

Analytes (BDL = Below Detection Limit; ND = Non Detect)

Allowable Concentration -->				Organic Compounds in Soil (mg/kg [ppm])																		Inorganics in Soil			Metals in Soil (mg/kg [ppm])														
Location	Sample Date:	Sample Matrix	Matrix Notes	500	TPH (total volatile and extractable petroleum hydrocarbons)	TPH-GRO (C6-C10) Low Fraction	TPH-DRO (C10-C36) High Fraction	0.17	85	100	175	1000	1000	0.22	0.22	2.2	0.022	22	0.022	1000	1000	0.22	23	1000		(<12)	(6-9)	0.39	15000	70	120000	23	3100	400	23	1600	390	390	23000
																											EC (<4 mmhos/cm or 2x background)	SAR (calculation)	pH	Arsenic	Barium - EPA Total Barium	Cadmium	Chromium (II)	Chromium (VI)	Copper	Lead (inorganic)	Mercury	Nicke (soluble salts)	Selenium
PL36SW	05/27/11	Cuttings		122.4		2.4	120	0.032	0.063	0.0099	0.066	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.007	0.018	BDL	0.048	BDL	3.7	38	9.1	3.4	5700	0.39	10	BDL	16	6.1	0.027	7.8	BDL	BDL	51



12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
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Tax I.D. 62-0814289

Est. 1970

Chris Hines  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

## Report Summary

Sunday June 12, 2011

Report Number: L518645

Samples Received: 06/01/11

Client Project:

Description: PL36SW

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:

T. Alan Harvill , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487  
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140  
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233  
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,  
TX - T104704245, OK-9915

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

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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REPORT OF ANALYSIS

Chris Hines  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

June 12, 2011

Date Received : June 01, 2011  
Description : PL36SW  
Sample ID : PL36SW-BGSW-052711 10-12 IN  
Collected By : Brennen Graff  
Collection Date : 05/27/11 11:05

ESC Sample # : L518645-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	2.0	1.0	mg/kg	6010B	06/02/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 06/12/11 12:49 Printed: 06/12/11 12:49



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Chris Hines  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

June 12, 2011

Date Received : June 01, 2011  
Description : PL36SW  
Sample ID : PL36SW-BGS-052711 10-12 IN  
Collected By : Brennen Graff  
Collection Date : 05/27/11 11:25

ESC Sample # : L518645-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	2.8	1.0	mg/kg	6010B	06/02/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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2717 County Road 215, Suite 100  
Parachute, CO 81635

June 12, 2011

Date Received : June 01, 2011  
Description : PL36SW  
Sample ID : PL36SW-BGE-052711 10-12 IN  
Collected By : Brennen Graff  
Collection Date : 05/27/11 11:40

ESC Sample # : L518645-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	4.1	1.0	mg/kg	6010B	06/02/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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June 12, 2011

Date Received : June 01, 2011  
Description : PL36SW  
Sample ID : PL36SW-BGNW-052711 10-12 IN  
Collected By : Brennen Graff  
Collection Date : 05/27/11 11:56

ESC Sample # : L518645-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	2.0	1.0	mg/kg	6010B	06/02/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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2717 County Road 215, Suite 100  
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June 12, 2011

Date Received : June 01, 2011  
Description : PL36SW  
Sample ID : PL36SW-BGNE-052711 10-12 IN  
Collected By : Brennen Graff  
Collection Date : 05/27/11 12:10

ESC Sample # : L518645-05

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	2.2	1.0	mg/kg	6010B	06/02/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

Chris Hines  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

June 12, 2011

Date Received : June 01, 2011  
Description : PL36SW  
Sample ID : PL36SW-CUT-052711 10-12 IN  
Collected By : Brennen Graff  
Collection Date : 05/27/11 12:40

ESC Sample # : L518645-06

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	10.	mg/kg	3060A/7196A	06/08/11	5
Chromium, Trivalent	10.	10.	mg/kg	Calc.	06/03/11	1
ORP	110		mV	2580	06/03/11	1
pH	9.1		su	9045D	06/03/11	1
Sodium Adsorption Ratio	38.			Calc.	06/05/11	1
Specific Conductance	3700		umhos/cm	9050AMod	06/06/11	1
Mercury	0.027	0.020	mg/kg	7471	06/03/11	1
Arsenic	3.4	1.0	mg/kg	6010B	06/03/11	1
Barium	5700	0.25	mg/kg	6010B	06/03/11	1
Cadmium	0.39	0.25	mg/kg	6010B	06/03/11	1
Chromium	10.	0.50	mg/kg	6010B	06/03/11	1
Copper	16.	1.0	mg/kg	6010B	06/03/11	1
Lead	6.1	0.25	mg/kg	6010B	06/03/11	1
Nickel	7.8	1.0	mg/kg	6010B	06/03/11	1
Selenium	BDL	1.0	mg/kg	6010B	06/03/11	1
Silver	BDL	0.50	mg/kg	6010B	06/03/11	1
Zinc	51.	1.5	mg/kg	6010B	06/03/11	1
Benzene	0.032	0.0025	mg/kg	8021/8015	06/02/11	5
Toluene	0.063	0.025	mg/kg	8021/8015	06/02/11	5
Ethylbenzene	0.0099	0.0025	mg/kg	8021/8015	06/02/11	5
Total Xylene	0.066	0.0075	mg/kg	8021/8015	06/02/11	5
TPH (GC/FID) Low Fraction	2.4	0.50	mg/kg	GRO	06/02/11	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	100.		% Rec.	8021/8015	06/02/11	5
a,a,a-Trifluorotoluene(PID)	99.9		% Rec.	8021/8015	06/02/11	5
TPH (GC/FID) High Fraction	120	4.0	mg/kg	3546/DRO	06/08/11	1
Surrogate recovery(%)						
o-Terphenyl	67.7		% Rec.	3546/DRO	06/08/11	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	06/10/11	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	06/10/11	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	06/10/11	1
Benzo(a)anthracene	BDL	0.030	mg/kg	8270C-SIM	06/10/11	5
Benzo(a)pyrene	BDL	0.030	mg/kg	8270C-SIM	06/10/11	5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

L518645-06 (PH) - 9.1@20.8c

L518645-06 (SV8270PAHSIM) - Dilution due to matrix

L518645-06 (CR6) - diluted due to cloudiness with color reagent.

REPORT OF ANALYSIS

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June 12, 2011

Date Received : June 01, 2011  
Description : PL36SW  
Sample ID : PL36SW-CUT-052711 10-12 IN  
Collected By : Brennen Graff  
Collection Date : 05/27/11 12:40

ESC Sample # : L518645-06

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.030	mg/kg	8270C-SIM	06/10/11	5
Benzo(g,h,i)perylene	BDL	0.030	mg/kg	8270C-SIM	06/10/11	5
Benzo(k)fluoranthene	BDL	0.030	mg/kg	8270C-SIM	06/10/11	5
Chrysene	BDL	0.030	mg/kg	8270C-SIM	06/10/11	5
Dibenz(a,h)anthracene	BDL	0.030	mg/kg	8270C-SIM	06/10/11	5
Fluoranthene	0.0070	0.0060	mg/kg	8270C-SIM	06/10/11	1
Fluorene	0.018	0.0060	mg/kg	8270C-SIM	06/10/11	1
Indeno(1,2,3-cd)pyrene	BDL	0.030	mg/kg	8270C-SIM	06/10/11	5
Naphthalene	0.048	0.0060	mg/kg	8270C-SIM	06/10/11	1
Phenanthrene	0.030	0.0060	mg/kg	8270C-SIM	06/10/11	1
Pyrene	BDL	0.030	mg/kg	8270C-SIM	06/10/11	5
1-Methylnaphthalene	0.064	0.0060	mg/kg	8270C-SIM	06/10/11	1
2-Methylnaphthalene	0.10	0.0060	mg/kg	8270C-SIM	06/10/11	1
2-Chloronaphthalene	BDL	0.0060	mg/kg	8270C-SIM	06/10/11	1
Surrogate Recovery						
Nitrobenzene-d5	95.3		% Rec.	8270C-SIM	06/10/11	1
2-Fluorobiphenyl	68.3		% Rec.	8270C-SIM	06/10/11	1
p-Terphenyl-d14	85.4		% Rec.	8270C-SIM	06/10/11	5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Reported: 06/12/11 12:49 Printed: 06/12/11 12:49

L518645-06 (PH) - 9.1@20.8c

L518645-06 (SV8270PAHSIM) - Dilution due to matrix

L518645-06 (CR6) - diluted due to cloudiness with color reagent.

Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L518645-06	WG538687	SAMP	Benzo(a)anthracene	R1715729	0
	WG538687	SAMP	Benzo(a)pyrene	R1715729	0
	WG538687	SAMP	Benzo(b)fluoranthene	R1715729	0
	WG538687	SAMP	Benzo(g,h,i)perylene	R1715729	0
	WG538687	SAMP	Benzo(k)fluoranthene	R1715729	0
	WG538687	SAMP	Chrysene	R1715729	0
	WG538687	SAMP	Dibenz(a,h)anthracene	R1715729	0
	WG538687	SAMP	Indeno(1,2,3-cd)pyrene	R1715729	0
	WG538687	SAMP	Pyrene	R1715729	0
	WG538896	SAMP	Chromium, Hexavalent	R1715591	0

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
O	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.

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.

Summary of Remarks For Samples Printed  
06/12/11 at 12:49:37

TSR Signing Reports: 358  
R5 - Desired TAT

Sample: L518645-01 Account: ENCANACO Received: 06/01/11 09:00 Due Date: 06/08/11 00:00 RPT Date: 06/12/11 12:49  
Sample: L518645-02 Account: ENCANACO Received: 06/01/11 09:00 Due Date: 06/08/11 00:00 RPT Date: 06/12/11 12:49  
Sample: L518645-03 Account: ENCANACO Received: 06/01/11 09:00 Due Date: 06/08/11 00:00 RPT Date: 06/12/11 12:49  
Sample: L518645-04 Account: ENCANACO Received: 06/01/11 09:00 Due Date: 06/08/11 00:00 RPT Date: 06/12/11 12:49  
Sample: L518645-05 Account: ENCANACO Received: 06/01/11 09:00 Due Date: 06/08/11 00:00 RPT Date: 06/12/11 12:49  
Sample: L518645-06 Account: ENCANACO Received: 06/01/11 09:00 Due Date: 06/09/11 00:00 RPT Date: 06/12/11 12:49



YOUR LAB OF CHOICE

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Quality Assurance Report  
Level II

L518645

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June 12, 2011

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Benzene	< .0005	mg/kg			WG538446	06/02/11 03:03
Ethylbenzene	< .0005	mg/kg			WG538446	06/02/11 03:03
Toluene	< .005	mg/kg			WG538446	06/02/11 03:03
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG538446	06/02/11 03:03
Total Xylene	< .0015	mg/kg			WG538446	06/02/11 03:03
a,a,a-Trifluorotoluene(FID)		% Rec.	100.2	59-128	WG538446	06/02/11 03:03
a,a,a-Trifluorotoluene(PID)		% Rec.	101.4	54-144	WG538446	06/02/11 03:03
pH	4.70	su			WG538584	06/03/11 12:25
Arsenic	< 1	mg/kg			WG538466	06/02/11 21:33
Mercury	< .02	mg/kg			WG538553	06/03/11 12:47
Arsenic	< 1	mg/kg			WG538474	06/03/11 21:42
Barium	< .25	mg/kg			WG538474	06/03/11 21:42
Cadmium	< .25	mg/kg			WG538474	06/03/11 21:42
Chromium	< .5	mg/kg			WG538474	06/03/11 21:42
Copper	< 1	mg/kg			WG538474	06/03/11 21:42
Lead	< .25	mg/kg			WG538474	06/03/11 21:42
Nickel	< 1	mg/kg			WG538474	06/03/11 21:42
Selenium	< 1	mg/kg			WG538474	06/03/11 21:42
Silver	< .5	mg/kg			WG538474	06/03/11 21:42
Zinc	< 1.5	mg/kg			WG538474	06/03/11 21:42
Specific Conductance	2.60	umhos/cm			WG538928	06/06/11 10:50
Chromium,Hexavalent	< 2	mg/kg			WG538896	06/08/11 08:56
1-Methylnaphthalene	< .006	mg/kg			WG538687	06/08/11 10:15
2-Chloronaphthalene	< .006	mg/kg			WG538687	06/08/11 10:15
2-Methylnaphthalene	< .006	mg/kg			WG538687	06/08/11 10:15
Acenaphthene	< .006	mg/kg			WG538687	06/08/11 10:15
Acenaphthylene	< .006	mg/kg			WG538687	06/08/11 10:15
Anthracene	< .006	mg/kg			WG538687	06/08/11 10:15
Benzo(a)anthracene	< .006	mg/kg			WG538687	06/08/11 10:15
Benzo(a)pyrene	< .006	mg/kg			WG538687	06/08/11 10:15
Benzo(b)fluoranthene	< .006	mg/kg			WG538687	06/08/11 10:15
Benzo(g,h,i)perylene	< .006	mg/kg			WG538687	06/08/11 10:15
Benzo(k)fluoranthene	< .006	mg/kg			WG538687	06/08/11 10:15
Chrysene	< .006	mg/kg			WG538687	06/08/11 10:15
Dibenz(a,h)anthracene	< .006	mg/kg			WG538687	06/08/11 10:15
Fluoranthene	< .006	mg/kg			WG538687	06/08/11 10:15
Fluorene	< .006	mg/kg			WG538687	06/08/11 10:15
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG538687	06/08/11 10:15
Naphthalene	< .006	mg/kg			WG538687	06/08/11 10:15
Phenanthrene	< .006	mg/kg			WG538687	06/08/11 10:15
Pyrene	< .006	mg/kg			WG538687	06/08/11 10:15
2-Fluorobiphenyl		% Rec.	74.57	21-120	WG538687	06/08/11 10:15
Nitrobenzene-d5		% Rec.	62.49	33-114	WG538687	06/08/11 10:15
p-Terphenyl-d14		% Rec.	76.69	18-142	WG538687	06/08/11 10:15

\* 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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Level II

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June 12, 2011

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
TPH (GC/FID) High Fraction	< 4	ppm			WG538685	06/08/11 22:09
o-Terphenyl		% Rec.	70.85	50-150	WG538685	06/08/11 22:09

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
pH	su	7.20	7.20	0	1	L518641-03	WG538584
pH	su	8.70	8.70	0	1	L518791-05	WG538584
Arsenic	mg/kg	20.0	14.0	37.2*	20	L518647-06	WG538466
Mercury	mg/kg	0	0	0	20	L518641-03	WG538553
ORP	mV	120.	110.	7.02	20	L518641-04	WG538621
ORP	mV	91.0	89.0	2.22	20	L518791-04	WG538621
Arsenic	mg/kg	24.0	24.0	1.26	20	L518690-07	WG538474
Barium	mg/kg	940.	930.	0.750	20	L518690-07	WG538474
Cadmium	mg/kg	0	0	0	20	L518690-07	WG538474
Chromium	mg/kg	34.0	31.0	9.82	20	L518690-07	WG538474
Copper	mg/kg	18.0	17.0	3.47	20	L518690-07	WG538474
Lead	mg/kg	20.0	18.0	13.0	20	L518690-07	WG538474
Selenium	mg/kg	0	0	0	20	L518690-07	WG538474
Silver	mg/kg	0	0	0	20	L518690-07	WG538474
Nickel	mg/kg	28.0	25.0	12.7	20	L518690-07	WG538474
Zinc	mg/kg	92.0	80.0	14.4	20	L518690-07	WG538474
Specific Conductance	umhos/cm	3400	3700	8.45	20	L518645-06	WG538928
Chromium,Hexavalent	mg/kg	0	0	0	20	L518645-06	WG538896
Chromium,Hexavalent	mg/kg	0	0	0	20	L519132-02	WG538896

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Benzene	mg/kg	.05	0.0522	104.	76-113	WG538446
Ethylbenzene	mg/kg	.05	0.0482	96.3	78-115	WG538446
Toluene	mg/kg	.05	0.0484	96.8	76-114	WG538446
Total Xylene	mg/kg	.15	0.142	95.0	81-118	WG538446
a,a,a-Trifluorotoluene(PID)				100.8	54-144	WG538446
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.16	93.9	67-135	WG538446
a,a,a-Trifluorotoluene(FID)				108.0	59-128	WG538446
pH	su	6.3	6.30	100.	97.98-102.02	WG538584
Arsenic	mg/kg	192	176.	91.7	78.6-120.8	WG538466
Mercury	mg/kg	8.77	8.35	95.2	71.6-127.7	WG538553

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

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Analyte	Units	Laboratory Control	Sample	% Rec	Limit	Batch
		Known Val	Result			
ORP	mV	229	220.	96.1	95.6-104.37	WG538621
Arsenic	mg/kg	192	191.	99.5	78.6-120.8	WG538474
Barium	mg/kg	420	419.	99.8	78.8-121.4	WG538474
Cadmium	mg/kg	70.1	70.0	99.9	78.5-121.5	WG538474
Chromium	mg/kg	168	168.	100.	80.4-120.2	WG538474
Copper	mg/kg	122	123.	101.	81.6-119.7	WG538474
Lead	mg/kg	113	118.	104.	77.3-122.1	WG538474
Nickel	mg/kg	74.1	75.6	102.	78.8-121.2	WG538474
Selenium	mg/kg	176	180.	102.	75.6-125.0	WG538474
Silver	mg/kg	115	115.	100.	66-133.9	WG538474
Zinc	mg/kg	437	435.	99.5	78.5-121.7	WG538474
Specific Conductance	umhos/cm	556	560.	101.	85-115	WG538928
Chromium, Hexavalent	mg/kg	132	110.	83.3	50-150	WG538896
1-Methylnaphthalene	mg/kg	.033	0.0235	71.1	41-110	WG538687
2-Chloronaphthalene	mg/kg	.033	0.0240	72.6	43-109	WG538687
2-Methylnaphthalene	mg/kg	.033	0.0235	71.1	38-104	WG538687
Acenaphthene	mg/kg	.033	0.0259	78.5	48-103	WG538687
Acenaphthylene	mg/kg	.033	0.0257	77.9	43-106	WG538687
Anthracene	mg/kg	.033	0.0267	80.8	51-110	WG538687
Benzo(a)anthracene	mg/kg	.033	0.0300	90.8	38-126	WG538687
Benzo(a)pyrene	mg/kg	.033	0.0304	92.0	47-118	WG538687
Benzo(b)fluoranthene	mg/kg	.033	0.0303	91.8	47-118	WG538687
Benzo(g,h,i)perylene	mg/kg	.033	0.0335	102.	40-125	WG538687
Benzo(k)fluoranthene	mg/kg	.033	0.0296	89.7	45-121	WG538687
Chrysene	mg/kg	.033	0.0267	80.8	35-135	WG538687
Dibenz(a,h)anthracene	mg/kg	.033	0.0310	94.1	41-124	WG538687
Fluoranthene	mg/kg	.033	0.0275	83.3	50-114	WG538687
Fluorene	mg/kg	.033	0.0267	80.8	49-109	WG538687
Indeno(1,2,3-cd)pyrene	mg/kg	.033	0.0308	93.3	40-126	WG538687
Naphthalene	mg/kg	.033	0.0250	75.8	36-100	WG538687
Phenanthrene	mg/kg	.033	0.0290	87.8	46-108	WG538687
Pyrene	mg/kg	.033	0.0291	88.2	30-136	WG538687
2-Fluorobiphenyl				71.15	33-114	WG538687
Nitrobenzene-d5				67.81	21-120	WG538687
p-Terphenyl-d14				85.12	18-142	WG538687
TPH (GC/FID) High Fraction	ppm	60	46.1	76.9	50-150	WG538685
o-Terphenyl				69.65	50-150	WG538685

Analyte	Units	Laboratory Control		Sample Duplicate	Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
TPH (GC/FID) Low Fraction	mg/kg	5.10	5.16	93.0	67-135	1.33	20	WG538446
a,a,a-Trifluorotoluene(FID)				107.8	59-128			WG538446
Benzene	mg/kg	0.0528	0.0522	106.	76-113	0.990	20	WG538446
Ethylbenzene	mg/kg	0.0489	0.0482	98.0	78-115	1.58	20	WG538446
Toluene	mg/kg	0.0496	0.0484	99.0	76-114	2.50	20	WG538446
Total Xylene	mg/kg	0.145	0.142	96.0	81-118	1.64	20	WG538446
a,a,a-Trifluorotoluene(PID)				100.9	54-144			WG538446

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Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
pH	su	6.30	6.30	100.	97.98-102.02	0	20	WG538584
ORP	mV	220.	220.	96.0	95.6-104.37	0	20	WG538621
Specific Conductance	umhos/	560.	560.	101.	85-115	0	20	WG538928
Chromium, Hexavalent	mg/kg	100.	110.	76.0	50-150	9.52	20	WG538896
1-Methylnaphthalene	mg/kg	0.0256	0.0235	78.0	41-110	8.77	24	WG538687
2-Chloronaphthalene	mg/kg	0.0277	0.0240	84.0	43-109	14.3	21	WG538687
2-Methylnaphthalene	mg/kg	0.0267	0.0235	81.0	38-104	12.9	24	WG538687
Acenaphthene	mg/kg	0.0292	0.0259	88.0	48-103	12.0	20	WG538687
Acenaphthylene	mg/kg	0.0289	0.0257	88.0	43-106	11.7	20	WG538687
Anthracene	mg/kg	0.0305	0.0267	92.0	51-110	13.4	22	WG538687
Benzo(a)anthracene	mg/kg	0.0308	0.0300	93.0	38-126	2.62	20	WG538687
Benzo(a)pyrene	mg/kg	0.0286	0.0304	87.0	47-118	5.93	20	WG538687
Benzo(b)fluoranthene	mg/kg	0.0310	0.0303	94.0	47-118	2.43	29	WG538687
Benzo(g,h,i)perylene	mg/kg	0.0324	0.0335	98.0	40-125	3.37	20	WG538687
Benzo(k)fluoranthene	mg/kg	0.0321	0.0296	97.0	45-121	8.11	31	WG538687
Chrysene	mg/kg	0.0294	0.0267	89.0	35-135	9.66	20	WG538687
Dibenz(a,h)anthracene	mg/kg	0.0306	0.0310	93.0	41-124	1.38	20	WG538687
Fluoranthene	mg/kg	0.0300	0.0275	91.0	50-114	8.75	20	WG538687
Fluorene	mg/kg	0.0307	0.0267	93.0	49-109	13.9	19	WG538687
Indeno(1,2,3-cd)pyrene	mg/kg	0.0306	0.0308	92.0	40-126	0.771	20	WG538687
Naphthalene	mg/kg	0.0280	0.0250	85.0	36-100	11.1	24	WG538687
Phenanthrene	mg/kg	0.0309	0.0290	94.0	46-108	6.36	21	WG538687
Pyrene	mg/kg	0.0302	0.0291	91.0	30-136	3.50	20	WG538687
2-Fluorobiphenyl				80.73	33-114			WG538687
Nitrobenzene-d5				72.58	21-120			WG538687
p-Terphenyl-d14				91.95	18-142			WG538687
TPH (GC/FID) High Fraction	ppm	44.0	46.1	73.0	50-150	4.78	25	WG538685
o-Terphenyl				63.80	50-150			WG538685

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
Benzene	mg/kg	0.207	0.00270	.05	81.8	32-137	L518647-01	WG538446
Ethylbenzene	mg/kg	0.176	0	.05	70.4	10-150	L518647-01	WG538446
Toluene	mg/kg	0.203	0	.05	81.4	20-142	L518647-01	WG538446
Total Xylene	mg/kg	0.542	0.0200	.15	69.5	16-141	L518647-01	WG538446
a,a,a-Trifluorotoluene(PID)					101.0	54-144		WG538446
TPH (GC/FID) Low Fraction	mg/kg	16.6	0.610	5.5	58.2	55-109	L518647-01	WG538446
a,a,a-Trifluorotoluene(FID)					104.5	59-128		WG538446
Arsenic	mg/kg	67.4	14.0	10	107.	75-125	L518647-06	WG538466
Mercury	mg/kg	0.247	0	.25	98.8	70-130	L518641-03	WG538553
Arsenic	mg/kg	77.6	24.0	50	107.	75-125	L518690-07	WG538474
Barium	mg/kg	1040	930.	50	220.*	75-125	L518690-07	WG538474

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Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
Cadmium	mg/kg	45.7	0	50	91.4	75-125	L518690-07	WG538474
Chromium	mg/kg	76.6	31.0	50	91.2	75-125	L518690-07	WG538474
Copper	mg/kg	70.0	17.0	50	106.	75-125	L518690-07	WG538474
Lead	mg/kg	67.5	18.0	50	99.0	75-125	L518690-07	WG538474
Selenium	mg/kg	45.4	0	50	90.8	75-125	L518690-07	WG538474
Silver	mg/kg	46.5	0	50	93.0	75-125	L518690-07	WG538474
Nickel	mg/kg	77.3	25.0	10	105.	75-125	L518690-07	WG538474
Zinc	mg/kg	145.	80.0	10	130.*	75-125	L518690-07	WG538474
Chromium, Hexavalent	mg/kg	13.0	0	20	65.0	50-150	L519132-01	WG538896
TPH (GC/FID) High Fraction	ppm	37.5	0	60	62.5	50-150	L518754-09	WG538685
o-Terphenyl					61.14	50-150		WG538685
1-Methylnaphthalene	mg/kg	0.135	0.0920	.033	132.*	19-131	L518304-01	WG538687
2-Chloronaphthalene	mg/kg	0.0324	0	.033	98.3	38-117	L518304-01	WG538687
2-Methylnaphthalene	mg/kg	0.261	0.170	.033	275.*	18-125	L518304-01	WG538687
Acenaphthene	mg/kg	0.0401	0.00650	.033	102.	31-120	L518304-01	WG538687
Acenaphthylene	mg/kg	0.0311	0	.033	94.4	34-116	L518304-01	WG538687
Anthracene	mg/kg	0.0372	0	.033	113.	32-131	L518304-01	WG538687
Benzo(a)anthracene	mg/kg	0.0261	0	.033	79.0	32-131	L518304-01	WG538687
Benzo(a)pyrene	mg/kg	0.0264	0	.033	80.0	28-130	L518304-01	WG538687
Benzo(b)fluoranthene	mg/kg	0.0285	0	.033	86.4	37-130	L518304-01	WG538687
Benzo(g,h,i)perylene	mg/kg	0.0253	0	.033	76.6	10-134	L518304-01	WG538687
Benzo(k)fluoranthene	mg/kg	0.0221	0	.033	67.1	31-129	L518304-01	WG538687
Chrysene	mg/kg	0.0235	0	.033	71.4	25-137	L518304-01	WG538687
Dibenz(a,h)anthracene	mg/kg	0.0253	0	.033	76.5	20-134	L518304-01	WG538687
Fluoranthene	mg/kg	0.0318	0	.033	96.4	27-138	L518304-01	WG538687
Fluorene	mg/kg	0.0551	0.0150	.033	121.	26-136	L518304-01	WG538687
Indeno(1,2,3-cd)pyrene	mg/kg	0.0252	0	.033	76.5	16-135	L518304-01	WG538687
Naphthalene	mg/kg	0.0545	0.0400	.033	43.8	22-121	L518304-01	WG538687
Phenanthrene	mg/kg	0.0905	0.0330	.033	174.*	27-133	L518304-01	WG538687
Pyrene	mg/kg	0.0291	0.00120	.033	84.6	22-133	L518304-01	WG538687
2-Fluorobiphenyl					78.34	33-114		WG538687
Nitrobenzene-d5					78.02	21-120		WG538687
p-Terphenyl-d14					56.89	18-142		WG538687

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Benzene	mg/kg	0.234	0.207	92.6	32-137	12.2	39	L518647-01	WG538446
Ethylbenzene	mg/kg	0.168	0.176	67.3	10-150	4.49	44	L518647-01	WG538446
Toluene	mg/kg	0.218	0.203	87.1	20-142	6.78	42	L518647-01	WG538446
Total Xylene	mg/kg	0.555	0.542	71.4	16-141	2.48	46	L518647-01	WG538446
a,a,a-Trifluorotoluene(FID)				100.0	59-128				WG538446
a,a,a-Trifluorotoluene(PID)				100.1	54-144				WG538446
TPH (GC/FID) Low Fraction	mg/kg	13.5	16.6	47.0*	55-109	20.4*	20	L518647-01	WG538446
a,a,a-Trifluorotoluene(FID)				104.0	59-128				WG538446
Arsenic	mg/kg	63.8	67.4	99.6	75-125	5.49	20	L518647-06	WG538466
Mercury	mg/kg	0.239	0.247	95.6	70-130	3.29	20	L518641-03	WG538553

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Analyte	Units	MSD	Matrix Spike	Duplicate	Limit	RPD	Limit	Ref	Samp	Batch
			Ref	%Rec						
Arsenic	mg/kg	71.6	77.6	95.2	75-125	8.04	20	L518690-07	WG538474	
Barium	mg/kg	931.	1040	2.00*	75-125	11.1	20	L518690-07	WG538474	
Cadmium	mg/kg	48.6	45.7	97.2	75-125	6.15	20	L518690-07	WG538474	
Chromium	mg/kg	82.7	76.6	103.	75-125	7.66	20	L518690-07	WG538474	
Copper	mg/kg	69.9	70.0	106.	75-125	0.143	20	L518690-07	WG538474	
Lead	mg/kg	68.8	67.5	102.	75-125	1.91	20	L518690-07	WG538474	
Selenium	mg/kg	49.0	45.4	98.0	75-125	7.63	20	L518690-07	WG538474	
Silver	mg/kg	49.7	46.5	99.4	75-125	6.65	20	L518690-07	WG538474	
Nickel	mg/kg	81.6	77.3	113.	75-125	5.41	20	L518690-07	WG538474	
Zinc	mg/kg	145.	145.	130.*	75-125	0	20	L518690-07	WG538474	
Chromium, Hexavalent	mg/kg	12.0	13.0	60.0	50-150	8.00	20	L519132-01	WG538896	
TPH (GC/FID) High Fraction	ppm	37.7	37.5	62.8	50-150	0.574	25	L518754-09	WG538685	
o-Terphenyl				58.98	50-150				WG538685	
1-Methylnaphthalene	mg/kg	0.105	0.135	38.7	19-131	25.5	30	L518304-01	WG538687	
2-Chloronaphthalene	mg/kg	0.0332	0.0324	101.	38-117	2.32	26	L518304-01	WG538687	
2-Methylnaphthalene	mg/kg	0.191	0.261	64.8	18-125	30.7*	29	L518304-01	WG538687	
Acenaphthene	mg/kg	0.0298	0.0401	70.7	31-120	29.3	30	L518304-01	WG538687	
Acenaphthylene	mg/kg	0.0307	0.0311	93.1	34-116	1.32	29	L518304-01	WG538687	
Anthracene	mg/kg	0.0348	0.0372	105.	32-131	6.86	26	L518304-01	WG538687	
Benzo(a)anthracene	mg/kg	0.0290	0.0261	87.9	32-131	10.6	31	L518304-01	WG538687	
Benzo(a)pyrene	mg/kg	0.0286	0.0264	86.7	28-130	8.05	28	L518304-01	WG538687	
Benzo(b)fluoranthene	mg/kg	0.0283	0.0285	85.9	37-130	0.665	41	L518304-01	WG538687	
Benzo(g,h,i)perylene	mg/kg	0.0275	0.0253	83.3	10-134	8.37	26	L518304-01	WG538687	
Benzo(k)fluoranthene	mg/kg	0.0253	0.0221	76.8	31-129	13.5	42	L518304-01	WG538687	
Chrysene	mg/kg	0.0258	0.0235	78.0	25-137	8.96	22	L518304-01	WG538687	
Dibenz(a,h)anthracene	mg/kg	0.0295	0.0253	89.3	20-134	15.4	25	L518304-01	WG538687	
Fluoranthene	mg/kg	0.0266	0.0318	80.5	27-138	17.9	35	L518304-01	WG538687	
Fluorene	mg/kg	0.0404	0.0551	76.9	26-136	30.8*	30	L518304-01	WG538687	
Indeno(1,2,3-cd)pyrene	mg/kg	0.0299	0.0252	90.6	16-135	16.9	26	L518304-01	WG538687	
Naphthalene	mg/kg	0.0531	0.0545	39.7	22-121	2.49	30	L518304-01	WG538687	
Phenanthrene	mg/kg	0.0611	0.0905	85.2	27-133	38.8*	36	L518304-01	WG538687	
Pyrene	mg/kg	0.0303	0.0291	88.2	22-133	4.09	33	L518304-01	WG538687	
2-Fluorobiphenyl				73.64	33-114				WG538687	
Nitrobenzene-d5				108.4	21-120				WG538687	
p-Terphenyl-d14				69.79	18-142				WG538687	

Batch number /Run number / Sample number cross reference

WG538446: R1707929: L518645-06  
WG538584: R1710009: L518645-06  
WG538466: R1710032: L518645-01 02 03 04 05  
WG538553: R1710231: L518645-06  
WG538621: R1710349: L518645-06  
WG538474: R1711610: L518645-06  
WG538788: R1712449: L518645-06  
WG538928: R1712789: L518645-06  
WG538896: R1715591: L518645-06  
WG538687: R1715729: L518645-06  
WG538685: R1716949: L518645-06

\* \* 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.