



**Nicholson GeoSolutions, LLC**

3433 East Lake Drive  
Centennial, CO 80121

May 26, 2016

Mr. Derek Johnson  
Linn Energy, LLC  
235 Callahan Avenue  
Parachute, Colorado 81635

**Subject: O-29 Soil Investigation**

Dear Derek:

Nicholson GeoSolutions LLC was retained by Linn Energy, LLC to conduct soil sampling of the soil stockpile located just west of the O-29 well pad in the Garden Gulch area, Garfield County, Colorado.

Six discrete soil samples were collected from the locations shown on Figure 1 at depths of approximately 3-4 feet. Grey-stained soil is present at this depth across the stockpile below a layer of unimpacted soil and rock.

All samples were analyzed for Total Volatile Petroleum Hydrocarbons (TVPH – gasoline range), Total Extractable Petroleum Hydrocarbons (TEPH – diesel and motor oil range), BTEX (benzene, toluene, ethylbenzene, and xylenes), and PAHs to evaluate compliance with the COGCC Table 910-1 standards.

Table 1 provides analytical results for the soil samples collected. The laboratory analytical report is contained in Appendix A. Benzo(a)pyrene exceeded the standard of 0.022 mg/kg for four of the six samples collected and ranged from 0.0234 to 0.0574 mg/kg for the four affected samples. All other parameters were below the standards for all samples.

It is recommended that landfarming of the impacted soils from the stockpile be conducted.

Sincerely,

A handwritten signature in blue ink that reads "DK Nicholson".

David K. Nicholson, P.G.  
Nicholson GeoSolutions LLC

**Table 1 O-29 Stockpile Sample Results – May 12, 2016**

Parameter	Sample ID						
	Table 910-1 Standards	O29-SP-1	O29-SP-2	O29-SP-3	O29-SP-4	O29-SP-5	O29-SP-6
TVPH – gasoline range	500 <sup>1</sup>	1.21	0.652	0.588	1.22	0.588	1.66
TEPH – diesel/motor oil range	500 <sup>1</sup>	92.4	28.9	36.6	120.6	23.81	70.7
benzene	0.17	<0.0025	0.00367	0.00432	0.00481	<0.0025	0.0112
toluene	85	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
ethylbenzene	100	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.00334
xylenes	175	0.00988	0.0159	0.00811	0.0146	<0.0075	0.0246
Benzo(a)pyrene	0.022	<b>0.0234</b>	<b>0.0549</b>	0.0184	<b>0.0462</b>	0.0146	<b>0.0574</b>

<sup>1</sup>The standard is 500 for the combined total of TVPH and TEPH

Values in bold type exceed standards

All units in mg/kg except where indicated





Figure 1

May  
2016

GeoSolutions  
NICHOLSON

### Legend

-  Discrete Soil Sample Location
-  Stockpile Boundary (0.58 ac)

0 37.5 75 150 Feet 1" = 75'

**Berry Petroleum**

**Linn O-29  
Stockpile Sampling**

**APPENDIX A**  
**Laboratory Report**



12065 Lebanon Rd.  
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Dave Nicholson  
Linn Energy - Denver, CO  
1999 Broadway, Suite 3700  
Denver, CO 80202

## Report Summary

Monday May 23, 2016

Report Number: L835672

Samples Received: 05/14/16

Client Project:

Description: Pit Reclamation

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Mark W. Beasley , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01,1461-02, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,  
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,  
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,  
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,  
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

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# REPORT OF ANALYSIS

Dave Nicholson  
Linn Energy - Denver, CO  
1999 Broadway, Suite 3700  
Denver, CO 80202

May 23, 2016

Date Received : May 14, 2016  
Description : Pit Reclamation  
Sample ID : 0-29-SP-1  
Collected By : DK Nicholson  
Collection Date : 05/12/16 12:50

ESC Sample # : L835672-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.00250	mg/kg	8021	05/20/16	5
Toluene	BDL	0.0250	mg/kg	8021	05/20/16	5
Ethylbenzene	BDL	0.00250	mg/kg	8021	05/20/16	5
Total Xylene	0.00988	0.00750	mg/kg	8021	05/20/16	5
TPH (GC/FID) Low Fraction	1.21	0.500	mg/kg	8015	05/20/16	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	95.5		% Rec.	8015	05/20/16	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	05/20/16	1
Diesel and Oil Ranges						
C10-C28 Diesel Range	72.9	4.00	mg/kg	8015	05/22/16	1
C28-C40 Oil Range	19.5	4.00	mg/kg	8015	05/22/16	1
Surrogate Recovery						
o-Terphenyl	39.4		% Rec.	8015	05/22/16	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.0186	0.00600	mg/kg	8270C-SIM	05/20/16	1
Acenaphthene	0.00671	0.00600	mg/kg	8270C-SIM	05/20/16	1
Acenaphthylene	BDL	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(a)anthracene	0.0307	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(a)pyrene	0.0234	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(b)fluoranthene	0.0473	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(g,h,i)perylene	0.0224	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(k)fluoranthene	0.0107	0.00600	mg/kg	8270C-SIM	05/20/16	1
Chrysene	0.0367	0.00600	mg/kg	8270C-SIM	05/20/16	1
Dibenz(a,h)anthracene	0.00826	0.00600	mg/kg	8270C-SIM	05/20/16	1
Fluoranthene	0.0714	0.00600	mg/kg	8270C-SIM	05/20/16	1
Fluorene	0.00805	0.00600	mg/kg	8270C-SIM	05/20/16	1
Indeno(1,2,3-cd)pyrene	0.0170	0.00600	mg/kg	8270C-SIM	05/20/16	1
Naphthalene	0.0214	0.0200	mg/kg	8270C-SIM	05/20/16	1
Phenanthrene	0.0510	0.00600	mg/kg	8270C-SIM	05/20/16	1
Pyrene	0.0423	0.00600	mg/kg	8270C-SIM	05/20/16	1
1-Methylnaphthalene	0.0266	0.0200	mg/kg	8270C-SIM	05/20/16	1
2-Methylnaphthalene	0.0465	0.0200	mg/kg	8270C-SIM	05/20/16	1
2-Chloronaphthalene	BDL	0.0200	mg/kg	8270C-SIM	05/20/16	1
Surrogate Recovery						
p-Terphenyl-d14	68.1		% Rec.	8270C-SIM	05/20/16	1
Nitrobenzene-d5	31.4		% Rec.	8270C-SIM	05/20/16	1
2-Fluorobiphenyl	65.8		% Rec.	8270C-SIM	05/20/16	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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L835672-01 (DRORLA) - Duplicate analysis was performed.



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# REPORT OF ANALYSIS

Dave Nicholson  
Linn Energy - Denver, CO  
1999 Broadway, Suite 3700  
Denver, CO 80202

May 23, 2016

Date Received : May 14, 2016  
Description : Pit Reclamation  
Sample ID : 0-29-SP-2  
Collected By : DK Nicholson  
Collection Date : 05/12/16 13:00

ESC Sample # : L835672-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.00367	0.00250	mg/kg	8021	05/19/16	5
Toluene	BDL	0.0250	mg/kg	8021	05/19/16	5
Ethylbenzene	BDL	0.00250	mg/kg	8021	05/19/16	5
Total Xylene	0.0159	0.00750	mg/kg	8021	05/19/16	5
TPH (GC/FID) Low Fraction	0.652	0.500	mg/kg	8015	05/19/16	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	101.		% Rec.	8015	05/19/16	1
a,a,a-Trifluorotoluene(PID)	91.2		% Rec.	8021	05/19/16	1
Diesel and Oil Ranges						
C10-C28 Diesel Range	28.9	20.0	mg/kg	8015	05/20/16	5
C28-C40 Oil Range	BDL	20.0	mg/kg	8015	05/20/16	5
Surrogate Recovery						
o-Terphenyl	60.5		% Rec.	8015	05/20/16	5
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.0313	0.0300	mg/kg	8270C-SIM	05/20/16	5
Acenaphthene	BDL	0.0300	mg/kg	8270C-SIM	05/20/16	5
Acenaphthylene	BDL	0.0300	mg/kg	8270C-SIM	05/20/16	5
Benzo(a)anthracene	0.0677	0.0300	mg/kg	8270C-SIM	05/20/16	5
Benzo(a)pyrene	0.0549	0.0300	mg/kg	8270C-SIM	05/20/16	5
Benzo(b)fluoranthene	0.107	0.0300	mg/kg	8270C-SIM	05/20/16	5
Benzo(g,h,i)perylene	0.0536	0.0300	mg/kg	8270C-SIM	05/20/16	5
Benzo(k)fluoranthene	BDL	0.0300	mg/kg	8270C-SIM	05/20/16	5
Chrysene	0.0776	0.0300	mg/kg	8270C-SIM	05/20/16	5
Dibenz(a,h)anthracene	0.0180	0.00300	mg/kg	8270C-SIM	05/20/16	5
Fluoranthene	0.165	0.0300	mg/kg	8270C-SIM	05/20/16	5
Fluorene	BDL	0.0300	mg/kg	8270C-SIM	05/20/16	5
Indeno(1,2,3-cd)pyrene	0.0408	0.0300	mg/kg	8270C-SIM	05/20/16	5
Naphthalene	BDL	0.100	mg/kg	8270C-SIM	05/20/16	5
Phenanthrene	0.0808	0.0300	mg/kg	8270C-SIM	05/20/16	5
Pyrene	0.0833	0.0300	mg/kg	8270C-SIM	05/20/16	5
1-Methylnaphthalene	BDL	0.100	mg/kg	8270C-SIM	05/20/16	5
2-Methylnaphthalene	BDL	0.100	mg/kg	8270C-SIM	05/20/16	5
2-Chloronaphthalene	BDL	0.100	mg/kg	8270C-SIM	05/20/16	5
Surrogate Recovery						
p-Terphenyl-d14	54.7		% Rec.	8270C-SIM	05/20/16	5
Nitrobenzene-d5	38.5		% Rec.	8270C-SIM	05/20/16	5
2-Fluorobiphenyl	66.8		% Rec.	8270C-SIM	05/20/16	5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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# REPORT OF ANALYSIS

Dave Nicholson  
Linn Energy - Denver, CO  
1999 Broadway, Suite 3700  
Denver, CO 80202

May 23, 2016

Date Received : May 14, 2016  
Description : Pit Reclamation  
Sample ID : 0-29-SP-3  
Collected By : DK Nicholson  
Collection Date : 05/12/16 13:10

ESC Sample # : L835672-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.00432	0.00250	mg/kg	8021	05/20/16	5
Toluene	BDL	0.0250	mg/kg	8021	05/20/16	5
Ethylbenzene	BDL	0.00250	mg/kg	8021	05/20/16	5
Total Xylene	0.00811	0.00750	mg/kg	8021	05/20/16	5
TPH (GC/FID) Low Fraction	0.588	0.500	mg/kg	8015	05/20/16	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	96.4		% Rec.	8015	05/20/16	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	05/20/16	1
Diesel and Oil Ranges						
C10-C28 Diesel Range	25.1	4.00	mg/kg	8015	05/21/16	1
C28-C40 Oil Range	11.5	4.00	mg/kg	8015	05/21/16	1
Surrogate Recovery						
o-Terphenyl	52.4		% Rec.	8015	05/21/16	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.00726	0.00600	mg/kg	8270C-SIM	05/20/16	1
Acenaphthene	BDL	0.00600	mg/kg	8270C-SIM	05/20/16	1
Acenaphthylene	BDL	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(a)anthracene	0.0250	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(a)pyrene	0.0184	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(b)fluoranthene	0.0387	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(g,h,i)perylene	0.0176	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(k)fluoranthene	0.00799	0.00600	mg/kg	8270C-SIM	05/20/16	1
Chrysene	0.0302	0.00600	mg/kg	8270C-SIM	05/20/16	1
Dibenz(a,h)anthracene	0.00628	0.00600	mg/kg	8270C-SIM	05/20/16	1
Fluoranthene	0.0850	0.00600	mg/kg	8270C-SIM	05/20/16	1
Fluorene	BDL	0.00600	mg/kg	8270C-SIM	05/20/16	1
Indeno(1,2,3-cd)pyrene	0.0136	0.00600	mg/kg	8270C-SIM	05/20/16	1
Naphthalene	BDL	0.0200	mg/kg	8270C-SIM	05/20/16	1
Phenanthrene	0.0282	0.00600	mg/kg	8270C-SIM	05/20/16	1
Pyrene	0.0354	0.00600	mg/kg	8270C-SIM	05/20/16	1
1-Methylnaphthalene	BDL	0.0200	mg/kg	8270C-SIM	05/20/16	1
2-Methylnaphthalene	0.0294	0.0200	mg/kg	8270C-SIM	05/20/16	1
2-Chloronaphthalene	BDL	0.0200	mg/kg	8270C-SIM	05/20/16	1
Surrogate Recovery						
p-Terphenyl-d14	57.5		% Rec.	8270C-SIM	05/20/16	1
Nitrobenzene-d5	33.5		% Rec.	8270C-SIM	05/20/16	1
2-Fluorobiphenyl	62.9		% Rec.	8270C-SIM	05/20/16	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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# REPORT OF ANALYSIS

Dave Nicholson  
Linn Energy - Denver, CO  
1999 Broadway, Suite 3700  
Denver, CO 80202

May 23, 2016

Date Received : May 14, 2016  
Description : Pit Reclamation  
Sample ID : 0-29-SP-4  
Collected By : DK Nicholson  
Collection Date : 05/12/16 13:15

ESC Sample # : L835672-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.00481	0.00250	mg/kg	8021	05/20/16	5
Toluene	BDL	0.0250	mg/kg	8021	05/20/16	5
Ethylbenzene	BDL	0.00250	mg/kg	8021	05/20/16	5
Total Xylene	0.0146	0.00750	mg/kg	8021	05/20/16	5
TPH (GC/FID) Low Fraction	1.22	0.500	mg/kg	8015	05/20/16	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	96.4		% Rec.	8015	05/20/16	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	05/20/16	1
Diesel and Oil Ranges						
C10-C28 Diesel Range	100.	20.0	mg/kg	8015	05/20/16	5
C28-C40 Oil Range	20.6	20.0	mg/kg	8015	05/20/16	5
Surrogate Recovery						
o-Terphenyl	75.0		% Rec.	8015	05/20/16	5
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.0496	0.00600	mg/kg	8270C-SIM	05/20/16	1
Acenaphthene	0.0150	0.00600	mg/kg	8270C-SIM	05/20/16	1
Acenaphthylene	BDL	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(a)anthracene	0.0599	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(a)pyrene	0.0462	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(b)fluoranthene	0.0917	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(g,h,i)perylene	0.0472	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(k)fluoranthene	0.0242	0.00600	mg/kg	8270C-SIM	05/20/16	1
Chrysene	0.0682	0.00600	mg/kg	8270C-SIM	05/20/16	1
Dibenz(a,h)anthracene	0.0175	0.00600	mg/kg	8270C-SIM	05/20/16	1
Fluoranthene	0.155	0.00600	mg/kg	8270C-SIM	05/20/16	1
Fluorene	0.0177	0.00600	mg/kg	8270C-SIM	05/20/16	1
Indeno(1,2,3-cd)pyrene	0.0359	0.00600	mg/kg	8270C-SIM	05/20/16	1
Naphthalene	0.0546	0.0200	mg/kg	8270C-SIM	05/20/16	1
Phenanthrene	0.109	0.00600	mg/kg	8270C-SIM	05/20/16	1
Pyrene	0.0872	0.00600	mg/kg	8270C-SIM	05/20/16	1
1-Methylnaphthalene	0.0682	0.0200	mg/kg	8270C-SIM	05/20/16	1
2-Methylnaphthalene	0.130	0.0200	mg/kg	8270C-SIM	05/20/16	1
2-Chloronaphthalene	BDL	0.0200	mg/kg	8270C-SIM	05/20/16	1
Surrogate Recovery						
p-Terphenyl-d14	59.2		% Rec.	8270C-SIM	05/20/16	1
Nitrobenzene-d5	37.4		% Rec.	8270C-SIM	05/20/16	1
2-Fluorobiphenyl	66.9		% Rec.	8270C-SIM	05/20/16	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

Dave Nicholson  
Linn Energy - Denver, CO  
1999 Broadway, Suite 3700  
Denver, CO 80202

May 23, 2016

Date Received : May 14, 2016  
Description : Pit Reclamation  
Sample ID : 0-29-SP-5  
Collected By : DK Nicholson  
Collection Date : 05/12/16 13:20

ESC Sample # : L835672-05

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.00250	mg/kg	8021	05/20/16	5
Toluene	BDL	0.0250	mg/kg	8021	05/20/16	5
Ethylbenzene	BDL	0.00250	mg/kg	8021	05/20/16	5
Total Xylene	BDL	0.00750	mg/kg	8021	05/20/16	5
TPH (GC/FID) Low Fraction	0.588	0.500	mg/kg	8015	05/20/16	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	96.5		% Rec.	8015	05/20/16	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	05/20/16	1
Diesel and Oil Ranges						
C10-C28 Diesel Range	16.9	4.00	mg/kg	8015	05/21/16	1
C28-C40 Oil Range	6.91	4.00	mg/kg	8015	05/21/16	1
Surrogate Recovery						
o-Terphenyl	118.		% Rec.	8015	05/21/16	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.0126	0.00600	mg/kg	8270C-SIM	05/20/16	1
Acenaphthene	BDL	0.00600	mg/kg	8270C-SIM	05/20/16	1
Acenaphthylene	BDL	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(a)anthracene	0.0200	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(a)pyrene	0.0146	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(b)fluoranthene	0.0261	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(g,h,i)perylene	0.0143	0.00600	mg/kg	8270C-SIM	05/20/16	1
Benzo(k)fluoranthene	0.00955	0.00600	mg/kg	8270C-SIM	05/20/16	1
Chrysene	0.0215	0.00600	mg/kg	8270C-SIM	05/20/16	1
Dibenz(a,h)anthracene	BDL	0.00600	mg/kg	8270C-SIM	05/20/16	1
Fluoranthene	0.0471	0.00600	mg/kg	8270C-SIM	05/20/16	1
Fluorene	BDL	0.00600	mg/kg	8270C-SIM	05/20/16	1
Indeno(1,2,3-cd)pyrene	0.0108	0.00600	mg/kg	8270C-SIM	05/20/16	1
Naphthalene	BDL	0.0200	mg/kg	8270C-SIM	05/20/16	1
Phenanthrene	0.0303	0.00600	mg/kg	8270C-SIM	05/20/16	1
Pyrene	0.0281	0.00600	mg/kg	8270C-SIM	05/20/16	1
1-Methylnaphthalene	BDL	0.0200	mg/kg	8270C-SIM	05/20/16	1
2-Methylnaphthalene	0.0242	0.0200	mg/kg	8270C-SIM	05/20/16	1
2-Chloronaphthalene	BDL	0.0200	mg/kg	8270C-SIM	05/20/16	1
Surrogate Recovery						
p-Terphenyl-d14	69.9		% Rec.	8270C-SIM	05/20/16	1
Nitrobenzene-d5	25.7		% Rec.	8270C-SIM	05/20/16	1
2-Fluorobiphenyl	65.6		% Rec.	8270C-SIM	05/20/16	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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# REPORT OF ANALYSIS

Dave Nicholson  
Linn Energy - Denver, CO  
1999 Broadway, Suite 3700  
Denver, CO 80202

May 23, 2016

Date Received : May 14, 2016  
Description : Pit Reclamation  
Sample ID : 0-29-SP-6  
Collected By : DK Nicholson  
Collection Date : 05/12/16 13:30

ESC Sample # : L835672-06

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.0112	0.00250	mg/kg	8021	05/20/16	5
Toluene	BDL	0.0250	mg/kg	8021	05/20/16	5
Ethylbenzene	0.00334	0.00250	mg/kg	8021	05/20/16	5
Total Xylene	0.0246	0.00750	mg/kg	8021	05/20/16	5
TPH (GC/FID) Low Fraction	1.66	0.500	mg/kg	8015	05/20/16	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	96.8		% Rec.	8015	05/20/16	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	05/20/16	1
Diesel and Oil Ranges						
C10-C28 Diesel Range	50.4	20.0	mg/kg	8015	05/20/16	5
C28-C40 Oil Range	20.3	20.0	mg/kg	8015	05/20/16	5
Surrogate Recovery						
o-Terphenyl	57.0		% Rec.	8015	05/20/16	5
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.0423	0.0120	mg/kg	8270C-SIM	05/20/16	2
Acenaphthene	0.0152	0.0120	mg/kg	8270C-SIM	05/20/16	2
Acenaphthylene	BDL	0.0120	mg/kg	8270C-SIM	05/20/16	2
Benzo(a)anthracene	0.0712	0.0120	mg/kg	8270C-SIM	05/20/16	2
Benzo(a)pyrene	0.0574	0.0120	mg/kg	8270C-SIM	05/20/16	2
Benzo(b)fluoranthene	0.123	0.0120	mg/kg	8270C-SIM	05/20/16	2
Benzo(g,h,i)perylene	0.0579	0.0120	mg/kg	8270C-SIM	05/20/16	2
Benzo(k)fluoranthene	0.0263	0.0120	mg/kg	8270C-SIM	05/20/16	2
Chrysene	0.0802	0.0120	mg/kg	8270C-SIM	05/20/16	2
Dibenz(a,h)anthracene	0.0218	0.0120	mg/kg	8270C-SIM	05/20/16	2
Fluoranthene	0.152	0.0120	mg/kg	8270C-SIM	05/20/16	2
Fluorene	0.0178	0.0120	mg/kg	8270C-SIM	05/20/16	2
Indeno(1,2,3-cd)pyrene	0.0456	0.0120	mg/kg	8270C-SIM	05/20/16	2
Naphthalene	0.0521	0.0400	mg/kg	8270C-SIM	05/20/16	2
Phenanthrene	0.0967	0.0120	mg/kg	8270C-SIM	05/20/16	2
Pyrene	0.0839	0.0120	mg/kg	8270C-SIM	05/20/16	2
1-Methylnaphthalene	0.0657	0.0400	mg/kg	8270C-SIM	05/20/16	2
2-Methylnaphthalene	0.107	0.0400	mg/kg	8270C-SIM	05/20/16	2
2-Chloronaphthalene	BDL	0.0400	mg/kg	8270C-SIM	05/20/16	2
Surrogate Recovery						
p-Terphenyl-d14	47.3		% Rec.	8270C-SIM	05/20/16	2
Nitrobenzene-d5	32.5		% Rec.	8270C-SIM	05/20/16	2
2-Fluorobiphenyl	61.5		% Rec.	8270C-SIM	05/20/16	2

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L835672-01	WG873370	SAMP	Total Xylene	R3139103	B
	WG874383	SAMP	o-Terphenyl	R3139000	J2
L835672-02	WG873224	SAMP	Dibenz(a,h)anthracene	R3138614	J
L835672-03	WG873370	SAMP	Total Xylene	R3139103	B
L835672-04	WG873370	SAMP	Total Xylene	R3139103	B
L835672-05	WG873370	SAMP	Total Xylene	R3139103	B
L835672-06	WG873370	SAMP	Total Xylene	R3139103	B

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
B	(EPA) - The indicated compound was found in the associated method blank as well as the laboratory sample.
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.



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Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Benzene	< .0005	mg/kg			WG873366	05/19/16 12:39
Ethylbenzene	< .0005	mg/kg			WG873366	05/19/16 12:39
Toluene	< .005	mg/kg			WG873366	05/19/16 12:39
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG873366	05/19/16 12:39
Total Xylene	< .0015	mg/kg			WG873366	05/19/16 12:39
a,a,a-Trifluorotoluene(FID)		% Rec.	101.0	59-128	WG873366	05/19/16 12:39
a,a,a-Trifluorotoluene(PID)		% Rec.	94.10	54-144	WG873366	05/19/16 12:39
C10-C28 Diesel Range	< 4	mg/kg			WG873587	05/20/16 10:03
C28-C40 Oil Range	< 4	mg/kg			WG873587	05/20/16 10:03
o-Terphenyl		% Rec.	88.10	50-150	WG873587	05/20/16 10:03
1-Methylnaphthalene	< .02	mg/kg			WG873224	05/20/16 02:55
2-Chloronaphthalene	< .02	mg/kg			WG873224	05/20/16 02:55
2-Methylnaphthalene	< .02	mg/kg			WG873224	05/20/16 02:55
Acenaphthene	< .006	mg/kg			WG873224	05/20/16 02:55
Acenaphthylene	< .006	mg/kg			WG873224	05/20/16 02:55
Anthracene	< .006	mg/kg			WG873224	05/20/16 02:55
Benzo(a)anthracene	< .006	mg/kg			WG873224	05/20/16 02:55
Benzo(a)pyrene	< .006	mg/kg			WG873224	05/20/16 02:55
Benzo(b)fluoranthene	< .006	mg/kg			WG873224	05/20/16 02:55
Benzo(g,h,i)perylene	< .006	mg/kg			WG873224	05/20/16 02:55
Benzo(k)fluoranthene	< .006	mg/kg			WG873224	05/20/16 02:55
Chrysene	< .006	mg/kg			WG873224	05/20/16 02:55
Dibenz(a,h)anthracene	< .006	mg/kg			WG873224	05/20/16 02:55
Fluoranthene	< .006	mg/kg			WG873224	05/20/16 02:55
Fluorene	< .006	mg/kg			WG873224	05/20/16 02:55
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG873224	05/20/16 02:55
Naphthalene	< .02	mg/kg			WG873224	05/20/16 02:55
Phenanthrene	< .006	mg/kg			WG873224	05/20/16 02:55
Pyrene	< .006	mg/kg			WG873224	05/20/16 02:55
2-Fluorobiphenyl		% Rec.	84.30	40.6-122	WG873224	05/20/16 02:55
Nitrobenzene-d5		% Rec.	34.40	22.1-146	WG873224	05/20/16 02:55
p-Terphenyl-d14		% Rec.	72.90	32.2-131	WG873224	05/20/16 02:55
C10-C28 Diesel Range	< 4	mg/kg			WG874383	05/22/16 19:26
C28-C40 Oil Range	< 4	mg/kg			WG874383	05/22/16 19:26
o-Terphenyl		% Rec.	74.50	50-150	WG874383	05/22/16 19:26
Benzene	< .0005	mg/kg			WG873370	05/20/16 10:26
Ethylbenzene	< .0005	mg/kg			WG873370	05/20/16 10:26
Toluene	< .005	mg/kg			WG873370	05/20/16 10:26
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG873370	05/20/16 10:26
Total Xylene	< .0015	mg/kg			WG873370	05/20/16 10:26
a,a,a-Trifluorotoluene(FID)		% Rec.	97.30	59-128	WG873370	05/20/16 10:26
a,a,a-Trifluorotoluene(PID)		% Rec.	103.0	54-144	WG873370	05/20/16 10:26

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.93	108.	63.5-137	WG873366
a,a,a-Trifluorotoluene(FID)				102.0	59-128	WG873366
a,a,a-Trifluorotoluene(PID)				111.0	54-144	WG873366
Benzene	mg/kg	.05	0.0549	110.	70-130	WG873366
Ethylbenzene	mg/kg	.05	0.0563	113.	70-130	WG873366

\* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Toluene	mg/kg	.05	0.0542	108.	70-130	WG873366
Total Xylene	mg/kg	.15	0.171	114.	70-130	WG873366
a,a,a-Trifluorotoluene(FID)				100.0	59-128	WG873366
a,a,a-Trifluorotoluene(PID)				104.0	54-144	WG873366
C10-C28 Diesel Range	mg/kg	60	47.4	78.9	50-100	WG873587
o-Terphenyl				88.90	50-150	WG873587
1-Methylnaphthalene	mg/kg	.08	0.0732	91.5	50.6-122	WG873224
2-Chloronaphthalene	mg/kg	.08	0.0646	80.8	53.9-121	WG873224
2-Methylnaphthalene	mg/kg	.08	0.0731	91.4	50.4-120	WG873224
Acenaphthene	mg/kg	.08	0.0638	79.7	52.4-120	WG873224
Acenaphthylene	mg/kg	.08	0.0625	78.2	49.6-120	WG873224
Anthracene	mg/kg	.08	0.0685	85.7	50.3-130	WG873224
Benzo(a)anthracene	mg/kg	.08	0.0642	80.3	46.7-125	WG873224
Benzo(a)pyrene	mg/kg	.08	0.0658	82.3	42.3-119	WG873224
Benzo(b)fluoranthene	mg/kg	.08	0.0644	80.5	43.6-124	WG873224
Benzo(g,h,i)perylene	mg/kg	.08	0.0683	85.3	45.1-132	WG873224
Benzo(k)fluoranthene	mg/kg	.08	0.0693	86.7	46.1-131	WG873224
Chrysene	mg/kg	.08	0.0688	85.9	49.5-131	WG873224
Dibenz(a,h)anthracene	mg/kg	.08	0.0719	89.8	44.8-133	WG873224
Fluoranthene	mg/kg	.08	0.0758	94.7	49.3-128	WG873224
Fluorene	mg/kg	.08	0.0653	81.7	50.6-121	WG873224
Indeno(1,2,3-cd)pyrene	mg/kg	.08	0.0715	89.4	46.1-135	WG873224
Naphthalene	mg/kg	.08	0.0614	76.7	49.6-115	WG873224
Phenanthrene	mg/kg	.08	0.0625	78.1	48.8-121	WG873224
Pyrene	mg/kg	.08	0.0666	83.2	44.7-130	WG873224
2-Fluorobiphenyl				89.10	40.6-122	WG873224
Nitrobenzene-d5				39.30	22.1-146	WG873224
p-Terphenyl-d14				74.00	32.2-131	WG873224
C10-C28 Diesel Range	mg/kg	60	39.2	65.3	50-100	WG874383
o-Terphenyl				74.70	50-150	WG874383
Benzene	mg/kg	.05	0.0451	90.1	70-130	WG873370
Ethylbenzene	mg/kg	.05	0.0464	92.8	70-130	WG873370
Toluene	mg/kg	.05	0.0450	90.0	70-130	WG873370
Total Xylene	mg/kg	.15	0.138	91.8	70-130	WG873370
a,a,a-Trifluorotoluene(FID)				96.10	59-128	WG873370
a,a,a-Trifluorotoluene(PID)				102.0	54-144	WG873370
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.46	99.2	63.5-137	WG873370
a,a,a-Trifluorotoluene(FID)				103.0	59-128	WG873370
a,a,a-Trifluorotoluene(PID)				110.0	54-144	WG873370

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
TPH (GC/FID) Low Fraction	mg/kg	6.31	5.93	115.	63.5-137	6.16	20	WG873366
a,a,a-Trifluorotoluene(FID)				103.0	59-128			WG873366
a,a,a-Trifluorotoluene(PID)				111.0	54-144			WG873366
Benzene	mg/kg	0.0529	0.0549	106.	70-130	3.72	20	WG873366
Ethylbenzene	mg/kg	0.0542	0.0563	108.	70-130	3.93	20	WG873366
Toluene	mg/kg	0.0517	0.0542	103.	70-130	4.81	20	WG873366
Total Xylene	mg/kg	0.165	0.171	110.	70-130	3.94	20	WG873366
a,a,a-Trifluorotoluene(FID)				100.0	59-128			WG873366

\* Performance of this Analyte is outside of established criteria.

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May 23, 2016

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
a,a,a-Trifluorotoluene(PID)				104.0	54-144			
C10-C28 Diesel Range	mg/kg	48.5	47.4	81.0	50-100	2.44	20	WG873587
o-Terphenyl				91.00	50-150			WG873587
1-Methylnaphthalene	mg/kg	0.0730	0.0732	91.0	50.6-122	0.180	20	WG873224
2-Chloronaphthalene	mg/kg	0.0631	0.0646	79.0	53.9-121	2.32	20	WG873224
2-Methylnaphthalene	mg/kg	0.0729	0.0731	91.0	50.4-120	0.310	20	WG873224
Acenaphthene	mg/kg	0.0624	0.0638	78.0	52.4-120	2.16	20	WG873224
Acenaphthylene	mg/kg	0.0609	0.0625	76.0	49.6-120	2.67	20	WG873224
Anthracene	mg/kg	0.0670	0.0685	84.0	50.3-130	2.19	20	WG873224
Benzo(a)anthracene	mg/kg	0.0620	0.0642	77.0	46.7-125	3.57	20	WG873224
Benzo(a)pyrene	mg/kg	0.0652	0.0658	82.0	42.3-119	0.910	20	WG873224
Benzo(b)fluoranthene	mg/kg	0.0653	0.0644	82.0	43.6-124	1.46	20	WG873224
Benzo(g,h,i)perylene	mg/kg	0.0664	0.0683	83.0	45.1-132	2.76	20	WG873224
Benzo(k)fluoranthene	mg/kg	0.0658	0.0693	82.0	46.1-131	5.17	20	WG873224
Chrysene	mg/kg	0.0690	0.0688	86.0	49.5-131	0.390	20	WG873224
Dibenz(a,h)anthracene	mg/kg	0.0697	0.0719	87.0	44.8-133	3.05	20	WG873224
Fluoranthene	mg/kg	0.0744	0.0758	93.0	49.3-128	1.88	20	WG873224
Fluorene	mg/kg	0.0648	0.0653	81.0	50.6-121	0.890	20	WG873224
Indeno(1,2,3-cd)pyrene	mg/kg	0.0693	0.0715	87.0	46.1-135	3.07	20	WG873224
Naphthalene	mg/kg	0.0605	0.0614	76.0	49.6-115	1.35	20	WG873224
Phenanthrene	mg/kg	0.0610	0.0625	76.0	48.8-121	2.51	20	WG873224
Pyrene	mg/kg	0.0650	0.0666	81.0	44.7-130	2.37	20	WG873224
2-Fluorobiphenyl				86.50	40.6-122			WG873224
Nitrobenzene-d5				35.20	22.1-146			WG873224
p-Terphenyl-d14				71.80	32.2-131			WG873224
C10-C28 Diesel Range	mg/kg	39.5	39.2	66.0	50-100	0.780	20	WG874383
o-Terphenyl				76.20	50-150			WG874383
Benzene	mg/kg	0.0447	0.0451	89.0	70-130	0.740	20	WG873370
Ethylbenzene	mg/kg	0.0459	0.0464	92.0	70-130	1.18	20	WG873370
Toluene	mg/kg	0.0443	0.0450	88.0	70-130	1.58	20	WG873370
Total Xylene	mg/kg	0.136	0.138	91.0	70-130	1.06	20	WG873370
a,a,a-Trifluorotoluene(FID)				96.60	59-128			WG873370
a,a,a-Trifluorotoluene(PID)				102.0	54-144			WG873370
TPH (GC/FID) Low Fraction	mg/kg	5.42	5.46	98.0	63.5-137	0.650	20	WG873370
a,a,a-Trifluorotoluene(FID)				103.0	59-128			WG873370
a,a,a-Trifluorotoluene(PID)				110.0	54-144			WG873370

Analyte	Units	Matrix Spike			% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res	TV				
Benzene	mg/kg	0.232	0.00367	.05	91.4	49.7-127	L835672-02	WG873366
Ethylbenzene	mg/kg	0.201	0.00226	.05	79.5	40.8-141	L835672-02	WG873366
Toluene	mg/kg	0.214	0.00212	.05	84.6	49.8-132	L835672-02	WG873366
Total Xylene	mg/kg	0.639	0.0159	.15	83.0	41.2-140	L835672-02	WG873366
a,a,a-Trifluorotoluene(FID)					99.20	59-128		WG873366
a,a,a-Trifluorotoluene(PID)					98.00	54-144		WG873366
TPH (GC/FID) Low Fraction	mg/kg	20.5	0.652	5.5	72.0	28.5-138	L835672-02	WG873366
a,a,a-Trifluorotoluene(FID)					98.60	59-128		WG873366
a,a,a-Trifluorotoluene(PID)					107.0	54-144		WG873366
1-Methylnaphthalene	mg/kg	0.128	0.0430	.016	106.	28.4-137	L835674-01	WG873224
2-Chloronaphthalene	mg/kg	0.0486	0.00	.016	60.8	38.6-126	L835674-01	WG873224

\* Performance of this Analyte is outside of established criteria.

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Tax I.D. 62-0814289

Est. 1970

Quality Assurance Report  
Level II

L835672

May 23, 2016

Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
2-Methylnaphthalene	mg/kg	0.197	0.0906	.016	133.	26.6-137	L835674-01	WG873224
Acenaphthene	mg/kg	0.0512	0.00582	.016	56.7	31.9-130	L835674-01	WG873224
Acenaphthylene	mg/kg	0.0486	0.00	.016	60.8	33.7-129	L835674-01	WG873224
Anthracene	mg/kg	0.0488	0.00395	.016	56.0	26.5-141	L835674-01	WG873224
Benzo(a)anthracene	mg/kg	0.0420	0.00	.016	52.5	18.3-136	L835674-01	WG873224
Benzo(a)pyrene	mg/kg	0.0412	0.00	.016	51.5	16.9-135	L835674-01	WG873224
Benzo(b)fluoranthene	mg/kg	0.0383	0.00	.016	47.8	10-134	L835674-01	WG873224
Benzo(g,h,i)perylene	mg/kg	0.0351	0.00	.016	43.8	14.1-140	L835674-01	WG873224
Benzo(k)fluoranthene	mg/kg	0.0325	0.00	.016	40.7	18.2-138	L835674-01	WG873224
Chrysene	mg/kg	0.0431	0.00347	.016	49.5	17.1-145	L835674-01	WG873224
Dibenz(a,h)anthracene	mg/kg	0.0376	0.00	.016	47.1	18.5-138	L835674-01	WG873224
Fluoranthene	mg/kg	0.0508	0.00372	.016	58.8	15.4-144	L835674-01	WG873224
Fluorene	mg/kg	0.0666	0.0139	.016	65.9	23.5-136	L835674-01	WG873224
Indeno(1,2,3-cd)pyrene	mg/kg	0.0355	0.00	.016	44.3	14.5-142	L835674-01	WG873224
Naphthalene	mg/kg	0.116	0.0481	.016	84.4	29.2-128	L835674-01	WG873224
Phenanthrene	mg/kg	0.0665	0.0239	.016	53.2	20.1-134	L835674-01	WG873224
Pyrene	mg/kg	0.0500	0.00836	.016	52.0	11-148	L835674-01	WG873224
2-Fluorobiphenyl					57.90	40.6-122		WG873224
Nitrobenzene-d5					36.90	22.1-146		WG873224
p-Terphenyl-d14					43.80	32.2-131		WG873224
C10-C28 Diesel Range	mg/kg	43.1	0.00	60	71.8	50-100	L835353-06	WG873587
o-Terphenyl					67.20	50-150		WG873587
C10-C28 Diesel Range	mg/kg	42.8	0.00	60	71.3	50-100	L836481-02	WG874383
o-Terphenyl					82.20	50-150		WG874383
Benzene	mg/kg	0.194	0.00	.05	77.7	49.7-127	L835674-01	WG873370
Ethylbenzene	mg/kg	0.144	0.00	.05	57.7	40.8-141	L835674-01	WG873370
Toluene	mg/kg	0.172	0.000889	.05	68.6	49.8-132	L835674-01	WG873370
Total Xylene	mg/kg	0.469	0.00407	.15	62.0	41.2-140	L835674-01	WG873370
a,a,a-Trifluorotoluene(FID)					96.50	59-128		WG873370
a,a,a-Trifluorotoluene(PID)					101.0	54-144		WG873370
TPH (GC/FID) Low Fraction	mg/kg	18.6	0.415	5.5	66.0	28.5-138	L835674-01	WG873370
a,a,a-Trifluorotoluene(FID)					101.0	59-128		WG873370
a,a,a-Trifluorotoluene(PID)					107.0	54-144		WG873370

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Benzene	mg/kg	0.218	0.232	85.7	49.7-127	6.25	23.5	L835672-02	WG873366
Ethylbenzene	mg/kg	0.189	0.201	74.8	40.8-141	5.95	23.8	L835672-02	WG873366
Toluene	mg/kg	0.201	0.214	79.6	49.8-132	6.04	23.5	L835672-02	WG873366
Total Xylene	mg/kg	0.596	0.639	77.4	41.2-140	6.87	23.7	L835672-02	WG873366
a,a,a-Trifluorotoluene(FID)				98.70	59-128				WG873366
a,a,a-Trifluorotoluene(PID)				98.20	54-144				WG873366
TPH (GC/FID) Low Fraction	mg/kg	18.2	20.5	63.8	28.5-138	11.8	23.6	L835672-02	WG873366
a,a,a-Trifluorotoluene(FID)				98.00	59-128				WG873366
a,a,a-Trifluorotoluene(PID)				106.0	54-144				WG873366
1-Methylnaphthalene	mg/kg	0.119	0.128	95.4	28.4-137	7.04	20	L835674-01	WG873224
2-Chloronaphthalene	mg/kg	0.0448	0.0486	56.0	38.6-126	8.18	20	L835674-01	WG873224
2-Methylnaphthalene	mg/kg	0.164	0.197	92.1	26.6-137	18.0	20	L835674-01	WG873224
Acenaphthene	mg/kg	0.0504	0.0512	55.7	31.9-130	1.61	20	L835674-01	WG873224
Acenaphthylene	mg/kg	0.0477	0.0486	59.6	33.7-129	1.89	20	L835674-01	WG873224

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Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Anthracene	mg/kg	0.0467	0.0488	53.5	26.5-141	4.32	21.2	L835674-01	WG873224
Benzo(a)anthracene	mg/kg	0.0406	0.0420	50.8	18.3-136	3.27	24.6	L835674-01	WG873224
Benzo(a)pyrene	mg/kg	0.0400	0.0412	50.0	16.9-135	2.96	25.2	L835674-01	WG873224
Benzo(b)fluoranthene	mg/kg	0.0355	0.0383	44.4	10-134	7.35	30.9	L835674-01	WG873224
Benzo(g,h,i)perylene	mg/kg	0.0345	0.0351	43.1	14.1-140	1.70	25.5	L835674-01	WG873224
Benzo(k)fluoranthene	mg/kg	0.0337	0.0325	42.1	18.2-138	3.53	25.6	L835674-01	WG873224
Chrysene	mg/kg	0.0419	0.0431	48.0	17.1-145	2.77	24.2	L835674-01	WG873224
Dibenz(a,h)anthracene	mg/kg	0.0366	0.0376	45.7	18.5-138	2.94	24.3	L835674-01	WG873224
Fluoranthene	mg/kg	0.0506	0.0508	58.6	15.4-144	0.380	27.1	L835674-01	WG873224
Fluorene	mg/kg	0.0621	0.0666	60.2	23.5-136	7.09	20	L835674-01	WG873224
Indeno(1,2,3-cd)pyrene	mg/kg	0.0343	0.0355	42.9	14.5-142	3.32	25.8	L835674-01	WG873224
Naphthalene	mg/kg	0.110	0.116	77.9	29.2-128	4.59	20	L835674-01	WG873224
Phenanthrene	mg/kg	0.0657	0.0665	52.3	20.1-134	1.09	23.6	L835674-01	WG873224
Pyrene	mg/kg	0.0503	0.0500	52.4	11-148	0.620	26.1	L835674-01	WG873224
2-Fluorobiphenyl				58.30	40.6-122				WG873224
Nitrobenzene-d5				38.00	22.1-146				WG873224
p-Terphenyl-d14				44.50	32.2-131				WG873224
C10-C28 Diesel Range	mg/kg	44.1	43.1	73.6	50-100	2.39	20	L835353-06	WG873587
o-Terphenyl				65.30	50-150				WG873587
C10-C28 Diesel Range	mg/kg	34.3	42.8	57.2	50-100	21.9*	20	L836481-02	WG874383
o-Terphenyl				80.90	50-150				WG874383
Benzene	mg/kg	0.187	0.194	74.6	49.7-127	4.09	23.5	L835674-01	WG873370
Ethylbenzene	mg/kg	0.144	0.144	57.5	40.8-141	0.290	23.8	L835674-01	WG873370
Toluene	mg/kg	0.169	0.172	67.1	49.8-132	2.21	23.5	L835674-01	WG873370
Total Xylene	mg/kg	0.464	0.469	61.3	41.2-140	1.07	23.7	L835674-01	WG873370
a,a,a-Trifluorotoluene(FID)				96.40	59-128				WG873370
a,a,a-Trifluorotoluene(PID)				102.0	54-144				WG873370
TPH (GC/FID) Low Fraction	mg/kg	17.3	18.6	61.3	28.5-138	7.21	23.6	L835674-01	WG873370
a,a,a-Trifluorotoluene(FID)				100.0	59-128				WG873370
a,a,a-Trifluorotoluene(PID)				106.0	54-144				WG873370

Batch number /Run number / Sample number cross reference

WG873366: R3138547: L835672-02  
WG873587: R3138554 R3138823: L835672-02 03 04 05 06  
WG873224: R3138614: L835672-01 02 03 04 05 06  
WG874383: R3139000: L835672-01  
WG873370: R3139103: L835672-01 03 04 05 06

\* \* Calculations are performed prior to rounding of reported values.  
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The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.