

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

Location	Sample Date:	Sample Matrix	Matrix Notes	Allowable Concentration -->		Organic Compounds in Soil (mg/kg [ppm])																			Inorganics in Soil			Metals in Soil (mg/kg [ppm])												
				500		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			
				TPH (total volatile and extractable petroleum hydrocarbons)	TPH-GRO (C6-C10) Low Fraction	TPH-DRO (C10-C36) High Fraction	Benzene	Toluene	Ethylbenzene	Xylenes - total	Acenaphthene	Anthracene	Benzo(A)anthracene	Benzo(B)fluoranthene	Benzo(K)fluoranthene	Benzo(A)pyrene	Chrysene	Dibenzo(A,H)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-C,D)pyrene	Naphthalene	Pyrene	EC (<4 mm/ies/cm or 2x background)	SAR (calculation)	pH	Arsenic	Barium - EPA Total Barium	Cadmium	Chromium (III)	Chromium (VI)	Copper	Lead (inorganic)	Mercury	Nickel (soluble salts)	Selenium	Silver	Zinc		
P28	07/10/12	Cuttings	composite 1	240	BDL	240	0.0043	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2.8	14	8.3	4.1	3700	BDL	20	BDL	19	8	0.028	5.3	BDL	BDL	40		
P28	07/10/12	Cuttings	composite 2	510	BDL	510	0.0074	BDL	BDL	0.013	BDL	0.26	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.43	BDL				BDL													
P28	07/10/12	Cuttings	composite 3	200	BDL	200	0.0048	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.26	BDL				BDL													



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Tax I.D. 62-0814289

Est. 1970

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

## Report Summary

Thursday July 19, 2012

Report Number: L584581


Samples Received: 07/12/12

Client Project:

Description: P28 Cuttings

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:

  
Jared Willis, ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, 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

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

July 19, 2012

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

ESC Sample # : L584581-01

Date Received : July 12, 2012  
 Description : P28 Cuttings

Site ID : P28

Sample ID : P28-CUT1-071012 0-12IN

Project # :

Collected By : Chris Bak  
 Collection Date : 07/10/12 08:22

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium,Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/16/12	1
Chromium,Trivalent	20.	2.0	mg/kg	Calc.	07/16/12	1
ORP	110		mV	2580	07/16/12	1
pH	8.3		su	9045D	07/17/12	1
Sodium Adsorption Ratio	14.			Calc.	07/19/12	1
Specific Conductance	2800		umhos/cm	9050AMod	07/17/12	1
Mercury	0.028	0.020	mg/kg	7471	07/14/12	1
Arsenic	4.1	1.0	mg/kg	6010B	07/16/12	1
Barium	3700	0.25	mg/kg	6010B	07/16/12	1
Cadmium	BDL	0.25	mg/kg	6010B	07/16/12	1
Chromium	20.	0.50	mg/kg	6010B	07/16/12	1
Copper	19.	1.0	mg/kg	6010B	07/16/12	1
Lead	8.0	0.25	mg/kg	6010B	07/16/12	1
Nickel	5.3	1.0	mg/kg	6010B	07/16/12	1
Selenium	BDL	2.0	mg/kg	6010B	07/16/12	2
Silver	BDL	0.50	mg/kg	6010B	07/16/12	1
Zinc	40.	1.5	mg/kg	6010B	07/16/12	1
Benzene	0.0043	0.0025	mg/kg	8021/8015	07/13/12	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/13/12	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/13/12	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/13/12	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/13/12	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	95.0		% Rec.	8021/8015	07/13/12	5
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021/8015	07/13/12	5
TPH (GC/FID) High Fraction	240	80.	mg/kg	3546/DRO	07/18/12	20
Surrogate recovery(%)						
o-Terphenyl	45.8		% Rec.	3546/DRO	07/18/12	20
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Acenaphthene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Acenaphthylene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Benzo(a)anthracene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Benzo(a)pyrene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20

BDL - Below Detection Limit  
 Det. Limit - Practical Quantitation Limit(PQL)  
 L584581-01 (PH) - 8.3@22.2c



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

July 19, 2012

Date Received : July 12, 2012  
 Description : P28 Cuttings  
 Sample ID : P28-CUT1-071012 0-12IN  
 Collected By : Chris Bak  
 Collection Date : 07/10/12 08:22

ESC Sample # : L584581-01  
 Site ID : P28  
 Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Benzo(g,h,i)perylene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Benzo(k)fluoranthene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Chrysene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Dibenz(a,h)anthracene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Fluoranthene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Fluorene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Indeno(1,2,3-cd)pyrene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Naphthalene	0.22	0.12	mg/kg	8270C-SIM	07/17/12	20
Phenanthrene	0.12	0.12	mg/kg	8270C-SIM	07/17/12	20
Pyrene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
1-Methylnaphthalene	0.27	0.12	mg/kg	8270C-SIM	07/17/12	20
2-Methylnaphthalene	0.40	0.12	mg/kg	8270C-SIM	07/17/12	20
2-Chloronaphthalene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Surrogate Recovery						
Nitrobenzene-d5	133.		% Rec.	8270C-SIM	07/17/12	20
2-Fluorobiphenyl	67.2		% Rec.	8270C-SIM	07/17/12	20
p-Terphenyl-d14	130.		% Rec.	8270C-SIM	07/17/12	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 07/19/12 17:08 Printed: 07/19/12 17:09  
 L584581-01 (PH) - 8.3@22.2c



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REPORT OF ANALYSIS

July 19, 2012

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

ESC Sample # : L584581-02

Date Received : July 12, 2012  
 Description : P28 Cuttings

Site ID : P28

Sample ID : P28-CUT2-071012 0-8IN

Project # :

Collected By : Chris Bak  
 Collection Date : 07/10/12 08:54

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	1.0	mg/kg	6010B	07/14/12	1
Benzene	0.0074	0.0025	mg/kg	8021/8015	07/13/12	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/13/12	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/13/12	5
Total Xylene	0.013	0.0075	mg/kg	8021/8015	07/13/12	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/13/12	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	95.0		% Rec.	8021/8015	07/13/12	5
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021/8015	07/13/12	5
TPH (GC/FID) High Fraction	510	80.	mg/kg	3546/DRO	07/18/12	20
Surrogate recovery(%)						
o-Terphenyl	108.		% Rec.	3546/DRO	07/18/12	20
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.26	0.12	mg/kg	8270C-SIM	07/17/12	20
Acenaphthene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Acenaphthylene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Benzo(a)anthracene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Benzo(a)pyrene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Benzo(b)fluoranthene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Benzo(g,h,i)perylene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Benzo(k)fluoranthene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Chrysene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Dibenz(a,h)anthracene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Fluoranthene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Fluorene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Indeno(1,2,3-cd)pyrene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Naphthalene	0.43	0.12	mg/kg	8270C-SIM	07/17/12	20
Phenanthrene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Pyrene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
1-Methylnaphthalene	0.61	0.12	mg/kg	8270C-SIM	07/17/12	20
2-Methylnaphthalene	0.86	0.12	mg/kg	8270C-SIM	07/17/12	20
2-Chloronaphthalene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Surrogate Recovery						
Nitrobenzene-d5	344.		% Rec.	8270C-SIM	07/17/12	20
2-Fluorobiphenyl	58.6		% Rec.	8270C-SIM	07/17/12	20
p-Terphenyl-d14	88.0		% Rec.	8270C-SIM	07/17/12	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

July 19, 2012

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

ESC Sample # : L584581-03

Date Received : July 12, 2012  
 Description : P28 Cuttings

Site ID : P28

Sample ID : P28-CUT3-071012 0-12IN

Project # :

Collected By : Chris Bak  
 Collection Date : 07/10/12 09:19

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	BDL	1.0	mg/kg	6010B	07/14/12	1
Benzene	0.0048	0.0025	mg/kg	8021/8015	07/13/12	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/13/12	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/13/12	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/13/12	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/13/12	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	95.1		% Rec.	8021/8015	07/13/12	5
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021/8015	07/13/12	5
TPH (GC/FID) High Fraction	200	80.	mg/kg	3546/DRO	07/18/12	20
Surrogate recovery(%)						
o-Terphenyl	38.9		% Rec.	3546/DRO	07/18/12	20
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Acenaphthene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Acenaphthylene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Benzo(a)anthracene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Benzo(a)pyrene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Benzo(b)fluoranthene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Benzo(g,h,i)perylene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Benzo(k)fluoranthene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Chrysene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Dibenz(a,h)anthracene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Fluoranthene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Fluorene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Indeno(1,2,3-cd)pyrene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Naphthalene	0.26	0.12	mg/kg	8270C-SIM	07/17/12	20
Phenanthrene	0.15	0.12	mg/kg	8270C-SIM	07/17/12	20
Pyrene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
1-Methylnaphthalene	0.29	0.12	mg/kg	8270C-SIM	07/17/12	20
2-Methylnaphthalene	0.44	0.12	mg/kg	8270C-SIM	07/17/12	20
2-Chloronaphthalene	BDL	0.12	mg/kg	8270C-SIM	07/17/12	20
Surrogate Recovery						
Nitrobenzene-d5	102.		% Rec.	8270C-SIM	07/17/12	20
2-Fluorobiphenyl	63.2		% Rec.	8270C-SIM	07/17/12	20
p-Terphenyl-d14	78.1		% Rec.	8270C-SIM	07/17/12	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Reported: 07/19/12 17:08 Printed: 07/19/12 17:09  
 L584581-03 (SV8270PAHSIM) - Dilution due to matrix

Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier	
L584581-01	WG602332	SAMP	Selenium	R2257653	O	
	WG602556	SAMP	Nitrobenzene-d5	R2258973	J7	
	WG602556	SAMP	2-Fluorobiphenyl	R2258973	J7	
	WG602556	SAMP	p-Terphenyl-d14	R2258973	J7	
	WG602930	SAMP	pH	R2259174	T8	
	WG602664	SAMP	ORP	R2258135	T8	
	WG602660	SAMP	Specific Conductance	R2260294	T8	
	WG602446	SAMP	o-Terphenyl	R2263413	J7	
	L584581-02	WG602556	SAMP	Nitrobenzene-d5	R2258973	J7
		WG602556	SAMP	2-Fluorobiphenyl	R2258973	J7
WG602556		SAMP	p-Terphenyl-d14	R2258973	J7	
L584581-03	WG602446	SAMP	o-Terphenyl	R2263413	J7	
	WG602556	SAMP	Nitrobenzene-d5	R2258973	J7	
	WG602556	SAMP	2-Fluorobiphenyl	R2258973	J7	
	WG602556	SAMP	p-Terphenyl-d14	R2258973	J7	
	WG602446	SAMP	o-Terphenyl	R2263413	J7	

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
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.
T8	(ESC) - Additional method/sample information: Sample(s) received past/too close to holding time expiration.

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  
07/19/12 at 17:09:24

TSR Signing Reports: 358  
R5 - Desired TAT

Try not to report benzene as BDL above a 250x dilution. ONLY log soil samples under this account. Waters get logged under ENCRCO. Log all PAHs as PAHSIM.

Sample: L584581-01 Account: ENCANACO Received: 07/12/12 09:00 Due Date: 07/19/12 00:00 RPT Date: 07/19/12 17:08

Sample: L584581-02 Account: ENCANACO Received: 07/12/12 09:00 Due Date: 07/19/12 00:00 RPT Date: 07/19/12 17:08

Sample: L584581-03 Account: ENCANACO Received: 07/12/12 09:00 Due Date: 07/19/12 00:00 RPT Date: 07/19/12 17:08



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Chris Hines / Matt Kasten  
2717 County Road 215, Suite 100

Parachute, CO 81635

Quality Assurance Report  
Level II

L584581

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July 19, 2012

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Benzene	< .0005	mg/kg			WG602322	07/12/12 16:41
Ethylbenzene	< .0005	mg/kg			WG602322	07/12/12 16:41
Toluene	< .005	mg/kg			WG602322	07/12/12 16:41
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG602322	07/12/12 16:41
Total Xylene	< .0015	mg/kg			WG602322	07/12/12 16:41
a,a,a-Trifluorotoluene(FID)		% Rec.	95.06	59-128	WG602322	07/12/12 16:41
a,a,a-Trifluorotoluene(PID)		% Rec.	101.6	54-144	WG602322	07/12/12 16:41
Mercury	< .02	mg/kg			WG602527	07/14/12 13:37
Arsenic	< 1	mg/kg			WG602521	07/14/12 09:54
Chromium,Hexavalent	< 2	mg/kg			WG602598	07/16/12 15:28
Arsenic	< 1	mg/kg			WG602332	07/16/12 18:59
Barium	< .25	mg/kg			WG602332	07/16/12 18:59
Cadmium	< .25	mg/kg			WG602332	07/16/12 18:59
Chromium	< .5	mg/kg			WG602332	07/16/12 18:59
Copper	< 1	mg/kg			WG602332	07/16/12 18:59
Lead	< .25	mg/kg			WG602332	07/16/12 18:59
Nickel	< 1	mg/kg			WG602332	07/16/12 18:59
Selenium	< 1	mg/kg			WG602332	07/16/12 18:59
Silver	< .5	mg/kg			WG602332	07/16/12 18:59
Zinc	< 1.5	mg/kg			WG602332	07/16/12 18:59
1-Methylnaphthalene	< .006	mg/kg			WG602556	07/16/12 11:20
2-Chloronaphthalene	< .006	mg/kg			WG602556	07/16/12 11:20
2-Methylnaphthalene	< .006	mg/kg			WG602556	07/16/12 11:20
Acenaphthene	< .006	mg/kg			WG602556	07/16/12 11:20
Acenaphthylene	< .006	mg/kg			WG602556	07/16/12 11:20
Anthracene	< .006	mg/kg			WG602556	07/16/12 11:20
Benzo(a)anthracene	< .006	mg/kg			WG602556	07/16/12 11:20
Benzo(a)pyrene	< .006	mg/kg			WG602556	07/16/12 11:20
Benzo(b)fluoranthene	< .006	mg/kg			WG602556	07/16/12 11:20
Benzo(g,h,i)perylene	< .006	mg/kg			WG602556	07/16/12 11:20
Benzo(k)fluoranthene	< .006	mg/kg			WG602556	07/16/12 11:20
Chrysene	< .006	mg/kg			WG602556	07/16/12 11:20
Dibenz(a,h)anthracene	< .006	mg/kg			WG602556	07/16/12 11:20
Fluoranthene	< .006	mg/kg			WG602556	07/16/12 11:20
Fluorene	< .006	mg/kg			WG602556	07/16/12 11:20
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG602556	07/16/12 11:20
Naphthalene	< .006	mg/kg			WG602556	07/16/12 11:20
Phenanthrene	< .006	mg/kg			WG602556	07/16/12 11:20
Pyrene	< .006	mg/kg			WG602556	07/16/12 11:20
2-Fluorobiphenyl		% Rec.	74.68	34-129	WG602556	07/16/12 11:20
Nitrobenzene-d5		% Rec.	74.19	14-141	WG602556	07/16/12 11:20
p-Terphenyl-d14		% Rec.	96.86	25-139	WG602556	07/16/12 11:20
pH	5.23	su			WG602930	07/17/12 14:10
Specific Conductance	1.22	umhos/cm			WG602660	07/17/12 14:15

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Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
TPH (GC/FID) High Fraction	< 4	ppm			WG602446	07/18/12 09:55
o-Terphenyl		% Rec.	70.76	50-150	WG602446	07/18/12 09:55

Analyte	Units	Duplicate			Limit	Ref Samp	Batch
		Result	Duplicate	RPD			
Mercury	mg/kg	0	0	0	20	L584715-02	WG602527
Arsenic	mg/kg	0	0	0	20	L584611-02	WG602521
Chromium,Hexavalent	mg/kg	0	3.40	NA	20	L584969-01	WG602598
Chromium,Hexavalent	mg/kg	0	1.00	NA	20	L584341-01	WG602598
Arsenic	mg/kg	5.00	4.95	0.604	20	L584424-01	WG602332
Barium	mg/kg	91.0	87.6	3.37	20	L584424-01	WG602332
Cadmium	mg/kg	0	0	0	20	L584424-01	WG602332
Chromium	mg/kg	24.0	25.1	2.83	20	L584424-01	WG602332
Copper	mg/kg	12.0	11.5	2.58	20	L584424-01	WG602332
Lead	mg/kg	13.0	12.2	7.87	20	L584424-01	WG602332
Nickel	mg/kg	5.60	5.30	5.15	20	L584424-01	WG602332
Silver	mg/kg	0	0	0	20	L584424-01	WG602332
Zinc	mg/kg	47.0	48.7	3.55	20	L584424-01	WG602332
Selenium	mg/kg	0	0	0	20	L584424-01	WG602332
ORP	mV	0	0	0	20	L584164-01	WG602664
ORP	mV	260.	260.	1.16	20	L584969-01	WG602664
pH	su	8.40	8.30	0.720	1	L584581-01	WG602930
pH	su	8.80	8.70	1.03*	1	L584969-06	WG602930
Specific Conductance	umhos/cm	3000	2900	3.06	20	L584341-01	WG602660
Specific Conductance	umhos/cm	170.	180.	5.13	20	L584707-04	WG602660

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Benzene	mg/kg	.05	0.0501	100.	76-113	WG602322
Ethylbenzene	mg/kg	.05	0.0495	99.0	78-115	WG602322
Toluene	mg/kg	.05	0.0495	99.1	76-114	WG602322
Total Xylene	mg/kg	.15	0.155	103.	81-118	WG602322
a,a,a-Trifluorotoluene(PID)				101.7	54-144	WG602322
TPH (GC/FID) Low Fraction	mg/kg	5.5	6.55	119.	67-135	WG602322
a,a,a-Trifluorotoluene(FID)				101.1	59-128	WG602322
Mercury	mg/kg	12.4	11.8	95.2	71.6-128	WG602527
Arsenic	mg/kg	237	218.	92.0	83.1-117	WG602521
Chromium,Hexavalent	mg/kg	150	135.	90.0	50-150	WG602598

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Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Arsenic	mg/kg	237	228.	96.2	83.1-117	WG602332
Barium	mg/kg	252	248.	98.4	84.1-116	WG602332
Cadmium	mg/kg	191	180.	94.2	83.2-117	WG602332
Chromium	mg/kg	128	129.	101.	81.3-118	WG602332
Copper	mg/kg	123	122.	99.2	83.7-116	WG602332
Lead	mg/kg	103	101.	98.1	83.1-117	WG602332
Nickel	mg/kg	118	106.	89.8	82-118	WG602332
Selenium	mg/kg	110	104.	94.5	78.7-122	WG602332
Silver	mg/kg	47.3	47.5	100.	66.2-134	WG602332
Zinc	mg/kg	183	174.	95.1	82-118	WG602332
ORP	mV	228	228.	100.	95.6-104.	WG602664
1-Methylnaphthalene	mg/kg	.033	0.0237	71.9	48-113	WG602556
2-Chloronaphthalene	mg/kg	.033	0.0232	70.3	51-114	WG602556
2-Methylnaphthalene	mg/kg	.033	0.0240	72.8	44-109	WG602556
Acenaphthene	mg/kg	.033	0.0237	71.9	52-108	WG602556
Acenaphthylene	mg/kg	.033	0.0259	78.5	51-110	WG602556
Anthracene	mg/kg	.033	0.0296	89.5	58-120	WG602556
Benzo(a)anthracene	mg/kg	.033	0.0309	93.7	54-110	WG602556
Benzo(a)pyrene	mg/kg	.033	0.0302	91.6	56-118	WG602556
Benzo(b)fluoranthene	mg/kg	.033	0.0293	88.9	55-114	WG602556
Benzo(g,h,i)perylene	mg/kg	.033	0.0307	92.9	48-130	WG602556
Benzo(k)fluoranthene	mg/kg	.033	0.0276	83.6	55-122	WG602556
Chrysene	mg/kg	.033	0.0284	86.2	57-118	WG602556
Dibenz(a,h)anthracene	mg/kg	.033	0.0316	95.8	53-122	WG602556
Fluoranthene	mg/kg	.033	0.0288	87.2	58-118	WG602556
Fluorene	mg/kg	.033	0.0256	77.5	54-109	WG602556
Indeno(1,2,3-cd)pyrene	mg/kg	.033	0.0323	97.8	51-125	WG602556
Naphthalene	mg/kg	.033	0.0221	67.0	45-105	WG602556
Phenanthrene	mg/kg	.033	0.0262	79.5	53-114	WG602556
Pyrene	mg/kg	.033	0.0284	86.1	53-121	WG602556
2-Fluorobiphenyl				75.45	34-129	WG602556
Nitrobenzene-d5				77.89	14-141	WG602556
p-Terphenyl-d14				95.95	25-139	WG602556
pH	su	5.7	5.77	101.*	98-101	WG602930
Specific Conductance	umhos/cm	495	509.	103.	85-115	WG602660
TPH (GC/FID) High Fraction	ppm	60	46.3	77.1	50-150	WG602446
o-Terphenyl				73.26	50-150	WG602446

Analyte	Units	Laboratory Control		Sample Duplicate	%Rec	Limit	RPD	Limit	Batch
		Result	Ref						
Benzene	mg/kg	0.0502	0.0501		100.	76-113	0.250	20	WG602322
Ethylbenzene	mg/kg	0.0492	0.0495		98.0	78-115	0.550	20	WG602322
Toluene	mg/kg	0.0491	0.0495		98.0	76-114	0.850	20	WG602322
Total Xylene	mg/kg	0.153	0.155		102.	81-118	1.28	20	WG602322
a,a,a-Trifluorotoluene(PID)					101.5	54-144			WG602322
TPH (GC/FID) Low Fraction	mg/kg	6.54	6.55		119.	67-135	0.0800	20	WG602322
a,a,a-Trifluorotoluene(FID)					101.4	59-128			WG602322

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Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Chromium,Hexavalent	mg/kg	135.	135.	90.0	50-150	0	20	WG602598
ORP	mV	224.	228.	98.0	95.6-104.	1.77	20	WG602664
1-Methylnaphthalene	mg/kg	0.0238	0.0237	72.0	48-113	0.484	24	WG602556
2-Chloronaphthalene	mg/kg	0.0229	0.0232	69.0	51-114	1.29	24	WG602556
2-Methylnaphthalene	mg/kg	0.0237	0.0240	72.0	44-109	1.51	24	WG602556
Acenaphthene	mg/kg	0.0242	0.0237	73.0	52-108	1.84	22	WG602556
Acenaphthylene	mg/kg	0.0248	0.0259	75.0	51-110	4.42	21	WG602556
Anthracene	mg/kg	0.0290	0.0296	88.0	58-120	1.84	20	WG602556
Benzo(a)anthracene	mg/kg	0.0302	0.0309	92.0	54-110	2.21	22	WG602556
Benzo(a)pyrene	mg/kg	0.0294	0.0302	89.0	56-118	2.78	21	WG602556
Benzo(b)fluoranthene	mg/kg	0.0267	0.0293	81.0	55-114	9.28	20	WG602556
Benzo(g,h,i)perylene	mg/kg	0.0294	0.0307	89.0	48-130	4.22	20	WG602556
Benzo(k)fluoranthene	mg/kg	0.0292	0.0276	88.0	55-122	5.50	25	WG602556
Chrysene	mg/kg	0.0274	0.0284	83.0	57-118	3.53	20	WG602556
Dibenz(a,h)anthracene	mg/kg	0.0307	0.0316	93.0	53-122	2.87	20	WG602556
Fluoranthene	mg/kg	0.0282	0.0288	85.0	58-118	2.21	20	WG602556
Fluorene	mg/kg	0.0252	0.0256	76.0	54-109	1.65	20	WG602556
Indeno(1,2,3-cd)pyrene	mg/kg	0.0305	0.0323	92.0	51-125	5.67	21	WG602556
Naphthalene	mg/kg	0.0222	0.0221	67.0	45-105	0.406	24	WG602556
Phenanthrene	mg/kg	0.0262	0.0262	79.0	53-114	0.262	20	WG602556
Pyrene	mg/kg	0.0268	0.0284	81.0	53-121	5.95	20	WG602556
2-Fluorobiphenyl				69.10	34-129			WG602556
Nitrobenzene-d5				67.48	14-141			WG602556
p-Terphenyl-d14				90.35	25-139			WG602556
pH	su	5.77	5.77	101.	98-101	0	20	WG602930
Specific Conductance	umhos/	507.	509.	102.	85-115	0.394	20	WG602660

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
Benzene	mg/kg	0.245	0	.05	97.9	32-137	L584393-01	WG602322
Ethylbenzene	mg/kg	0.244	0	.05	97.7	10-150	L584393-01	WG602322
Toluene	mg/kg	0.252	0	.05	101.	20-142	L584393-01	WG602322
Total Xylene	mg/kg	0.764	0	.15	102.	16-141	L584393-01	WG602322
a,a,a-Trifluorotoluene(PID)					101.6	54-144		WG602322
TPH (GC/FID) Low Fraction	mg/kg	29.4	0	5.5	107.	55-109	L584393-01	WG602322
a,a,a-Trifluorotoluene(FID)					101.0	59-128		WG602322
Mercury	mg/kg	0.280	0	.25	112.	80-120	L584715-02	WG602527
Arsenic	mg/kg	41.9	0	50	83.8	75-125	L584611-02	WG602521
Chromium,Hexavalent	mg/kg	16.8	0	20	84.0	50-150	L584341-03	WG602598
Arsenic	mg/kg	50.6	4.95	50	91.3	75-125	L584424-01	WG602332
Barium	mg/kg	134.	87.6	50	92.8	75-125	L584424-01	WG602332

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Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
Cadmium	mg/kg	45.3	0	50	90.6	75-125	L584424-01	WG602332
Chromium	mg/kg	72.3	25.1	50	94.4	75-125	L584424-01	WG602332
Copper	mg/kg	61.2	11.5	50	99.4	75-125	L584424-01	WG602332
Lead	mg/kg	58.5	12.2	50	92.6	75-125	L584424-01	WG602332
Nickel	mg/kg	48.9	5.30	50	87.2	75-125	L584424-01	WG602332
Silver	mg/kg	49.2	0	50	98.4	75-125	L584424-01	WG602332
Zinc	mg/kg	96.0	48.7	50	94.6	75-125	L584424-01	WG602332
Selenium	mg/kg	41.5	0	10	83.0	75-125	L584424-01	WG602332
1-Methylnaphthalene	mg/kg	0.0232	0	.033	70.4	25-155	L584410-04	WG602556
2-Chloronaphthalene	mg/kg	0.0225	0	.033	68.3	31-153	L584410-04	WG602556
2-Methylnaphthalene	mg/kg	0.0233	0	.033	70.7	22-172	L584410-04	WG602556
Acenaphthene	mg/kg	0.0236	0	.033	71.6	43-133	L584410-04	WG602556
Acenaphthylene	mg/kg	0.0243	0	.033	73.7	42-146	L584410-04	WG602556
Anthracene	mg/kg	0.0269	0	.033	81.4	38-153	L584410-04	WG602556
Benzo(a)anthracene	mg/kg	0.0290	0	.033	88.0	31-142	L584410-04	WG602556
Benzo(a)pyrene	mg/kg	0.0287	0	.033	87.0	26-152	L584410-04	WG602556
Benzo(b)fluoranthene	mg/kg	0.0282	0	.033	85.5	10-188	L584410-04	WG602556
Benzo(g,h,i)perylene	mg/kg	0.0285	0	.033	86.4	10-176	L584410-04	WG602556
Benzo(k)fluoranthene	mg/kg	0.0259	0	.033	78.5	22-163	L584410-04	WG602556
Chrysene	mg/kg	0.0273	0	.033	82.8	26-146	L584410-04	WG602556
Dibenz(a,h)anthracene	mg/kg	0.0295	0	.033	89.3	10-160	L584410-04	WG602556
Fluoranthene	mg/kg	0.0276	0	.033	83.7	23-160	L584410-04	WG602556
Fluorene	mg/kg	0.0248	0	.033	75.0	44-143	L584410-04	WG602556
Indeno(1,2,3-cd)pyrene	mg/kg	0.0300	0	.033	91.0	10-157	L584410-04	WG602556
Naphthalene	mg/kg	0.0220	0	.033	66.6	22-156	L584410-04	WG602556
Phenanthrene	mg/kg	0.0250	0	.033	75.7	23-164	L584410-04	WG602556
Pyrene	mg/kg	0.0265	0	.033	80.4	12-170	L584410-04	WG602556
2-Fluorobiphenyl					69.02	34-129		WG602556
Nitrobenzene-d5					70.51	14-141		WG602556
p-Terphenyl-d14					85.39	25-139		WG602556
TPH (GC/FID) High Fraction	ppm	48.4	0	60	80.6	50-150	L584602-01	WG602446
o-Terphenyl					66.64	50-150		WG602446

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Benzene	mg/kg	0.244	0.245	97.7	32-137	0.180	39	L584393-01	WG602322
Ethylbenzene	mg/kg	0.241	0.244	96.4	10-150	1.28	44	L584393-01	WG602322
Toluene	mg/kg	0.241	0.252	96.6	20-142	4.14	42	L584393-01	WG602322
Total Xylene	mg/kg	0.750	0.764	100.	16-141	1.90	46	L584393-01	WG602322
a,a,a-Trifluorotoluene(PID)				101.2	54-144				WG602322
TPH (GC/FID) Low Fraction	mg/kg	28.4	29.4	103.	55-109	3.62	20	L584393-01	WG602322
a,a,a-Trifluorotoluene(FID)				100.6	59-128				WG602322
Mercury	mg/kg	0.274	0.280	110.	80-120	2.17	20	L584715-02	WG602527
Arsenic	mg/kg	41.5	41.9	83.0	75-125	0.959	20	L584611-02	WG602521
Chromium,Hexavalent	mg/kg	17.5	16.8	87.5	50-150	4.08	20	L584341-03	WG602598
Arsenic	mg/kg	49.0	50.6	88.1	75-125	3.21	20	L584424-01	WG602332

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Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref	Samp	Batch
			Ref	%Rec						
Barium	mg/kg	135.	134.	94.8	75-125	0.743	20	L584424-01	WG602332	
Cadmium	mg/kg	44.6	45.3	89.2	75-125	1.56	20	L584424-01	WG602332	
Chromium	mg/kg	71.5	72.3	92.8	75-125	1.11	20	L584424-01	WG602332	
Copper	mg/kg	60.8	61.2	98.6	75-125	0.656	20	L584424-01	WG602332	
Lead	mg/kg	57.2	58.5	90.0	75-125	2.25	20	L584424-01	WG602332	
Nickel	mg/kg	47.0	48.9	83.4	75-125	3.96	20	L584424-01	WG602332	
Silver	mg/kg	48.1	49.2	96.2	75-125	2.26	20	L584424-01	WG602332	
Zinc	mg/kg	96.8	96.0	96.2	75-125	0.830	20	L584424-01	WG602332	
Selenium	mg/kg	40.0	41.5	80.0	75-125	3.68	20	L584424-01	WG602332	
1-Methylnaphthalene	mg/kg	0.0249	0.0232	75.4	25-155	6.81	27	L584410-04	WG602556	
2-Chloronaphthalene	mg/kg	0.0239	0.0225	72.4	31-153	5.91	22	L584410-04	WG602556	
2-Methylnaphthalene	mg/kg	0.0250	0.0233	75.7	22-172	6.92	29	L584410-04	WG602556	
Acenaphthene	mg/kg	0.0243	0.0236	73.6	43-133	2.66	26	L584410-04	WG602556	
Acenaphthylene	mg/kg	0.0253	0.0243	76.8	42-146	4.10	22	L584410-04	WG602556	
Anthracene	mg/kg	0.0278	0.0269	84.2	38-153	3.35	27	L584410-04	WG602556	
Benzo(a)anthracene	mg/kg	0.0299	0.0290	90.6	31-142	2.95	31	L584410-04	WG602556	
Benzo(a)pyrene	mg/kg	0.0297	0.0287	90.1	26-152	3.54	32	L584410-04	WG602556	
Benzo(b)fluoranthene	mg/kg	0.0280	0.0282	84.8	10-188	0.790	33	L584410-04	WG602556	
Benzo(g,h,i)perylene	mg/kg	0.0291	0.0285	88.2	10-176	1.98	30	L584410-04	WG602556	
Benzo(k)fluoranthene	mg/kg	0.0282	0.0259	85.4	22-163	8.42	29	L584410-04	WG602556	
Chrysene	mg/kg	0.0288	0.0273	87.4	26-146	5.42	30	L584410-04	WG602556	
Dibenz(a,h)anthracene	mg/kg	0.0304	0.0295	92.2	10-160	3.24	39	L584410-04	WG602556	
Fluoranthene	mg/kg	0.0291	0.0276	88.3	23-160	5.39	22	L584410-04	WG602556	
Fluorene	mg/kg	0.0254	0.0248	76.9	44-143	2.45	23	L584410-04	WG602556	
Indeno(1,2,3-cd)pyrene	mg/kg	0.0300	0.0300	91.0	10-157	0.0274	40	L584410-04	WG602556	
Naphthalene	mg/kg	0.0234	0.0220	70.8	22-156	6.04	27	L584410-04	WG602556	
Phenanthrene	mg/kg	0.0262	0.0250	79.3	23-164	4.61	25	L584410-04	WG602556	
Pyrene	mg/kg	0.0271	0.0265	82.2	12-170	2.31	24	L584410-04	WG602556	
2-Fluorobiphenyl				72.57	34-129				WG602556	
Nitrobenzene-d5				75.34	14-141				WG602556	
p-Terphenyl-d14				90.35	25-139				WG602556	

Batch number /Run number / Sample number cross reference

WG602322: R2253053: L584581-01 02 03  
 WG602527: R2255654: L584581-01  
 WG602521: R2256035: L584581-02 03  
 WG602598: R2256993: L584581-01  
 WG602332: R2257653: L584581-01  
 WG602664: R2258135: L584581-01  
 WG602556: R2258973: L584581-01 02 03  
 WG602930: R2259174: L584581-01  
 WG602660: R2260294: L584581-01  
 WG602745: R2261993: L584581-01  
 WG602446: R2263413: L584581-01 02 03

\* \* Calculations are performed prior to rounding of reported values.  
 \* Performance of this Analyte is outside of established criteria.  
 For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



**YOUR LAB OF CHOICE**

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Est. 1970

July 19, 2012

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.