiers: ND - Not Detected at the Reporting Limit | S - Spike Recovery outside accepted recovery limits | B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits | R - RPD outside accepted recovery limits

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID: **LCSD-7107** Batch ID: **7107** Test Code: **SW7470** Units: **mg/L** Analysis Date: **12/21/2004** Prep Date: **12/21/2004**

Client ID: Run ID: **MI-LA254_041221B** SeqNo: **327883**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.00461	0.0002	0.005	0	92.2	75.2	134	0.004669	1.27	0	

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: **LCS** Batch ID: **R14094** Test Code: **SW6010A** Units: **mg/L** Analysis Date: **12/21/2004 10:53:15 A** Prep Date:

Client ID: Run ID: **ICP_041221B** SeqNo: **327693**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.4844	0.02	0.5	0	96.9	80	120	0			
Antimony	0.4447	0.01	0.5	0	88.9	80	120	0			
Arsenic	0.4855	0.02	0.5	0	97.1	80	120	0			
Barium	0.4498	0.002	0.5	0	90.0	80	120	0			
Beryllium	0.4674	0.003	0.5	0	93.5	80	120	0			
Cadmium	0.4532	0.002	0.5	0	90.6	80	120	0			
Calcium	54.19	1	50.5	0	107	80	120	0			
Chromium	0.4588	0.006	0.5	0	91.8	80	120	0			
Cobalt	0.4471	0.006	0.5	0	89.4	80	120	0			
Copper	0.445	0.006	0.5	0	89.0	80	120	0			
Iron	0.4358	0.02	0.5	0	87.2	80	120	0			
Lead	0.4662	0.005	0.5	0	93.2	80	120	0			
Magnesium	54.46	1	50.5	0	108	80	120	0			
Manganese	0.4347	0.002	0.5	0	86.9	80	120	0			
Nickel	0.4462	0.01	0.5	0	89.2	80	120	0			
Potassium	55.01	1	55	0	100	80	120	0			
Selenium	0.4331	0.05	0.5	0	86.6	80	120	0			
Silver	0.4863	0.005	0.5	0	97.3	80	120	0			
Sodium	56.06	1	50.5	0	111	80	120	0			
Thallium	0.4711	0.02	0.5	0	94.2	80	120	0			
Uranium	2.106	0.1	5	0	42.1	80	120	0			S
Vanadium	0.466	0.05	0.5	0	93.2	80	120	0			
Zinc	0.4589	0.005	0.5	0	91.8	80	120	0			
Yttrium	100.2	0	100	0	100	70	130	0			
Yttrium Radial	106.1	0	100	0	106	70	130	0			

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID: **LCSD** Batch ID: R14094 Test Code: **SW6010A** Units: **mg/L** Analysis Date: **12/21/2004 10:56:15 A** Prep Date:

Client ID: Run ID: **ICP_041221B** SeqNo: **327694**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.4859	0.02	0.5	0	97.2	80	120	0.4844	0.305	20	
Antimony	0.4563	0.01	0.5	0	91.3	80	120	0.4447	2.56	20	
Arsenic	0.4809	0.02	0.5	0	96.2	80	120	0.4855	0.958	20	
Barium	0.4565	0.002	0.5	0	91.3	80	120	0.4498	1.48	20	
Beryllium	0.4662	0.003	0.5	0	93.2	80	120	0.4674	0.272	20	
Cadmium	0.4527	0.002	0.5	0	90.5	80	120	0.4532	0.117	20	
Calcium	54.64	1	50.5	0	108	80	120	54.19	0.836	20	
Chromium	0.459	0.006	0.5	0	91.8	80	120	0.4588	0.0415	20	
Cobalt	0.4466	0.006	0.5	0	89.3	80	120	0.4471	0.117	20	
Copper	0.4512	0.006	0.5	0	90.2	80	120	0.445	1.37	20	
Iron	0.4353	0.02	0.5	0	87.1	80	120	0.4358	0.124	20	
Lead	0.4688	0.005	0.5	0	93.8	80	120	0.4662	0.552	20	
Magnesium	54.89	1	50.5	0	109	80	120	54.46	0.775	20	
Manganese	0.4402	0.002	0.5	0	88.0	80	120	0.4347	1.27	20	
Nickel	0.4444	0.01	0.5	0	88.9	80	120	0.4462	0.404	20	
Potassium	55.48	1	55	0	101	80	120	55.01	0.843	20	
Selenium	0.4285	0.05	0.5	0	85.7	80	120	0.4331	1.07	20	
Silver	0.4917	0.005	0.5	0	98.3	80	120	0.4863	1.09	20	
Sodium	56.53	1	50.5	0	112	80	120	56.06	0.839	20	
Thallium	0.4607	0.02	0.5	0	92.1	80	120	0.4711	2.23	20	
Uranium	2.123	0.1	5	0	42.5	80	120	2.106	0.774	20	S
Vanadium	0.4718	0.05	0.5	0	94.4	80	120	0.466	1.24	20	
Zinc	0.4601	0.005	0.5	0	92.0	80	120	0.4589	0.254	20	
Yttrium	100.4	0	100	0	100	70	130	100.2	0.160	0	
Yttrium Radial	106.9	0	100	0	107	70	130	106.1	0.707	0	

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

CLIENT: Kleinfelder
Work Order: 0412154
Project: DOE Deep Wells

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: **LCS** Batch ID: **R14107** Test Code: **SW6010A** Units: **mg/L** Analysis Date: **12/21/2004 3:26:24 PM** Prep Date:

Client ID: Run ID: **ICP_041221C** SeqNo: **328023**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Uranium	2.096	0.1	2.5	0	83.8	80	120	0			

Sample ID: **LCSD** Batch ID: **R14107** Test Code: **SW6010A** Units: **mg/L** Analysis Date: **12/21/2004 3:28:33 PM** Prep Date:

Client ID: Run ID: **ICP_041221C** SeqNo: **328024**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Uranium	2.103	0.1	2.5	0	84.1	80	120	2.096	0.352	20	

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank