Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt.	Vol.	ODF
K39JG	UNK	12/19/08 01:28:54 am	-0.005	48	16.70		1.00	1.00	1.00
CCV	CCV	12/19/08 01:31:13 am	4.932	41795	3.38		1.00	1.00	1.00
% Recovery 98.64									
CCB	CCB	12/19/08 01:33:30 am	-0.016	-49	2.71		1.00	1.00	1.00
K4C8Q	UNK	12/19/08 01:35:49 am	-0.008	21	21.34		1.00	1.00	1.00
K4C8QS	UNK	12/19/08 01:38:08 am	5.008	42442	2.67		1.00	1.00	1.00
K4C8QD	UNK	12/19/08 01:40:28 am	4.942	41885	2.84		1.00	1.00	1.00
K4C8W	UNK	12/19/08 01:42:48 am	-0.006	40	14.99		1.00	1.00	1.00
K4C8X	UNK	12/19/08 01:45:09 am	-0.010	9	57.51		1.00	1.00	1.00
K4C8XS	UNK	12/19/08 01:47:30 am	3.945	33452	3.10		1.00	1.00	1.00
K4C8XD	UNK	12/19/08 01:49:51 am	4.542	38503	3.72		1.00	1.00	1.00
K4JJW	UNK	12/19/08 01:52:12 am	-0.012	-11	33.88		1.00	1.00	1.00
K4JJWS	UNK	12/19/08 01:54:34 am	4.795	40643	4.39		1.00	1.00	1.00
K4JJWD	UNK	12/19/08 01:56:57 am	4.934	41816	3.16		1.00	1.00	1.00
CCV	CCV	12/19/08 01:59:15 am	4.608	39057	2.60		1.00	1.00	1.00
% Recovery 92.16									
CCB	CCB	12/19/08 02:01:32 am	-0.016	-45	6.86		1.00	1.00	1.00
K4JK2	UNK	12/19/08 02:03:55 am	-0.008	24	8.01		1.00	1.00	1.00
K4JLD	UNK	12/19/08 02:06:18 am	0.011	187	6.84	s	1.00	1.00	1.00

501

Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt.	Vol. ODF
K4JLJ	UNK	12/19/08 02:08:37 am	-0.011	-1	195.39		1.00	1.00 1.00
K4P1AB	UNK	12/19/08 02:10:57 am	-0.018	-58	8.06		1.00	1.00 1.00
K4P1AC	UNK	12/19/08 02:13:17 am	4.633	39265	3.14		1.00	1.00 1.00
K39KC	UNK	12/19/08 02:15:38 am	-0.021	-84	4.79		1.00	1.00 1.00
K39KCP5	UNK	12/19/08 02:17:59 am	-0.016	-45	13.87		1.00	1.00 1.00
K39KCS	UNK	12/19/08 02:20:20 am	4.890	41442	3.16		1.00	1.00 1.00
K39KCD	UNK	12/19/08 02:22:41 am	4.391	37224	3.42		1.00	1.00 1.00
K39K8	UNK	12/19/08 02:25:03 am	0.010	179	4.70		1.00	1.00 1.00
CCV % Recovery 97.14	CCV	12/19/08 02:27:22 am	4.857	41165	3.40		1.00	1.00 1.00
CCB	CCB	12/19/08 02:29:39 am	-0.016	-48	3.87		1.00	1.00 1.00
K39LA	UNK	12/19/08 02:32:01 am	0.956	8178	5.46	s	1.00	1.00 1.00
K40N8B	UNK	12/19/08 02:34:24 am	-0.018	-59	7.04		1.00	1.00 1.00
K40N8C	UNK	12/19/08 02:36:47 am	4.555	38610	3.38		1.00	1.00 1.00
K4HAV	UNK	12/19/08 02:39:10 am	0.001	95	9.97		1.00	1.00 1.00
K4HA8	UNK	12/19/08 02:41:30 am	-0.018	-63	5.50		1.00	1.00 1.00
~~K4P1K~~	~~UNK~~	~~12/19/08 02:43:50 am~~	~~124.000~~	~~1048705~~	~~0.00~~	~~S~~	~~1.00~~	~~1.00~~ 1.00
NA ↕ Samples > LR see 100x at end.								
~~K4P1K8~~	~~UNK~~	~~12/19/08 02:55:23 am~~	~~123.180~~	~~1041756~~	~~0.00~~	~~S~~	~~1.00~~	~~1.00~~ 1.00

 CS 12/19/08

Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt.	Vol.	ODF
NA See 100x at end. CS 12/19/08									
K4P1KD	UNK	12/19/08 03:04:33 am	122.450	1035585	0.00	S	1.00	1.00	1.00
K4P1L Sample >LR see 10x at end. CS 12/19/08	UNK	12/19/08 03:11:17 am	57.258	484286	2.60	O	1.00	1.00	1.00
K4P1M	UNK	12/19/08 03:16:36 am	3.899	33064	2.83		1.00	1.00	1.00
CCV	CCV	12/19/08 03:18:55 am	4.506	38198	2.61		1.00	1.00	1.00
% Recovery 90.13									
CCB	CCB	12/19/08 03:21:12 am	-0.066	-471	4.10		1.00	1.00	1.00
K4P1N	UNK	12/19/08 03:23:34 am	6.530	55315	6.92	s	1.00	1.00	1.00
K4P1P	UNK	12/19/08 03:25:56 am	3.129	26548	3.00		1.00	1.00	1.00
K4P1Q	UNK	12/19/08 03:28:19 am	4.092	34694	4.28		1.00	1.00	1.00
K4P1R	UNK	12/19/08 03:30:42 am	0.389	3381	2.73		1.00	1.00	1.00
K4P1T	UNK	12/19/08 03:33:06 am	0.985	8420	3.83		1.00	1.00	1.00
CCV	CCV	12/19/08 03:35:24 am	4.866	41238	2.32		1.00	1.00	1.00
% Recovery 97.32									
CCB	CCB	12/19/08 03:37:41 am	-0.121	-934	2.63		1.00	1.00	1.00
K4RED	UNK	12/19/08 03:40:05 am	0.087	827	20.02	s	1.00	1.00	1.00
K4VQV	UNK	12/19/08 03:42:26 am	-0.076	-550	18.01		1.00	1.00	1.00
K4VQW	UNK	12/19/08 03:44:46 am	0.346	3018	5.99	s	1.00	1.00	1.00
K4VQ0	UNK	12/19/08 03:47:07 am	-0.048	-318	7.17		1.00	1.00	1.00
K4VQ1	UNK	12/19/08 03:49:29 am	-0.069	-490	6.65		1.00	1.00	1.00

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Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt.	Vol.	ODF
K4VQ2	UNK	12/19/08 03:51:50 am	-0.064	-448	32.17		1.00	1.00	1.00
CCV	CCV	12/19/08 03:54:09 am	4.734	40124	2.38		1.00	1.00	1.00
% Recovery 94.68									
CCB	CCB	12/19/08 03:56:26 am	-0.100	-754	2.70		1.00	1.00	1.00
CCV	CCV	12/19/08 08:46:34 am	5.065	42924	2.57		1.00	1.00	1.00
% Recovery 101.31									
CCB	CCB	12/19/08 08:48:51 am	-0.129	-999	0.69		1.00	1.00	1.00
K4P1K 100X	UNK	12/19/08 08:51:12 am	6.811	57690	4.36		1.00	1.00	1.00
K4P1KS 100X	UNK	12/19/08 08:55:03 am	6.457	54692	4.55		1.00	1.00	1.00
K4P1KD 100X	UNK	12/19/08 08:57:24 am	8.368	70857	1.92		1.00	1.00	1.00
K4P1L 10X	UNK	12/19/08 08:59:46 am	4.851	41113	2.84		1.00	1.00	1.00
CCV	CCV	12/19/08 09:02:05 am	4.944	41897	3.63		1.00	1.00	1.00
% Recovery 98.88									
CCB	CCB	12/19/08 09:04:22 am	-0.114	-875	1.61		1.00	1.00	1.00

Analysis Parameters

Instrument

Conditions

Gas flow (mL/min)	Sample Uptake (s)	Rinse (s)	Read delay (s)	Replicates (#)	Replicate time (s)	Pump speed (%)	Wavelength (nm)
100	40.00	90.00	53.00	4	1.50	50	253.65

Instrumental Zero

Zero before first sample: No

Zero periodically: Yes

Before each calibration.

Baseline Correction

#1 Start time (s)	#1 End time (s)	#2 Start time (s)	#2 End time (s)
25.00	29.00		

Standby Mode

Enabled: Yes

Standby Options: pump slow

Autodilution

Enabled: No

Condition:

Tube # range:

If no autodilution tubes remaining

Calibration

Settings

Algorithm	Through blank	Weighted fit	Cal. Type	Racalibration rate	Reslope rate	Reslope standard
Linear	No	No	Normal	0	0	N/A

Limits

Calibration slope		Reslope		Coeff. of
Lower (%)	Upper (%)	Lower (%)	Upper (%)	Determination
20	150	75	125	0.99500

Error action: Flag and continue

QC

GLP Override: Yes

QC Tests

505

CCB

Concentration (ppb)
0.2000

Failure flag: Q

Error action for manually inserted QC: Stop analysis

ICB

Concentration (ppb)
0.2000

Failure flag: Z

Error action for manually inserted QC: Stop analysis

CCV

Concentration (ppb)	Low Limit %	High Limit %
5.0000	80.0000	120.0000

Failure flag: Q

Error action for manually inserted QC: Stop analysis

ICV

Concentration (ppb)	Low Limit %	High Limit %
7.0000	90.0000	110.0000

Failure flag: Q

Error action for manually inserted QC: Stop analysis

CRDL

Concentration (ppb)	Low Limit %	High Limit %
0.2000	70.0000	130.0000

Failure flag: Y

Error action for manually inserted QC: Stop analysis

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

REVISED

PROJECT NO. BOEING NPDES

SSFL MWH-Pasadena/Boeing

Lot #: F8L170169

Joseph Doak

TestAmerica Irvine
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TESTAMERICA LABORATORIES, INC.

Sherryl Adam
Project Manager

January 28, 2009

Case Narrative
LOT NUMBER: **F8L170169**
REVISED

This report has been revised to include Uranium results to be reported in pCi/L per client request.

This report contains the analytical results for the sample received under chain of custody by TestAmerica St. Louis on December 17, 2008. This sample is associated with your SSFL MWH-Pasadena/Boeing project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted on the following page.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by TestAmerica St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances
Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Radium 228 by GFPC
Radium 228 was observed in the method blank above the reporting limit. Associated samples are either non-detect for the contaminant or exhibit concentrations greater than five (5) times the concentrations observed in the method blank and therefore do not require re-analysis. Original results are reported.

Affected Samples:
F8L170169 (1): IRL1709-01

Radium 226 by GFPC
Radium 226 was observed in the method blank above the reporting limit. Associated samples are either non-detect for the contaminant or exhibit concentrations greater than five (5) times the concentrations observed in the method blank and therefore do not require re-analysis. Original results are reported.

The LCS/LCSD RPD is not within method acceptance criteria. LCS/LCSD recoveries are within QC limits demonstrating good extraction performance in the sample matrix.

Affected Samples:
F8L170169 (1): IRL1709-01

Total Uranium by Laser Phosphorimetry
The sample results were converted from ug/L to pCi/L per client request. The conversion assumes that all of the uranium is naturally occurring.

Affected Samples:
F8L170169 (1): IRL1709-01

METHODS SUMMARY

F8L170169

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Gamma Spectroscopy - Cesium-137 & Hits	EPA 901.1 MOD	
Gross Alpha/Beta EPA 900	EPA 900.0 MOD	EPA 900.0
H-3 by Distillation & LSC	EPA 906.0 MOD	
Radium-226 by GFPC	EPA 903.0 MOD	EPA 903.0
Radium-228 by GFPC	EPA 904 MOD	EPA 904
Strontium 90 by GFPC	EPA 905 MOD	
Total Uranium By Laser Ph osphorimetry	ASTM 5174-91	

References:

ASTM Annual Book Of ASTM Standards.

EPA "EASTERN ENVIRONMENTAL RADIATION FACILITY RADIOCHEMISTRY PROCEDURES MANUAL" US EPA EPA 520/5-84-006 AUGUST 1984

SAMPLE SUMMARY

F8L170169

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
K4VJ8	001	IRL1709-01	12/15/08	09:35

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

TestAmerica Irvine

Client Sample ID: IRL1709-01

Radiochemistry

Lab Sample ID: F8L170169-001
Work Order: K4VJ8
Matrix: WATER

Date Collected: 12/15/08 0935
Date Received: 12/17/08 0930

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	mdc	Prep Date	Analysis Date
Gamma Cs-137 & Hits by EPA 901.1 MOD				**pCi/L**	**Batch # 8359107**		**Yld %**
Cesium 137	2.1	U	8.2	20.0	15	12/24/08	01/10/09
Potassium 40	-50	U	480		250	12/24/08	01/10/09
Gross Alpha/Beta EPA 900				**pCi/L**	**Batch # 8353165**		**Yld %**
Gross Alpha	**2.3**	**J**	1.1	3.0	**1.3**	**12/18/08**	**12/21/08**
Gross Beta	**4.10**		0.95	4.00	**0.98**	**12/18/08**	**12/21/08**
Radium 226 by EPA 903.0 MOD				**pCi/L**	**Batch # 8352386**		**Yld % 46**
Radium (226)	0.11	U	0.22	1.00	0.37	12/17/08	01/09/09
Radium 228 by GFPC EPA 904 MOD				**pCi/L**	**Batch # 8352387**		**Yld % 37**
Radium 228	0.17	U	0.57	1.00	0.98	12/17/08	01/09/09
TRITIUM (Distill) by EPA 906.0 MOD				**pCi/L**	**Batch # 9012073**		**Yld %**
Tritium	80	U	200	500	340	01/12/09	01/13/09
SR-90 BY GFPC EPA-905 MOD				**pCi/L**	**Batch # 8352461**		**Yld % 61**
Strontium 90	-0.04	U	0.38	3.00	0.65	12/17/08	01/10/09
Total Uranium by KPA ASTM 5174-91				**pCi/L**	**Batch # 8354127**		**Yld %**
Total Uranium	0.176	U	0.018	0.693	0.21	12/19/08	12/21/08

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC.

J Result is greater than sample detection limit but less than stated reporting limit.

511

TestAmerica Irvine

Client Sample ID: IRL1709-01 DUP

Radiochemistry

Lab Sample ID: F8L170169-001X
Work Order: K4VJ8
Matrix: WATER

Date Collected: 12/15/08 0935
Date Received: 12/17/08 0930

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	mdc	Prep Date	Analysis Date
Gross Alpha/Beta EPA 900				**pCi/L**		**Batch # 8353165**	**Yld %**
Gross Alpha	2.4	J	1.2	3.0	1.6	12/18/08	12/21/08
Gross Beta	3.64	J	0.94	4.00	1.1	12/18/08	12/21/08
Gamma Cs-137 & Hits by EPA 901.1 MOD				**pCi/L**		**Batch # 8359107**	**Yld %**
Cesium 137	0.3	U	7.0	20.0	13	12/24/08	01/11/09
Potassium 40	-100	U	4800		200	12/24/08	01/11/09
TRITIUM (Distill) by EPA 906.0 MOD				**pCi/L**		**Batch # 9012073**	**Yld %**
Tritium	120	U	200	500	340	01/12/09	01/13/09

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC.

J Result is greater than sample detection limit but less than stated reporting limit.

512

METHOD BLANK REPORT

Radiochemistry

Client Lot ID: F8L170169
Matrix: WATER

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC		Prep Date	Lab Sample ID / Analysis Date
Total Uranium by KPA ASTM 5174-91			pCi/L	Batch # 8354127		Yld %		F8L190000-127B
Total Uranium	0.0364	U	0.0047	0.693	0.21		12/19/08	12/21/08
Gamma Cs-137 & Hits by EPA 901.1 MOD			pCi/L	Batch # 8359107		Yld %		F8L240000-107B
Cesium 137	-0.2	U	7.7	20.0	14		12/24/08	01/11/09
Potassium 40	-90	U	3400		200		12/24/08	01/11/09
Radium 226 by EPA 903.0 MOD			pCi/L	Batch # 8352386		Yld % 96		F8L170000-386B
Radium (226)	4.72		0.47	1.00	0.06		12/17/08	01/12/09
Radium 228 by GFPC EPA 904 MOD			pCi/L	Batch # 8352387		Yld % 77		F8L170000-387B
Radium 228	2.87		0.53	1.00	0.53		12/17/08	01/09/09
SR-90 BY GFPC EPA-905 MOD			pCi/L	Batch # 8352461		Yld % 61		F8L170000-461B
Strontium 90	0.18	U	0.37	3.00	0.62		12/17/08	01/10/09
Gross Alpha/Beta EPA 900			pCi/L	Batch # 8353165		Yld %		F8L180000-165B
Gross Alpha	-0.28	U	0.37	3.00	0.93		12/18/08	12/21/08
Gross Beta	0.62	U	0.65	4.00	1.0		12/18/08	12/21/08
TRITIUM (Distill) by EPA 906.0 MOD			pCi/L	Batch # 9012073		Yld %		F9A120000-073B
Tritium	-30	U	190	500	340		01/12/09	01/13/09

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined using instrument performance only
Bold results are greater than the MDC.

U Result is less than the sample detection limit.

513

Laboratory Control Sample Report

Radiochemistry

Client Lot ID: F8L170169
Matrix: WATER

Parameter	Spike Amount	Result	Total Uncert. (2 σ+/-)	MDC	% Yld	% Rec	Lab Sample ID QC Control Limits
Gross Alpha/Beta EPA 900			**pCi/L**	**900.0 MOD**			**F8L180000-165C**
Gross Beta	67.8	72.6	6.2	1.2		107	(73 - 122)
	Batch #:	8353165		**Analysis Date:**	12/21/08		
Gross Alpha/Beta EPA 900			**pCi/L**	**900.0 MOD**			**F8L180000-165C**
Gross Alpha	49.4	56.9	6.3	1.1		115	(73 - 136)
	Batch #:	8353165		**Analysis Date:**	12/21/08		
Total Uranium by KPA ASTM 5174-91			**pCi/L**	**5174-91**			**F8L190000-127C**
Total Uranium	27.7	29.2	3.5	0.2		105	(90 - 118)
	Batch #:	8354127		**Analysis Date:**	12/21/08		
Total Uranium by KPA ASTM 5174-91			**pCi/L**	**5174-91**			**F8L190000-127C**
Total Uranium	5.54	5.80	0.60	0.21		105	(90 - 118)
	Batch #:	8354127		**Analysis Date:**	12/21/08		
Gamma Cs-137 & Hits by EPA 901.1 MOD			**pCi/L**	**901.1 MOD**			**F8L240000-107C**
Americium 241	141000	138000	11000	600		98	(90 - 110)
Cesium 137	53100	51500	3000	200		97	(90 - 110)
Cobalt 60	87900	84300	4700	200		96	(90 - 110)
	Batch #:	8359107		**Analysis Date:**	01/11/09		
TRITIUM (Distill) by EPA 906.0 MOD			**pCi/L**	**906.0 MOD**			**F9A120000-073C**
Tritium	4820	3960	470	340		82	(77 - 110)
	Batch #:	9012073		**Analysis Date:**	01/13/09		

NOTE(S)

MDC is determined by instrument performance only

514

Laboratory Control Sample/LCS Duplicate Report

Radiochemistry

Client Lot ID: F8L170169
Matrix: WATER

Parameter		Spike Amount	Result		Total Uncert. (2 σ+/-)	% Yld	% Rec	QC Control Limits	Precision	
Radium 226 by EPA 903.0 MOD				**pCi/L**	**903.0 MOD**			**Lab Sample ID F8L170000-386C**		
Radium (226)		11.3	5.86		0.57	86	52	(52 - 150)		
	Spk 2	11.3	10.1		0.90	97	90	(52 - 150)	53	%RPD
		Batch #:	8352386			**Analysis Date:**		01/12/09		
Radium 228 by GFPC EPA 904 MOD				**pCi/L**	**904 MOD**			**Lab Sample ID F8L170000-387C**		
Radium 228		7.35	5.52		0.82	56	75	(64 - 140)		
	Spk 2	7.35	8.11		0.95	72	110	(64 - 140)	38	%RPD
		Batch #:	8352387			**Analysis Date:**		01/09/09		
SR-90 BY GFPC EPA-905 MOD				**pCi/L**	**905 MOD**			**Lab Sample ID F8L170000-461C**		
Strontium 90		6.99	7.81		0.93	64	112	(78 - 146)		
	Spk 2	6.99	8.38		0.97	66	120	(78 - 146)	7	%RPD
		Batch #:	8352461			**Analysis Date:**		01/10/09		

NOTE(S)

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

DUPLICATE EVALUATION REPORT

Radiochemistry

Client Lot ID: F8L170169
Matrix: WATER

Date Sampled: 12/15/08
Date Received: 12/17/08

Parameter	SAMPLE Result		Total Uncert. (2σ +/-)	% Yld	DUPLICATE Result		Total Uncert. (2 σ +/-)	% Yld	QC Sample ID Precision	
Gross Alpha/Beta EPA 900				**pCi/L**	**900.0 MOD**				**F8L170169-001**	
Gross Alpha	2.3	J	1.1		2.4	J	1.2		5	%RPD
Gross Beta	4.10		0.95		3.64	J	0.94		12	%RPD
	Batch #:		8353165 (Sample)		8353165 (Duplicate)					
Gamma Cs-137 & Hits by EPA 901.1 MOD				**pCi/L**	**901.1 MOD**				**F8L170169-001**	
Cesium 137	2.1	U	8.2		0.3	U	7.0		154	%RPD
Potassium 40	-50	U	480		-100	U	4800		74	%RPD
	Batch #:		8359107 (Sample)		8359107 (Duplicate)					
TRITIUM (Distill) by EPA 906.0 MOD				**pCi/L**	**906.0 MOD**				**F8L170169-001**	
Tritium	80	U	200		120	U	200		38	%RPD
	Batch #:		9012073 (Sample)		9012073 (Duplicate)					

NOTE(S)

Data are incomplete without the case narrative.
Calculations are performed before rounding to avoid round-off error in calculated results

J Result is greater than sample detection limit but less than stated reporting limit.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE REPORT

Radiochemistry

Client Lot ID: F8L120277
Matrix: WATER

Date Sampled: 12/07/08 1315
Date Received: 12/12/08 0830

Parameter		Spike Amount	SPIKE Result	Total Uncert. (2 σ+/-)	Spike Yld	SAMPLE Result	Total Uncert. (2σ +/-)	QC Sample ID % Yld	%Rec	QC Control Limits
Total Uranium by KPA ASTM 5				ug/L		5174-91			F8L120277-001	
Total Uranium		40.0	43.3	5.1		1.45	0.15		105	(90 - 121)
	Spk2	40.0	43.5	5.2		1.45	0.15		105	(90 - 121)
								Precision:	0.3	%RPD

Batch #: 8354127 Analysis date: 12/21/08

NOTE(S)

Data are incomplete without the case narrative.

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

517

MATRIX SPIKE REPORT

Radiochemistry

Client Lot Id: F8L170169
Matrix: WATER
Date Sampled: 12/15/08
Date Received: 12/17/08

Parameter	Spike Amount	Spike Result	Total Uncert. (2σ +/-)	Spike Yld.	Sample Result	Total Uncert. (2 σ +/-)	QC Sample ID %YLD	QC Sample ID %REC	QC Control Limits
Gross Alpha/Beta EPA 900			pCi/L		900.0 MOD			F8L170169-001	
Gross Beta	67.8	73.4	6.2		4.10	0.95		102	(66 - 147)
	Batch #:	8353165		Analysis Date:		12/21/08			
Gross Alpha/Beta EPA 900			pCi/L		900.0 MOD			F8L170169-001	
Gross Alpha	49.4	50.2	5.9		2.3	1.1		97	(44 - 150)
	Batch #:	8353165		Analysis Date:		12/21/08			
TRITIUM (Distill) by EPA 906.0 MOD			pCi/L		906.0 MOD			F8L170170-001	
Tritium	4820	4220	480		10	190		87	(47 - 150)
	Batch #:	9012073		Analysis Date:		01/13/09			

NOTE(S)

Data are incomplete without the case narrative.

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

cwl 341

TestAmerica Irvine

IRL1709

SENDING LABORATORY:	RECEIVING LABORATORY:
TestAmerica Irvine	TestAmerica St. Louis
17461 Derian Avenue. Suite 100	13715 Rider Trail North
Irvine, CA 92614	Earth City, MO 63045
Phone: (949) 261-1022	Phone :(314) 298-8566
Fax: (949) 260-3297	Fax: (314) 298-8757
Project Manager: Joseph Doak	Project Location: CA - CALIFORNIA
Client: MWH-Pasadena/Boeing	Receipt Temperature: _____°C Ice: Y / N

Analysis	Units	Due	Expires	Interlab Price	Surch	Comments
Sample ID: IRL1709-01	**Water**		Sampled: **12/15/08 09:35**			
Gamma Spec-O	mg/kg	12/22/08	12/15/09 09:35	$250.00	25%	Out St Louis, K-40 and CS-137 only, DO NOT FILTER!
Gross Alpha-O	pCi/L	12/22/08	06/13/09 09:35	$100.00	100%	Out St Louis, Boeing permit, DO NOT FILTER!
Gross Beta-O	pCi/L	12/22/08	06/13/09 09:35	$100.00	100%	Out St Louis, Boeing permit, DO NOT FILTER!
Level 4 Data Package - Out	N/A	12/22/08	01/12/09 09:35	$0.00	25%	
Radium, Combined-O	pCi/L	12/22/08	12/15/09 09:35	$238.00	100%	Out St Louis, Boeing permit, DO NOT FILTER!
Strontium 90-O	pCi/L	12/22/08	12/15/09 09:35	$155.00	100%	Out St Louis, Boeing permit, DO NOT FILTER!
Tritium-O	pCi/L	12/22/08	12/15/09 09:35	$80.00	100%	Out St Louis, Boeing permit, DO NOT FILTER!
Uranium, Combined-O	pCi/L	12/22/08	12/15/09 09:35	$120.00	25%	Out St Louis, Boeing permit, DO NOT FILTER!

Containers Supplied:

2.5 gal Poly (J) 500 mL Amber (K)

Released By	Date/Time	Received By	Date/Time
	12/16/08 17:00	Fed Ex	12/16/08 17:00
Released By	Date/Time	Received By	Date/Time
			12.17.08 0930

TESTAMERICA
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170
177
178

CONDITION UPON RECEIPT FORM

Client: TA Irvine
Quote No: 81594
COC/RFA No: below

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Initiated By: CA Date: 12-17-08 Time: 0930

Shipping Information

Shipper: (FedEx) UPS DHL Courier Client Other: _____ Multiple Packages: (Y) N

Shipping # (s):*				Sample Temperature (s):**			
1.	797187504267	6.		1.	2	6.	
2.		7.		2.	2	7.	
3.		8.		3.		8.	
4.		9.		4.		9.	
5.		10.		5.		10.	

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid or Rad tests- Liquid or Solids

Condition (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1.	(Y) N	Are there custody seals present on the cooler?	8.	Y (N)	Are there custody seals present on bottles?
2.	Y (N) N/A	Do custody seals on cooler appear to be tampered with?	9.	Y N (N/A)	Do custody seals on bottles appear to be tampered with?
3.	(Y) N	Were contents of cooler frisked after opening, but before unpacking?	10.	Y N (N/A)	Was sample received with proper pH[1]? (If not, make note below)
4.	(Y) N	Sample received with Chain of Custody?	11.	(Y) N	Sample received in proper containers?
5.	(Y) N N/A	Does the Chain of Custody match sample ID's on the container(s)?	12.	Y N (N/A)	Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below)
6.	Y (N)	Was sample received broken?	13.	(Y) N N/A	Was Internal COC/Workshare received?
7.	(Y) N	Is sample volume sufficient for analysis?	14.	(Y) N N/A	Was pH taken by original TestAmerica lab?

[1] For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX and soils.

Notes: (TRL1709
1710
1711
1714)

Corrective Action:
☐ Client Contact Name: _____ Informed by: _____
☐ Sample(s) processed "as is"
☐ Sample(s) on hold until: _____ If released, notify: _____
Project Management Review: K. Clay Date: 12-18-08

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

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Vista
Analytical Laboratory

December 19, 2008

Vista Project I.D.: 31266

Mr. Joseph Doak
Test America-Irvine, CA
17461 Derian Avenue
Suite 100
Irvine, CA 92614

Dear Mr. Doak,

Enclosed are the results for the one aqueous sample received at Vista Analytical Laboratory on December 17, 2008 under your Project Name "IRL1709". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Vista's current certifications, and copies of the raw data (if requested).

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com. Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha M. Maier
Laboratory Director

Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAC for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista Analytical Laboratory.

Section I: Sample Inventory Report

Date Received: **12/17/2008**

Vista Lab. ID	Client Sample ID
31266-001	IRL1709-01

SECTION II

Method Blank **EPA Method 1613**

Matrix: Aqueous | QC Batch No.: 1770 | Lab Sample: 0-MB001

Sample Size: 1.00 L | Date Extracted: 17-Dec-08 | Date Analyzed DB-5: 18-Dec-08 | Date Analyzed DB-225: NA

Analyte	Conc. (ug/L)	DL [a]	EMPC [b]	Qualifiers
2,3,7,8-TCDD	ND	0.000000958		
1,2,3,7,8-PeCDD	ND	0.00000250		
1,2,3,4,7,8-HxCDD	ND	0.00000182		
1,2,3,6,7,8-HxCDD	ND	0.00000171		
1,2,3,7,8,9-HxCDD	ND	0.00000164		
1,2,3,4,6,7,8-HpCDD	ND	0.00000279		
OCDD	ND	0.00000430		
2,3,7,8-TCDF	ND	0.000000887		
1,2,3,7,8-PeCDF	ND	0.00000118		
2,3,4,7,8-PeCDF	ND	0.00000107		
1,2,3,4,7,8-HxCDF	ND	0.000000512		
1,2,3,6,7,8-HxCDF	ND	0.000000592		
2,3,4,6,7,8-HxCDF	ND	0.000000696		
1,2,3,7,8,9-HxCDF	ND	0.00000105		
1,2,3,4,6,7,8-HpCDF	ND	0.00000153		
1,2,3,4,7,8,9-HpCDF	ND	0.00000182		
OCDF	ND	0.00000159		

	Labeled Standard	%R	LCL-UCL [d]	Qualifiers
IS	13C-2,3,7,8-TCDD	94.0	25 - 164	
	13C-1,2,3,7,8-PeCDD	101	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	84.4	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	95.7	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	89.5	23 - 140	
	13C-OCDD	74.1	17 - 157	
	13C-2,3,7,8-TCDF	92.8	24 - 169	
	13C-1,2,3,7,8-PeCDF	90.1	24 - 185	
	13C-2,3,4,7,8-PeCDF	97.0	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	91.1	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	85.9	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	86.9	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	89.9	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	80.2	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	83.2	26 - 138	
	13C-OCDF	78.0	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	95.0	35 - 197	

Totals

Total TCDD	ND	0.000000958
Total PeCDD	ND	0.00000250
Total HxCDD	ND	0.00000172
Total HpCDD	ND	0.00000279
Total TCDF	ND	0.000000887
Total PeCDF	ND	0.00000218
Total HxCDF	ND	0.000000692
Total HpCDF	ND	0.00000166

Footnotes

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

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Analyst: MAS

Approved By: William J. Luksemburg 19-Dec-2008 11:15

OPR Results **EPA Method 1613**

Matrix:	Aqueous	QC Batch No.:	1770	Lab Sample:	0-OPR001
Sample Size:	1.00 L	Date Extracted:	17-Dec-08	Date Analyzed DB-5:	18-Dec-08
				Date Analyzed DB-225:	NA

Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits		Labeled Standard	%R	LCL-UCL	Qualifier
2,3,7,8-TCDD	10.0	8.63	6.7 - 15.8	IS	13C-2,3,7,8-TCDD	89.2	25 - 164	
1,2,3,7,8-PeCDD	50.0	47.8	35 - 71		13C-1,2,3,7,8-PeCDD	96.7	25 - 181	
1,2,3,4,7,8-HxCDD	50.0	46.8	35 - 82		13C-1,2,3,4,7,8-HxCDD	77.1	32 - 141	
1,2,3,6,7,8-HxCDD	50.0	46.3	38 - 67		13C-1,2,3,6,7,8-HxCDD	91.1	28 - 130	
1,2,3,7,8,9-HxCDD	50.0	45.7	32 - 81		13C-1,2,3,4,6,7,8-HpCDD	84.0	23 - 140	
1,2,3,4,6,7,8-HpCDD	50.0	46.3	35 - 70		13C-OCDD	67.9	17 - 157	
OCDD	100	95.6	78 - 144		13C-2,3,7,8-TCDF	88.6	24 - 169	
2,3,7,8-TCDF	10.0	8.58	7.5 - 15.8		13C-1,2,3,7,8-PeCDF	88.4	24 - 185	
1,2,3,7,8-PeCDF	50.0	46.7	40 - 67		13C-2,3,4,7,8-PeCDF	91.1	21 - 178	
2,3,4,7,8-PeCDF	50.0	48.7	34 - 80		13C-1,2,3,4,7,8-HxCDF	88.6	26 - 152	
1,2,3,4,7,8-HxCDF	50.0	45.2	36 - 67		13C-1,2,3,6,7,8-HxCDF	81.1	26 - 123	
1,2,3,6,7,8-HxCDF	50.0	47.5	42 - 65		13C-2,3,4,6,7,8-HxCDF	81.0	28 - 136	
2,3,4,6,7,8-HxCDF	50.0	45.7	35 - 78		13C-1,2,3,7,8,9-HxCDF	83.5	29 - 147	
1,2,3,7,8,9-HxCDF	50.0	46.6	39 - 65		13C-1,2,3,4,6,7,8-HpCDF	74.7	28 - 143	
1,2,3,4,6,7,8-HpCDF	50.0	45.0	41 - 61		13C-1,2,3,4,7,8,9-HpCDF	79.5	26 - 138	
1,2,3,4,7,8,9-HpCDF	50.0	44.9	39 - 69		13C-OCDF	73.1	17 - 157	
OCDF	100	89.5	63 - 170	CRS	37Cl-2,3,7,8-TCDD	84.0	35 - 197	

Analyst: MAS

Approved By: William J. Luksemburg 19-Dec-2008 11:15

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Sample ID: **IRL1709-01** **EPA Method 1613**

Client Data		Sample Data		Laboratory Data			
Name:	Test America-Irvine, CA	Matrix:	Aqueous	Lab Sample:	31266-001	Date Received:	17-Dec-08
Project:	IRL1709	Sample Size:	1.04 L	QC Batch No.:	1770	Date Extracted:	17-Dec-08
Date Collected:	15-Dec-08			Date Analyzed DB-5:	18-Dec-08	Date Analyzed DB-225:	NA
Time Collected:	0935						

Analyte	Conc. (ug/L)	DL [a]	EMPC[b]	Qualifiers
2,3,7,8-TCDD	ND	0.000000654		
1,2,3,7,8-PeCDD	ND	0.00000326		
1,2,3,4,7,8-HxCDD	ND	0.00000285		
1,2,3,6,7,8-HxCDD	ND	0.00000277		
1,2,3,7,8,9-HxCDD	ND	0.00000261		
1,2,3,4,6,7,8-HpCDD	ND	0.00000500		
OCDD	0.0000297			J
2,3,7,8-TCDF	ND	0.000000568		
1,2,3,7,8-PeCDF	ND	0.00000214		
2,3,4,7,8-PeCDF	ND	0.00000216		
1,2,3,4,7,8-HxCDF	ND	0.000000772		
1,2,3,6,7,8-HxCDF	ND	0.000000849		
2,3,4,6,7,8-HxCDF	ND	0.000000996		
1,2,3,7,8,9-HxCDF	ND	0.00000152		
1,2,3,4,6,7,8-HpCDF	ND	0.00000156		
1,2,3,4,7,8,9-HpCDF	ND	0.00000196		
OCDF	ND	0.00000212		

	Labeled Standard	%R	LCL-UCL[d]	Qualifiers
IS	13C-2,3,7,8-TCDD	99.5	25 - 164	
	13C-1,2,3,7,8-PeCDD	110	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	88.6	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	97.9	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	93.8	23 - 140	
	13C-OCDD	81.0	17 - 157	
	13C-2,3,7,8-TCDF	99.3	24 - 169	
	13C-1,2,3,7,8-PeCDF	101	24 - 185	
	13C-2,3,4,7,8-PeCDF	103	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	88.3	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	85.9	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	88.6	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	93.6	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	88.1	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	90.5	26 - 138	
	13C-OCDF	83.8	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	91.0	35 - 197	

Totals

Total TCDD	ND	0.000000654
Total PeCDD	ND	0.00000326
Total HxCDD	ND	0.00000274
Total HpCDD	ND	0.00000813
Total TCDF	ND	0.000000568
Total PeCDF	ND	0.00000215
Total HxCDF	ND	0.00000101
Total HpCDF	ND	0.00000174

Footnotes

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

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Analyst: MAS

Approved By: William J. Luksemburg 19-Dec-2008 11:15

APPENDIX

DATA QUALIFIERS & ABBREVIATIONS

B	**This compound was also detected in the method blank.**
D	**Dilution**
E	**The amount detected is above the High Calibration Limit.**
P	**The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.**
H	**The signal-to-noise ratio is greater than 10:1.**
I	**Chemical Interference**
J	**The amount detected is below the Low Calibration Limit.**
*****	**See Cover Letter**
Conc.	**Concentration**
DL	**Sample-specific estimated detection limit**
MDL	**The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.**
EMPC	**Estimated Maximum Possible Concentration**
NA	**Not applicable**
RL	**Reporting Limit – concentrations that correspond to low calibration point**
ND	**Not Detected**
TEQ	**Toxic Equivalency**

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

CERTIFICATIONS

Accrediting Authority	Certificate Number
State of Alaska, DEC	CA413-2008
State of Arizona	AZ0639
State of Arkansas, DEQ	08-043-0
State of Arkansas, DOH	Reciprocity through CA
State of California – NELAP Primary AA	02102CA
State of Colorado	N/A
State of Connecticut	PH-0182
State of Florida, DEP	E87777
State of Indiana Department of Health	C-CA-02
Commonwealth of Kentucky	90063
State of Louisiana, Health and Hospitals	LA08000
State of Louisiana, DEQ	01977
State of Maine	2008024
State of Michigan	9932
State of Mississippi	Reciprocity through CA
Naval Facilities Engineering Service Center	NFESC413
State of Nevada	CA004132007A
State of New Jersey	CA003
State of New Mexico	Reciprocity through CA
State of New York, DOH	11411
State of North Carolina	06700
State of North Dakota, DOH	R-078
State of Oklahoma	D9919
State of Oregon	CA200001-006
State of Pennsylvania	68-00490
State of South Carolina	87002001
State of Tennessee	TN02996
State of Texas	T104704189-08-TX
U.S. Army Corps of Engineers	N/A
State of Utah	CA16400
Commonwealth of Virginia	00013
State of Washington	C1285
State of Wisconsin	998036160
State of Wyoming	8TMS-Q

SUBCONTRACT ORDER

TestAmerica Irvine

IRL1709

31266

SENDING LABORATORY:

TestAmerica Irvine
17461 Derian Avenue. Suite 100
Irvine, CA 92614
Phone: (949) 261-1022
Fax: (949) 260-3297
Project Manager: Joseph Doak

RECEIVING LABORATORY:

Vista Analytical Laboratory- SUB
1104 Windfield Way
El Dorado Hills, CA 95762
Phone :(916) 673-1520
Fax: (916) 673-0106
Project Location: CA - CALIFORNIA
Receipt Temperature: 1.4 °C Ice: (Y) N

Analysis	Units	Due	Expires	Comments
Sample ID: IRL1709-01	**Water**		Sampled: **12/15/08 09:35**	
1613-Dioxin-HR-Alta	ug/l	12/22/08	12/22/08 09:35	J flags,17 congeners,no TEQ,ug/L,sub=Vista
EDD + Level 4	N/A	12/22/08	01/12/09 09:35	Excel EDD email to pm,Include Std logs for Lvl IV
Containers Supplied:				
1 L Amber (C)	1 L Amber (D)			

Released By — Date/Time 12/14/08 17:00 — Received By Fed Ex — Date/Time 12/16/08 17:00

Released By — Date/Time — Received By — Date/Time 12/17/08 0935

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SAMPLE LOG-IN CHECKLIST

Vista Analytical Laboratory

Vista Project #: 31266 **TAT** 5 days

Samples Arrival:	**Date/Time** 12/17/08 0918	**Initials:** CV	**Location:** LR-2 **Shelf/Rack:** N/A
Logged In:	**Date/Time** 12/17/08 0935	**Initials:** CV	**Location:** LR-2 **Shelf/Rack:** C-3

Delivered By:	(FedEx)	UPS	Cal	DHL	Hand Delivered	Other
Preservation:	(Ice)	Blue Ice	Dry Ice	None		
Temp °C 1.4°	**Time:** 0927	**Thermometer ID:** IR-2				

	YES	NO	NA
Adequate Sample Volume Received? (A+S bottles)	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill Trk # 7961 9099 8504	✓		
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?		✓	
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓

$Na_2S_2O_3$ Preservation Documented?		COC	Sample Container	(None)	
Shipping Container	Vista	(Client)	Retain	(Return)	Dispose

Comments:

APPENDIX G

Section 9

Outfall 006 - BMP Effectiveness, December 15, 2008

Test America Analytical Laboratory Report

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Avenue. Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing
618 Michillinda Avenue, Suite 200
Arcadia, CA 91007
Attention: Bronwyn Kelly

Project: BMP Effectiveness
Monitoring Program

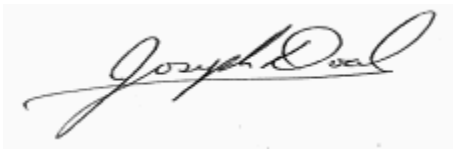
Sampled: 12/15/08
Received: 12/16/08
Issued: 12/29/08 14:51

NELAP #01108CA California ELAP#2706 CSDLAC #10256 AZ #AZ0671 NV #CA01531

SAMPLE CROSS REFERENCE

LABORATORY ID	CLIENT ID	MATRIX
IRL1898-01	006 EFF-1	Water
IRL1898-02	006 EFF-2	Water
IRL1898-03	006 EFF-3	Water
IRL1898-04	006 EFF-4	Water
IRL1898-05	006 EFF-5	Water
IRL1898-06	006 EFF-6	Water
IRL1898-07	006 EFF-7	Water
IRL1898-08	006 EFF-8	Water

Reviewed By:



TestAmerica Irvine

Joseph Doak
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Avenue. Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

MWH-Pasadena/Boeing
618 Michillinda Avenue, Suite 200
Arcadia, CA 91007
Attention: Bronwyn Kelly

Project ID: BMP Effectiveness Monitoring Program
Report Number: IRL1898

Sampled: 12/15/08
Received: 12/16/08

INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IRL1898-01 (006 EFF-1 - Water)									
Reporting Units: g/cc									
Density	Displacement	8L26050	N/A	NA	**0.99**	1	12/26/08	12/26/08	
Sample ID: IRL1898-02 (006 EFF-2 - Water)									
Reporting Units: g/cc									
Density	Displacement	8L26050	N/A	NA	**0.99**	1	12/26/08	12/26/08	
Sample ID: IRL1898-03 (006 EFF-3 - Water)									
Reporting Units: g/cc									
Density	Displacement	8L26050	N/A	NA	**0.99**	1	12/26/08	12/26/08	
Sample ID: IRL1898-04 (006 EFF-4 - Water)									
Reporting Units: g/cc									
Density	Displacement	8L26050	N/A	NA	**0.99**	1	12/26/08	12/26/08	
Sample ID: IRL1898-05 (006 EFF-5 - Water)									
Reporting Units: g/cc									
Density	Displacement	8L26050	N/A	NA	**0.99**	1	12/26/08	12/26/08	
Sample ID: IRL1898-06 (006 EFF-6 - Water)									
Reporting Units: g/cc									
Density	Displacement	8L26050	N/A	NA	**0.98**	1	12/26/08	12/26/08	
Sample ID: IRL1898-07 (006 EFF-7 - Water)									
Reporting Units: g/cc									
Density	Displacement	8L26050	N/A	NA	**1.0**	1	12/26/08	12/26/08	
Sample ID: IRL1898-08 (006 EFF-8 - Water)									
Reporting Units: g/cc									
Density	Displacement	8L26050	N/A	NA	**1.0**	1	12/26/08	12/26/08	
Sample ID: IRL1898-01 (006 EFF-1 - Water)									
Reporting Units: mg/l									
Sediment	ASTM D3977	8L29068	10	10	ND	1	12/29/08	12/29/08	
Sample ID: IRL1898-02 (006 EFF-2 - Water)									
Reporting Units: mg/l									
Sediment	ASTM D3977	8L29068	10	10	**13**	1	12/29/08	12/29/08	

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Attention: Bronwyn Kelly

Project ID: BMP Effectiveness Monitoring Program
Report Number: IRL1898

Sampled: 12/15/08
Received: 12/16/08

INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IRL1898-03 (006 EFF-3 - Water)									
Reporting Units: mg/l									
Sediment	ASTM D3977	8L29068	10	10	ND	1	12/29/08	12/29/08	
Sample ID: IRL1898-04 (006 EFF-4 - Water)									
Reporting Units: mg/l									
Sediment	ASTM D3977	8L29068	10	10	**13**	1	12/29/08	12/29/08	
Sample ID: IRL1898-05 (006 EFF-5 - Water)									
Reporting Units: mg/l									
Sediment	ASTM D3977	8L29068	10	10	**10**	1	12/29/08	12/29/08	
Sample ID: IRL1898-06 (006 EFF-6 - Water)									
Reporting Units: mg/l									
Sediment	ASTM D3977	8L29068	10	10	**11**	1	12/29/08	12/29/08	
Sample ID: IRL1898-07 (006 EFF-7 - Water)									
Reporting Units: mg/l									
Sediment	ASTM D3977	8L29068	10	10	ND	1	12/29/08	12/29/08	
Sample ID: IRL1898-08 (006 EFF-8 - Water)									
Reporting Units: mg/l									
Sediment	ASTM D3977	8L29068	10	10	ND	1	12/29/08	12/29/08	

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Arcadia, CA 91007
Attention: Bronwyn Kelly

Project ID: BMP Effectiveness Monitoring Program
Report Number: IRL1898

Sampled: 12/15/08
Received: 12/16/08

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 8L26050 Extracted: 12/26/08											
Duplicate Analyzed: 12/26/2008 (8L26050-DUP1)						**Source: IRL1903-01**					
Density	0.933	NA	N/A	g/cc		0.949			2	20	
Duplicate Analyzed: 12/26/2008 (8L26050-DUP2)						**Source: IRL1906-03**					
Density	0.993	NA	N/A	g/cc		0.992			0	20	

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MWH-Pasadena/Boeing	Project ID: BMP Effectiveness Monitoring Program	
618 Michillinda Avenue, Suite 200		Sampled: 12/15/08
Arcadia, CA 91007	Report Number: IRL1898	Received: 12/16/08
Attention: Bronwyn Kelly		

DATA QUALIFIERS AND DEFINITIONS

ND Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.

RPD Relative Percent Difference

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MWH-Pasadena/Boeing	Project ID: BMP Effectiveness Monitoring Program	Sampled: 12/15/08
618 Michillinda Avenue, Suite 200	Report Number: IRL1898	Received: 12/16/08
Arcadia, CA 91007		
Attention: Bronwyn Kelly		

Certification Summary

TestAmerica Irvine

Method	Matrix	Nelac	California
ASTM D3977	Water		
Displacement	Water		

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for TestAmerica may be obtained by contacting the laboratory or visiting our website at www.testamericainc.com

TestAmerica Irvine

Joseph Doak
Project Manager

Test America Version 12/20/07

CHAIN OF CUSTODY FORM

IR4898

Client Name/Address:	Project: **Boeing BMP Effectiveness Monitoring Program**
MWH-Arcadia 618 Michillinda Avenue, Suite 200 Arcadia, CA 91007 Test America Contact: Joseph Doak	
Project Manager: Bronwyn Kelly Sampler: R Banaga R BANAGA	Phone Number: (626) 568-6691 Fax Number: (626) 568-6515

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	ANALYSIS REQUIRED: Suspended Sediment Concentration (SSC, ASTM-D3977-1997)									Comments
006 EFF-1	W	500 mL Poly	1	12/15/08-0830	None	1	X									
006 EFF-2	W	500 mL Poly	1	12/15/08-0930	None	2	X									
006 EFF-3	W	500 mL Poly	1	12/15/08-1030	None	3	X									
006 EFF-4	W	500 mL Poly	1	12/15/08-1130	None	4	X									
006 EFF-5	W	500 mL Poly	1	12/15/08-1230	None	5	X									
006 EFF-6	W	500 mL Poly	1	12/15/08-1330	None	6	X									
006 EFF-7	W	500 mL Poly	1	12/15/08-1430	None	7	X									
006 EFF-8	W	500 mL Poly	1	12/15/08-1530	None	8	X									

Field readings:

Temp = NA

pH = NA

Time of readings = NA

Relinquished By	Date/Time:	Received By	Date/Time:
Kevin Banaga 12.16.08	1350		12/16/08 1350
Relinquished By	Date/Time:	Received By	Date/Time:
Shyll 12/16/08	1800		12/16/08 1800
Relinquished By	Date/Time:	Received By	Date/Time:

Turn around Time: (check)
24 Hours _____ 5 Days _____
48 Hours _____ 10 Days _____
72 Hours _____ Normal X

Sample Integrity: (check)
Intact X On Ice: X 1.4 1.5

12/17 7:50 g

#005

APPENDIX G

Section 10

Outfall 009, November 26, 2008

MEC^X Data Validation Reports

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: IRK2835

Prepared by

MEC^X, LP
12269 East Vassar Drive
Aurora, CO 80014

I. INTRODUCTION

Task Order Title:	Boeing SSFL NPDES
Contract Task Order:	1261.100D.00
Sample Delivery Group:	IRK2835
Project Manager:	B. Kelly
Matrix:	Water
QC Level:	IV
No. of Samples:	1
No. of Reanalyses/Dilutions:	0
Laboratory:	TestAmerica-Irvine

Table 1. Sample Identification

Client ID	Laboratory ID	Sub-Laboratory ID	Matrix	Collected	Method
Outfall 009	IRK2835-01	D8K290113-001, F8L030238-001, 31224-001	Water	11/26/08 1455	245.1, 900.0, 901.1, 903.1, 904.0, 905.0, 906.0, 1613B, ASTM 5174-91

II. Sample Management

No anomalies were observed regarding sample management. The samples were received at TestAmerica-Irvine above the temperature limit; however, the sample had insufficient time to cool during transport. The samples were received at Testamerica-Denver and Vista below the temperature limit; however, the samples were not noted to be damaged or frozen. The samples were received at TestAmerica-St. Louis and Vista within the temperature limits. According to the case narrative for this SDG, the samples were received intact at all laboratories. The COCs were appropriately signed and dated by field and/or laboratory personnel. As the sample was couriered to TestAmerica-Irvine, custody seals were not required. Custody seals were intact upon arrival at TestAmerica-Denver, TestAmerica-St. Louis, and Vista. If necessary, the client ID was added to the sample result summary by the reviewer.

Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit. The associated value is the sample detection limit or the quantitation limit for perchlorate only.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.

Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D was noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination as indicated by the preparation (method) blank results.	Presumed contamination as indicated by the preparation (method) or calibration blank results.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination as indicated by the trip blank results.	Not applicable.
+	False positive – reported compound was not present.	Not applicable.
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination as indicated by the FB or ER results.	Presumed contamination as indicated by the FB or ER results.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.

Qualification Code Reference Table Cont.

D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Unusual problems found with the data that have been described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Unusual problems found with the data that have been described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. Method Analyses

A. EPA METHOD 1613—Dioxin/Furans

Reviewed By: E. Wessling
Date Reviewed: December 29, 2008

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0), USEPA Method 1613*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (8/02).

- Holding Times: Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

- Instrument Performance: Instrument performance criteria were met. Following are findings associated with instrument performance.

    - GC Column Performance: A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

    - Mass Spectrometer Performance: The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

- Calibration: Calibration criteria were met.

    - Initial Calibration: Initial calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq$20% for the 16 native compounds (calibration by isotope dilution) and $\leq$35% for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613 QC limits for all standards.

    - Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VERs were acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits.

- Blanks: The method blank, MB-1751, had no target compound detects above the EDL which affected the site sample quantitation and reporting.

- Blank Spikes and Laboratory Control Samples: Recoveries were within the acceptance criteria listed in Table 6 of Method 1613 for the OPR-1751.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: This SDG had no identified field blank or equipment rinsate samples.

    - Field Duplicates: There were no field duplicate samples identified for this SDG.

- Internal Standards Performance: The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613.

- Compound Identification: Compound identification was verified. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613.

- Compound Quantification and Reported Detection Limits: Compound quantitation was verified by recalculating any sample detects and a representative number of blank spike concentrations. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," and coded with "DNQ," in order to comply with the NPDES permit. Nondetects are valid to the estimated detection limit (EDL).

B. EPA METHOD 245.1—Metals and Mercury

Reviewed By: P. Meeks
Date Reviewed: December 12, 2008

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Metals (DVP-5, Rev. 0 and DVP-21, Rev. 0), EPA Method 245.1,* and the *National Functional Guidelines for Inorganic Data Review* (10/04).

- Holding Times: The analytical holding time, 28 days for mercury, was met.

- Tuning: Not applicable to this method.

- Calibration: Calibration criteria were met. The mercury initial calibration r^2 value was $\geq$0.995 and all initial and continuing calibration recoveries were within 85-115%. The CRA and check standard was recovered below the control limit of 70-130%, at 68.5%; therefore, nondetected total and dissolved mercury in the sample were qualified as estimated, "UJ."

- Blanks: There were no applicable detects in the method blanks or CCBs.

- Interference Check Samples: Not applicable to this method.

- Blank Spikes and Laboratory Control Samples: The recovery was within the laboratory-established QC limits.

- Laboratory Duplicates: No laboratory duplicate analyses were performed on the sample in this SDG.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on the sample in this SDG. Both recoveries and the RPD were within the laboratory-established control limits.

- Serial Dilution: No serial dilution analyses were performed on the sample in this SDG.

- Internal Standards Performance: Not applicable to this method.

- Sample Result Verification: Calculations were verified and the sample results reported on the sample result summaries were verified against the raw data. No transcription errors or calculation errors were noted. Detects reported below the reporting limit were qualified as estimated, "J," and coded with "DNQ," in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: This SDG had no identified field blank or equipment rinsate samples.

    - Field Duplicates: There were no field duplicate samples identified for this SDG.

C. VARIOUS EPA METHODS — Radionuclides

Reviewed By: P. Meeks
Date Reviewed: January 12, 2009

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.1, 904.0, 905.0, and 906.0, ASTM Method D-5174,* and the *National Functional Guidelines for Inorganic Data Review* (07/02).

- Holding Times: The tritium sample was analyzed within 180 days of collection. All remaining aliquots were prepared beyond the five-day holding time for unpreserved samples; therefore, results for all analytes except tritium were qualified as estimated, "J," for detects and, "UJ," for nondetects.

- Calibration: The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability. ”

  The gross alpha and radium-226 detector efficiencies were less than 20%; therefore, gross alpha and radium-226 in the sample was qualified as estimated, “J,” for detects and, “UJ,” for nondetects. The remaining detector efficiencies were greater than 20%.

  The tritium aliquot was spiked for efficiency determination; therefore, no calibration was necessary. The strontium, radium-226, and radium-228 chemical yields were greater than 50% and considered acceptable. The gamma spectroscopy analytes were determined at the maximum photopeak energy. The kinetic phosphorescence analyzer (KPA) was calibrated immediately prior to the sample analysis. All KPA calibration check standard recoveries were within 90-110% and were deemed acceptable.

- Blanks: There were no analytes detected in the method blanks or KPA CCBs.

- Blank Spikes and Laboratory Control Samples: The recoveries and radium-226, radium-228, and strontium-90 RPDs were within the laboratory-established control limits.

- Laboratory Duplicates: No laboratory duplicate analyses were performed on the sample in this SDG. Method precision was evaluated based on LCS/LCSD results for radium-226, radium-228, and strontium-90.

- Matrix Spike/Matrix Spike Duplicate: A matrix spike analysis was performed on the sample in this SDG for tritium. The recovery was within the laboratory-established control limits. Method accuracy for the remaining analytes was evaluated based on LCS/LCSD results.

- Sample Result Verification: An EPA Level IV review was performed for the sample in this data package. The sample results and MDAs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Detects reported below the reporting limit were qualified as estimated, “J,” and coded with “DNQ,” in order to comply with the NPDES permit. Reported nondetects are valid to the MDA

- Field QC Samples: Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

  - Field Blanks and Equipment Rinsates: This SDG had no identified field blank or equipment rinsate samples.

  - Field Duplicates: There were no field duplicate samples identified for this SDG.

Sample ID:	IRK2835-01 Outfall 009			EPA Method 1613
Client Data		**Sample Data**	**Laboratory Data**	
Name:	Test America-Irvine, CA	Matrix: Aqueous	Lab Sample: 31224-001	Date Received: 29-Nov-08
Project:	IRK2835	Sample Size: 1.01 L	QC Batch No.: 1751	Date Extracted: 9-Dec-08
Date Collected:	26-Nov-08		Date Analyzed DB-5: 11-Dec-08	Date Analyzed DB-225: NA
Time Collected:	1455			

Analyte	Conc. (ug/L)		DL [a]	EMPC [b]	Qualifiers
2,3,7,8-TCDD	ND	U	0.00000105		
1,2,3,7,8-PeCDD	ND		0.00000173		
1,2,3,4,7,8-HxCDD	ND		0.00000471		
1,2,3,6,7,8-HxCDD	ND		0.00000448		
1,2,3,7,8,9-HxCDD	ND		0.00000427		
1,2,3,4,6,7,8-HpCDD	0.0000356				
OCDD	0.000428				
2,3,7,8-TCDF	ND	U	0.00000109		
1,2,3,7,8-PeCDF	ND		0.00000170		
2,3,4,7,8-PeCDF	ND		0.00000193		
1,2,3,4,7,8-HxCDF	ND		0.00000161		
1,2,3,6,7,8-HxCDF	ND		0.00000173		
2,3,4,6,7,8-HxCDF	ND		0.00000196		
1,2,3,7,8,9-HxCDF	ND		0.00000248		
1,2,3,4,6,7,8-HpCDF	0.00000639	J/DNQ			J
1,2,3,4,7,8,9-HpCDF	ND	U	0.00000241		
OCDF	0.0000245	J/DNQ			J

	Labeled Standard	%R	LCL-UCL [d]	Qualifiers
IS	13C-2,3,7,8-TCDD	77.9	25 - 164	
	13C-1,2,3,7,8-PeCDD	65.4	25 - 181	
	13C-1,2,3,4,7,8-HxCDD	67.0	32 - 141	
	13C-1,2,3,6,7,8-HxCDD	76.9	28 - 130	
	13C-1,2,3,4,6,7,8-HpCDD	78.4	23 - 140	
	13C-OCDD	65.2	17 - 157	
	13C-2,3,7,8-TCDF	76.8	24 - 169	
	13C-1,2,3,7,8-PeCDF	60.8	24 - 185	
	13C-2,3,4,7,8-PeCDF	60.8	21 - 178	
	13C-1,2,3,4,7,8-HxCDF	64.0	26 - 152	
	13C-1,2,3,6,7,8-HxCDF	63.0	26 - 123	
	13C-2,3,4,6,7,8-HxCDF	66.1	28 - 136	
	13C-1,2,3,7,8,9-HxCDF	75.4	29 - 147	
	13C-1,2,3,4,6,7,8-HpCDF	69.9	28 - 143	
	13C-1,2,3,4,7,8,9-HpCDF	70.3	26 - 138	
	13C-OCDF	66.8	17 - 157	
CRS	37Cl-2,3,7,8-TCDD	90.0	35 - 197	

Totals			
Total TCDD	ND	U	0.00000105
Total PeCDD	ND		0.00000173
Total HxCDD	ND		0.00000453
Total HpCDD	0.0000747		
Total TCDF	ND	U	0.00000109
Total PeCDF	ND		0.00000181
Total HxCDF	ND		0.00000434
Total HpCDF	0.0000151	J/DNQ	

Footnotes

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

Analyst: MAS

Approved By: William J. Luksemburg 12-Dec-2008 10:50

LEVEL IV