



Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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Report Date: December 13, 2013

Work Order: 13112702



Project Location: Eddy County, NM
Project Name: Federal Lease Evap Pond #2
Project Number: Federal Lease Evap Pond #2

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
347585	Hole 1 3' (Pond 2)	soil	2013-11-15	09:00	2013-11-26
347586	Hole 1 12' (Pond 2)	soil	2013-11-15	12:00	2013-11-26
347587	Hole 2 3' (Pond 2)	soil	2013-11-15	09:15	2013-11-26
347588	Hole 3 6' (Pond 2)	soil	2013-11-15	11:00	2013-11-26
347589	Hole 4 3' (Pond 2)	soil	2013-11-15	09:45	2013-11-26
347590	Hole 4 12' (Pond 2)	soil	2013-11-15	13:00	2013-11-26

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 25 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink that reads "Michael Abel". The signature is written in a cursive, flowing style.

Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

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Case Narrative

Samples for project Federal Lease Evap Pond #2 were received by TraceAnalysis, Inc. on 2013-11-26 and assigned to work order 13112702. Samples for work order 13112702 were received intact at a temperature of 10.2 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	90737	2013-11-27 at 08:51	107168	2013-11-27 at 08:51
Chloride (Titration)	SM 4500-Cl B	91053	2013-12-12 at 10:00	107550	2013-12-13 at 11:00
TPH DRO - NEW	S 8015 D	90781	2013-11-27 at 17:00	107213	2013-12-03 at 11:45
TPH GRO	S 8015 D	90737	2013-11-27 at 08:51	107169	2013-11-27 at 08:51

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 13112702 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 347585 - Hole 1 3' (Pond 2)

Laboratory: Lubbock
Analysis: BTEX
QC Batch: 107168
Prep Batch: 90737

Analytical Method: S 8021B
Date Analyzed: 2013-11-27
Sample Preparation: 2013-11-27

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	Qs,U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	2.41	mg/Kg	1	2.00	120	66.2 - 120
4-Bromofluorobenzene (4-BFB)			2.24	mg/Kg	1	2.00	112	59.5 - 120

Sample: 347585 - Hole 1 3' (Pond 2)

Laboratory: Lubbock
Analysis: Chloride (Titration)
QC Batch: 107550
Prep Batch: 91053

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-12-13
Sample Preparation: 2013-12-12

Prep Method: N/A
Analyzed By: GS
Prepared By: GS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Qs		4520	mg/Kg	5	5.00

Sample: 347585 - Hole 1 3' (Pond 2)

Laboratory: Lubbock
Analysis: TPH DRO - NEW
QC Batch: 107213
Prep Batch: 90781

Analytical Method: S 8015 D
Date Analyzed: 2013-12-03
Sample Preparation: 2013-11-27

Prep Method: N/A
Analyzed By: CM
Prepared By: CM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1	<50.0	mg/Kg	1	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			94.1	mg/Kg	1	100	94	70 - 130

Sample: 347585 - Hole 1 3' (Pond 2)

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 107169
Prep Batch: 90737

Analytical Method: S 8015 D
Date Analyzed: 2013-11-27
Sample Preparation: 2013-11-27

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.04	mg/Kg	1	2.00	102	73 - 122
4-Bromofluorobenzene (4-BFB)			1.87	mg/Kg	1	2.00	94	74.6 - 120

Sample: 347586 - Hole 1 12' (Pond 2)

Laboratory: Lubbock
Analysis: BTEX
QC Batch: 107168
Prep Batch: 90737

Analytical Method: S 8021B
Date Analyzed: 2013-11-27
Sample Preparation: 2013-11-27

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	Qs,U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	2.41	mg/Kg	1	2.00	120	66.2 - 120
4-Bromofluorobenzene (4-BFB)			2.15	mg/Kg	1	2.00	108	59.5 - 120

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Sample: 347586 - Hole 1 12' (Pond 2)

Laboratory:	Lubbock		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	107550	Date Analyzed:	2013-12-13
Prep Batch:	91053	Sample Preparation:	2013-12-12
		Prep Method:	N/A
		Analyzed By:	GS
		Prepared By:	GS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Qs		2780	mg/Kg	5	5.00

Sample: 347586 - Hole 1 12' (Pond 2)

Laboratory:	Lubbock		
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D
QC Batch:	107213	Date Analyzed:	2013-12-03
Prep Batch:	90781	Sample Preparation:	2013-11-27
		Prep Method:	N/A
		Analyzed By:	CM
		Prepared By:	CM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			95.4	mg/Kg	1	100	95	70 - 130

Sample: 347586 - Hole 1 12' (Pond 2)

Laboratory:	Lubbock		
Analysis:	TPH GRO	Analytical Method:	S 8015 D
QC Batch:	107169	Date Analyzed:	2013-11-27
Prep Batch:	90737	Sample Preparation:	2013-11-27
		Prep Method:	S 5035
		Analyzed By:	MT
		Prepared By:	MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.02	mg/Kg	1	2.00	101	73 - 122
4-Bromofluorobenzene (4-BFB)			1.80	mg/Kg	1	2.00	90	74.6 - 120

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Sample: 347587 - Hole 2 3' (Pond 2)

Laboratory: Lubbock
Analysis: BTEX
QC Batch: 107168
Prep Batch: 90737

Analytical Method: S 8021B
Date Analyzed: 2013-11-27
Sample Preparation: 2013-11-27

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	Qs,U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.30	mg/Kg	1	2.00	115	66.2 - 120
4-Bromofluorobenzene (4-BFB)			2.32	mg/Kg	1	2.00	116	59.5 - 120

Sample: 347587 - Hole 2 3' (Pond 2)

Laboratory: Lubbock
Analysis: Chloride (Titration)
QC Batch: 107550
Prep Batch: 91053

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-12-13
Sample Preparation: 2013-12-12

Prep Method: N/A
Analyzed By: GS
Prepared By: GS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Qs		94.0	mg/Kg	1	5.00

Sample: 347587 - Hole 2 3' (Pond 2)

Laboratory: Lubbock
Analysis: TPH DRO - NEW
QC Batch: 107213
Prep Batch: 90781

Analytical Method: S 8015 D
Date Analyzed: 2013-12-03
Sample Preparation: 2013-11-27

Prep Method: N/A
Analyzed By: CM
Prepared By: CM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	146	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		106		mg/Kg	1	100	106	70 - 130

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Sample: 347587 - Hole 2 3' (Pond 2)

Laboratory:	Lubbock		
Analysis:	TPH GRO	Analytical Method:	S 8015 D
QC Batch:	107169	Date Analyzed:	2013-11-27
Prep Batch:	90737	Sample Preparation:	2013-11-27
		Prep Method:	S 5035
		Analyzed By:	MT
		Prepared By:	MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.93	mg/Kg	1	2.00	96	73 - 122
4-Bromofluorobenzene (4-BFB)			1.93	mg/Kg	1	2.00	96	74.6 - 120

Sample: 347588 - Hole 3 6' (Pond 2)

Laboratory:	Lubbock		
Analysis:	BTEX	Analytical Method:	S 8021B
QC Batch:	107168	Date Analyzed:	2013-11-27
Prep Batch:	90737	Sample Preparation:	2013-11-27
		Prep Method:	S 5035
		Analyzed By:	MT
		Prepared By:	MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	Qs,U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	2.44	mg/Kg	1	2.00	122	66.2 - 120
4-Bromofluorobenzene (4-BFB)			2.37	mg/Kg	1	2.00	118	59.5 - 120

Sample: 347588 - Hole 3 6' (Pond 2)

Laboratory:	Lubbock		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	107550	Date Analyzed:	2013-12-13
Prep Batch:	91053	Sample Preparation:	2013-12-12
		Prep Method:	N/A
		Analyzed By:	GS
		Prepared By:	GS

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Qs		104	mg/Kg	1	5.00

Sample: 347588 - Hole 3 6' (Pond 2)

Laboratory: Lubbock
Analysis: TPH DRO - NEW
QC Batch: 107213
Prep Batch: 90781

Analytical Method: S 8015 D
Date Analyzed: 2013-12-03
Sample Preparation: 2013-11-27

Prep Method: N/A
Analyzed By: CM
Prepared By: CM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			91.5	mg/Kg	1	100	92	70 - 130

Sample: 347588 - Hole 3 6' (Pond 2)

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 107169
Prep Batch: 90737

Analytical Method: S 8015 D
Date Analyzed: 2013-11-27
Sample Preparation: 2013-11-27

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.05	mg/Kg	1	2.00	102	73 - 122
4-Bromofluorobenzene (4-BFB)			1.99	mg/Kg	1	2.00	100	74.6 - 120

Sample: 347589 - Hole 4 3' (Pond 2)

Laboratory: Lubbock
Analysis: BTEX
QC Batch: 107168
Prep Batch: 90737

Analytical Method: S 8021B
Date Analyzed: 2013-11-27
Sample Preparation: 2013-11-27

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	Qs, U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.19	mg/Kg	1	2.00	110	66.2 - 120
4-Bromofluorobenzene (4-BFB)			2.04	mg/Kg	1	2.00	102	59.5 - 120

Sample: 347589 - Hole 4 3' (Pond 2)

Laboratory: Lubbock
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 107550 Date Analyzed: 2013-12-13 Analyzed By: GS
Prep Batch: 91053 Sample Preparation: 2013-12-12 Prepared By: GS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Qs		4030	mg/Kg	5	5.00

Sample: 347589 - Hole 4 3' (Pond 2)

Laboratory: Lubbock
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 107213 Date Analyzed: 2013-12-03 Analyzed By: CM
Prep Batch: 90781 Sample Preparation: 2013-11-27 Prepared By: CM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			92.4	mg/Kg	1	100	92	70 - 130

Sample: 347589 - Hole 4 3' (Pond 2)

Laboratory: Lubbock
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 107169 Date Analyzed: 2013-11-27 Analyzed By: MT
Prep Batch: 90737 Sample Preparation: 2013-11-27 Prepared By: MT

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.83	mg/Kg	1	2.00	92	73 - 122
4-Bromofluorobenzene (4-BFB)			1.69	mg/Kg	1	2.00	84	74.6 - 120

Sample: 347590 - Hole 4 12' (Pond 2)

Laboratory: Lubbock
Analysis: BTEX
QC Batch: 107168
Prep Batch: 90737

Analytical Method: S 8021B
Date Analyzed: 2013-11-27
Sample Preparation: 2013-11-27

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	Qs,U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.38	mg/Kg	1	2.00	119	66.2 - 120
4-Bromofluorobenzene (4-BFB)			2.13	mg/Kg	1	2.00	106	59.5 - 120

Sample: 347590 - Hole 4 12' (Pond 2)

Laboratory: Lubbock
Analysis: Chloride (Titration)
QC Batch: 107550
Prep Batch: 91053

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-12-13
Sample Preparation: 2013-12-12

Prep Method: N/A
Analyzed By: GS
Prepared By: GS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Qs		1920	mg/Kg	5	5.00

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Sample: 347590 - Hole 4 12' (Pond 2)

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2013-12-03	Analyzed By:	CM
QC Batch:	107213	Sample Preparation:	2013-11-27	Prepared By:	CM
Prep Batch:	90781				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			94.0	mg/Kg	1	100	94	70 - 130

Sample: 347590 - Hole 4 12' (Pond 2)

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2013-11-27	Analyzed By:	MT
QC Batch:	107169	Sample Preparation:	2013-11-27	Prepared By:	MT
Prep Batch:	90737				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.98	mg/Kg	1	2.00	99	73 - 122
4-Bromofluorobenzene (4-BFB)			1.78	mg/Kg	1	2.00	89	74.6 - 120

Method Blanks

Method Blank (1) QC Batch: 107168

QC Batch: 107168 Date Analyzed: 2013-11-27 Analyzed By: MT
Prep Batch: 90737 QC Preparation: 2013-11-27 Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00473	mg/Kg	0.02
Toluene		1	<0.00416	mg/Kg	0.02
Ethylbenzene		1	<0.00511	mg/Kg	0.02
Xylene		1	<0.00430	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.30	mg/Kg	1	2.00	115	66.2 - 120
4-Bromofluorobenzene (4-BFB)			2.14	mg/Kg	1	2.00	107	59.5 - 120

Method Blank (1) QC Batch: 107169

QC Batch: 107169 Date Analyzed: 2013-11-27 Analyzed By: MT
Prep Batch: 90737 QC Preparation: 2013-11-27 Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.230	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.01	mg/Kg	1	2.00	100	73 - 122
4-Bromofluorobenzene (4-BFB)			1.80	mg/Kg	1	2.00	90	74.6 - 120

Method Blank (1) QC Batch: 107213

QC Batch: 107213 Date Analyzed: 2013-12-03 Analyzed By: CM
Prep Batch: 90781 QC Preparation: 2013-11-27 Prepared By: CM

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Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<5.22	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			106	mg/Kg	1	100	106	70 - 130

Method Blank (1) QC Batch: 107550

QC Batch: 107550
Prep Batch: 91053

Date Analyzed: 2013-12-13
QC Preparation: 2013-12-12

Analyzed By: GS
Prepared By: GS

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.05	mg/Kg	5

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 107168
Prep Batch: 90737

Date Analyzed: 2013-11-27
QC Preparation: 2013-11-27

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.08	mg/Kg	1	2.00	<0.00473	104	69.3 - 120
Toluene		1	2.26	mg/Kg	1	2.00	<0.00416	113	70.5 - 120
Ethylbenzene	Qs	Qs	2.43	mg/Kg	1	2.00	<0.00511	122	70.6 - 120
Xylene		1	7.04	mg/Kg	1	6.00	<0.00430	117	70.7 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.11	mg/Kg	1	2.00	<0.00473	106	69.3 - 120	2	20
Toluene		1	2.27	mg/Kg	1	2.00	<0.00416	114	70.5 - 120	1	20
Ethylbenzene	Qs	Qs	2.48	mg/Kg	1	2.00	<0.00511	124	70.6 - 120	2	20
Xylene		1	7.17	mg/Kg	1	6.00	<0.00430	120	70.7 - 120	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.32	2.38	mg/Kg	1	2.00	116	119	66.2 - 120
4-Bromofluorobenzene (4-BFB)	2.12	2.09	mg/Kg	1	2.00	106	104	59.5 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 107169
Prep Batch: 90737

Date Analyzed: 2013-11-27
QC Preparation: 2013-11-27

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.6	mg/Kg	1	20.0	<0.230	78	60.1 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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control spikes continued . . .

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.4	mg/Kg	1	20.0	<0.230	77	60.1 - 120	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.89	1.83	mg/Kg	1	2.00	94	92	73 - 122
4-Bromofluorobenzene (4-BFB)	1.88	1.85	mg/Kg	1	2.00	94	92	74.6 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 107213
Prep Batch: 90781

Date Analyzed: 2013-12-03
QC Preparation: 2013-11-27

Analyzed By: CM
Prepared By: CM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	208	mg/Kg	1	250	<5.22	83	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	206	mg/Kg	1	250	<5.22	82	70 - 130	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	117	117	mg/Kg	1	100	117	117	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 107550
Prep Batch: 91053

Date Analyzed: 2013-12-13
QC Preparation: 2013-12-12

Analyzed By: GS
Prepared By: GS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			101	mg/Kg	1	100	<3.05	101	85 - 115

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Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			100	mg/Kg	1	100	<3.05	100	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 347575

QC Batch: 107168
Prep Batch: 90737

Date Analyzed: 2013-11-27
QC Preparation: 2013-11-27

Analyzed By: MT
Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.03	mg/Kg	1	2.00	<0.00473	102	63.6 - 120
Toluene		1	2.17	mg/Kg	1	2.00	<0.00416	108	67.8 - 128
Ethylbenzene		1	2.33	mg/Kg	1	2.00	<0.00511	116	69.5 - 136
Xylene		1	6.79	mg/Kg	1	6.00	<0.00430	113	69.3 - 139

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.89	mg/Kg	1	2.00	<0.00473	94	63.6 - 120	7	20
Toluene		1	2.03	mg/Kg	1	2.00	<0.00416	102	67.8 - 128	7	20
Ethylbenzene		1	2.16	mg/Kg	1	2.00	<0.00511	108	69.5 - 136	8	20
Xylene		1	6.30	mg/Kg	1	6.00	<0.00430	105	69.3 - 139	8	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.23	2.09	mg/Kg	1	2	112	104	66.2 - 120
4-Bromofluorobenzene (4-BFB)	2.12	1.94	mg/Kg	1	2	106	97	59.5 - 120

Matrix Spike (MS-1) Spiked Sample: 347575

QC Batch: 107169
Prep Batch: 90737

Date Analyzed: 2013-11-27
QC Preparation: 2013-11-27

Analyzed By: MT
Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.2	mg/Kg	1	20.0	<0.230	86	40.3 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.0	mg/Kg	1	20.0	<0.230	75	40.3 - 120	14	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.05	1.74	mg/Kg	1	2	102	87	73 - 122
4-Bromofluorobenzene (4-BFB)	2.07	1.82	mg/Kg	1	2	104	91	74.6 - 120

Matrix Spike (MS-1) Spiked Sample: 347590

QC Batch: 107213
Prep Batch: 90781

Date Analyzed: 2013-12-03
QC Preparation: 2013-11-27

Analyzed By: CM
Prepared By: CM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	184	mg/Kg	1	250	<5.22	74	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	185	mg/Kg	1	250	<5.22	74	70 - 130	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	92.6	91.9	mg/Kg	1	100	93	92	70 - 130

Matrix Spike (MS-1) Spiked Sample: 348078

QC Batch: 107550
Prep Batch: 91053

Date Analyzed: 2013-12-13
QC Preparation: 2013-12-12

Analyzed By: GS
Prepared By: GS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	¹ Q _s	Q _s	19500	mg/Kg	50	500	19200	60	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

continued . . .

matrix spikes continued ...

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	² Q _s	Q _s	19200	mg/Kg	50	500	19200	0	80 - 120	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Calibration Standards

Standard (CCV-1)

QC Batch: 107168

Date Analyzed: 2013-11-27

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.111	111	80 - 120	2013-11-27
Toluene		1	mg/kg	0.100	0.107	107	80 - 120	2013-11-27
Ethylbenzene		1	mg/kg	0.100	0.107	107	80 - 120	2013-11-27
Xylene		1	mg/kg	0.300	0.323	108	80 - 120	2013-11-27

Standard (CCV-2)

QC Batch: 107168

Date Analyzed: 2013-11-27

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.102	102	80 - 120	2013-11-27
Toluene		1	mg/kg	0.100	0.104	104	80 - 120	2013-11-27
Ethylbenzene		1	mg/kg	0.100	0.103	103	80 - 120	2013-11-27
Xylene		1	mg/kg	0.300	0.308	103	80 - 120	2013-11-27

Standard (CCV-3)

QC Batch: 107168

Date Analyzed: 2013-11-27

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.103	103	80 - 120	2013-11-27
Toluene		1	mg/kg	0.100	0.106	106	80 - 120	2013-11-27
Ethylbenzene		1	mg/kg	0.100	0.105	105	80 - 120	2013-11-27
Xylene		1	mg/kg	0.300	0.314	104	80 - 120	2013-11-27

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Standard (CCV-1)

QC Batch: 107169

Date Analyzed: 2013-11-27

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.06	106	80 - 120	2013-11-27

Standard (CCV-2)

QC Batch: 107169

Date Analyzed: 2013-11-27

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.843	84	80 - 120	2013-11-27

Standard (CCV-3)

QC Batch: 107169

Date Analyzed: 2013-11-27

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.821	82	80 - 120	2013-11-27

Standard (CCV-1)

QC Batch: 107213

Date Analyzed: 2013-12-03

Analyzed By: CM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	212	85	80 - 120	2013-12-03

Standard (CCV-2)

QC Batch: 107213

Date Analyzed: 2013-12-03

Analyzed By: CM

Report Date: December 13, 2013
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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	222	89	80 - 120	2013-12-03

Standard (CCV-3)

QC Batch: 107213

Date Analyzed: 2013-12-03

Analyzed By: CM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	214	86	80 - 120	2013-12-03

Standard (ICV-1)

QC Batch: 107550

Date Analyzed: 2013-12-13

Analyzed By: GS

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2013-12-13

Standard (CCV-1)

QC Batch: 107550

Date Analyzed: 2013-12-13

Analyzed By: GS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2013-12-13

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704219-13-9	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Result Comments

- 1 Value too high to obtain spike.
- 2 Value too high to obtain spike.

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

