


Utah Gas Corporation

Sample Delivery Group: L1048724
Samples Received: 12/01/2018
Project Number:
Description: MFS Federal 8-1 Pit
Site: 8-1
Report To: Mr. Steve Hale
1125 Escalante Drive
Rangely, CO 81648

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Qc
⁷ Gl
⁸ Al
⁹ Sc



LANDFARM L1048724-01 Solid

Collected by
Steve Hale

Collected date/time
11/29/18 09:00

Received date/time
12/01/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1205563	100	12/01/18 20:48	12/05/18 04:19	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1205148	20	12/04/18 07:22	12/04/18 13:47	DMW
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG1205644	20	12/05/18 07:46	12/07/18 03:13	JNJ

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	240		10.0	100	12/05/2018 04:19	WG1205563
(S) a,a,a-Trifluorotoluene(FID)	93.1		77.0-120		12/05/2018 04:19	WG1205563

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	1510		80.0	20	12/04/2018 13:47	WG1205148
(S) o-Terphenyl	20.1	J7	18.0-148		12/04/2018 13:47	WG1205148

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.666	20	12/07/2018 03:13	WG1205644
Acenaphthylene	ND		0.666	20	12/07/2018 03:13	WG1205644
Anthracene	ND		0.666	20	12/07/2018 03:13	WG1205644
Benidine	ND	J4	6.66	20	12/07/2018 03:13	WG1205644
Benzo(a)anthracene	ND		0.666	20	12/07/2018 03:13	WG1205644
Benzo(b)fluoranthene	ND		0.666	20	12/07/2018 03:13	WG1205644
Benzo(k)fluoranthene	ND		0.666	20	12/07/2018 03:13	WG1205644
Benzo(g,h,i)perylene	ND		0.666	20	12/07/2018 03:13	WG1205644
Benzo(a)pyrene	ND		0.666	20	12/07/2018 03:13	WG1205644
Bis(2-chlorethoxy)methane	ND		6.66	20	12/07/2018 03:13	WG1205644
Bis(2-chloroethyl)ether	ND		6.66	20	12/07/2018 03:13	WG1205644
Bis(2-chloroisopropyl)ether	ND		6.66	20	12/07/2018 03:13	WG1205644
4-Bromophenyl-phenylether	ND		6.66	20	12/07/2018 03:13	WG1205644
2-Chloronaphthalene	ND		0.666	20	12/07/2018 03:13	WG1205644
4-Chlorophenyl-phenylether	ND		6.66	20	12/07/2018 03:13	WG1205644
Chrysene	ND		0.666	20	12/07/2018 03:13	WG1205644
Dibenz(a,h)anthracene	ND		0.666	20	12/07/2018 03:13	WG1205644
3,3-Dichlorobenzidine	ND		6.66	20	12/07/2018 03:13	WG1205644
2,4-Dinitrotoluene	ND		6.66	20	12/07/2018 03:13	WG1205644
2,6-Dinitrotoluene	ND		6.66	20	12/07/2018 03:13	WG1205644
Fluoranthene	ND		0.666	20	12/07/2018 03:13	WG1205644
Fluorene	ND		0.666	20	12/07/2018 03:13	WG1205644
Hexachlorobenzene	ND		6.66	20	12/07/2018 03:13	WG1205644
Hexachloro-1,3-butadiene	ND		6.66	20	12/07/2018 03:13	WG1205644
Hexachlorocyclopentadiene	ND		6.66	20	12/07/2018 03:13	WG1205644
Hexachloroethane	ND		6.66	20	12/07/2018 03:13	WG1205644
Indeno(1,2,3-cd)pyrene	ND		0.666	20	12/07/2018 03:13	WG1205644
Isophorone	ND		6.66	20	12/07/2018 03:13	WG1205644
Naphthalene	ND		0.666	20	12/07/2018 03:13	WG1205644
Nitrobenzene	ND		6.66	20	12/07/2018 03:13	WG1205644
n-Nitrosodimethylamine	ND		6.66	20	12/07/2018 03:13	WG1205644
n-Nitrosodiphenylamine	ND		6.66	20	12/07/2018 03:13	WG1205644
n-Nitrosodi-n-propylamine	ND		6.66	20	12/07/2018 03:13	WG1205644
Phenanthrene	ND		0.666	20	12/07/2018 03:13	WG1205644
Benzylbutyl phthalate	ND		6.66	20	12/07/2018 03:13	WG1205644
Bis(2-ethylhexyl)phthalate	ND		6.66	20	12/07/2018 03:13	WG1205644
Di-n-butyl phthalate	ND		6.66	20	12/07/2018 03:13	WG1205644
Diethyl phthalate	ND		6.66	20	12/07/2018 03:13	WG1205644
Dimethyl phthalate	ND		6.66	20	12/07/2018 03:13	WG1205644
Di-n-octyl phthalate	ND		6.66	20	12/07/2018 03:13	WG1205644
Pyrene	ND		0.666	20	12/07/2018 03:13	WG1205644
1,2,4-Trichlorobenzene	ND		6.66	20	12/07/2018 03:13	WG1205644
4-Chloro-3-methylphenol	ND		6.66	20	12/07/2018 03:13	WG1205644

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 11/29/18 09:00

L1048724

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
2-Chlorophenol	ND		6.66	20	12/07/2018 03:13	WG1205644
2,4-Dichlorophenol	ND		6.66	20	12/07/2018 03:13	WG1205644
2,4-Dimethylphenol	ND		6.66	20	12/07/2018 03:13	WG1205644
4,6-Dinitro-2-methylphenol	ND		6.66	20	12/07/2018 03:13	WG1205644
2,4-Dinitrophenol	ND		6.66	20	12/07/2018 03:13	WG1205644
2-Nitrophenol	ND		6.66	20	12/07/2018 03:13	WG1205644
4-Nitrophenol	ND		6.66	20	12/07/2018 03:13	WG1205644
Pentachlorophenol	ND		6.66	20	12/07/2018 03:13	WG1205644
Phenol	ND		6.66	20	12/07/2018 03:13	WG1205644
2,4,6-Trichlorophenol	ND		6.66	20	12/07/2018 03:13	WG1205644
(S) 2-Fluorophenol	53.9	J7	12.0-120		12/07/2018 03:13	WG1205644
(S) Phenol-d5	47.7	J7	10.0-120		12/07/2018 03:13	WG1205644
(S) Nitrobenzene-d5	123	J7	10.0-122		12/07/2018 03:13	WG1205644
(S) 2-Fluorobiphenyl	50.0	J7	15.0-120		12/07/2018 03:13	WG1205644
(S) 2,4,6-Tribromophenol	47.9	J7	10.0-127		12/07/2018 03:13	WG1205644
(S) p-Terphenyl-d14	46.7	J7	10.0-120		12/07/2018 03:13	WG1205644

Sample Narrative:

L1048724-01 WG1205644: Cannot run at lower dilution due to viscosity of extract

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3365357-3 12/04/18 22:38

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	94.6			77.0-120

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3365357-1 12/04/18 21:34 • (LCSD) R3365357-2 12/04/18 21:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.17	5.55	93.9	101	72.0-127			7.14	20
(S) a,a,a-Trifluorotoluene(FID)				107	108	77.0-120				

L1049339-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1049339-03 12/05/18 05:23 • (MS) R3365357-4 12/05/18 05:44 • (MSD) R3365357-5 12/05/18 06:05

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	6.06	263	651	684	32.0	34.7	200	10.0-151			4.92	28
(S) a,a,a-Trifluorotoluene(FID)					95.9	95.9		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3365123-1 12/04/18 12:49

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) High Fraction	U		0.769	4.00
(S) o-Terphenyl	73.1			18.0-148

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3365123-2 12/04/18 13:00 • (LCSD) R3365123-3 12/04/18 13:12

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) High Fraction	50.0	35.1	39.3	70.2	78.6	50.0-150			11.3	20
(S) o-Terphenyl				88.3	97.7	18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3366043-3 12/06/18 19:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00642	0.0333
Acenaphthylene	U		0.00671	0.0333
Anthracene	U		0.00632	0.0333
Benzo(a)anthracene	U		0.00428	0.0333
Benzo(b)fluoranthene	U		0.00695	0.0333
Benzo(k)fluoranthene	U		0.00582	0.0333
Benzo(g,h,i)perylene	U		0.00721	0.0333
Benzidine	U		0.0637	0.333
Benzo(a)pyrene	U		0.00548	0.0333
Bis(2-chlorethoxy)methane	U		0.00770	0.333
Bis(2-chloroethyl)ether	U		0.00896	0.333
Bis(2-chloroisopropyl)ether	U		0.00760	0.333
4-Bromophenyl-phenylether	U		0.0114	0.333
2-Chloronaphthalene	U		0.00639	0.0333
4-Chlorophenyl-phenylether	U		0.00627	0.333
Chrysene	U		0.00555	0.0333
Dibenz(a,h)anthracene	U		0.00821	0.0333
3,3-Dichlorobenzidine	U		0.0794	0.333
2,4-Dinitrotoluene	U		0.00607	0.333
2,6-Dinitrotoluene	U		0.00737	0.333
Fluoranthene	U		0.00496	0.0333
Fluorene	U		0.00682	0.0333
Hexachlorobenzene	U		0.00856	0.333
Hexachloro-1,3-butadiene	U		0.0100	0.333
Hexachlorocyclopentadiene	U		0.0587	0.333
Hexachloroethane	U		0.0134	0.333
Indeno(1,2,3-cd)pyrene	U		0.00772	0.0333
Isophorone	U		0.00522	0.333
Naphthalene	U		0.00889	0.0333
Nitrobenzene	U		0.00695	0.333
n-Nitrosodimethylamine	U		0.0647	0.333
n-Nitrosodiphenylamine	U		0.0900	0.333
n-Nitrosodi-n-propylamine	U		0.00906	0.333
Phenanthrene	U		0.00528	0.0333
Benzylbutyl phthalate	U		0.0103	0.333
Bis(2-ethylhexyl)phthalate	U		0.0120	0.333
Di-n-butyl phthalate	U		0.0109	0.333
Diethyl phthalate	U		0.00691	0.333
Dimethyl phthalate	U		0.00540	0.333
Di-n-octyl phthalate	U		0.00907	0.333

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3366043-3 12/06/18 19:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Pyrene	U		0.0123	0.0333
1,2,4-Trichlorobenzene	U		0.00876	0.333
4-Chloro-3-methylphenol	U		0.00477	0.333
2-Chlorophenol	U		0.00831	0.333
2,4-Dichlorophenol	U		0.00746	0.333
2,4-Dimethylphenol	U		0.0471	0.333
4,6-Dinitro-2-methylphenol	U		0.124	0.333
2,4-Dinitrophenol	U		0.0980	0.333
2-Nitrophenol	U		0.0130	0.333
4-Nitrophenol	U		0.0525	0.333
Pentachlorophenol	U		0.0480	0.333
Phenol	U		0.00695	0.333
2,4,6-Trichlorophenol	U		0.00779	0.333
(S) 2-Fluorophenol	74.0			12.0-120
(S) Phenol-d5	61.1			10.0-120
(S) Nitrobenzene-d5	64.0			10.0-122
(S) 2-Fluorobiphenyl	65.2			15.0-120
(S) 2,4,6-Tribromophenol	68.6			10.0-127
(S) p-Terphenyl-d14	66.1			10.0-120

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3366043-1 12/06/18 19:06 • (LCSD) R3366043-2 12/06/18 19:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.666	0.455	0.399	68.3	59.9	38.0-120			13.1	22
Acenaphthylene	0.666	0.443	0.379	66.5	56.9	40.0-120			15.6	22
Anthracene	0.666	0.431	0.398	64.7	59.8	42.0-120			7.96	20
Benzo(a)anthracene	0.666	0.435	0.406	65.3	61.0	44.0-120			6.90	20
Benzo(b)fluoranthene	0.666	0.454	0.389	68.2	58.4	43.0-120			15.4	22
Benzo(k)fluoranthene	0.666	0.438	0.419	65.8	62.9	44.0-120			4.43	21
Benzo(g,h,i)perylene	0.666	0.454	0.417	68.2	62.6	43.0-120			8.50	22
Benzo(a)pyrene	0.666	0.443	0.401	66.5	60.2	45.0-120			9.95	20
Bis(2-chlorethoxy)methane	0.666	0.332	0.294	49.8	44.1	20.0-120			12.1	23
Bis(2-chloroethyl)ether	0.666	0.403	0.340	60.5	51.1	16.0-120			17.0	31
Benzidine	0.666	ND	ND	0.000	0.000	1.00-120	J4	J4	0.000	40
Bis(2-chloroisopropyl)ether	0.666	0.404	0.349	60.7	52.4	23.0-120			14.6	30
4-Bromophenyl-phenylether	0.666	0.467	0.424	70.1	63.7	40.0-120			9.65	21
2-Chloronaphthalene	0.666	0.443	0.382	66.5	57.4	35.0-120			14.8	24

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3366043-1 12/06/18 19:06 • (LCSD) R3366043-2 12/06/18 19:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
4-Chlorophenyl-phenylether	0.666	0.480	0.425	72.1	63.8	40.0-120			12.2	22
Chrysene	0.666	0.452	0.415	67.9	62.3	43.0-120			8.54	20
Dibenz(a,h)anthracene	0.666	0.470	0.431	70.6	64.7	44.0-120			8.66	22
3,3-Dichlorobenzidine	0.666	0.375	0.393	56.3	59.0	28.0-120			4.69	23
2,4-Dinitrotoluene	0.666	0.483	0.440	72.5	66.1	45.0-120			9.32	21
2,6-Dinitrotoluene	0.666	0.467	0.418	70.1	62.8	42.0-120			11.1	21
Fluoranthene	0.666	0.463	0.411	69.5	61.7	44.0-120			11.9	21
Fluorene	0.666	0.443	0.395	66.5	59.3	41.0-120			11.5	22
Hexachlorobenzene	0.666	0.501	0.447	75.2	67.1	39.0-120			11.4	21
Hexachloro-1,3-butadiene	0.666	0.410	0.361	61.6	54.2	15.0-120			12.7	28
Hexachlorocyclopentadiene	0.666	0.491	0.429	73.7	64.4	15.0-120			13.5	31
Hexachloroethane	0.666	0.417	0.339	62.6	50.9	17.0-120			20.6	31
Indeno(1,2,3-cd)pyrene	0.666	0.453	0.410	68.0	61.6	45.0-120			9.97	21
Isophorone	0.666	0.355	0.315	53.3	47.3	23.0-120			11.9	23
Naphthalene	0.666	0.365	0.317	54.8	47.6	18.0-120			14.1	24
Nitrobenzene	0.666	0.367	0.327	55.1	49.1	17.0-120			11.5	26
n-Nitrosodimethylamine	0.666	0.363	0.317	54.5	47.6	10.0-125			13.5	33
n-Nitrosodiphenylamine	0.666	0.427	0.406	64.1	61.0	40.0-120			5.04	21
n-Nitrosodi-n-propylamine	0.666	0.396	0.349	59.5	52.4	26.0-120			12.6	27
Phenanthrene	0.666	0.435	0.385	65.3	57.8	42.0-120			12.2	20
Benzylbutyl phthalate	0.666	0.421	0.387	63.2	58.1	40.0-120			8.42	21
Bis(2-ethylhexyl)phthalate	0.666	0.434	0.398	65.2	59.8	41.0-120			8.65	21
Di-n-butyl phthalate	0.666	0.469	0.433	70.4	65.0	43.0-120			7.98	20
Diethyl phthalate	0.666	0.483	0.431	72.5	64.7	43.0-120			11.4	21
Dimethyl phthalate	0.666	0.480	0.420	72.1	63.1	43.0-120			13.3	22
Di-n-octyl phthalate	0.666	0.452	0.417	67.9	62.6	40.0-120			8.06	21
Pyrene	0.666	0.407	0.383	61.1	57.5	41.0-120			6.08	21
1,2,4-Trichlorobenzene	0.666	0.381	0.340	57.2	51.1	17.0-120			11.4	26
4-Chloro-3-methylphenol	0.666	0.388	0.344	58.3	51.7	28.0-120			12.0	20
2-Chlorophenol	0.666	0.449	0.377	67.4	56.6	28.0-120			17.4	28
2,4-Dichlorophenol	0.666	0.410	0.360	61.6	54.1	25.0-120			13.0	21
2,4-Dimethylphenol	0.666	0.374	0.339	56.2	50.9	15.0-120			9.82	26
4,6-Dinitro-2-methylphenol	0.666	0.404	0.345	60.7	51.8	16.0-120			15.8	33
2,4-Dinitrophenol	0.666	0.340	0.309	51.1	46.4	10.0-120			9.55	40
2-Nitrophenol	0.666	0.413	0.358	62.0	53.8	20.0-120			14.3	25
4-Nitrophenol	0.666	0.407	0.368	61.1	55.3	27.0-120			10.1	24
Pentachlorophenol	0.666	0.449	0.428	67.4	64.3	29.0-120			4.79	25
Phenol	0.666	0.415	0.339	62.3	50.9	28.0-120			20.2	27
2,4,6-Trichlorophenol	0.666	0.481	0.411	72.2	61.7	37.0-120			15.7	24
(S) 2-Fluorophenol				76.1	62.5	12.0-120				

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Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3366043-1 12/06/18 19:06 • (LCSD) R3366043-2 12/06/18 19:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
(S) Phenol-d5				64.7	55.1	10.0-120				
(S) Nitrobenzene-d5				55.9	48.6	10.0-122				
(S) 2-Fluorobiphenyl				65.8	58.0	15.0-120				
(S) 2,4,6-Tribromophenol				75.8	68.3	10.0-127				
(S) p-Terphenyl-d14				65.5	62.8	10.0-120				

L1049817-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1049817-01 12/06/18 21:47 • (MS) R3366043-4 12/06/18 22:11 • (MSD) R3366043-5 12/06/18 22:33

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.666	ND	0.457	0.404	68.6	60.7	1	18.0-120			12.3	32
Acenaphthylene	0.666	ND	0.434	0.382	65.2	57.4	1	25.0-120			12.7	32
Anthracene	0.666	ND	0.426	0.379	64.0	56.9	1	22.0-120			11.7	29
Benzo(a)anthracene	0.666	ND	0.386	0.371	58.0	55.7	1	25.0-120			3.96	29
Benzo(b)fluoranthene	0.666	ND	0.430	0.367	64.6	55.1	1	19.0-122			15.8	31
Benzo(k)fluoranthene	0.666	ND	0.439	0.392	65.9	58.9	1	23.0-120			11.3	30
Benzo(g,h,i)perylene	0.666	ND	0.325	0.283	48.8	42.5	1	10.0-120			13.8	33
Benzo(a)pyrene	0.666	ND	0.424	0.370	63.7	55.6	1	24.0-120			13.6	30
Bis(2-chlorethoxy)methane	0.666	ND	0.315	0.291	47.3	43.7	1	10.0-120			7.92	34
Bis(2-chloroethyl)ether	0.666	ND	0.388	0.347	58.3	52.1	1	10.0-120			11.2	40
Bis(2-chloroisopropyl)ether	0.666	ND	0.388	0.338	58.3	50.8	1	10.0-120			13.8	40
4-Bromophenyl-phenylether	0.666	ND	0.463	0.409	69.5	61.4	1	27.0-120			12.4	30
2-Chloronaphthalene	0.666	ND	0.432	0.391	64.9	58.7	1	20.0-120			9.96	32
4-Chlorophenyl-phenylether	0.666	ND	0.474	0.424	71.2	63.7	1	24.0-120			11.1	29
Benidine	0.666	ND	ND	ND	0.000	0.000	1	1.00-120	J6	J6	0.000	40
Chrysene	0.666	ND	0.389	0.368	58.4	55.3	1	21.0-120			5.55	29
Dibenz(a,h)anthracene	0.666	ND	0.374	0.332	56.2	49.8	1	10.0-120			11.9	32
3,3-Dichlorobenzidine	0.666	ND	0.253	0.258	38.0	38.7	1	10.0-120			1.96	34
2,4-Dinitrotoluene	0.666	ND	0.477	0.425	71.6	63.8	1	30.0-120			11.5	31
2,6-Dinitrotoluene	0.666	ND	0.457	0.407	68.6	61.1	1	25.0-120			11.6	31
Fluoranthene	0.666	ND	0.457	0.396	66.5	57.3	1	18.0-126			14.3	32
Fluorene	0.666	ND	0.450	0.390	67.6	58.6	1	25.0-120			14.3	30
Hexachlorobenzene	0.666	ND	0.483	0.420	72.5	63.1	1	27.0-120			14.0	28
Hexachloro-1,3-butadiene	0.666	ND	0.412	0.368	61.9	55.3	1	10.0-120			11.3	38
Hexachlorocyclopentadiene	0.666	ND	0.416	0.328	62.5	49.2	1	10.0-120			23.7	40
Hexachloroethane	0.666	ND	0.374	0.352	56.2	52.9	1	10.0-120			6.06	40
Indeno(1,2,3-cd)pyrene	0.666	ND	0.352	0.313	52.9	47.0	1	10.0-120			11.7	32
Isophorone	0.666	ND	0.339	0.315	50.9	47.3	1	13.0-120			7.34	34

L1049817-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1049817-01 12/06/18 21:47 • (MS) R3366043-4 12/06/18 22:11 • (MSD) R3366043-5 12/06/18 22:33

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Naphthalene	0.666	ND	0.349	0.318	52.4	47.7	1	10.0-120			9.30	35
Nitrobenzene	0.666	ND	0.350	0.321	52.6	48.2	1	10.0-120			8.64	36
n-Nitrosodimethylamine	0.666	ND	0.326	0.327	48.9	49.1	1	10.0-127			0.306	40
n-Nitrosodiphenylamine	0.666	ND	0.372	0.346	55.9	52.0	1	17.0-120			7.24	29
n-Nitrosodi-n-propylamine	0.666	ND	0.375	0.342	56.3	51.4	1	10.0-120			9.21	37
Phenanthrene	0.666	ND	0.425	0.369	61.4	53.0	1	17.0-120			14.1	31
Benzylbutyl phthalate	0.666	ND	0.381	0.363	57.2	54.5	1	23.0-120			4.84	30
Bis(2-ethylhexyl)phthalate	0.666	ND	0.379	0.360	56.9	54.1	1	17.0-126			5.14	30
Di-n-butyl phthalate	0.666	ND	0.462	0.398	69.4	59.8	1	30.0-120			14.9	29
Diethyl phthalate	0.666	ND	0.472	0.422	70.9	63.4	1	26.0-120			11.2	28
Dimethyl phthalate	0.666	ND	0.476	0.410	71.5	61.6	1	25.0-120			14.9	29
Di-n-octyl phthalate	0.666	ND	0.404	0.387	60.7	58.1	1	21.0-123			4.30	29
Pyrene	0.666	ND	0.356	0.341	53.5	51.2	1	16.0-121			4.30	32
1,2,4-Trichlorobenzene	0.666	ND	0.377	0.344	56.6	51.7	1	12.0-120			9.15	37
4-Chloro-3-methylphenol	0.666	ND	0.374	0.342	56.2	51.4	1	15.0-120			8.94	30
2-Chlorophenol	0.666	ND	0.433	0.392	65.0	58.9	1	15.0-120			9.94	37
2,4-Dichlorophenol	0.666	ND	0.391	0.370	58.7	55.6	1	20.0-120			5.52	31
2,4-Dimethylphenol	0.666	ND	0.352	0.317	52.9	47.6	1	10.0-120			10.5	33
4,6-Dinitro-2-methylphenol	0.666	ND	0.412	0.320	61.9	48.0	1	10.0-120			25.1	39
2,4-Dinitrophenol	0.666	ND	0.423	0.372	63.5	55.9	1	10.0-121			12.8	40
2-Nitrophenol	0.666	ND	0.396	0.364	59.5	54.7	1	12.0-120			8.42	39
4-Nitrophenol	0.666	ND	0.420	0.368	63.1	55.3	1	10.0-137			13.2	32
Pentachlorophenol	0.666	ND	0.494	0.457	74.2	68.6	1	10.0-160			7.78	31
Phenol	0.666	ND	0.388	0.357	58.3	53.6	1	12.0-120			8.32	38
2,4,6-Trichlorophenol	0.666	ND	0.486	0.432	73.0	64.9	1	19.0-120			11.8	32
(S) 2-Fluorophenol					74.0	64.7		12.0-120				
(S) Phenol-d5					61.3	56.3		10.0-120				
(S) Nitrobenzene-d5					54.7	48.6		10.0-122				
(S) 2-Fluorobiphenyl					66.1	57.4		15.0-120				
(S) 2,4,6-Tribromophenol					80.9	70.6		10.0-127				
(S) p-Terphenyl-d14					58.6	53.2		10.0-120				

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Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J4	The associated batch QC was outside the established quality control range for accuracy.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



- (4) Closure of pits and steel, fiberglass, concrete or other similar produced water vessels, and associated remediation operations conducted prior to December 30, 1997 are not subject to Rules 905., 906., 907., 909. and 910.

912. VENTING OR FLARING NATURAL GAS

- The unnecessary or excessive venting or flaring of natural gas produced from a well is prohibited.
- Except for gas flared or vented during an upset condition, well maintenance, well stimulation flowback, purging operations, or a productivity test, gas from a well shall be flared or vented only after notice has been given and approval obtained from the Director on a Sundry Notice, Form 4, stating the estimated volume and content of the gas. The notice shall indicate whether the gas contains more than one (1) ppm of hydrogen sulfide. If necessary to protect the public health, safety or welfare, the Director may require the flaring of gas.
- Gas flared, vented or used on the lease shall be estimated based on a gas-oil ratio test or other equivalent test approved by the Director, and reported on Operator's Monthly Report of Operations, Form 7.
- Flared gas that is subject to Sundry Notice, Form 4, shall be directed to a controlled flare in accordance with Rule 903.b.(2) or other combustion device operated as efficiently as possible to provide maximum reduction of air contaminants where practicable and without endangering the safety of the well site personnel and the public.
- Operators shall notify the local emergency dispatch or the local governmental designee of any natural gas flaring. Notice shall be given prior to flaring when flaring can be reasonably anticipated, or as soon as possible, but in no event more than two (2) hours after the flaring occurs.

Table 910-1
CONCENTRATION LEVELS¹

Contaminant of Concern	Concentrations
Organic Compounds in Soil	
TPH (total volatile and extractable petroleum hydrocarbons)	500 mg/kg
Benzene	0.17 mg/kg²
Toluene	85 mg/kg²
Ethylbenzene	100 mg/kg²
Xylenes (total)	175 mg/kg²
Acenaphthene	1,000 mg/kg ²
Anthracene	1,000 mg/kg ²
Benz(a)anthracene	0.22 mg/kg ²
Benzo(b)fluoranthene	2.2 mg/kg ²
Benzo(k)fluoranthene	0.022 mg/kg ²
Benzo(a)pyrene	22 mg/kg ²
Chrysene	0.022 mg/kg ²
Dibenzo(a,h)anthracene	0.022 mg/kg ²
Fluoranthene	1,000 mg/kg ²
Fluorene	1,000 mg/kg ²
Indeno(1,2,3,c,d)pyrene	0.22 mg/kg ²
Naphthalene	23 mg/kg ²
Pyrene	1,000 mg/kg ²

0.21083

TPH and
SVOCs
only
for
HH Fed
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(target
detection
limits)