



A Waters Company

Beth Schrage
Pace Analytical Services - Indianapolis
7726 Moller Road
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USA

SOIL-105



Final Report

Soil/Hazardous Waste Proficiency Testing

Soil Study

Open Date: 01/21/19

Close Date: 03/07/19

Report Issued Date: 03/11/19



A Waters Company

March 11, 2019

Beth Schrage
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Enclosed is your final report for ERA's SOIL-105 Proficiency Testing (PT) study. Your final report includes an evaluation of all results submitted by your laboratory to ERA.

Data Evaluation Protocols: All analytes in ERA's SOIL-105 Proficiency Testing study have been evaluated using the following tiered approach. If the analyte is listed in the current TNI Fields of Proficiency Testing (FoPT) tables, the evaluation was completed by comparing the reported result to the acceptance limits generated using the criteria contained in the current TNI FoPT tables. If the analyte is not included in the TNI FoPT tables, the reported result has been evaluated using the procedures outlined in ERA's Standard Operating Procedure for the Generation of Performance Acceptance Limits (SOP 730002268).

Corrective Action Help: As part of your accreditation(s), you may be required to identify the root cause of any "Not Acceptable" results, implement the necessary corrective actions, and then satisfy your PT requirements by participating in a Supplemental (QuiK™ Response) or future ERA PT study. ERA's technical staff is available to help your laboratory resolve any technical issues that may be impairing your PT performance and possibly affecting your routine data quality. Our laboratory and technical staff have many years of collective experience in performing the full range of environmental analyses. As part of our technical support, ERA offers QC samples that can be useful in helping you work through your technical issues.

At the request of the TNI Accreditation Council, we have included a Laboratory Exception Report that includes a list of all analytes reported with less than qualifiers when the assigned value was greater than "0." In addition, because we have received many requests from laboratories, this report also includes a list of all analytes with "Not Acceptable" evaluations.

Some states have elected not to convert to the 2009 TNI Standards at this time. If you have released your results to a state that has retained the 2003 NELAC Evaluation Criteria, your final report will include a section that evaluates the results according to the 2003 Standard in addition to the 2009 TNI Standards.

Thank you for your participation in ERA's SOIL-105 Proficiency Testing study. If you have any questions, please contact our Proficiency Testing Department at 1-800-372-0122.

Sincerely,

A handwritten signature in black ink, appearing to read "Matthew Seebeck", written over a horizontal line.

Matthew Seebeck
Quality Officer

attachments



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Report Recipient	Contact/Phone Number	Reporting Type	Evaluation Type
Illinois	John South / (217) 558-7142	Custom Reporting	2009 TNI
Kansas	Paul Harrison / 785-296-6198	Custom Reporting	2009 TNI
Kentucky	Patrick Garrity / 502-782-6954	Custom Reporting	2009 TNI
Texas	Frank Jamison / (512) 239-3754	Custom Reporting	2009 TNI
West Virginia (DEP)	Justin D Carpenter / (304) 926-0499-1158	All Analytes	2009 TNI



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SOIL-105 Definitions & Study Discussion

Study Dates: 01/21/19 - 03/07/19

Report Issued: 03/11/19

SOIL Study Definitions

The Reported Value is the value that the laboratory reported to ERA.

The ERA Assigned Values for the Organic Proficiency Testing Standards are equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation as applicable. The ERA assigned values for the Inorganic Proficiency Testing Standards, with the exception of the TCLP Metals in Soil and Total Organic Carbon (TOC) in the Nutrients in Soil sample, are equal to the maximum amount of the parameter available in the standard by applicable EPA methodologies. The ERA assigned values for the TCLP metals and TOC are equal to the mean of the study data, after the removal of outliers. All parameters not added to the standard are given an Assigned Value of "< PTRL", per the guidelines contained in the 2009 TNI Standards. The assigned values are directly traceable to the commercially prepared starting materials used to manufacture the PT standards.

The Acceptance Limits are established per the criteria contained in the most current TNI Fields of Proficiency Testing (FoPT) tables, or ERA's SOP for the Generation of Performance Acceptance Limits™ as applicable.

The Performance Evaluation:

Acceptable = Reported Value falls within the Acceptance Limits.

Not Acceptable = Reported Value falls outside the Acceptance Limits.

No Evaluation = Reported Value cannot be evaluated.

Not Reported = No Value reported.

The Method Description is the method the laboratory reported to ERA.

SOIL Study Discussion

ERA's SOIL-105 Proficiency Testing (PT) study has been reviewed by ERA senior management and certified compliant with the requirements of the 2009 TNI PT Standard and the criteria contained in the most current TNI Fields of Proficiency Testing (FoPT) tables.

ERA's SOIL-105 study standards were examined for any anomalies. A full review of all homogeneity, stability and accuracy verification data was completed. All analytical verification data for all analytes in the standards met the acceptance criteria contained in the 2009 TNI PT Standard and the criteria contained in the most current TNI FoPT tables.

The data submitted by participating laboratories was also examined for study anomalies. There were no anomalies observed during the statistical review of the data.

ERA's SOIL-105 Proficiency Testing study reports shall not be reproduced except in its entirety and not without the permission of the participating laboratory. The report must not be used by the participating laboratories to claim product endorsement any agency of the U. S. government.

The data contained herein are confidential and intended for your use only.

If you have any questions or concerns regarding your assessment in ERA's SOIL Proficiency Testing program, please contact our Proficiency Testing Department at 1-800-372-0122.





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SOIL-105 Laboratory Exception Report

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P041110
03/11/19
01/21/19 - 03/07/19

2009 TNI Evaluation Checks

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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SOIL Volatiles in Soil (cat# 623, lot# D105-721)

4320	Acetonitrile	µg/kg	< 200	889	0.00 - 1790	Acceptable	EPA 8260C 2006
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2009 TNI Not Acceptable Evaluations

There were no Not Acceptable evaluations for this study.



All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) are included in ERA's A2LA accreditation. Lab Code: 1539-01
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Study # : SOIL-105





Final Report Results For Laboratory Pace Analytical Services - Indianapolis





2009 TNI Evaluation Report

Study: **SOIL-105**

ERA Customer Number: **P041110**

Laboratory Name: **Pace Analytical Services
- Indianapolis**

Inorganic Results





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SOIL-105 2009 TNI Evaluation Final Complete Report

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TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description	Analysis Date	Z Score	Study Mean	Study Standard Deviation	Analyst Name
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SOIL Metals in Soil (cat# 620, lot# D105-540)

1000	Aluminum	mg/kg	7620	10100	4470 - 13100	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.629	8800	1880	
1005	Antimony	mg/kg	81.5	282	28.2 - 366	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.829	147	79.5	
1010	Arsenic	mg/kg	134	155	100 - 186	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.663	143	14.2	
1015	Barium	mg/kg	363	439	311 - 519	Acceptable	EPA 6010B 2 1996	1/31/2019	-1.48	415	35.2	
1020	Beryllium	mg/kg	164	192	134 - 224	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.947	179	16.1	
1025	Boron	mg/kg	139	216	96.1 - 238	Acceptable	EPA 6010B 2 1996	1/31/2019	-1.16	160	18.3	
1030	Cadmium	mg/kg	53.0	61.5	42.2 - 70.3	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.725	56.2	4.48	
1035	Calcium	mg/kg	4100	5190	3610 - 6310	Acceptable	EPA 6010B 2 1996	1/31/2019	-1.85	4960	465	
1040	Chromium	mg/kg	89.0	104	70.5 - 131	Acceptable	EPA 6010B 2 1996	1/31/2019	-1.07	101	10.9	
1050	Cobalt	mg/kg	172	196	141 - 236	Acceptable	EPA 6010B 2 1996	1/31/2019	-1.19	189	13.8	
1055	Copper	mg/kg	62.7	65.0	47.3 - 78.9	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.0621	63.1	6.50	
1070	Iron	mg/kg	12800	15000	6000 - 25400	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.699	15700	4130	
1075	Lead	mg/kg	116	126	89.3 - 160	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.731	125	11.9	
1085	Magnesium	mg/kg	2230	2570	1520 - 3310	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.590	2410	312	
1090	Manganese	mg/kg	334	387	290 - 474	Acceptable	EPA 6010B 2 1996	1/31/2019	-1.40	382	34.2	
1095	Mercury	mg/kg		7.76	4.57 - 10.7	Not Reported				7.61	1.21	
1100	Molybdenum	mg/kg	93.4	120	75.5 - 139	Acceptable	EPA 6010B 2 1996	1/31/2019	-1.47	107	9.41	
1105	Nickel	mg/kg	94.4	117	75.7 - 141	Acceptable	EPA 6010B 2 1996	1/31/2019	-1.66	108	8.29	
1125	Potassium	mg/kg	1750	2420	1260 - 2960	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.974	2110	369	
1140	Selenium	mg/kg	74.5	84.6	49.2 - 107	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.413	77.9	8.24	



All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) are included in ERA's A2LA accreditation. Lab Code: 1539-01

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SOIL Metals in Soil (cat# 620, lot# D105-540) (Continued)

1150	Silver	mg/kg	32.8	34.6	23.6 - 45.1	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.411	34.3	3.75	
1155	Sodium	mg/kg	115	161	54.3 - 235	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.967	145	30.6	
1160	Strontium	mg/kg	89.7	104	74.8 - 133	Acceptable	EPA 6010B 2 1996	1/31/2019	-1.34	104	10.6	
1165	Thallium	mg/kg	105	123	77.1 - 149	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.895	113	8.77	
1175	Tin	mg/kg	101	118	61.2 - 152	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.460	107	12.3	
1180	Titanium	mg/kg	315	512	0.00 - 854	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.733	421	144	
3055	Uranium	mg/kg		103	71.9 - 135	Not Reported				104	10.5	
1185	Vanadium	mg/kg	74.1	87.3	54.2 - 113	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.782	83.7	12.3	
1190	Zinc	mg/kg	222	251	168 - 312	Acceptable	EPA 6010B 2 1996	1/31/2019	-0.768	240	23.1	





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SOIL Metals in Soil (cat# 620, lot# D105-540)

1000	Aluminum	mg/kg	8800	10100	4470 - 13100	Acceptable	EPA 6020	2/7/2019	-0.000981	8800	1880	
1005	Antimony	mg/kg	71.9	282	28.2 - 366	Acceptable	EPA 6020	2/7/2019	-0.949	147	79.5	
1010	Arsenic	mg/kg	113	155	100 - 186	Acceptable	EPA 6020	2/7/2019	-2.14	143	14.2	
1015	Barium	mg/kg	420	439	311 - 519	Acceptable	EPA 6020	2/7/2019	0.137	415	35.2	
1020	Beryllium	mg/kg	169	192	134 - 224	Acceptable	EPA 6020	2/7/2019	-0.637	179	16.1	
1025	Boron	mg/kg		216	96.1 - 238	Not Reported				160	18.3	
1030	Cadmium	mg/kg	58.8	61.5	42.2 - 70.3	Acceptable	EPA 6020	2/7/2019	0.570	56.2	4.48	
1035	Calcium	mg/kg		5190	3610 - 6310	Not Reported				4960	465	
1040	Chromium	mg/kg	91.3	104	70.5 - 131	Acceptable	EPA 6020	2/7/2019	-0.859	101	10.9	
1050	Cobalt	mg/kg	188	196	141 - 236	Acceptable	EPA 6020	2/7/2019	-0.0374	189	13.8	
1055	Copper	mg/kg	61.5	65.0	47.3 - 78.9	Acceptable	EPA 6020	2/7/2019	-0.247	63.1	6.50	
1070	Iron	mg/kg		15000	6000 - 25400	Not Reported				15700	4130	
1075	Lead	mg/kg	119	126	89.3 - 160	Acceptable	EPA 6020	2/7/2019	-0.479	125	11.9	
1085	Magnesium	mg/kg		2570	1520 - 3310	Not Reported				2410	312	
1090	Manganese	mg/kg	384	387	290 - 474	Acceptable	EPA 6020	2/7/2019	0.0558	382	34.2	
1095	Mercury	mg/kg		7.76	4.57 - 10.7	Not Reported				7.61	1.21	
1100	Molybdenum	mg/kg		120	75.5 - 139	Not Reported				107	9.41	
1105	Nickel	mg/kg	111	117	75.7 - 141	Acceptable	EPA 6020	2/7/2019	0.338	108	8.29	
1125	Potassium	mg/kg		2420	1260 - 2960	Not Reported				2110	369	
1140	Selenium	mg/kg	67.3	84.6	49.2 - 107	Acceptable	EPA 6020	2/7/2019	-1.29	77.9	8.24	



All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) are included in ERA's A2LA accreditation. Lab Code: 1539-01

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SOIL Metals in Soil (cat# 620, lot# D105-540) (Continued)

1150	Silver	mg/kg	39.9	34.6	23.6 - 45.1	Acceptable	EPA 6020	2/7/2019	1.48	34.3	3.75	
1155	Sodium	mg/kg		161	54.3 - 235	Not Reported				145	30.6	
1160	Strontium	mg/kg		104	74.8 - 133	Not Reported				104	10.6	
1165	Thallium	mg/kg	112	123	77.1 - 149	Acceptable	EPA 6020	2/7/2019	-0.0975	113	8.77	
1175	Tin	mg/kg		118	61.2 - 152	Not Reported				107	12.3	
1180	Titanium	mg/kg		512	0.00 - 854	Not Reported				421	144	
3055	Uranium	mg/kg		103	71.9 - 135	Not Reported				104	10.5	
1185	Vanadium	mg/kg	73.5	87.3	54.2 - 113	Acceptable	EPA 6020	2/7/2019	-0.831	83.7	12.3	
1190	Zinc	mg/kg	238	251	168 - 312	Acceptable	EPA 6020	2/7/2019	-0.0755	240	23.1	





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SOIL Metals in Soil (cat# 620, lot# D105-540)

1000	Aluminum	mg/kg		10100	4470 - 13100	Not Reported				8800	1880	
1005	Antimony	mg/kg		282	28.2 - 366	Not Reported				147	79.5	
1010	Arsenic	mg/kg		155	100 - 186	Not Reported				143	14.2	
1015	Barium	mg/kg		439	311 - 519	Not Reported				415	35.2	
1020	Beryllium	mg/kg		192	134 - 224	Not Reported				179	16.1	
1025	Boron	mg/kg		216	96.1 - 238	Not Reported				160	18.3	
1030	Cadmium	mg/kg		61.5	42.2 - 70.3	Not Reported				56.2	4.48	
1035	Calcium	mg/kg		5190	3610 - 6310	Not Reported				4960	465	
1040	Chromium	mg/kg		104	70.5 - 131	Not Reported				101	10.9	
1050	Cobalt	mg/kg		196	141 - 236	Not Reported				189	13.8	
1055	Copper	mg/kg		65.0	47.3 - 78.9	Not Reported				63.1	6.50	
1070	Iron	mg/kg		15000	6000 - 25400	Not Reported				15700	4130	
1075	Lead	mg/kg		126	89.3 - 160	Not Reported				125	11.9	
1085	Magnesium	mg/kg		2570	1520 - 3310	Not Reported				2410	312	
1090	Manganese	mg/kg		387	290 - 474	Not Reported				382	34.2	
1095	Mercury	mg/kg	10.6	7.76	4.57 - 10.7	Acceptable	EPA 7471A 1 1994	2/11/2019	2.47	7.61	1.21	
1100	Molybdenum	mg/kg		120	75.5 - 139	Not Reported				107	9.41	
1105	Nickel	mg/kg		117	75.7 - 141	Not Reported				108	8.29	
1125	Potassium	mg/kg		2420	1260 - 2960	Not Reported				2110	369	
1140	Selenium	mg/kg		84.6	49.2 - 107	Not Reported				77.9	8.24	



All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) are included in ERA's A2LA accreditation. Lab Code: 1539-01

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SOIL Metals in Soil (cat# 620, lot# D105-540) (Continued)

1150	Silver	mg/kg		34.6	23.6 - 45.1	Not Reported				34.3	3.75	
1155	Sodium	mg/kg		161	54.3 - 235	Not Reported				145	30.6	
1160	Strontium	mg/kg		104	74.8 - 133	Not Reported				104	10.6	
1165	Thallium	mg/kg		123	77.1 - 149	Not Reported				113	8.77	
1175	Tin	mg/kg		118	61.2 - 152	Not Reported				107	12.3	
1180	Titanium	mg/kg		512	0.00 - 854	Not Reported				421	144	
3055	Uranium	mg/kg		103	71.9 - 135	Not Reported				104	10.5	
1185	Vanadium	mg/kg		87.3	54.2 - 113	Not Reported				83.7	12.3	
1190	Zinc	mg/kg		251	168 - 312	Not Reported				240	23.1	

SOIL Hexavalent Chromium in Soil (cat# 876, lot# D105-921)

1045	Chromium VI	mg/kg	122	198	49.5 - 231	Acceptable	EPA 7196A 1 1992	1/31/2019	-1.11	140	16.3	
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All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) are included in ERA's A2LA accreditation. Lab Code: 1539-01

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SOIL TCLP Metals in Soil (cat# 629, lot# D105-544)

1005	Antimony	mg/L	1.1	0.962	0.568 - 1.36	Acceptable	EPA 6010B 2 1996	2/2/2019	1.05	0.962	0.131	
1010	Arsenic	mg/L	1.9	1.80	1.05 - 2.55	Acceptable	EPA 6010B 2 1996	2/2/2019	0.398	1.80	0.250	
1015	Barium	mg/L	2.0	1.89	1.41 - 2.37	Acceptable	EPA 6010B 2 1996	2/2/2019	0.666	1.89	0.161	
1020	Beryllium	mg/L	3.5	3.26	2.30 - 4.21	Acceptable	EPA 6010B 2 1996	2/2/2019	0.766	3.26	0.319	
1030	Cadmium	mg/L	3.0	2.70	2.00 - 3.40	Acceptable	EPA 6010B 2 1996	2/2/2019	1.28	2.70	0.234	
1040	Chromium	mg/L	2.0	1.89	1.34 - 2.44	Acceptable	EPA 6010B 2 1996	2/2/2019	0.600	1.89	0.183	
1075	Lead	mg/L	1.3	1.18	0.685 - 1.68	Acceptable	EPA 6010B 2 1996	2/2/2019	0.711	1.18	0.166	
1095	Mercury	mg/L		1.58	0.409 - 2.75	Not Reported				1.58	0.389	
1105	Nickel	mg/L	1.9	1.87	1.48 - 2.26	Acceptable	EPA 6010B 2 1996	2/2/2019	0.233	1.87	0.131	
1140	Selenium	mg/L	1.9	1.76	1.22 - 2.29	Acceptable	EPA 6010B 2 1996	2/2/2019	0.798	1.76	0.179	
1150	Silver	mg/L	9.3	7.46	2.07 - 12.9	Acceptable	EPA 6010B 2 1996	2/2/2019	1.02	7.46	1.80	
1190	Zinc	mg/L	4.6	4.29	3.17 - 5.40	Acceptable	EPA 6010B 2 1996	2/2/2019	0.843	4.29	0.372	





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SOIL TCLP Metals in Soil (cat# 629, lot# D105-544)

1005	Antimony	mg/L		0.962	0.568 - 1.36	Not Reported				0.962	0.131	
1010	Arsenic	mg/L		1.80	1.05 - 2.55	Not Reported				1.80	0.250	
1015	Barium	mg/L		1.89	1.41 - 2.37	Not Reported				1.89	0.161	
1020	Beryllium	mg/L		3.26	2.30 - 4.21	Not Reported				3.26	0.319	
1030	Cadmium	mg/L		2.70	2.00 - 3.40	Not Reported				2.70	0.234	
1040	Chromium	mg/L		1.89	1.34 - 2.44	Not Reported				1.89	0.183	
1075	Lead	mg/L		1.18	0.685 - 1.68	Not Reported				1.18	0.166	
1095	Mercury	mg/L	2.2	1.58	0.409 - 2.75	Acceptable	EPA 7470A 1 1994	2/1/2019	1.60	1.58	0.389	
1105	Nickel	mg/L		1.87	1.48 - 2.26	Not Reported				1.87	0.131	
1140	Selenium	mg/L		1.76	1.22 - 2.29	Not Reported				1.76	0.179	
1150	Silver	mg/L		7.46	2.07 - 12.9	Not Reported				7.46	1.80	
1190	Zinc	mg/L		4.29	3.17 - 5.40	Not Reported				4.29	0.372	

SOIL Cyanide in Soil (cat# 621, lot# D105-541)

1645	Cyanide, total	mg/kg	97.8	134	38.8 - 147	Acceptable	EPA 9012A 1 1996	1/30/2019	0.215	91.9	27.6	
1923	Reactive Cyanide	mg/kg		< 200	0.00 - 200	Not Reported				54.8	62.7	
1510	Amenable Cyanide	mg/kg	< 2	< 200	0.00 - 200	Acceptable	EPA 9012A 1 1996	1/30/2019		46.6	33.5	

SOIL Corrosivity/pH in Soil (cat# 875, lot# D105-914)

1625	Corrosivity (pH)	S.U.	3.9	3.86	3.26 - 4.46	Acceptable	EPA 9045C 3 1995	1/31/2019	1.30	3.73	0.131	
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SOIL Ignitability/Flashpoint (cat# 874, lot# D105-979)

1780	Ignitability/Flashpoint	°F	144	145	128 - 162	Acceptable	EPA 1010A 2002	2/6/2019	-0.0381	144	5.91	
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ERA Customer Number: **P041110**

Laboratory Name: **Pace Analytical Services
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Organic Results





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SOIL Volatiles in Soil (cat# 623, lot# D105-721)

4315	Acetone	µg/kg	552	579	57.9 - 909	Acceptable	EPA 8260C 2006	2/8/2019	0.500	483	138	
4320	Acetonitrile	µg/kg	< 200	889	0.00 - 1790	Acceptable	EPA 8260C 2006	2/8/2019		461	103	
4325	Acrolein	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4375	Benzene	µg/kg	50.9	63.1	41.0 - 85.2	Acceptable	EPA 8260C 2006	2/8/2019	-1.66	63.6	7.62	
4385	Bromobenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4390	Bromochloromethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4395	Bromodichloromethane	µg/kg	19.4	24.1	14.5 - 33.7	Acceptable	EPA 8260C 2006	2/8/2019	-1.58	24.1	2.95	
4400	Bromoform	µg/kg	101	122	67.1 - 177	Acceptable	EPA 8260C 2006	2/8/2019	-0.750	117	21.6	
4950	Bromomethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4410	2-Butanone (MEK)	µg/kg	397	455	151 - 699	Acceptable	EPA 8260C 2006	2/8/2019	-0.470	432	73.7	
4435	n-Butylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4440	sec-Butylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4445	tert-Butylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
5000	tert-Butyl methyl ether (MTBE)	µg/kg	< 12	< 12.0	0.00 - 12.0	Acceptable	EPA 8260C 2006	2/8/2019				
4450	Carbon disulfide	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4455	Carbon tetrachloride	µg/kg	101	132	66.0 - 198	Acceptable	EPA 8260C 2006	2/8/2019	-1.54	131	19.4	
4475	Chlorobenzene	µg/kg	87.8	116	58.0 - 174	Acceptable	EPA 8260C 2006	2/8/2019	-1.97	112	12.4	
4575	Chlorodibromomethane	µg/kg	< 12	< 12.0	0.00 - 12.0	Acceptable	EPA 8260C 2006	2/8/2019				
4485	Chloroethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4500	2-Chloroethylvinylether	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				



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SOIL Volatiles in Soil (cat# 623, lot# D105-721) (Continued)

4505	Chloroform	µg/kg	89.5	110	66.0 - 154	Acceptable	EPA 8260C 2006	2/8/2019	-1.41	109	13.7	
4960	Chloromethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4535	2-Chlorotoluene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4540	4-Chlorotoluene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4570	1,2-Dibromo-3-chloropropane (DBCP)	µg/kg	< 10	< 10.0	0.00 - 10.0	Acceptable	EPA 8260C 2006	2/8/2019				
4585	1,2-Dibromoethane (EDB)	µg/kg	157	187	122 - 252	Acceptable	EPA 8260C 2006	2/8/2019	-1.06	181	23.1	
4595	Dibromomethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4610	1,2-Dichlorobenzene	µg/kg	124	168	101 - 235	Acceptable	EPA 8260C 2006	2/8/2019	-1.38	159	25.2	
4615	1,3-Dichlorobenzene	µg/kg	26.2	38.0	22.8 - 53.2	Acceptable	EPA 8260C 2006	2/8/2019	-2.31	36.5	4.44	
4620	1,4-Dichlorobenzene	µg/kg	119	168	101 - 235	Acceptable	EPA 8260C 2006	2/8/2019	-1.67	158	23.6	
4625	Dichlorodifluoromethane (Freon 12)	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4630	1,1-Dichloroethane	µg/kg	< 12	< 12.0	0.00 - 12.0	Acceptable	EPA 8260C 2006	2/8/2019				
4635	1,2-Dichloroethane	µg/kg	130	163	97.8 - 228	Acceptable	EPA 8260C 2006	2/8/2019	-1.05	154	23.0	
4640	1,1-Dichloroethylene	µg/kg	151	196	98.0 - 294	Acceptable	EPA 8260C 2006	2/8/2019	-1.31	182	23.6	
4645	cis-1,2-Dichloroethylene	µg/kg	121	146	87.6 - 204	Acceptable	EPA 8260C 2006	2/8/2019	-1.34	145	17.8	
4700	trans-1,2-Dichloroethylene	µg/kg	29.0	35.4	21.2 - 49.6	Acceptable	EPA 8260C 2006	2/8/2019	-1.49	36.5	5.01	
4655	1,2-Dichloropropane	µg/kg	< 13	< 13.0	0.00 - 13.0	Acceptable	EPA 8260C 2006	2/8/2019				
4660	1,3-Dichloropropane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4665	2,2-Dichloropropane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4670	1,1-Dichloropropene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				

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SOIL Volatiles in Soil (cat# 623, lot# D105-721) (Continued)

4680	cis-1,3-Dichloropropylene	µg/kg	< 12	< 12.0	0.00 - 12.0	Acceptable	EPA 8260C 2006	2/8/2019				
4685	trans-1,3-Dichloropropylene	µg/kg	120	153	84.2 - 222	Acceptable	EPA 8260C 2006	2/8/2019	-0.929	137	18.1	
4765	Ethylbenzene	µg/kg	134	176	106 - 246	Acceptable	EPA 8260C 2006	2/8/2019	-1.69	174	23.7	
4835	Hexachlorobutadiene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4840	Hexachloroethane	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
4860	2-Hexanone	µg/kg	205	242	121 - 363	Acceptable	EPA 8260C 2006	2/8/2019	-0.930	236	33.2	
4900	Isopropylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4910	4-Isopropyltoluene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
4975	Methylene chloride	µg/kg	124	160	80.0 - 240	Acceptable	EPA 8260C 2006	2/8/2019	-1.92	163	20.3	
4995	4-Methyl-2-pentanone (MIBK)	µg/kg	293	349	174 - 524	Acceptable	EPA 8260C 2006	2/8/2019	-1.49	351	39.0	
5005	Naphthalene	µg/kg	135	189	94.5 - 284	Acceptable	EPA 8260C 2006	2/8/2019	-0.796	165	38.3	
5015	Nitrobenzene	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
5090	n-Propylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
5100	Styrene	µg/kg	150	191	124 - 258	Acceptable	EPA 8260C 2006	2/8/2019	-1.76	182	18.1	
5105	1,1,1,2-Tetrachloroethane	µg/kg	117	139	83.4 - 195	Acceptable	EPA 8260C 2006	2/8/2019	-1.35	137	15.2	
5110	1,1,2,2-Tetrachloroethane	µg/kg	< 11	< 11.0	0.00 - 11.0	Acceptable	EPA 8260C 2006	2/8/2019				
5115	Tetrachloroethylene	µg/kg	115	164	82.0 - 246	Acceptable	EPA 8260C 2006	2/8/2019	-1.86	159	23.8	
5140	Toluene	µg/kg	82.2	105	68.2 - 142	Acceptable	EPA 8260C 2006	2/8/2019	-1.53	104	14.1	
5150	1,2,3-Trichlorobenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
5155	1,2,4-Trichlorobenzene	µg/kg	34.9	63.1	25.2 - 101	Acceptable	EPA 8260C 2006	2/8/2019	-1.76	55.0	11.4	



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SOIL Volatiles in Soil (cat# 623, lot# D105-721) (Continued)

5160	1,1,1-Trichloroethane	µg/kg	< 11	< 11.0	0.00 - 11.0	Acceptable	EPA 8260C 2006	2/8/2019				
5165	1,1,2-Trichloroethane	µg/kg	< 14	< 14.0	0.00 - 14.0	Acceptable	EPA 8260C 2006	2/8/2019				
5170	Trichloroethylene	µg/kg	< 12	< 12.0	0.00 - 12.0	Acceptable	EPA 8260C 2006	2/8/2019				
5175	Trichlorofluoromethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
5180	1,2,3-Trichloropropane (TCP)	µg/kg	132	149	74.5 - 224	Acceptable	EPA 8260C 2006	2/8/2019	-0.697	148	23.4	
5210	1,2,4-Trimethylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
5215	1,3,5-Trimethylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
5225	Vinyl acetate	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
5235	Vinyl chloride	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/8/2019				
5240	m&p-Xylene	µg/kg	< 11	< 11.0	0.00 - 11.0	Acceptable	EPA 8260C 2006	2/8/2019				
5250	o-Xylene	µg/kg	< 11	< 11.0	0.00 - 11.0	Acceptable	EPA 8260C 2006	2/8/2019				
5260	Xylenes, total	µg/kg	< 22	< 22.0	0.00 - 22.0	Acceptable	EPA 8260C 2006	2/8/2019				





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SOIL Low-Level PAHs in Soil (cat# 625, lot# D105-722)

5500	Acenaphthene	µg/kg	463	719	146 - 804	Acceptable	EPA 8270C SIM	1/31/2019	-0.149	475	78.9	
5505	Acenaphthylene	µg/kg	416	701	70.1 - 879	Acceptable	EPA 8270C SIM	1/31/2019	-0.315	443	86.7	
5555	Anthracene	µg/kg	646	949	269 - 1040	Acceptable	EPA 8270C SIM	1/31/2019	0.494	622	48.0	
5575	Benzo(a)anthracene	µg/kg	206	301	107 - 331	Acceptable	EPA 8270C SIM	1/31/2019	-0.332	217	33.4	
5585	Benzo(b)fluoranthene	µg/kg	272	482	196 - 530	Acceptable	EPA 8270C SIM	1/31/2019	-1.05	348	72.4	
5600	Benzo(k)fluoranthene	µg/kg	172	249	93.2 - 274	Acceptable	EPA 8270C SIM	1/31/2019	-0.181	180	41.9	
5590	Benzo(g,h,i)perylene	µg/kg	252	432	125 - 475	Acceptable	EPA 8270C SIM	1/31/2019	-0.577	287	61.4	
5580	Benzo(a)pyrene	µg/kg	78.3	141	31.4 - 155	Acceptable	EPA 8270C SIM	1/31/2019	-0.749	91.3	17.3	
5855	Chrysene	µg/kg	55.1	69.9	23.6 - 85.7	Acceptable	EPA 8270C SIM	1/31/2019	0.0562	54.7	7.70	
5895	Dibenz(a,h)anthracene	µg/kg	59.8	106	30.5 - 117	Acceptable	EPA 8270C SIM	1/31/2019	-0.801	73.5	17.1	
6265	Fluoranthene	µg/kg	133	168	59.0 - 203	Acceptable	EPA 8270C SIM	1/31/2019	0.123	131	15.6	
6270	Fluorene	µg/kg	83.9	125	26.0 - 161	Acceptable	EPA 8270C SIM	1/31/2019	-0.512	93.7	19.1	
6315	Indeno(1,2,3-cd)pyrene	µg/kg	69.5	116	34.7 - 143	Acceptable	EPA 8270C SIM	1/31/2019	-0.807	88.8	24.0	
5005	Naphthalene	µg/kg	314	500	50.0 - 605	Acceptable	EPA 8270C SIM	1/31/2019	0.0285	312	64.4	
6615	Phenanthrene	µg/kg	176	232	72.1 - 271	Acceptable	EPA 8270C SIM	1/31/2019	0.153	172	29.3	
6665	Pyrene	µg/kg	262	364	110 - 401	Acceptable	EPA 8270C SIM	1/31/2019	0.174	256	37.2	





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SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D105-727)

5500	Acenaphthene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	2/5/2019				
5505	Acenaphthylene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	2/5/2019				
5145	2-Amino-1-methylbenzene (o-toluidine)	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	2/5/2019				
5545	Aniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	2/5/2019				
5555	Anthracene	µg/kg	5220	8090	2380 - 8900	Acceptable	EPA 8270C 3 1996	2/5/2019	0.0160	5200	1280	
5595	Benzidine	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	2/5/2019				
5610	Benzoic acid	µg/kg	< 3000	< 3000	0.00 - 3000	Acceptable	EPA 8270C 3 1996	2/5/2019				
5575	Benzo(a)anthracene	µg/kg	3200	4260	1550 - 4930	Acceptable	EPA 8270C 3 1996	2/5/2019	-0.0556	3240	745	
5585	Benzo(b)fluoranthene	µg/kg	2770	5220	1570 - 6230	Acceptable	EPA 8270C 3 1996	2/5/2019	-1.29	3900	873	
5600	Benzo(k)fluoranthene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	2/5/2019				
5590	Benzo(g,h,i)perylene	µg/kg	7350	11000	2910 - 12100	Acceptable	EPA 8270C 3 1996	2/5/2019	0.0508	7260	1810	
5580	Benzo(a)pyrene	µg/kg	2270	4820	1260 - 5300	Acceptable	EPA 8270C 3 1996	2/5/2019	-1.14	3190	804	
5630	Benzyl alcohol	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	2/5/2019				
5760	bis(2-Chloroethoxy)methane	µg/kg	7800	10400	2590 - 11400	Acceptable	EPA 8270C 3 1996	2/5/2019	0.460	6890	1990	
5765	bis(2-Chloroethyl)ether	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	2/5/2019				
5660	4-Bromophenyl-phenylether	µg/kg	6470	9080	2730 - 10800	Acceptable	EPA 8270C 3 1996	2/5/2019	-0.189	6760	1520	
5670	Butylbenzylphthalate	µg/kg	5780	7820	2180 - 9820	Acceptable	EPA 8270C 3 1996	2/5/2019	-0.143	6000	1530	
5680	Carbazole	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	2/5/2019				
5745	4-Chloroaniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	2/5/2019				
5700	4-Chloro-3-methylphenol	µg/kg	1710	2600	474 - 2860	Acceptable	EPA 8270C 3 1996	2/5/2019	0.401	1570	360	

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SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D105-727) (Continued)

5790	1-Chloronaphthalene	µg/kg		< 1000	0.00 - 1000	Not Reported						
5795	2-Chloronaphthalene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	2/5/2019				
5800	2-Chlorophenol	µg/kg	6150	10100	1480 - 11100	Acceptable	EPA 8270C 3 1996	2/5/2019	0.386	5540	1570	
5825	4-Chlorophenyl-phenylether	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	2/5/2019				
5855	Chrysene	µg/kg	5740	7340	2730 - 8280	Acceptable	EPA 8270C 3 1996	2/5/2019	0.185	5510	1260	
5895	Dibenz(a,h)anthracene	µg/kg	3360	6080	1670 - 7040	Acceptable	EPA 8270C 3 1996	2/5/2019	-0.891	4360	1120	
5905	Dibenzofuran	µg/kg	3370	4510	1360 - 4960	Acceptable	EPA 8270C 3 1996	2/5/2019	0.298	3130	812	
5925	Di-n-butylphthalate	µg/kg	2070	2640	607 - 3510	Acceptable	EPA 8270C 3 1996	2/5/2019	0.0226	2060	469	
4610	1,2-Dichlorobenzene	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	2/5/2019				
4615	1,3-Dichlorobenzene	µg/kg	5780	9020	902 - 9920	Acceptable	EPA 8270C 3 1996	2/5/2019	0.846	4510	1510	
4620	1,4-Dichlorobenzene	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	2/5/2019				
5945	3,3'-Dichlorobenzidine	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	2/5/2019				
6000	2,4-Dichlorophenol	µg/kg	7600	12100	2200 - 13300	Acceptable	EPA 8270C 3 1996	2/5/2019	0.653	6480	1720	
6005	2,6-Dichlorophenol	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	2/5/2019				
6070	Diethylphthalate	µg/kg	7180	9080	2640 - 10300	Acceptable	EPA 8270C 3 1996	2/5/2019	0.506	6470	1400	
6130	2,4-Dimethylphenol	µg/kg	< 3000	< 3000	0.00 - 3000	Acceptable	EPA 8270C 3 1996	2/5/2019				
6135	Dimethylphthalate	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	2/5/2019				
6175	2,4-Dinitrophenol	µg/kg	< 3000	< 3000	0.00 - 3000	Acceptable	EPA 8270C 3 1996	2/5/2019				
6185	2,4-Dinitrotoluene	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	2/5/2019				
6190	2,6-Dinitrotoluene	µg/kg	2620	3240	978 - 3560	Acceptable	EPA 8270C 3 1996	2/5/2019	0.670	2240	565	



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SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D105-727) (Continued)

6200	Di-n-octylphthalate	µg/kg	6950	9100	2040 - 12200	Acceptable	EPA 8270C 3 1996	2/5/2019	-0.101	7130	1810	
6065	bis(2-Ethylhexyl)phthalate	µg/kg	6830	7780	1940 - 10300	Acceptable	EPA 8270C 3 1996	2/5/2019	0.467	6100	1560	
6265	Fluoranthene	µg/kg	7510	10000	3080 - 11700	Acceptable	EPA 8270C 3 1996	2/5/2019	0.0560	7410	1790	
6270	Fluorene	µg/kg	3190	3940	1250 - 4590	Acceptable	EPA 8270C 3 1996	2/5/2019	0.367	2920	745	
6275	Hexachlorobenzene	µg/kg	1700	2010	727 - 2320	Acceptable	EPA 8270C 3 1996	2/5/2019	0.530	1520	331	
4835	Hexachlorobutadiene	µg/kg	8760	12500	2320 - 13800	Acceptable	EPA 8270C 3 1996	2/5/2019	0.508	7710	2060	
6285	Hexachlorocyclopentadiene	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	2/5/2019				
4840	Hexachloroethane	µg/kg	6950	11100	1110 - 12200	Acceptable	EPA 8270C 3 1996	2/5/2019	0.550	5820	2050	
6315	Indeno(1,2,3-cd)pyrene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	2/5/2019				
6320	Isophorone	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	2/5/2019				
6360	4,6-Dinitro-2-methylphenol	µg/kg	< 3000	< 3000	0.00 - 3000	Acceptable	EPA 8270C 3 1996	2/5/2019				
6385	2-Methylnaphthalene	µg/kg	1360	1940	415 - 2140	Acceptable	EPA 8270C 3 1996	2/5/2019	0.247	1280	324	
6400	2-Methylphenol	µg/kg	2920	11100	1110 - 12200	Acceptable	EPA 8270C 3 1996	2/5/2019	0.348	2640	810	
6410	4-Methylphenol	µg/kg	2110	5770	577 - 6350	Acceptable	EPA 8270C 3 1996	2/5/2019	0.146	2020	601	
5005	Naphthalene	µg/kg	6380	8970	1430 - 9870	Acceptable	EPA 8270C 3 1996	2/5/2019	0.593	5520	1450	
6460	2-Nitroaniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	2/5/2019				
6465	3-Nitroaniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	2/5/2019				
6470	4-Nitroaniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	2/5/2019				
5015	Nitrobenzene	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	2/5/2019				
6490	2-Nitrophenol	µg/kg	3590	5070	678 - 5580	Acceptable	EPA 8270C 3 1996	2/5/2019	0.694	2980	882	





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SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D105-727) (Continued)

6500	4-Nitrophenol	µg/kg	4910	8030	803 - 8830	Acceptable	EPA 8270C 3 1996	2/5/2019	0.760	3930	1290	
6525	N-Nitrosodiethylamine	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	2/5/2019				
6530	N-Nitrosodimethylamine	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	2/5/2019				
6535	N-Nitrosodiphenylamine	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	2/5/2019				
6545	N-Nitroso-di-n-propylamine	µg/kg	8760	12100	1960 - 13300	Acceptable	EPA 8270C 3 1996	2/5/2019	0.522	7560	2300	
4659	2,2'-Oxybis(1-Chloropropane)	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	2/5/2019				
6590	Pentachlorobenzene	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	2/5/2019				
6605	Pentachlorophenol	µg/kg	< 300	< 300	0.00 - 300	Acceptable	EPA 8270C 3 1996	2/5/2019				
6615	Phenanthrene	µg/kg	3540	4880	1660 - 5620	Acceptable	EPA 8270C 3 1996	2/5/2019	-0.117	3640	831	
6625	Phenol	µg/kg	4530	7530	1130 - 8280	Acceptable	EPA 8270C 3 1996	2/5/2019	0.234	4240	1260	
6665	Pyrene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	2/5/2019				
5095	Pyridine	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	2/5/2019				
6715	1,2,4,5-Tetrachlorobenzene	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	2/5/2019				
6735	2,3,4,6-Tetrachlorophenol	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	2/5/2019				
5155	1,2,4-Trichlorobenzene	µg/kg	8940	12600	2670 - 13900	Acceptable	EPA 8270C 3 1996	2/5/2019	0.585	7660	2180	
6835	2,4,5-Trichlorophenol	µg/kg	8760	12000	2140 - 13200	Acceptable	EPA 8270C 3 1996	2/5/2019	0.887	7130	1830	
6840	2,4,6-Trichlorophenol	µg/kg	5450	7630	1450 - 8390	Acceptable	EPA 8270C 3 1996	2/5/2019	1.15	4270	1030	



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SOIL Organochlorine Pesticides in Soil (cat# 468, lot# D105-728)

7025	Aldrin	µg/kg	303	355	110 - 476	Acceptable	EPA 8081B 2000	1/31/2019	0.237	293	42.4	
7110	alpha-BHC	µg/kg	297	351	104 - 465	Acceptable	EPA 8081B 2000	1/31/2019	0.231	285	53.8	
7115	beta-BHC	µg/kg	275	305	80.7 - 389	Acceptable	EPA 8081B 2000	1/31/2019	0.831	235	48.3	
7105	delta-BHC	µg/kg	92.2	110	18.9 - 165	Acceptable	EPA 8081B 2000	1/31/2019	0.0146	91.9	18.0	
7120	gamma-BHC(Lindane)	µg/kg	348	398	127 - 576	Acceptable	EPA 8081B 2000	1/31/2019	-0.0568	352	68.4	
7240	alpha-Chlordane	µg/kg	307	363	131 - 477	Acceptable	EPA 8081B 2000	1/31/2019	0.0623	304	50.6	
7245	gamma-Chlordane	µg/kg	259	311	121 - 387	Acceptable	EPA 8081B 2000	1/31/2019	0.122	254	43.6	
7355	4,4'-DDD	µg/kg	364	421	149 - 557	Acceptable	EPA 8081B 2000	1/31/2019	0.203	353	54.6	
7360	4,4'-DDE	µg/kg	342	397	141 - 538	Acceptable	EPA 8081B 2000	1/31/2019	0.0460	340	54.0	
7365	4,4'-DDT	µg/kg	214	261	58.5 - 348	Acceptable	EPA 8081B 2000	1/31/2019	0.267	203	40.3	
7470	Dieldrin	µg/kg	327	412	161 - 533	Acceptable	EPA 8081B 2000	1/31/2019	-0.332	347	58.9	
7540	Endrin	µg/kg	171	208	77.1 - 269	Acceptable	EPA 8081B 2000	1/31/2019	-0.0576	173	36.3	
7530	Endrin aldehyde	µg/kg	327	442	60.7 - 531	Acceptable	EPA 8081B 2000	1/31/2019	0.441	296	70.4	
7535	Endrin ketone	µg/kg	327	401	100 - 532	Acceptable	EPA 8081B 2000	1/31/2019	0.162	316	66.8	
7510	Endosulfan I	µg/kg	363	462	147 - 571	Acceptable	EPA 8081B 2000	1/31/2019	0.0589	359	64.2	
7515	Endosulfan II	µg/kg	175	205	59.2 - 292	Acceptable	EPA 8081B 2000	1/31/2019	-0.0185	176	32.9	
7520	Endosulfan sulfate	µg/kg	291	354	73.9 - 485	Acceptable	EPA 8081B 2000	1/31/2019	0.205	279	56.8	
7685	Heptachlor	µg/kg	191	233	72.7 - 304	Acceptable	EPA 8081B 2000	1/31/2019	0.0690	188	37.6	
7690	Heptachlor epoxide	µg/kg	172	208	73.2 - 274	Acceptable	EPA 8081B 2000	1/31/2019	-0.0535	174	28.4	
7810	Methoxychlor	µg/kg	304	428	45.0 - 617	Acceptable	EPA 8081B 2000	1/31/2019	-0.366	331	74.0	

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SOIL Chlordane in Soil (cat# 628, lot# D105-725)

7250	Chlordane, technical	µg/kg	330	456	99.0 - 601	Acceptable	EPA 8081B 2000	1/31/2019	-0.254	350	78.5	
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SOIL Toxaphene in Soil (cat# 627, lot# D105-724)

8250	Toxaphene	µg/kg	164	270	27.0 - 409	Acceptable	EPA 8081B 2000	1/31/2019	-0.445	196	71.2	
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SOIL Chlorinated Acid Herbicides in Soil (cat# 626, lot# D105-723)

8505	Acifluorfen	µg/kg	174	185	0.00 - 280	Acceptable	EPA 8151A 1996	2/26/2019	0.983	122	52.5	
8530	Bentazon	µg/kg	149	489	0.00 - 729	Acceptable	EPA 8151A 1996	2/26/2019	-0.970	291	146	
8540	Chloramben	µg/kg		144	0.00 - 461	Not Reported				77.2	128	
8545	2,4-D	µg/kg	121	236	23.6 - 335	Acceptable	EPA 8151A 1996	2/26/2019	-0.816	167	56.0	
8560	2,4-DB	µg/kg	311	790	79.0 - 1150	Acceptable	EPA 8151A 1996	2/26/2019	-0.733	475	224	
8550	Dacthal diacid (DCPA)	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8151A 1996	2/26/2019				
8555	Dalapon	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8151A 1996	2/26/2019				
8595	Dicamba	µg/kg	294	394	39.4 - 576	Acceptable	EPA 8151A 1996	2/26/2019	0.177	276	100	
8600	3,5-Dichlorobenzoic acid	µg/kg	130	110	0.00 - 204	Acceptable	EPA 8151A 1996	2/26/2019	0.993	93.4	36.9	
8605	Dichlorprop	µg/kg	384	516	0.00 - 825	Acceptable	EPA 8151A 1996	2/26/2019	0.111	367	153	
8620	Dinoseb	µg/kg	896	825	82.5 - 1210	Acceptable	EPA 8151A 1996	2/26/2019	1.80	422	264	
7775	MCPA	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8151A 1996	2/26/2019				
7780	MCPP	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8151A 1996	2/26/2019				
6500	4-Nitrophenol	µg/kg		492	0.00 - 611	Not Reported				260	117	
6605	Pentachlorophenol	µg/kg	636	452	45.2 - 909	Acceptable	EPA 8151A 1996	2/26/2019	1.63	310	200	
8645	Picloram	µg/kg	61.9	714	0.00 - 1230	Acceptable	EPA 8151A 1996	2/26/2019	-0.993	353	293	
8655	2,4,5-T	µg/kg	804	838	83.8 - 1240	Acceptable	EPA 8151A 1996	2/26/2019	1.13	542	231	
8650	2,4,5-TP (Silvex)	µg/kg	221	216	21.6 - 365	Acceptable	EPA 8151A 1996	2/26/2019	0.917	158	69.0	



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SOIL PCBs in Soil (cat# 624, lot# D105-726)

8880	Aroclor 1016	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	1/31/2019				
8885	Aroclor 1221	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	1/31/2019				
8890	Aroclor 1232	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	1/31/2019				
8895	Aroclor 1242	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	1/31/2019				
8900	Aroclor 1248	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	1/31/2019				
8905	Aroclor 1254	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	1/31/2019				
8910	Aroclor 1260	mg/kg	5.4	8.57	1.85 - 11.6	Acceptable	EPA 8082A 2000	1/31/2019	-0.819	6.74	1.64	

SOIL Gasoline Range Organics (GRO) in Soil (cat# 630, lot# D105-763)

9408	Gasoline Range Organics (GRO)	mg/kg	483	1140	115 - 1470	Acceptable	EPA 8015D 2003	2/1/2019	-1.02	790	301	
4375	Benzene in GRO	mg/kg		5.04	0.00 - 5.54	Not Reported				1.73	0.728	
4765	Ethylbenzene in GRO	mg/kg		19.2	1.76 - 21.3	Not Reported				11.5	3.26	
5140	Toluene in GRO	mg/kg		58.0	0.00 - 63.8	Not Reported				27.3	10.9	
5260	Xylenes, total in GRO	mg/kg		98.0	1.95 - 113	Not Reported				57.6	18.5	

SOIL Diesel Range Organics (DRO) in Soil (cat# 631, lot# D105-765)

9369	Diesel Range Organics (DRO)	mg/kg	1120	1770	525 - 2430	Acceptable	EPA 8015D 2003	1/30/2019	-1.13	1480	314	
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All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) are included in ERA's A2LA accreditation. Lab Code: 1539-01

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Study # : SOIL-105



CERTIFICATE OF EXCELLENCE

In recognition of the quality of your laboratory in proficiency testing for
SOIL-105

Pace Analytical Services - Indianapolis

is issued this certificate of achievement by ERA. This laboratory has been recognized as a Laboratory of Excellence for achieving 100% acceptable data in this study which included 262 participating laboratories. This achievement is a demonstration of the superior quality of the laboratory in evaluation of the standards listed below.

Base/Neutrals and Acids in Soil	Chlordane in Soil	Chlorinated Acid Herbicides in Soil	Corrosivity/pH in Soil
Cyanide in Soil	Diesel Range Organics (DRO) in Soil	Gasoline Range Organics (GRO) in Soil	Hexavalent Chromium in Soil
Ignitability/Flashpoint	Low-Level PAHs in Soil	Metals in Soil	Organochlorine Pesticides in Soil
PCBs in Soil	TCLP Metals in Soil	Toxaphene in Soil	Volatiles in Soil



Matthew Seebeck
Quality Officer



A Waters Company

Beth Schrage
Pace Analytical Services - Indianapolis
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USA

SOIL-107



Final Report

Soil/Hazardous Waste Proficiency Testing

Soil Study

Open Date: 07/22/19

Close Date: 09/05/19

Report Issued Date: 09/11/19



A Waters Company

September 11, 2019

Beth Schrage
Pace Analytical Services - Indianapolis
7726 Moller Road
Indianapolis, IN 46268

Enclosed is your final report for ERA's SOIL-107 Proficiency Testing (PT) study. Your final report includes an evaluation of all results submitted by your laboratory to ERA.

Data Evaluation Protocols: All analytes in ERA's SOIL-107 Proficiency Testing study have been evaluated using the following tiered approach. If the analyte is listed in the current TNI Fields of Proficiency Testing (FoPT) tables, the evaluation was completed by comparing the reported result to the acceptance limits generated using the criteria contained in the current TNI FoPT tables. If the analyte is not included in the TNI FoPT tables, the reported result has been evaluated using the procedures outlined in ERA's Standard Operating Procedure for the Generation of Performance Acceptance Limits (SOP 730002268).

Corrective Action Help: As part of your accreditation(s), you may be required to identify the root cause of any "Not Acceptable" results, implement the necessary corrective actions, and then satisfy your PT requirements by participating in a Supplemental (QuiK™ Response) or future ERA PT study. ERA's technical staff is available to help your laboratory resolve any technical issues that may be impairing your PT performance and possibly affecting your routine data quality. Our laboratory and technical staff have many years of collective experience in performing the full range of environmental analyses. As part of our technical support, ERA offers QC samples that can be useful in helping you work through your technical issues.

At the request of the TNI Accreditation Council, we have included a Laboratory Exception Report that includes a list of all analytes reported with less than qualifiers when the assigned value was greater than "0." In addition, because we have received many requests from laboratories, this report also includes a list of all analytes with "Not Acceptable" evaluations.

Some states have elected not to convert to the 2009 TNI Standards at this time. If you have released your results to a state that has retained the 2003 NELAC Evaluation Criteria, your final report will include a section that evaluates the results according to the 2003 Standard in addition to the 2009 TNI Standards.

Thank you for your participation in ERA's SOIL-107 Proficiency Testing study. If you have any questions, please contact our Proficiency Testing Department at 1-800-372-0122.

Sincerely,

A handwritten signature in black ink, appearing to read "Matthew Seebeck", written over a horizontal line.

Matthew Seebeck
Quality Officer

attachments



A Waters Company

Report Recipient	Contact/Phone Number	Reporting Type	Evaluation Type
Illinois	John South / (217) 558-7142	All Analytes	2009 TNI
Kansas	Paul Harrison / 785-296-6198	All Analytes	2009 TNI
Kentucky	Patrick Garrity / 502-782-6954	All Analytes	2009 TNI
Texas	Frank Jamison / (512) 239-3754	All Analytes	2009 TNI
West Virginia (DEP)	Justin D Carpenter / (304) 926-0499-1158	All Analytes	2009 TNI



A Waters Company

SOIL-107 Definitions & Study Discussion

Study Dates: 07/22/19 - 09/05/19

Report Issued: 09/11/19

SOIL Study Definitions

The Reported Value is the value that the laboratory reported to ERA.

The ERA Assigned Values for the Organic Proficiency Testing Standards are equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation as applicable. The ERA assigned values for the Inorganic Proficiency Testing Standards, with the exception of the TCLP Metals in Soil and Total Organic Carbon (TOC) in the Nutrients in Soil sample, are equal to the maximum amount of the parameter available in the standard by applicable EPA methodologies. The ERA assigned values for the TCLP metals and TOC are equal to the mean of the study data, after the removal of outliers. All parameters not added to the standard are given an Assigned Value of "< PTRL", per the guidelines contained in the 2009 TNI Standards. The assigned values are directly traceable to the commercially prepared starting materials used to manufacture the PT standards.

The Acceptance Limits are established per the criteria contained in the most current TNI Fields of Proficiency Testing (FoPT) tables, or ERA's SOP for the Generation of Performance Acceptance Limits™ as applicable.

The Performance Evaluation:

Acceptable = Reported Value falls within the Acceptance Limits.

Not Acceptable = Reported Value falls outside the Acceptance Limits.

No Evaluation = Reported Value cannot be evaluated.

Not Reported = No Value reported.

The Method Description is the method the laboratory reported to ERA.

SOIL Study Discussion

ERA's SOIL-107 Proficiency Testing (PT) study has been reviewed by ERA senior management and certified compliant with the requirements of the 2009 TNI PT Standard and the criteria contained in the most current TNI Fields of Proficiency Testing (FoPT) tables.

ERA's SOIL-107 study standards were examined for any anomalies. A full review of all homogeneity, stability and accuracy verification data was completed. All analytical verification data for all analytes in the standards met the acceptance criteria contained in the 2009 TNI PT Standard and the criteria contained in the most current TNI FoPT tables.

The data submitted by participating laboratories was also examined for study anomalies. There were no anomalies observed during the statistical review of the data.

ERA's SOIL-107 Proficiency Testing study reports shall not be reproduced except in its entirety and not without the permission of the participating laboratory. The report must not be used by the participating laboratories to claim product endorsement any agency of the U. S. government.

The data contained herein are confidential and intended for your use only.

If you have any questions or concerns regarding your assessment in ERA's SOIL Proficiency Testing program, please contact our Proficiency Testing Department at 1-800-372-0122.





A Waters Company

SOIL-107 Laboratory Exception Report

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EPA ID:
ERA Customer Number:
Report Issued:
Study Dates:

IN00043
P041110
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07/22/19 - 09/05/19

2009 TNI Evaluation Checks

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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SOIL Volatiles in Soil (cat# 623, lot# D107-721)

4320	Acetonitrile	µg/kg	< 200	902	0.00 - 1820	Acceptable	EPA 8260C 2006
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2009 TNI Not Acceptable Evaluations

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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SOIL Volatiles in Soil (cat# 623, lot# D107-721)

4620	1,4-Dichlorobenzene	µg/kg	26.8	< 12.0	0.00 - 12.0	Not Acceptable	EPA 8260C 2006
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All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) & 271, 401QR, 463, 928QR (Glycols) are included in ERA's A2LA accreditation.
Lab Code: 1539-01

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Study # : SOIL-107





Final Report Results For Laboratory Pace Analytical Services - Indianapolis





2009 TNI Evaluation Report

Study: **SOIL-107**

ERA Customer Number: **P041110**

Laboratory Name: **Pace Analytical Services
- Indianapolis**

Inorganic Results





A Waters Company

SOIL-107 2009 TNI Evaluation Final Complete Report

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TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description	Analysis Date	Z Score	Study Mean	Study Standard Deviation	Analyst Name
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SOIL Metals in Soil (cat# 620, lot# D107-540)

1000	Aluminum	mg/kg	8320	10100	4270 - 12700	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.0694	8460	2080	
1005	Antimony	mg/kg	57.3	228	22.8 - 302	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.996	120	62.9	
1010	Arsenic	mg/kg	91.8	104	66.9 - 124	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.382	95.5	9.71	
1015	Barium	mg/kg	277	320	225 - 375	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.885	300	25.9	
1020	Beryllium	mg/kg	96.2	111	77.2 - 129	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.839	103	7.93	
1025	Boron	mg/kg	97.0	145	66.1 - 160	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.921	110	14.3	
1030	Cadmium	mg/kg	123	149	101 - 169	Acceptable	EPA 6010B 2 1996	8/6/2019	-1.05	135	11.7	
1035	Calcium	mg/kg	4220	5190	3430 - 6020	Acceptable	EPA 6010B 2 1996	8/6/2019	-1.11	4720	456	
1040	Chromium	mg/kg	131	155	103 - 191	Acceptable	EPA 6010B 2 1996	8/6/2019	-1.42	147	11.3	
1050	Cobalt	mg/kg	37.2	45.2	32.4 - 54.0	Acceptable	EPA 6010B 2 1996	8/6/2019	-1.94	43.2	3.10	
1055	Copper	mg/kg	141	156	113 - 188	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.709	150	13.3	
1070	Iron	mg/kg	14500	15000	5160 - 23700	Acceptable	EPA 6010B 2 1996	8/6/2019	0.0158	14400	3990	
1075	Lead	mg/kg	79.3	92.4	64.6 - 120	Acceptable	EPA 6010B 2 1996	8/6/2019	-1.48	92.3	8.81	
1085	Magnesium	mg/kg	2180	2570	1420 - 3170	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.388	2300	304	
1090	Manganese	mg/kg	567	709	529 - 826	Acceptable	EPA 6010B 2 1996	8/6/2019	-2.28	677	48.4	
1095	Mercury	mg/kg		26.6	11.0 - 29.3	Not Reported				18.4	2.89	
1100	Molybdenum	mg/kg	36.7	47.2	27.7 - 55.1	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.914	41.4	5.13	
1105	Nickel	mg/kg	51.2	65.2	41.9 - 77.8	Acceptable	EPA 6010B 2 1996	8/6/2019	-1.90	59.8	4.55	
1125	Potassium	mg/kg	1870	2420	1200 - 2860	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.453	2030	346	
1140	Selenium	mg/kg	38.8	45.1	23.4 - 60.7	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.658	42.0	4.89	



All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) & 271, 401QR, 463, 928QR (Glycols) are included in ERA's A2LA accreditation. Lab Code: 1539-01





A Waters Company

SOIL-107 2009 TNI Evaluation Final Complete Report

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TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description	Analysis Date	Z Score	Study Mean	Study Standard Deviation	Analyst Name
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SOIL Metals in Soil (cat# 620, lot# D107-540) (Continued)

1150	Silver	mg/kg	36.8	41.0	27.9 - 52.7	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.770	40.3	4.57	
1155	Sodium	mg/kg	124	161	50.2 - 227	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.529	139	27.6	
1160	Strontium	mg/kg	140	161	110 - 193	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.855	152	13.7	
1165	Thallium	mg/kg	67.7	90.4	54.3 - 112	Acceptable	EPA 6010B 2 1996	8/6/2019	-2.51	83.1	6.15	
1175	Tin	mg/kg	85.2	104	53.2 - 136	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.812	94.5	11.4	
1180	Titanium	mg/kg	364	530	0.00 - 885	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.237	402	161	
3055	Uranium	mg/kg		72.3	45.5 - 94.6	Not Reported				70.1	8.17	
1185	Vanadium	mg/kg	92.9	104	64.9 - 129	Acceptable	EPA 6010B 2 1996	8/6/2019	-0.321	96.9	12.5	
1190	Zinc	mg/kg	327	393	258 - 480	Acceptable	EPA 6010B 2 1996	8/6/2019	-1.27	369	33.2	



All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) & 271, 401QR, 463, 928QR (Glycols) are included in ERA's A2LA accreditation. Lab Code: 1539-01





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SOIL Metals in Soil (cat# 620, lot# D107-540)

1000	Aluminum	mg/kg	9500	10100	4270 - 12700	Acceptable	EPA 6020	7/31/2019	0.498	8460	2080	
1005	Antimony	mg/kg	35.5	228	22.8 - 302	Acceptable	EPA 6020	7/31/2019	-1.34	120	62.9	
1010	Arsenic	mg/kg	77.4	104	66.9 - 124	Acceptable	EPA 6020	7/31/2019	-1.87	95.5	9.71	
1015	Barium	mg/kg	306	320	225 - 375	Acceptable	EPA 6020	7/31/2019	0.234	300	25.9	
1020	Beryllium	mg/kg	106	111	77.2 - 129	Acceptable	EPA 6020	7/31/2019	0.397	103	7.93	
1025	Boron	mg/kg		145	66.1 - 160	Not Reported				110	14.3	
1030	Cadmium	mg/kg	136	149	101 - 169	Acceptable	EPA 6020	7/31/2019	0.0592	135	11.7	
1035	Calcium	mg/kg		5190	3430 - 6020	Not Reported				4720	456	
1040	Chromium	mg/kg	138	155	103 - 191	Acceptable	EPA 6020	7/31/2019	-0.799	147	11.3	
1050	Cobalt	mg/kg	41.5	45.2	32.4 - 54.0	Acceptable	EPA 6020	7/31/2019	-0.554	43.2	3.10	
1055	Copper	mg/kg	136	156	113 - 188	Acceptable	EPA 6020	7/31/2019	-1.08	150	13.3	
1070	Iron	mg/kg		15000	5160 - 23700	Not Reported				14400	3990	
1075	Lead	mg/kg	93.8	92.4	64.6 - 120	Acceptable	EPA 6020	7/31/2019	0.168	92.3	8.81	
1085	Magnesium	mg/kg		2570	1420 - 3170	Not Reported				2300	304	
1090	Manganese	mg/kg	667	709	529 - 826	Acceptable	EPA 6020	7/31/2019	-0.215	677	48.4	
1095	Mercury	mg/kg		26.6	11.0 - 29.3	Not Reported				18.4	2.89	
1100	Molybdenum	mg/kg		47.2	27.7 - 55.1	Not Reported				41.4	5.13	
1105	Nickel	mg/kg	57.4	65.2	41.9 - 77.8	Acceptable	EPA 6020	7/31/2019	-0.536	59.8	4.55	
1125	Potassium	mg/kg		2420	1200 - 2860	Not Reported				2030	346	
1140	Selenium	mg/kg	36.1	45.1	23.4 - 60.7	Acceptable	EPA 6020	7/31/2019	-1.21	42.0	4.89	



All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) & 271, 401QR, 463, 928QR (Glycols) are included in ERA's A2LA accreditation. Lab Code: 1539-01





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SOIL-107 2009 TNI Evaluation Final Complete Report

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SOIL Metals in Soil (cat# 620, lot# D107-540) (Continued)

1150	Silver	mg/kg	38.2	41.0	27.9 - 52.7	Acceptable	EPA 6020	7/31/2019	-0.464	40.3	4.57	
1155	Sodium	mg/kg		161	50.2 - 227	Not Reported				139	27.6	
1160	Strontium	mg/kg		161	110 - 193	Not Reported				152	13.7	
1165	Thallium	mg/kg	91.8	90.4	54.3 - 112	Acceptable	EPA 6020	7/31/2019	1.41	83.1	6.15	
1175	Tin	mg/kg		104	53.2 - 136	Not Reported				94.5	11.4	
1180	Titanium	mg/kg		530	0.00 - 885	Not Reported				402	161	
3055	Uranium	mg/kg		72.3	45.5 - 94.6	Not Reported				70.1	8.17	
1185	Vanadium	mg/kg	90.9	104	64.9 - 129	Acceptable	EPA 6020	7/31/2019	-0.480	96.9	12.5	
1190	Zinc	mg/kg	359	393	258 - 480	Acceptable	EPA 6020	7/31/2019	-0.303	369	33.2	



All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) & 271, 401QR, 463, 928QR (Glycols) are included in ERA's A2LA accreditation. Lab Code: 1539-01





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SOIL Metals in Soil (cat# 620, lot# D107-540)

1000	Aluminum	mg/kg		10100	4270 - 12700	Not Reported				8460	2080	
1005	Antimony	mg/kg		228	22.8 - 302	Not Reported				120	62.9	
1010	Arsenic	mg/kg		104	66.9 - 124	Not Reported				95.5	9.71	
1015	Barium	mg/kg		320	225 - 375	Not Reported				300	25.9	
1020	Beryllium	mg/kg		111	77.2 - 129	Not Reported				103	7.93	
1025	Boron	mg/kg		145	66.1 - 160	Not Reported				110	14.3	
1030	Cadmium	mg/kg		149	101 - 169	Not Reported				135	11.7	
1035	Calcium	mg/kg		5190	3430 - 6020	Not Reported				4720	456	
1040	Chromium	mg/kg		155	103 - 191	Not Reported				147	11.3	
1050	Cobalt	mg/kg		45.2	32.4 - 54.0	Not Reported				43.2	3.10	
1055	Copper	mg/kg		156	113 - 188	Not Reported				150	13.3	
1070	Iron	mg/kg		15000	5160 - 23700	Not Reported				14400	3990	
1075	Lead	mg/kg		92.4	64.6 - 120	Not Reported				92.3	8.81	
1085	Magnesium	mg/kg		2570	1420 - 3170	Not Reported				2300	304	
1090	Manganese	mg/kg		709	529 - 826	Not Reported				677	48.4	
1095	Mercury	mg/kg	20.8	26.6	11.0 - 29.3	Acceptable	EPA 7471A 1 1994	8/2/2019	0.842	18.4	2.89	
1100	Molybdenum	mg/kg		47.2	27.7 - 55.1	Not Reported				41.4	5.13	
1105	Nickel	mg/kg		65.2	41.9 - 77.8	Not Reported				59.8	4.55	
1125	Potassium	mg/kg		2420	1200 - 2860	Not Reported				2030	346	
1140	Selenium	mg/kg		45.1	23.4 - 60.7	Not Reported				42.0	4.89	



All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) & 271, 401QR, 463, 928QR (Glycols) are included in ERA's A2LA accreditation. Lab Code: 1539-01





A Waters Company

SOIL-107 2009 TNI Evaluation Final Complete Report

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SOIL Metals in Soil (cat# 620, lot# D107-540) (Continued)

1150	Silver	mg/kg		41.0	27.9 - 52.7	Not Reported				40.3	4.57	
1155	Sodium	mg/kg		161	50.2 - 227	Not Reported				139	27.6	
1160	Strontium	mg/kg		161	110 - 193	Not Reported				152	13.7	
1165	Thallium	mg/kg		90.4	54.3 - 112	Not Reported				83.1	6.15	
1175	Tin	mg/kg		104	53.2 - 136	Not Reported				94.5	11.4	
1180	Titanium	mg/kg		530	0.00 - 885	Not Reported				402	161	
3055	Uranium	mg/kg		72.3	45.5 - 94.6	Not Reported				70.1	8.17	
1185	Vanadium	mg/kg		104	64.9 - 129	Not Reported				96.9	12.5	
1190	Zinc	mg/kg		393	258 - 480	Not Reported				369	33.2	

SOIL Hexavalent Chromium in Soil (cat# 876, lot# D107-921)

1045	Chromium VI	mg/kg	34.2	87.1	8.71 - 95.8	Acceptable	EPA 7196A 1 1992	8/5/2019	-1.57	47.4	8.39	
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SOIL-107 2009 TNI Evaluation Final Complete Report

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SOIL TCLP Metals in Soil (cat# 629, lot# D107-544)

1005	Antimony	mg/L	2.0	1.85	1.18 - 2.53	Acceptable	EPA 6010B 2 1996	8/9/2019	0.653	1.85	0.226	
1010	Arsenic	mg/L	0.36	0.322	0.162 - 0.482	Acceptable	EPA 6010B 2 1996	8/9/2019	0.707	0.322	0.0534	
1015	Barium	mg/L	2.1	2.00	1.28 - 2.72	Acceptable	EPA 6010B 2 1996	8/9/2019	0.413	2.00	0.240	
1020	Beryllium	mg/L	1.9	1.79	1.36 - 2.22	Acceptable	EPA 6010B 2 1996	8/9/2019	0.770	1.79	0.143	
1030	Cadmium	mg/L	1.8	1.72	1.06 - 2.37	Acceptable	EPA 6010B 2 1996	8/9/2019	0.389	1.72	0.218	
1040	Chromium	mg/L	2.5	2.36	1.48 - 3.24	Acceptable	EPA 6010B 2 1996	8/9/2019	0.480	2.36	0.294	
1075	Lead	mg/L	6.7	6.41	3.89 - 8.94	Acceptable	EPA 6010B 2 1996	8/9/2019	0.339	6.41	0.841	
1095	Mercury	mg/L		3.76	1.38 - 6.13	Not Reported				3.76	0.793	
1105	Nickel	mg/L	3.0	2.88	1.70 - 4.05	Acceptable	EPA 6010B 2 1996	8/9/2019	0.318	2.88	0.392	
1140	Selenium	mg/L	0.72	0.670	0.429 - 0.911	Acceptable	EPA 6010B 2 1996	8/9/2019	0.625	0.670	0.0802	
1150	Silver	mg/L	16.2	14.8	4.45 - 25.2	Acceptable	EPA 6010B 2 1996	8/9/2019	0.397	14.8	3.46	
1190	Zinc	mg/L	1.2	1.14	0.654 - 1.63	Acceptable	EPA 6010B 2 1996	8/9/2019	0.358	1.14	0.163	



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SOIL TCLP Metals in Soil (cat# 629, lot# D107-544)

1005	Antimony	mg/L		1.85	1.18 - 2.53	Not Reported				1.85	0.226	
1010	Arsenic	mg/L		0.322	0.162 - 0.482	Not Reported				0.322	0.0534	
1015	Barium	mg/L		2.00	1.28 - 2.72	Not Reported				2.00	0.240	
1020	Beryllium	mg/L		1.79	1.36 - 2.22	Not Reported				1.79	0.143	
1030	Cadmium	mg/L		1.72	1.06 - 2.37	Not Reported				1.72	0.218	
1040	Chromium	mg/L		2.36	1.48 - 3.24	Not Reported				2.36	0.294	
1075	Lead	mg/L		6.41	3.89 - 8.94	Not Reported				6.41	0.841	
1095	Mercury	mg/L	3.3	3.76	1.38 - 6.13	Acceptable	EPA 7470A 1 1994	8/14/2019	-0.575	3.76	0.793	
1105	Nickel	mg/L		2.88	1.70 - 4.05	Not Reported				2.88	0.392	
1140	Selenium	mg/L		0.670	0.429 - 0.911	Not Reported				0.670	0.0802	
1150	Silver	mg/L		14.8	4.45 - 25.2	Not Reported				14.8	3.46	
1190	Zinc	mg/L		1.14	0.654 - 1.63	Not Reported				1.14	0.163	

SOIL Cyanide in Soil (cat# 621, lot# D107-541)

1645	Cyanide, total	mg/kg	61.0	124	30.8 - 136	Acceptable	EPA 9012A 1 1996	7/30/2019	-0.516	75.7	28.6	
1923	Reactive Cyanide	mg/kg		< 200	0.00 - 200	Not Reported				24.0	24.2	
1510	Amenable Cyanide	mg/kg	< 5.0	< 200	0.00 - 200	Acceptable	EPA 9012A 1 1996	8/12/2019		36.8	22.8	

SOIL Corrosivity/pH in Soil (cat# 875, lot# D107-914)

1625	Corrosivity (pH)	S.U.	7.1	7.36	6.76 - 7.96	Acceptable	EPA 9045C 3 1995	8/6/2019	-0.251	7.16	0.248	
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SOIL Ignitability/Flashpoint (cat# 874, lot# D107-979)

1780	Ignitability/Flashpoint	°F	124	120	103 - 137	Acceptable	EPA 1010A 2002	8/8/2019	-0.113	125	5.83	
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ERA Customer Number: **P041110**

Laboratory Name: **Pace Analytical Services
- Indianapolis**

Organic Results





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SOIL Volatiles in Soil (cat# 623, lot# D107-721)

4315	Acetone	µg/kg	622	630	63.0 - 984	Acceptable	EPA 8260C 2006	8/9/2019	0.308	562	193	
4320	Acetonitrile	µg/kg	< 200	902	0.00 - 1820	Acceptable	EPA 8260C 2006	8/9/2019		492	197	
4325	Acrolein	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4375	Benzene	µg/kg	< 13	< 13.0	0.00 - 13.0	Acceptable	EPA 8260C 2006	8/9/2019				
4385	Bromobenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4390	Bromochloromethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4395	Bromodichloromethane	µg/kg	< 12	< 12.0	0.00 - 12.0	Acceptable	EPA 8260C 2006	8/9/2019				
4400	Bromoform	µg/kg	53.9	53.8	29.6 - 78.0	Acceptable	EPA 8260C 2006	8/9/2019	-0.248	56.5	10.4	
4950	Bromomethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4410	2-Butanone (MEK)	µg/kg	324	345	107 - 534	Acceptable	EPA 8260C 2006	8/9/2019	0.0239	323	50.3	
4435	n-Butylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4440	sec-Butylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4445	tert-Butylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
5000	tert-Butyl methyl ether (MTBE)	µg/kg	101	102	61.2 - 143	Acceptable	EPA 8260C 2006	8/9/2019	-0.417	107	13.2	
4450	Carbon disulfide	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4455	Carbon tetrachloride	µg/kg	27.7	43.1	21.5 - 64.7	Acceptable	EPA 8260C 2006	8/9/2019	-1.73	44.5	9.71	
4475	Chlorobenzene	µg/kg	< 10	< 10.0	0.00 - 10.0	Acceptable	EPA 8260C 2006	8/9/2019				
4575	Chlorodibromomethane	µg/kg	75.8	83.4	50.0 - 117	Acceptable	EPA 8260C 2006	8/9/2019	-0.775	85.6	12.7	
4485	Chloroethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4500	2-Chloroethylvinylether	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				



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SOIL Volatiles in Soil (cat# 623, lot# D107-721) (Continued)

4505	Chloroform	µg/kg	124	152	91.2 - 213	Acceptable	EPA 8260C 2006	8/9/2019	-1.27	153	22.9	
4960	Chloromethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4535	2-Chlorotoluene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4540	4-Chlorotoluene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4570	1,2-Dibromo-3-chloropropane (DBCP)	µg/kg	166	167	83.5 - 251	Acceptable	EPA 8260C 2006	8/9/2019	0.0104	166	31.0	
4585	1,2-Dibromoethane (EDB)	µg/kg	20.6	24.9	16.2 - 33.6	Acceptable	EPA 8260C 2006	8/9/2019	-1.10	24.9	3.94	
4595	Dibromomethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4610	1,2-Dichlorobenzene	µg/kg	57.9	76.5	45.9 - 107	Acceptable	EPA 8260C 2006	8/9/2019	-1.06	75.0	16.1	
4615	1,3-Dichlorobenzene	µg/kg	26.8	36.6	22.0 - 51.2	Acceptable	EPA 8260C 2006	8/9/2019	-0.995	36.5	9.76	
4620	1,4-Dichlorobenzene	µg/kg	26.8	< 12.0	0.00 - 12.0	Not Acceptable	EPA 8260C 2006	8/9/2019				
4625	Dichlorodifluoromethane (Freon 12)	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4630	1,1-Dichloroethane	µg/kg	134	170	102 - 238	Acceptable	EPA 8260C 2006	8/9/2019	-1.59	172	23.7	
4635	1,2-Dichloroethane	µg/kg	93.7	114	68.4 - 160	Acceptable	EPA 8260C 2006	8/9/2019	-1.22	115	17.4	
4640	1,1-Dichloroethylene	µg/kg	< 10	< 10.0	0.00 - 10.0	Acceptable	EPA 8260C 2006	8/9/2019				
4645	cis-1,2-Dichloroethylene	µg/kg	< 12	< 12.0	0.00 - 12.0	Acceptable	EPA 8260C 2006	8/9/2019				
4700	trans-1,2-Dichloroethylene	µg/kg	41.1	58.9	35.3 - 82.5	Acceptable	EPA 8260C 2006	8/9/2019	-1.70	60.5	11.4	
4655	1,2-Dichloropropane	µg/kg	83.2	97.3	63.2 - 131	Acceptable	EPA 8260C 2006	8/9/2019	-0.934	98.5	16.4	
4660	1,3-Dichloropropane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4665	2,2-Dichloropropane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4670	1,1-Dichloropropene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				



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SOIL Volatiles in Soil (cat# 623, lot# D107-721) (Continued)

4680	cis-1,3-Dichloropropylene	µg/kg	85.8	114	68.4 - 160	Acceptable	EPA 8260C 2006	8/9/2019	-0.938	102	17.4	
4685	trans-1,3-Dichloropropylene	µg/kg	74.8	100	55.0 - 145	Acceptable	EPA 8260C 2006	8/9/2019	-1.52	100	16.8	
4765	Ethylbenzene	µg/kg	122	151	90.6 - 211	Acceptable	EPA 8260C 2006	8/9/2019	-0.955	153	32.1	
4835	Hexachlorobutadiene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4840	Hexachloroethane	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
4860	2-Hexanone	µg/kg	< 50	< 50.0	0.00 - 50.0	Acceptable	EPA 8260C 2006	8/9/2019				
4900	Isopropylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4910	4-Isopropyltoluene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
4975	Methylene chloride	µg/kg	132	151	75.5 - 227	Acceptable	EPA 8260C 2006	8/9/2019	-0.831	153	25.5	
4995	4-Methyl-2-pentanone (MIBK)	µg/kg	330	345	172 - 518	Acceptable	EPA 8260C 2006	8/9/2019	0.195	319	55.7	
5005	Naphthalene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
5015	Nitrobenzene	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
5090	n-Propylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
5100	Styrene	µg/kg	136	167	109 - 225	Acceptable	EPA 8260C 2006	8/9/2019	-0.653	160	37.4	
5105	1,1,1,2-Tetrachloroethane	µg/kg	184	192	115 - 269	Acceptable	EPA 8260C 2006	8/9/2019	-0.283	195	40.3	
5110	1,1,2,2-Tetrachloroethane	µg/kg	< 11	< 11.0	0.00 - 11.0	Acceptable	EPA 8260C 2006	8/9/2019				
5115	Tetrachloroethylene	µg/kg	< 10	< 10.0	0.00 - 10.0	Acceptable	EPA 8260C 2006	8/9/2019				
5140	Toluene	µg/kg	134	180	117 - 243	Acceptable	EPA 8260C 2006	8/9/2019	-1.47	179	30.5	
5150	1,2,3-Trichlorobenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
5155	1,2,4-Trichlorobenzene	µg/kg	90.3	173	69.2 - 277	Acceptable	EPA 8260C 2006	8/9/2019	-1.59	162	45.0	



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SOIL Volatiles in Soil (cat# 623, lot# D107-721) (Continued)

5160	1,1,1-Trichloroethane	µg/kg	< 11	< 11.0	0.00 - 11.0	Acceptable	EPA 8260C 2006	8/9/2019				
5165	1,1,2-Trichloroethane	µg/kg	41.9	44.7	31.3 - 58.1	Acceptable	EPA 8260C 2006	8/9/2019	-0.682	46.7	7.07	
5170	Trichloroethylene	µg/kg	< 12	< 12.0	0.00 - 12.0	Acceptable	EPA 8260C 2006	8/9/2019				
5175	Trichlorofluoromethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
5180	1,2,3-Trichloropropane (TCP)	µg/kg	185	181	90.5 - 272	Acceptable	EPA 8260C 2006	8/9/2019	0.232	180	22.8	
5210	1,2,4-Trimethylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
5215	1,3,5-Trimethylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
5225	Vinyl acetate	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
5235	Vinyl chloride	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/9/2019				
5240	m&p-Xylene	µg/kg	< 11	< 11.0	0.00 - 11.0	Acceptable	EPA 8260C 2006	8/9/2019				
5250	o-Xylene	µg/kg	< 11	< 11.0	0.00 - 11.0	Acceptable	EPA 8260C 2006	8/9/2019				
5260	Xylenes, total	µg/kg	< 22	< 22.0	0.00 - 22.0	Acceptable	EPA 8260C 2006	8/9/2019				



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SOIL Low-Level PAHs in Soil (cat# 625, lot# D107-722)

5500	Acenaphthene	µg/kg	562	844	167 - 928	Acceptable	EPA 8270C SIM	8/6/2019	0.181	541	115	
5505	Acenaphthylene	µg/kg	538	828	82.8 - 1020	Acceptable	EPA 8270C SIM	8/6/2019	0.188	515	124	
5555	Anthracene	µg/kg	533	863	231 - 949	Acceptable	EPA 8270C SIM	8/6/2019	-0.0237	536	117	
5575	Benzo(a)anthracene	µg/kg	227	287	106 - 326	Acceptable	EPA 8270C SIM	8/6/2019	0.194	216	54.7	
5585	Benzo(b)fluoranthene	µg/kg	230	344	140 - 378	Acceptable	EPA 8270C SIM	8/6/2019	-0.371	253	63.3	
5600	Benzo(k)fluoranthene	µg/kg	117	167	56.3 - 184	Acceptable	EPA 8270C SIM	8/6/2019	-0.0561	119	36.8	
5590	Benzo(g,h,i)perylene	µg/kg	267	400	108 - 440	Acceptable	EPA 8270C SIM	8/6/2019	0.203	253	70.7	
5580	Benzo(a)pyrene	µg/kg	96.0	150	32.2 - 165	Acceptable	EPA 8270C SIM	8/6/2019	0.123	92.8	25.7	
5855	Chrysene	µg/kg	320	415	131 - 471	Acceptable	EPA 8270C SIM	8/6/2019	0.214	301	91.0	
5895	Dibenz(a,h)anthracene	µg/kg	171	246	78.8 - 271	Acceptable	EPA 8270C SIM	8/6/2019	0.112	166	45.8	
6265	Fluoranthene	µg/kg	366	481	181 - 532	Acceptable	EPA 8270C SIM	8/6/2019	0.104	357	89.3	
6270	Fluorene	µg/kg	64.5	89.9	16.1 - 114	Acceptable	EPA 8270C SIM	8/6/2019	-0.0461	65.2	15.3	
6315	Indeno(1,2,3-cd)pyrene	µg/kg	159	191	68.4 - 221	Acceptable	EPA 8270C SIM	8/6/2019	0.360	145	39.2	
5005	Naphthalene	µg/kg	335	528	52.8 - 589	Acceptable	EPA 8270C SIM	8/6/2019	0.339	304	91.8	
6615	Phenanthrene	µg/kg	109	151	49.6 - 187	Acceptable	EPA 8270C SIM	8/6/2019	-0.325	118	28.8	
6665	Pyrene	µg/kg	52.7	72.7	19.6 - 94.5	Acceptable	EPA 8270C SIM	8/6/2019	-0.251	57.0	17.3	



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SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D107-727)

5500	Acenaphthene	µg/kg	2000	2780	769 - 3060	Acceptable	EPA 8270C 3 1996	8/9/2019	0.292	1890	362	
5505	Acenaphthylene	µg/kg	3520	4810	1200 - 5360	Acceptable	EPA 8270C 3 1996	8/9/2019	0.336	3280	720	
5145	2-Amino-1-methylbenzene (o-toluidine)	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/9/2019				
5545	Aniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/9/2019				
5555	Anthracene	µg/kg	2200	3080	870 - 3460	Acceptable	EPA 8270C 3 1996	8/9/2019	0.0877	2170	384	
5595	Benzidine	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/9/2019				
5610	Benzoic acid	µg/kg	< 3000	< 3000	0.00 - 3000	Acceptable	EPA 8270C 3 1996	8/9/2019				
5575	Benzo(a)anthracene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/9/2019				
5585	Benzo(b)fluoranthene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/9/2019				
5600	Benzo(k)fluoranthene	µg/kg	2030	2750	868 - 3440	Acceptable	EPA 8270C 3 1996	8/9/2019	-0.262	2160	482	
5590	Benzo(g,h,i)perylene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/9/2019				
5580	Benzo(a)pyrene	µg/kg	4830	6700	1930 - 7370	Acceptable	EPA 8270C 3 1996	8/9/2019	0.224	4630	902	
5630	Benzyl alcohol	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/9/2019				
5760	bis(2-Chloroethoxy)methane	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/9/2019				
5765	bis(2-Chloroethyl)ether	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	8/9/2019				
5660	4-Bromophenyl-phenylether	µg/kg	6500	7640	2330 - 9250	Acceptable	EPA 8270C 3 1996	8/9/2019	0.625	5790	1140	
5670	Butylbenzylphthalate	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/9/2019				
5680	Carbazole	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/9/2019				
5745	4-Chloroaniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/9/2019				
5700	4-Chloro-3-methylphenol	µg/kg	6150	8630	1840 - 9490	Acceptable	EPA 8270C 3 1996	8/9/2019	1.02	4960	1170	



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SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D107-727) (Continued)

5790	1-Chloronaphthalene	µg/kg		< 1000	0.00 - 1000	Not Reported						
5795	2-Chloronaphthalene	µg/kg	8610	10500	2300 - 11600	Acceptable	EPA 8270C 3 1996	8/9/2019	1.17	6710	1630	
5800	2-Chlorophenol	µg/kg	6410	9190	1320 - 10100	Acceptable	EPA 8270C 3 1996	8/9/2019	1.03	4970	1390	
5825	4-Chlorophenyl-phenylether	µg/kg	1480	1950	530 - 2380	Acceptable	EPA 8270C 3 1996	8/9/2019	0.0944	1450	284	
5855	Chrysene	µg/kg	4290	5300	2000 - 6160	Acceptable	EPA 8270C 3 1996	8/9/2019	0.241	4080	858	
5895	Dibenz(a,h)anthracene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/9/2019				
5905	Dibenzofuran	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	8/9/2019				
5925	Di-n-butylphthalate	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/9/2019				
4610	1,2-Dichlorobenzene	µg/kg	8740	12600	1260 - 13900	Acceptable	EPA 8270C 3 1996	8/9/2019	0.941	6630	2240	
4615	1,3-Dichlorobenzene	µg/kg	2660	4380	438 - 4820	Acceptable	EPA 8270C 3 1996	8/9/2019	0.524	2200	874	
4620	1,4-Dichlorobenzene	µg/kg	8170	12300	1230 - 13500	Acceptable	EPA 8270C 3 1996	8/9/2019	0.876	6170	2280	
5945	3,3'-Dichlorobenzidine	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/9/2019				
6000	2,4-Dichlorophenol	µg/kg	9090	12100	2340 - 13300	Acceptable	EPA 8270C 3 1996	8/9/2019	1.28	6840	1750	
6005	2,6-Dichlorophenol	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	8/9/2019				
6070	Diethylphthalate	µg/kg	1200	1630	475 - 2020	Acceptable	EPA 8270C 3 1996	8/9/2019	-0.217	1250	229	
6130	2,4-Dimethylphenol	µg/kg	< 3000	< 3000	0.00 - 3000	Acceptable	EPA 8270C 3 1996	8/9/2019				
6135	Dimethylphthalate	µg/kg	6710	8190	2450 - 9450	Acceptable	EPA 8270C 3 1996	8/9/2019	0.664	5950	1140	
6175	2,4-Dinitrophenol	µg/kg	< 3000	< 3000	0.00 - 3000	Acceptable	EPA 8270C 3 1996	8/9/2019				
6185	2,4-Dinitrotoluene	µg/kg	2670	3170	864 - 3990	Acceptable	EPA 8270C 3 1996	8/9/2019	0.469	2430	521	
6190	2,6-Dinitrotoluene	µg/kg	10800	13000	4140 - 14300	Acceptable	EPA 8270C 3 1996	8/9/2019	0.879	9120	1910	



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SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D107-727) (Continued)

6200	Di-n-octylphthalate	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/9/2019				
6065	bis(2-Ethylhexyl)phthalate	µg/kg	3160	4020	893 - 5620	Acceptable	EPA 8270C 3 1996	8/9/2019	-0.117	3250	806	
6265	Fluoranthene	µg/kg	4940	6130	1940 - 7520	Acceptable	EPA 8270C 3 1996	8/9/2019	0.226	4730	929	
6270	Fluorene	µg/kg	1100	1440	345 - 1780	Acceptable	EPA 8270C 3 1996	8/9/2019	0.191	1060	195	
6275	Hexachlorobenzene	µg/kg	11800	14000	5010 - 15700	Acceptable	EPA 8270C 3 1996	8/9/2019	0.713	10300	2050	
4835	Hexachlorobutadiene	µg/kg	3200	5410	730 - 5950	Acceptable	EPA 8270C 3 1996	8/9/2019	0.485	2820	793	
6285	Hexachlorocyclopentadiene	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	8/9/2019				
4840	Hexachloroethane	µg/kg	3070	5110	511 - 5620	Acceptable	EPA 8270C 3 1996	8/9/2019	0.371	2710	981	
6315	Indeno(1,2,3-cd)pyrene	µg/kg	4830	7380	1070 - 8500	Acceptable	EPA 8270C 3 1996	8/9/2019	0.0417	4780	1140	
6320	Isophorone	µg/kg	9850	13000	3120 - 14700	Acceptable	EPA 8270C 3 1996	8/9/2019	0.434	8910	2160	
6360	4,6-Dinitro-2-methylphenol	µg/kg	< 3000	< 3000	0.00 - 3000	Acceptable	EPA 8270C 3 1996	8/9/2019				
6385	2-Methylnaphthalene	µg/kg	8330	10900	2650 - 12000	Acceptable	EPA 8270C 3 1996	8/9/2019	0.816	6990	1640	
6400	2-Methylphenol	µg/kg	< 300	< 300	0.00 - 300	Acceptable	EPA 8270C 3 1996	8/9/2019				
6410	4-Methylphenol	µg/kg	< 300	< 300	0.00 - 300	Acceptable	EPA 8270C 3 1996	8/9/2019				
5005	Naphthalene	µg/kg	7400	9840	1500 - 10800	Acceptable	EPA 8270C 3 1996	8/9/2019	1.08	5780	1490	
6460	2-Nitroaniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/9/2019				
6465	3-Nitroaniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/9/2019				
6470	4-Nitroaniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/9/2019				
5015	Nitrobenzene	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	8/9/2019				
6490	2-Nitrophenol	µg/kg	8750	10000	1410 - 11000	Acceptable	EPA 8270C 3 1996	8/9/2019	1.85	5960	1510	



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SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D107-727) (Continued)

6500	4-Nitrophenol	µg/kg	9300	11300	1130 - 14000	Acceptable	EPA 8270C 3 1996	8/9/2019	1.44	6450	1980	
6525	N-Nitrosodiethylamine	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/9/2019				
6530	N-Nitrosodimethylamine	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	8/9/2019				
6535	N-Nitrosodiphenylamine	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	8/9/2019				
6545	N-Nitroso-di-n-propylamine	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	8/9/2019				
4659	2,2'-Oxybis(1-Chloropropane)	µg/kg	2830	4790	640 - 5270	Acceptable	EPA 8270C 3 1996	8/9/2019	-0.132	2930	763	
6590	Pentachlorobenzene	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/9/2019				
6605	Pentachlorophenol	µg/kg	4740	7270	727 - 8470	Acceptable	EPA 8270C 3 1996	8/9/2019	0.507	4200	1070	
6615	Phenanthrene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/9/2019				
6625	Phenol	µg/kg	7540	10500	1640 - 11600	Acceptable	EPA 8270C 3 1996	8/9/2019	0.966	6020	1570	
6665	Pyrene	µg/kg	4810	6280	1930 - 8130	Acceptable	EPA 8270C 3 1996	8/9/2019	-0.208	5030	1050	
5095	Pyridine	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/9/2019				
6715	1,2,4,5-Tetrachlorobenzene	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/9/2019				
6735	2,3,4,6-Tetrachlorophenol	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	8/9/2019				
5155	1,2,4-Trichlorobenzene	µg/kg	7190	9440	1880 - 10400	Acceptable	EPA 8270C 3 1996	8/9/2019	0.891	5770	1600	
6835	2,4,5-Trichlorophenol	µg/kg	4710	6250	1220 - 7040	Acceptable	EPA 8270C 3 1996	8/9/2019	0.610	4130	953	
6840	2,4,6-Trichlorophenol	µg/kg	9360	13000	2610 - 14300	Acceptable	EPA 8270C 3 1996	8/9/2019	1.21	7230	1750	



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SOIL Organochlorine Pesticides in Soil (cat# 468, lot# D107-728)

7025	Aldrin	µg/kg	169	218	67.3 - 304	Acceptable	EPA 8081B 2000	8/8/2019	-0.479	186	34.6	
7110	alpha-BHC	µg/kg	188	236	71.0 - 333	Acceptable	EPA 8081B 2000	8/8/2019	-0.349	202	39.7	
7115	beta-BHC	µg/kg	303	430	137 - 577	Acceptable	EPA 8081B 2000	8/8/2019	-0.686	357	78.7	
7105	delta-BHC	µg/kg	242	294	86.5 - 446	Acceptable	EPA 8081B 2000	8/8/2019	-0.462	266	52.7	
7120	gamma-BHC(Lindane)	µg/kg	319	385	118 - 541	Acceptable	EPA 8081B 2000	8/8/2019	-0.176	330	61.4	
7240	alpha-Chlordane	µg/kg	157	212	78.5 - 290	Acceptable	EPA 8081B 2000	8/8/2019	-0.877	184	31.1	
7245	gamma-Chlordane	µg/kg	357	466	197 - 615	Acceptable	EPA 8081B 2000	8/8/2019	-0.649	406	75.1	
7355	4,4'-DDD	µg/kg	197	263	90.0 - 376	Acceptable	EPA 8081B 2000	8/8/2019	-0.727	233	49.8	
7360	4,4'-DDE	µg/kg	344	444	166 - 623	Acceptable	EPA 8081B 2000	8/8/2019	-0.743	394	67.7	
7365	4,4'-DDT	µg/kg	100	132	30.2 - 203	Acceptable	EPA 8081B 2000	8/8/2019	-0.699	117	23.7	
7470	Dieldrin	µg/kg	203	279	112 - 385	Acceptable	EPA 8081B 2000	8/8/2019	-0.976	249	46.7	
7540	Endrin	µg/kg	64.3	90.3	24.4 - 137	Acceptable	EPA 8081B 2000	8/8/2019	-0.979	80.6	16.6	
7530	Endrin aldehyde	µg/kg	121	194	19.4 - 253	Acceptable	EPA 8081B 2000	8/8/2019	-0.416	132	25.9	
7535	Endrin ketone	µg/kg	82.4	136	29.3 - 189	Acceptable	EPA 8081B 2000	8/8/2019	-1.17	109	22.9	
7510	Endosulfan I	µg/kg	98.2	139	40.7 - 206	Acceptable	EPA 8081B 2000	8/8/2019	-1.08	124	23.6	
7515	Endosulfan II	µg/kg	339	356	158 - 699	Acceptable	EPA 8081B 2000	8/8/2019	-1.20	429	75.0	
7520	Endosulfan sulfate	µg/kg	72.9	114	20.2 - 170	Acceptable	EPA 8081B 2000	8/8/2019	-1.06	95.2	21.0	
7685	Heptachlor	µg/kg	165	227	77.7 - 322	Acceptable	EPA 8081B 2000	8/8/2019	-0.863	200	40.6	
7690	Heptachlor epoxide	µg/kg	353	440	173 - 604	Acceptable	EPA 8081B 2000	8/8/2019	-0.492	389	72.5	
7810	Methoxychlor	µg/kg	246	343	36.5 - 536	Acceptable	EPA 8081B 2000	8/8/2019	-0.598	286	67.3	



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SOIL Chlordane in Soil (cat# 628, lot# D107-725)

7250	Chlordane, technical	µg/kg	382	578	127 - 762	Acceptable	EPA 8081B 2000	8/8/2019	-0.700	444	88.7	
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SOIL Toxaphene in Soil (cat# 627, lot# D107-724)

8250	Toxaphene	µg/kg	1200	1810	334 - 2290	Acceptable	EPA 8081B 2000	8/8/2019	-0.337	1310	325	
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SOIL Chlorinated Acid Herbicides in Soil (cat# 626, lot# D107-723)

8505	Acifluorfen	µg/kg	96.9	138	2.72 - 184	Acceptable	EPA 8151A 1996	8/6/2019	0.119	93.3	30.2	
8530	Bentazon	µg/kg	250	666	0.00 - 801	Acceptable	EPA 8151A 1996	8/6/2019	-0.708	355	149	
8540	Chloramben	µg/kg		876	0.00 - 964	Not Reported				258	146	
8545	2,4-D	µg/kg	272	430	43.0 - 534	Acceptable	EPA 8151A 1996	8/6/2019	-0.134	283	83.7	
8560	2,4-DB	µg/kg	195	605	60.5 - 827	Acceptable	EPA 8151A 1996	8/6/2019	-1.13	368	153	
8550	Dacthal diacid (DCPA)	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8151A 1996	8/6/2019				
8555	Dalapon	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8151A 1996	8/6/2019				
8595	Dicamba	µg/kg	144	192	42.6 - 219	Acceptable	EPA 8151A 1996	8/6/2019	0.440	131	29.5	
8600	3,5-Dichlorobenzoic acid	µg/kg	241	317	156 - 349	Acceptable	EPA 8151A 1996	8/6/2019	-0.151	246	29.9	
8605	Dichlorprop	µg/kg	724	842	72.0 - 1120	Acceptable	EPA 8151A 1996	8/6/2019	0.747	594	174	
8620	Dinoseb	µg/kg	374	550	55.0 - 605	Acceptable	EPA 8151A 1996	8/6/2019	0.903	290	93.3	
7775	MCPA	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8151A 1996	8/6/2019				
7780	MCPP	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8151A 1996	8/6/2019				
6500	4-Nitrophenol	µg/kg		867	0.00 - 1110	Not Reported				370	247	
6605	Pentachlorophenol	µg/kg	674	931	93.1 - 1020	Acceptable	EPA 8151A 1996	8/6/2019	1.07	486	177	
8645	Picloram	µg/kg	104	584	0.00 - 823	Acceptable	EPA 8151A 1996	8/6/2019	-0.903	270	184	
8655	2,4,5-T	µg/kg	690	894	89.4 - 1080	Acceptable	EPA 8151A 1996	8/6/2019	0.747	561	173	
8650	2,4,5-TP (Silvex)	µg/kg	373	415	41.5 - 522	Acceptable	EPA 8151A 1996	8/6/2019	1.16	279	81.1	



All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) & 271, 401QR, 463, 928QR (Glycols) are included in ERA's A2LA accreditation. Lab Code: 1539-01





A Waters Company

SOIL-107 2009 TNI Evaluation Final Complete Report

Beth Schrage
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EPA ID:
ERA Customer Number:
Report Issued:
Study Dates:

IN00043
P041110
09/11/19
07/22/19 - 09/05/19

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description	Analysis Date	Z Score	Study Mean	Study Standard Deviation	Analyst Name
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SOIL PCBs in Soil (cat# 624, lot# D107-726)

8880	Aroclor 1016	mg/kg	30.0	43.1	10.8 - 56.9	Acceptable	EPA 8082A 2000	7/31/2019	-0.424	33.8	9.07	
8885	Aroclor 1221	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	7/31/2019				
8890	Aroclor 1232	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	7/31/2019				
8895	Aroclor 1242	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	7/31/2019				
8900	Aroclor 1248	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	7/31/2019				
8905	Aroclor 1254	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	7/31/2019				
8910	Aroclor 1260	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	7/31/2019				

SOIL Gasoline Range Organics (GRO) in Soil (cat# 630, lot# D107-763)

9408	Gasoline Range Organics (GRO)	mg/kg	420	647	64.7 - 812	Acceptable	EPA 8015D 2003	7/30/2019	0.237	374	194	
4375	Benzene in GRO	mg/kg		2.86	0.00 - 3.15	Not Reported				1.02	0.540	
4765	Ethylbenzene in GRO	mg/kg		10.9	0.00 - 14.2	Not Reported				6.62	2.53	
5140	Toluene in GRO	mg/kg		32.9	0.00 - 36.2	Not Reported				14.9	6.31	
5260	Xylenes, total in GRO	mg/kg		55.6	22.9 - 61.2	Not Reported				36.9	4.66	

SOIL Diesel Range Organics (DRO) in Soil (cat# 631, lot# D107-765)

9369	Diesel Range Organics (DRO)	mg/kg	508	718	187 - 941	Acceptable	EPA 8015D 2003	7/31/2019	-0.383	564	146	
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All analytes except PT catalog numbers 462, 604QR, 929, 731QR, 960, 735QR (PFAS) & 271, 401QR, 463, 928QR (Glycols) are included in ERA's A2LA accreditation. Lab Code: 1539-01



CERTIFICATE OF RECOGNITION

ERA congratulates

Pace Analytical Services - Indianapolis SOIL-107

For your participation and successful evaluation, we recognize the performance of this laboratory for achieving acceptable evaluation in the following standards.

Base/Neutrals and Acids in Soil	Chlordane in Soil	Chlorinated Acid Herbicides in Soil
Corrosivity/pH in Soil	Cyanide in Soil	Diesel Range Organics (DRO) in Soil
Gasoline Range Organics (GRO) in Soil	Hexavalent Chromium in Soil	Ignitability/Flashpoint
Low-Level PAHs in Soil	Metals in Soil	Organochlorine Pesticides in Soil
PCBs in Soil	TCLP Metals in Soil	Toxaphene in Soil



Matthew Seebeck
Quality Officer



A Waters Company

Beth Schrage
Pace Analytical Services - Indianapolis
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Indianapolis, IN 46268
USA

SOIL-109



Final Report

Soil/Hazardous Waste Proficiency Testing

Soil Study

Open Date: 01/20/20

Close Date: 03/05/20

Report Issued Date: 03/09/20



A Waters Company

March 9, 2020

Beth Schrage
Pace Analytical Services - Indianapolis
7726 Moller Road
Indianapolis, IN 46268

Enclosed is your final report for ERA's SOIL-109 Proficiency Testing (PT) study. Your final report includes an evaluation of all results submitted by your laboratory to ERA.

Data Evaluation Protocols: All analytes in ERA's SOIL-109 Proficiency Testing study have been evaluated using the following tiered approach. If the analyte is listed in the most current NELAC Fields of Proficiency Testing (FoPT) table the evaluation was completed by comparing the reported result to the acceptance limits generated using the criteria contained in the table and the evaluation criteria contained in the 2016 TNI Standard, Volume 3. If the analyte is not included in the NELAC FoPT table, the reported result has been evaluated using the procedures outlined in ERA's Standard Operating Procedure for the Generation of Performance Acceptance Limits (SOP 730002268).

Corrective Action Help: As part of your accreditation(s), you may be required to identify the root cause of any "Not Acceptable" results, implement the necessary corrective actions, and then satisfy your PT requirements by participating in a Supplemental (QuiK™Response) or future ERA PT study. ERA's technical staff is available to help your laboratory resolve any technical issues that may be impairing your PT performance and possibly affecting your routine data quality. Our laboratory and technical staff have many years of collective experience in performing the full range of environmental analyses. As part of our technical support, ERA offers QC samples that can be useful in helping you work through your technical issues.

Thank you for your participation in ERA's SOIL-109 Proficiency Testing study. If you have any questions, please contact our Proficiency Testing Department at 1-800-372-0122.

Sincerely,

Matthew Seebeck
Quality Officer

attachments



A Waters Company

Report Recipient	Contact/Phone Number	Reporting Type
Illinois	John South / (217) 558-7142	All Analytes
Kansas	Paul Harrison / 785-296-6198	All Analytes
Kentucky	Patrick Garrity / 502-782-6954	All Analytes
Texas	Frank Jamison / (512) 239-3754	All Analytes
West Virginia (DEP)	Justin D Carpenter / (304) 926-0499-1158	All Analytes



A Waters Company

SOIL-109 Definitions & Study Discussion

Study Dates: 01/20/20 - 03/05/20

Report Issued: 03/09/20

SOIL Study Definitions

The Reported Value is the value that the laboratory reported to ERA.

The ERA Assigned Values are compliant with the most current NELAC Fields of Proficiency Testing (FoPT) table. The Assigned Values for the Organic Proficiency Testing Standards are equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation as applicable. The assigned values for the Inorganic Proficiency Testing Standards, with the exception of the TCLP Metals in Soil and Total Organic Carbon (TOC) in the Nutrients in Soil sample, are equal to the maximum amount of the parameter available in the standard by applicable EPA methodologies. The assigned values for the TCLP metals and TOC are equal to the mean of the study data, after the removal of outliers. All parameters not added to the standard are given an Assigned Value of "< PTRL", per the guidelines contained in the 2009 TNI Standards. The assigned values are directly traceable to the commercially prepared starting materials used to manufacture the PT standards.

The Acceptance Limits are established per the criteria contained in the most current NELAC FoPT table or ERA's SOP for the Generation of Performance Acceptance Limits™ as applicable. This report is scored by the criteria in the 2016 TNI Standard, Volume 3, instead of by the criteria in the 2009 TNI Standard to which the Proficiency Testing Provider is accredited. This is a planned change and is endorsed by the TNI Proficiency Testing Program Executive Committee for transition to the 2016 TNI Standard.

The Performance Evaluation:

Acceptable = Reported Value falls within the Acceptance Limits.

Not Acceptable = Reported Value falls outside the Acceptance Limits.

No Evaluation = Reported Value cannot be evaluated.

Not Reported = No Value reported.

The Method Description is the method the laboratory reported to ERA.

SOIL Study Discussion

ERA's SOIL-109 Proficiency Testing (PT) study has been reviewed by ERA senior management and certified compliant with the requirements of the 2009 TNI PT Standard and the 2016 TNI Standard, Volume 3, Section 5.9 and the criteria contained in the most current NELAC Fields of Proficiency Testing (FoPT) table.

ERA's SOIL-109 study standards were examined for any anomalies. There was one anomaly observed and is addressed on the following page if your laboratory received the SOIL-109 Metals In Sludge sample, catalog #619. A full review of all homogeneity, stability and accuracy verification data was completed. With the exception of Mercury in the Metals In Sludge sample, all analytical verification data for all analytes in the standards met the acceptance criteria contained in the 2009 TNI PT Standard and the criteria contained in the most current NELAC FoPT table.

All analytes are included in ERA's A2LA accreditation, certification number 1539.01.

The data submitted by participating laboratories was also examined for study anomalies. There were no anomalies observed during the statistical review of the data.

ERA's SOIL-109 Proficiency Testing study reports shall not be reproduced except in its entirety and not without the permission of the participating laboratory. The report must not be used by the participating laboratories to claim product endorsement any agency of the U. S. government.

The data contained herein are confidential and intended for your use only.

If you have any questions or concerns regarding your assessment in ERA's SOIL Proficiency Testing program, please contact our Proficiency Testing Department at 1-800-372-0122.





SOIL-109 Laboratory Exception Report

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EPA ID: IN00043
ERA Customer Number: P041110
Report Issued: 03/09/20
Study Dates: 01/20/20 - 03/05/20

Not Acceptable Evaluations

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Hexavalent Chromium in Soil (cat# 876, lot# D109-921)							
1045	Chromium VI	mg/kg	149	109	10.9 - 121	Not Acceptable	EPA 7196A 1 1992
SOIL Volatiles in Soil (cat# 623, lot# D109-721)							
4410	2-Butanone (MEK)	µg/kg	< 10	240	65.7 - 377	Not Acceptable	EPA 8260C 2006



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Final Report Results For Laboratory Pace Analytical Services - Indianapolis





Final Evaluation Report

Study: SOIL-109

ERA Customer Number: **P041110**

Laboratory Name: **Pace Analytical Services
- Indianapolis**

Inorganic Results





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ERA Customer Number:
Report Issued:
Study Dates:

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03/09/20
01/20/20 - 03/05/20

SOIL-109 Final Evaluation Report

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description	Analysis Date	Z Score	Study Mean	Study Standard Deviation	Analyst Name
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SOIL Metals in Soil (cat# 620, lot# D109-540)

1000	Aluminum	mg/kg	8520	10100	4060 - 12200	Acceptable	EPA 6010B 2 1996	1/27/2020	0.253	8130	1550	
1005	Antimony	mg/kg	66.0	259	25.9 - 335	Acceptable	EPA 6010B 2 1996	1/27/2020	-0.899	134	75.9	
1010	Arsenic	mg/kg	155	171	109 - 203	Acceptable	EPA 6010B 2 1996	1/27/2020	-0.0673	156	16.0	
1015	Barium	mg/kg	245	253	179 - 298	Acceptable	EPA 6010B 2 1996	1/27/2020	0.303	239	21.4	
1020	Beryllium	mg/kg	164	179	127 - 212	Acceptable	EPA 6010B 2 1996	1/27/2020	-0.348	169	15.2	
1025	Boron	mg/kg	77.6	114	52.5 - 125	Acceptable	EPA 6010B 2 1996	1/27/2020	-0.813	87.5	12.2	
1030	Cadmium	mg/kg	119	149	103 - 171	Acceptable	EPA 6010B 2 1996	1/27/2020	-1.49	137	11.9	
1035	Calcium	mg/kg	4730	5190	3460 - 6070	Acceptable	EPA 6010B 2 1996	1/27/2020	-0.0750	4760	467	
1040	Chromium	mg/kg	155	163	108 - 200	Acceptable	EPA 6010B 2 1996	1/27/2020	0.0856	154	12.8	
1050	Cobalt	mg/kg	99.6	127	90.8 - 151	Acceptable	EPA 6010B 2 1996	1/27/2020	-2.10	121	10.2	
1055	Copper	mg/kg	59.5	57.0	41.1 - 68.6	Acceptable	EPA 6010B 2 1996	1/27/2020	0.905	54.9	5.13	
1070	Iron	mg/kg	14000	15000	4920 - 23200	Acceptable	EPA 6010B 2 1996	1/27/2020	-0.0263	14100	3040	
1075	Lead	mg/kg	117	133	93.3 - 167	Acceptable	EPA 6010B 2 1996	1/27/2020	-1.01	130	12.8	
1085	Magnesium	mg/kg	2250	2570	1440 - 3200	Acceptable	EPA 6010B 2 1996	1/27/2020	-0.238	2320	280	
1090	Manganese	mg/kg	260	277	199 - 340	Acceptable	EPA 6010B 2 1996	1/27/2020	-0.426	269	21.9	
1095	Mercury	mg/kg		21.6	12.3 - 28.6	Not Reported				20.5	3.01	
1100	Molybdenum	mg/kg	83.8	108	66.9 - 124	Acceptable	EPA 6010B 2 1996	1/27/2020	-1.19	95.4	9.72	
1105	Nickel	mg/kg	45.0	58.7	37.7 - 70.0	Acceptable	EPA 6010B 2 1996	1/27/2020	-1.83	53.9	4.84	
1125	Potassium	mg/kg	1980	2420	1190 - 2850	Acceptable	EPA 6010B 2 1996	1/27/2020	-0.136	2020	293	
1140	Selenium	mg/kg	153	181	113 - 221	Acceptable	EPA 6010B 2 1996	1/27/2020	-0.816	167	17.0	



This report is scored by the criteria in the 2016 TNI Standard, Volume 3, instead of by the criteria in the 2009 TNI Standard to which the Proficiency Testing Provider is accredited. This is a planned change and is endorsed by the TNI Proficiency Testing Program Executive Committee for transition to the 2016 TNI Standard.





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Report Issued:
Study Dates:

IN00043
P041110
03/09/20
01/20/20 - 03/05/20

SOIL-109 Final Evaluation Report

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description	Analysis Date	Z Score	Study Mean	Study Standard Deviation	Analyst Name
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SOIL Metals in Soil (cat# 620, lot# D109-540) (Continued)

1150	Silver	mg/kg	34.9	35.5	23.0 - 44.1	Acceptable	EPA 6010B 2 1996	1/27/2020	0.340	33.6	3.96	
1155	Sodium	mg/kg	131	161	46.5 - 220	Acceptable	EPA 6010B 2 1996	1/27/2020	-0.0856	133	25.9	
1160	Strontium	mg/kg	89.9	89.7	62.8 - 113	Acceptable	EPA 6010B 2 1996	1/27/2020	0.226	87.9	8.74	
1165	Thallium	mg/kg	95.4	121	76.1 - 147	Acceptable	EPA 6010B 2 1996	1/27/2020	-1.52	112	10.6	
1175	Tin	mg/kg	66.0	83.5	39.7 - 108	Acceptable	EPA 6010B 2 1996	1/27/2020	-0.998	74.0	8.01	
1180	Titanium	mg/kg	306	474	46.3 - 620	Acceptable	EPA 6010B 2 1996	1/27/2020	-0.283	333	95.6	
3055	Uranium	mg/kg		51.9	35.9 - 68.0	Not Reported				51.9	5.36	
1185	Vanadium	mg/kg	61.8	68.1	37.0 - 88.3	Acceptable	EPA 6010B 2 1996	1/27/2020	-0.0947	62.6	8.50	
1190	Zinc	mg/kg	140	165	111 - 205	Acceptable	EPA 6010B 2 1996	1/27/2020	-1.40	158	12.9	

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SOIL Metals in Soil (cat# 620, lot# D109-540)

1000	Aluminum	mg/kg	9120	10100	4060 - 12200	Acceptable	EPA 6020	1/28/2020	0.640	8130	1550	
1005	Antimony	mg/kg	27.4	259	25.9 - 335	Acceptable	EPA 6020	1/28/2020	-1.41	134	75.9	
1010	Arsenic	mg/kg	132	171	109 - 203	Acceptable	EPA 6020	1/28/2020	-1.50	156	16.0	
1015	Barium	mg/kg	236	253	179 - 298	Acceptable	EPA 6020	1/28/2020	-0.118	239	21.4	
1020	Beryllium	mg/kg	154	179	127 - 212	Acceptable	EPA 6020	1/28/2020	-1.00	169	15.2	
1025	Boron	mg/kg		114	52.5 - 125	Not Reported				87.5	12.2	
1030	Cadmium	mg/kg	119	149	103 - 171	Acceptable	EPA 6020	1/28/2020	-1.49	137	11.9	
1035	Calcium	mg/kg		5190	3460 - 6070	Not Reported				4760	467	
1040	Chromium	mg/kg	143	163	108 - 200	Acceptable	EPA 6020	1/28/2020	-0.850	154	12.8	
1050	Cobalt	mg/kg	106	127	90.8 - 151	Acceptable	EPA 6020	1/28/2020	-1.47	121	10.2	
1055	Copper	mg/kg	49.7	57.0	41.1 - 68.6	Acceptable	EPA 6020	1/28/2020	-1.00	54.9	5.13	
1070	Iron	mg/kg		15000	4920 - 23200	Not Reported				14100	3040	
1075	Lead	mg/kg	126	133	93.3 - 167	Acceptable	EPA 6020	1/28/2020	-0.306	130	12.8	
1085	Magnesium	mg/kg		2570	1440 - 3200	Not Reported				2320	280	
1090	Manganese	mg/kg	250	277	199 - 340	Acceptable	EPA 6020	1/28/2020	-0.881	269	21.9	
1095	Mercury	mg/kg		21.6	12.3 - 28.6	Not Reported				20.5	3.01	
1100	Molybdenum	mg/kg		108	66.9 - 124	Not Reported				95.4	9.72	
1105	Nickel	mg/kg	45.8	58.7	37.7 - 70.0	Acceptable	EPA 6020	1/28/2020	-1.67	53.9	4.84	
1125	Potassium	mg/kg		2420	1190 - 2850	Not Reported				2020	293	
1140	Selenium	mg/kg	142	181	113 - 221	Acceptable	EPA 6020	1/28/2020	-1.46	167	17.0	



This report is scored by the criteria in the 2016 TNI Standard, Volume 3, instead of by the criteria in the 2009 TNI Standard to which the Proficiency Testing Provider is accredited. This is a planned change and is endorsed by the TNI Proficiency Testing Program Executive Committee for transition to the 2016 TNI Standard.





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SOIL-109 Final Evaluation Report

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SOIL Metals in Soil (cat# 620, lot# D109-540) (Continued)

1150	Silver	mg/kg	30.9	35.5	23.0 - 44.1	Acceptable	EPA 6020	1/28/2020	-0.670	33.6	3.96	
1155	Sodium	mg/kg		161	46.5 - 220	Not Reported				133	25.9	
1160	Strontium	mg/kg		89.7	62.8 - 113	Not Reported				87.9	8.74	
1165	Thallium	mg/kg	98.0	121	76.1 - 147	Acceptable	EPA 6020	1/28/2020	-1.28	112	10.6	
1175	Tin	mg/kg		83.5	39.7 - 108	Not Reported				74.0	8.01	
1180	Titanium	mg/kg		474	46.3 - 620	Not Reported				333	95.6	
3055	Uranium	mg/kg		51.9	35.9 - 68.0	Not Reported				51.9	5.36	
1185	Vanadium	mg/kg	55.4	68.1	37.0 - 88.3	Acceptable	EPA 6020	1/28/2020	-0.848	62.6	8.50	
1190	Zinc	mg/kg	148	165	111 - 205	Acceptable	EPA 6020	1/28/2020	-0.776	158	12.9	



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SOIL Metals in Soil (cat# 620, lot# D109-540)

1000	Aluminum	mg/kg		10100	4060 - 12200	Not Reported				8130	1550	
1005	Antimony	mg/kg		259	25.9 - 335	Not Reported				134	75.9	
1010	Arsenic	mg/kg		171	109 - 203	Not Reported				156	16.0	
1015	Barium	mg/kg		253	179 - 298	Not Reported				239	21.4	
1020	Beryllium	mg/kg		179	127 - 212	Not Reported				169	15.2	
1025	Boron	mg/kg		114	52.5 - 125	Not Reported				87.5	12.2	
1030	Cadmium	mg/kg		149	103 - 171	Not Reported				137	11.9	
1035	Calcium	mg/kg		5190	3460 - 6070	Not Reported				4760	467	
1040	Chromium	mg/kg		163	108 - 200	Not Reported				154	12.8	
1050	Cobalt	mg/kg		127	90.8 - 151	Not Reported				121	10.2	
1055	Copper	mg/kg		57.0	41.1 - 68.6	Not Reported				54.9	5.13	
1070	Iron	mg/kg		15000	4920 - 23200	Not Reported				14100	3040	
1075	Lead	mg/kg		133	93.3 - 167	Not Reported				130	12.8	
1085	Magnesium	mg/kg		2570	1440 - 3200	Not Reported				2320	280	
1090	Manganese	mg/kg		277	199 - 340	Not Reported				269	21.9	
1095	Mercury	mg/kg	26.1	21.6	12.3 - 28.6	Acceptable	EPA 7471A 1 1994	1/29/2020	1.87	20.5	3.01	
1100	Molybdenum	mg/kg		108	66.9 - 124	Not Reported				95.4	9.72	
1105	Nickel	mg/kg		58.7	37.7 - 70.0	Not Reported				53.9	4.84	
1125	Potassium	mg/kg		2420	1190 - 2850	Not Reported				2020	293	
1140	Selenium	mg/kg		181	113 - 221	Not Reported				167	17.0	



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SOIL-109 Final Evaluation Report

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SOIL Metals in Soil (cat# 620, lot# D109-540) (Continued)

1150	Silver	mg/kg		35.5	23.0 - 44.1	Not Reported				33.6	3.96	
1155	Sodium	mg/kg		161	46.5 - 220	Not Reported				133	25.9	
1160	Strontium	mg/kg		89.7	62.8 - 113	Not Reported				87.9	8.74	
1165	Thallium	mg/kg		121	76.1 - 147	Not Reported				112	10.6	
1175	Tin	mg/kg		83.5	39.7 - 108	Not Reported				74.0	8.01	
1180	Titanium	mg/kg		474	46.3 - 620	Not Reported				333	95.6	
3055	Uranium	mg/kg		51.9	35.9 - 68.0	Not Reported				51.9	5.36	
1185	Vanadium	mg/kg		68.1	37.0 - 88.3	Not Reported				62.6	8.50	
1190	Zinc	mg/kg		165	111 - 205	Not Reported				158	12.9	

SOIL Hexavalent Chromium in Soil (cat# 876, lot# D109-921)

1045	Chromium VI	mg/kg	149	109	10.9 - 121	Not Acceptable	EPA 7196A 1 1992	1/28/2020	7.00	65.0	12.0	
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SOIL TCLP Metals in Soil (cat# 629, lot# D109-544)

1005	Antimony	mg/L	1.6	1.47	0.854 - 2.09	Acceptable	EPA 6010B 2 1996	2/3/2020	0.626	1.47	0.206	
1010	Arsenic	mg/L	1.6	1.55	0.932 - 2.18	Acceptable	EPA 6010B 2 1996	2/3/2020	0.217	1.55	0.208	
1015	Barium	mg/L	3.4	3.42	3.00 - 3.85	Acceptable	EPA 6010B 2 1996	2/3/2020	-0.172	3.42	0.143	
1020	Beryllium	mg/L	5.7	5.59	3.98 - 7.21	Acceptable	EPA 6010B 2 1996	2/3/2020	0.198	5.59	0.539	
1030	Cadmium	mg/L	3.9	3.84	3.01 - 4.67	Acceptable	EPA 6010B 2 1996	2/3/2020	0.220	3.84	0.277	
1040	Chromium	mg/L	3.2	3.06	2.06 - 4.05	Acceptable	EPA 6010B 2 1996	2/3/2020	0.431	3.06	0.333	
1075	Lead	mg/L	3.9	3.99	2.64 - 5.33	Acceptable	EPA 6010B 2 1996	2/3/2020	-0.197	3.99	0.449	
1095	Mercury	mg/L		2.89	0.00 - 6.87	Not Reported				2.89	1.33	
1105	Nickel	mg/L	3.3	3.17	2.46 - 3.88	Acceptable	EPA 6010B 2 1996	2/3/2020	0.558	3.17	0.236	
1140	Selenium	mg/L	3.4	3.23	2.36 - 4.09	Acceptable	EPA 6010B 2 1996	2/3/2020	0.600	3.23	0.289	
1150	Silver	mg/L	0.44	0.376	0.0721 - 0.679	Acceptable	EPA 6010B 2 1996	2/3/2020	0.637	0.376	0.101	
1190	Zinc	mg/L	2.6	2.57	1.90 - 3.25	Acceptable	EPA 6010B 2 1996	2/3/2020	0.119	2.57	0.224	



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SOIL TCLP Metals in Soil (cat# 629, lot# D109-544)

1005	Antimony	mg/L		1.47	0.854 - 2.09	Not Reported				1.47	0.206	
1010	Arsenic	mg/L		1.55	0.932 - 2.18	Not Reported				1.55	0.208	
1015	Barium	mg/L		3.42	3.00 - 3.85	Not Reported				3.42	0.143	
1020	Beryllium	mg/L		5.59	3.98 - 7.21	Not Reported				5.59	0.539	
1030	Cadmium	mg/L		3.84	3.01 - 4.67	Not Reported				3.84	0.277	
1040	Chromium	mg/L		3.06	2.06 - 4.05	Not Reported				3.06	0.333	
1075	Lead	mg/L		3.99	2.64 - 5.33	Not Reported				3.99	0.449	
1095	Mercury	mg/L	0.42	2.89	0.00 - 6.87	Acceptable	EPA 7470A 1 1994	2/3/2020	-1.86	2.89	1.33	
1105	Nickel	mg/L		3.17	2.46 - 3.88	Not Reported				3.17	0.236	
1140	Selenium	mg/L		3.23	2.36 - 4.09	Not Reported				3.23	0.289	
1150	Silver	mg/L		0.376	0.0721 - 0.679	Not Reported				0.376	0.101	
1190	Zinc	mg/L		2.57	1.90 - 3.25	Not Reported				2.57	0.224	

SOIL Cyanide in Soil (cat# 621, lot# D109-541)

1645	Cyanide, total	mg/kg	66.9	95.3	28.1 - 112	Acceptable	EPA 9012A 1 1996	1/24/2020	-0.143	70.2	23.1	
1923	Reactive Cyanide	mg/kg		< 200	0.00 - 200	Not Reported				22.6	42.4	
1510	Amenable Cyanide	mg/kg	< 2.5	< 200	0.00 - 200	Acceptable	EPA 9012A 1 1996	1/24/2020		20.6	23.0	

SOIL Corrosivity/pH in Soil (cat# 875, lot# D109-914)

1625	Corrosivity (pH)	S.U.	4.6	4.95	4.35 - 5.55	Acceptable	EPA 9045C 3 1995	1/31/2020	-2.37	5.04	0.185	
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SOIL Ignitability/Flashpoint (cat# 874, lot# D109-979)

1780	Ignitability/Flashpoint	°F	125	135	118 - 152	Acceptable	EPA 1010A 2002	1/31/2020	-1.06	130	5.04	
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Final Evaluation Report

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Laboratory Name: **Pace Analytical Services**
- Indianapolis

Organic Results





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SOIL Volatiles in Soil (cat# 623, lot# D109-721)

4315	Acetone	µg/kg	194	250	25.0 - 421	Acceptable	EPA 8260C 2006	2/5/2020	0.533	151	81.5	
4320	Acetonitrile	µg/kg	< 200	756	0.00 - 1520	Acceptable	EPA 8260C 2006	2/5/2020		276	103	
4325	Acrolein	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4375	Benzene	µg/kg	69.7	98.4	64.0 - 133	Acceptable	EPA 8260C 2006	2/5/2020	-1.38	91.9	16.1	
4385	Bromobenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4390	Bromochloromethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4395	Bromodichloromethane	µg/kg	32.4	40.5	24.3 - 56.7	Acceptable	EPA 8260C 2006	2/5/2020	-1.02	39.2	6.71	
4400	Bromoform	µg/kg	177	190	104 - 276	Acceptable	EPA 8260C 2006	2/5/2020	-0.140	181	29.9	
4950	Bromomethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4410	2-Butanone (MEK)	µg/kg	< 10	240	65.7 - 377	Not Acceptable	EPA 8260C 2006	2/5/2020		208	51.2	
4435	n-Butylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4440	sec-Butylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4445	tert-Butylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
5000	tert-Butyl methyl ether (MTBE)	µg/kg	121	155	93.0 - 217	Acceptable	EPA 8260C 2006	2/5/2020	-0.999	150	29.4	
4450	Carbon disulfide	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4455	Carbon tetrachloride	µg/kg	16.8	25.3	12.6 - 38.0	Acceptable	EPA 8260C 2006	2/5/2020	-1.79	24.0	4.04	
4475	Chlorobenzene	µg/kg	136	176	88.0 - 264	Acceptable	EPA 8260C 2006	2/5/2020	-0.814	161	30.8	
4575	Chlorodibromomethane	µg/kg	32.4	38.4	23.0 - 53.8	Acceptable	EPA 8260C 2006	2/5/2020	-0.821	37.0	5.65	
4485	Chloroethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4500	2-Chloroethylvinylether	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				



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SOIL Volatiles in Soil (cat# 623, lot# D109-721) (Continued)

4505	Chloroform	µg/kg	97.1	139	83.4 - 195	Acceptable	EPA 8260C 2006	2/5/2020	-1.40	133	25.6	
4960	Chloromethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4535	2-Chlorotoluene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4540	4-Chlorotoluene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4570	1,2-Dibromo-3-chloropropane (DBCP)	µg/kg	31.4	42.1	21.0 - 63.2	Acceptable	EPA 8260C 2006	2/5/2020	-0.960	38.9	7.78	
4585	1,2-Dibromoethane (EDB)	µg/kg	66.0	78.6	51.1 - 106	Acceptable	EPA 8260C 2006	2/5/2020	-0.939	76.9	11.7	
4595	Dibromomethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4610	1,2-Dichlorobenzene	µg/kg	64.0	88.9	53.3 - 124	Acceptable	EPA 8260C 2006	2/5/2020	-0.996	82.2	18.3	
4615	1,3-Dichlorobenzene	µg/kg	< 12	< 12.0	0.00 - 12.0	Acceptable	EPA 8260C 2006	2/5/2020				
4620	1,4-Dichlorobenzene	µg/kg	119	162	97.2 - 227	Acceptable	EPA 8260C 2006	2/5/2020	-0.948	148	30.6	
4625	Dichlorodifluoromethane (Freon 12)	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4630	1,1-Dichloroethane	µg/kg	77.1	107	64.2 - 150	Acceptable	EPA 8260C 2006	2/5/2020	-1.35	103	19.4	
4635	1,2-Dichloroethane	µg/kg	102	138	82.8 - 193	Acceptable	EPA 8260C 2006	2/5/2020	-1.74	135	18.9	
4640	1,1-Dichloroethylene	µg/kg	88.1	142	71.0 - 213	Acceptable	EPA 8260C 2006	2/5/2020	-1.36	128	29.2	
4645	cis-1,2-Dichloroethylene	µg/kg	107	146	87.6 - 204	Acceptable	EPA 8260C 2006	2/5/2020	-1.25	145	30.1	
4700	trans-1,2-Dichloroethylene	µg/kg	120	171	103 - 239	Acceptable	EPA 8260C 2006	2/5/2020	-1.84	174	29.5	
4655	1,2-Dichloropropane	µg/kg	< 13	< 13.0	0.00 - 13.0	Acceptable	EPA 8260C 2006	2/5/2020				
4660	1,3-Dichloropropane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4665	2,2-Dichloropropane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4670	1,1-Dichloropropene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				



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SOIL Volatiles in Soil (cat# 623, lot# D109-721) (Continued)

4680	cis-1,3-Dichloropropylene	µg/kg	25.9	29.7	17.8 - 41.6	Acceptable	EPA 8260C 2006	2/5/2020	-0.706	28.6	3.84	
4685	trans-1,3-Dichloropropylene	µg/kg	82.5	100	55.0 - 145	Acceptable	EPA 8260C 2006	2/5/2020	-0.825	94.9	15.1	
4765	Ethylbenzene	µg/kg	< 12	< 12.0	0.00 - 12.0	Acceptable	EPA 8260C 2006	2/5/2020				
4835	Hexachlorobutadiene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4840	Hexachloroethane	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
4860	2-Hexanone	µg/kg	235	270	135 - 405	Acceptable	EPA 8260C 2006	2/5/2020	-0.321	252	53.9	
4900	Isopropylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4910	4-Isopropyltoluene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
4975	Methylene chloride	µg/kg	68.2	91.6	45.8 - 137	Acceptable	EPA 8260C 2006	2/5/2020	-1.25	87.9	15.8	
4995	4-Methyl-2-pentanone (MIBK)	µg/kg	293	349	174 - 524	Acceptable	EPA 8260C 2006	2/5/2020	-0.704	339	65.0	
5005	Naphthalene	µg/kg	41.6	68.8	34.4 - 103	Acceptable	EPA 8260C 2006	2/5/2020	-1.06	58.3	15.7	
5015	Nitrobenzene	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
5090	n-Propylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
5100	Styrene	µg/kg	< 26	< 26.0	0.00 - 26.0	Acceptable	EPA 8260C 2006	2/5/2020				
5105	1,1,1,2-Tetrachloroethane	µg/kg	153	177	106 - 248	Acceptable	EPA 8260C 2006	2/5/2020	-0.692	171	25.7	
5110	1,1,2,2-Tetrachloroethane	µg/kg	< 11	< 11.0	0.00 - 11.0	Acceptable	EPA 8260C 2006	2/5/2020				
5115	Tetrachloroethylene	µg/kg	122	176	88.0 - 264	Acceptable	EPA 8260C 2006	2/5/2020	-1.38	162	29.2	
5140	Toluene	µg/kg	136	181	118 - 244	Acceptable	EPA 8260C 2006	2/5/2020	-1.04	170	33.0	
5150	1,2,3-Trichlorobenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
5155	1,2,4-Trichlorobenzene	µg/kg	99.7	173	69.2 - 277	Acceptable	EPA 8260C 2006	2/5/2020	-0.936	142	45.3	



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SOIL Volatiles in Soil (cat# 623, lot# D109-721) (Continued)

5160	1,1,1-Trichloroethane	µg/kg	< 11	< 11.0	0.00 - 11.0	Acceptable	EPA 8260C 2006	2/5/2020				
5165	1,1,2-Trichloroethane	µg/kg	157	184	129 - 239	Acceptable	EPA 8260C 2006	2/5/2020	-0.780	178	26.5	
5170	Trichloroethylene	µg/kg	63.9	88.7	53.2 - 124	Acceptable	EPA 8260C 2006	2/5/2020	-1.33	83.4	14.6	
5175	Trichlorofluoromethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
5180	1,2,3-Trichloropropane (TCP)	µg/kg	164	186	93.0 - 279	Acceptable	EPA 8260C 2006	2/5/2020	-0.134	169	38.7	
5210	1,2,4-Trimethylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
5215	1,3,5-Trimethylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
5225	Vinyl acetate	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
5235	Vinyl chloride	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	2/5/2020				
5240	m&p-Xylene	µg/kg	< 11	< 11.0	0.00 - 11.0	Acceptable	EPA 8260C 2006	2/5/2020				
5250	o-Xylene	µg/kg	< 11	< 11.0	0.00 - 11.0	Acceptable	EPA 8260C 2006	2/5/2020				
5260	Xylenes, total	µg/kg	< 22	< 22.0	0.00 - 22.0	Acceptable	EPA 8260C 2006	2/5/2020				



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SOIL Low-Level PAHs in Soil (cat# 625, lot# D109-722)

5500	Acenaphthene	µg/kg	547	788	171 - 935	Acceptable	EPA 8270C SIM	1/30/2020	-0.0417	553	148	
5505	Acenaphthylene	µg/kg	609	861	86.1 - 1140	Acceptable	EPA 8270C SIM	1/30/2020	0.203	576	163	
5555	Anthracene	µg/kg	552	791	237 - 870	Acceptable	EPA 8270C SIM	1/30/2020	0.00791	551	135	
5575	Benzo(a)anthracene	µg/kg	125	166	58.8 - 195	Acceptable	EPA 8270C SIM	1/30/2020	-0.0524	127	36.5	
5585	Benzo(b)fluoranthene	µg/kg	106	120	46.3 - 143	Acceptable	EPA 8270C SIM	1/30/2020	0.516	94.4	22.5	
5600	Benzo(k)fluoranthene	µg/kg	295	373	153 - 410	Acceptable	EPA 8270C SIM	1/30/2020	0.240	277	73.6	
5590	Benzo(g,h,i)perylene	µg/kg	161	220	60.8 - 248	Acceptable	EPA 8270C SIM	1/30/2020	0.135	154	50.3	
5580	Benzo(a)pyrene	µg/kg	82.0	101	22.1 - 121	Acceptable	EPA 8270C SIM	1/30/2020	0.692	71.4	15.4	
5855	Chrysene	µg/kg	296	453	132 - 498	Acceptable	EPA 8270C SIM	1/30/2020	-0.0801	303	85.4	
5895	Dibenz(a,h)anthracene	µg/kg	152	205	67.2 - 226	Acceptable	EPA 8270C SIM	1/30/2020	0.199	144	41.5	
6265	Fluoranthene	µg/kg	184	207	78.8 - 257	Acceptable	EPA 8270C SIM	1/30/2020	0.403	168	40.4	
6270	Fluorene	µg/kg	314	427	106 - 538	Acceptable	EPA 8270C SIM	1/30/2020	-0.0951	322	84.5	
6315	Indeno(1,2,3-cd)pyrene	µg/kg	148	193	64.7 - 213	Acceptable	EPA 8270C SIM	1/30/2020	0.239	139	39.0	
5005	Naphthalene	µg/kg	476	654	65.4 - 866	Acceptable	EPA 8270C SIM	1/30/2020	0.205	448	138	
6615	Phenanthrene	µg/kg	330	450	138 - 517	Acceptable	EPA 8270C SIM	1/30/2020	0.0332	328	73.0	
6665	Pyrene	µg/kg	333	469	151 - 541	Acceptable	EPA 8270C SIM	1/30/2020	-0.145	346	88.5	



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SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D109-727)

5500	Acenaphthene	µg/kg	6700	9690	2660 - 10700	Acceptable	EPA 8270C 3 1996	1/31/2020	0.129	6510	1460	
5505	Acenaphthylene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	1/31/2020				
5145	2-Amino-1-methylbenzene (o-toluidine)	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	1/31/2020				
5545	Aniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	1/31/2020				
5555	Anthracene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	1/31/2020				
5595	Benzidine	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	1/31/2020				
5610	Benzoic acid	µg/kg	< 3000	< 3000	0.00 - 3000	Acceptable	EPA 8270C 3 1996	1/31/2020				
5575	Benzo(a)anthracene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	1/31/2020				
5585	Benzo(b)fluoranthene	µg/kg	2480	3570	1090 - 4410	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.503	2750	533	
5600	Benzo(k)fluoranthene	µg/kg	2350	3090	989 - 3910	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.231	2450	437	
5590	Benzo(g,h,i)perylene	µg/kg	4570	6420	1880 - 7630	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.167	4750	1110	
5580	Benzo(a)pyrene	µg/kg	3400	5430	1530 - 5990	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.525	3760	683	
5630	Benzyl alcohol	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	1/31/2020				
5760	bis(2-Chloroethoxy)methane	µg/kg	3010	4310	907 - 4760	Acceptable	EPA 8270C 3 1996	1/31/2020	0.250	2830	709	
5765	bis(2-Chloroethyl)ether	µg/kg	2120	3800	380 - 4200	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.187	2230	603	
5660	4-Bromophenyl-phenylether	µg/kg	4680	6520	1950 - 7790	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.204	4870	915	
5670	Butylbenzylphthalate	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	1/31/2020				
5680	Carbazole	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	1/31/2020				
5745	4-Chloroaniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	1/31/2020				
5700	4-Chloro-3-methylphenol	µg/kg	4760	7660	1610 - 8430	Acceptable	EPA 8270C 3 1996	1/31/2020	0.522	4380	730	



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SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D109-727) (Continued)

5790	1-Chloronaphthalene	µg/kg		< 1000	0.00 - 1000	Not Reported						
5795	2-Chloronaphthalene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	1/31/2020				
5800	2-Chlorophenol	µg/kg	1600	2630	362 - 2890	Acceptable	EPA 8270C 3 1996	1/31/2020	0.287	1490	394	
5825	4-Chlorophenyl-phenylether	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	1/31/2020				
5855	Chrysene	µg/kg	2150	3110	1120 - 3590	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.462	2350	437	
5895	Dibenz(a,h)anthracene	µg/kg	2190	3070	788 - 3920	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.332	2350	487	
5905	Dibenzofuran	µg/kg	5000	7000	2170 - 7700	Acceptable	EPA 8270C 3 1996	1/31/2020	0.130	4860	1090	
5925	Di-n-butylphthalate	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	1/31/2020				
4610	1,2-Dichlorobenzene	µg/kg	3760	6660	666 - 7330	Acceptable	EPA 8270C 3 1996	1/31/2020	0.293	3460	1030	
4615	1,3-Dichlorobenzene	µg/kg	3310	5850	585 - 6440	Acceptable	EPA 8270C 3 1996	1/31/2020	0.310	3010	972	
4620	1,4-Dichlorobenzene	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	1/31/2020				
5945	3,3'-Dichlorobenzidine	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	1/31/2020				
6000	2,4-Dichlorophenol	µg/kg	2960	4660	727 - 5130	Acceptable	EPA 8270C 3 1996	1/31/2020	0.794	2520	553	
6005	2,6-Dichlorophenol	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	1/31/2020				
6070	Diethylphthalate	µg/kg	4030	5130	1500 - 5930	Acceptable	EPA 8270C 3 1996	1/31/2020	0.462	3710	683	
6130	2,4-Dimethylphenol	µg/kg	< 3000	< 3000	0.00 - 3000	Acceptable	EPA 8270C 3 1996	1/31/2020				
6135	Dimethylphthalate	µg/kg	3070	4290	1220 - 4960	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.0342	3090	572	
6175	2,4-Dinitrophenol	µg/kg	< 3000	< 3000	0.00 - 3000	Acceptable	EPA 8270C 3 1996	1/31/2020				
6185	2,4-Dinitrotoluene	µg/kg	6820	10800	2970 - 11900	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.338	7330	1510	
6190	2,6-Dinitrotoluene	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	1/31/2020				



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SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D109-727) (Continued)

6200	Di-n-octylphthalate	µg/kg	6830	9920	2190 - 13000	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.437	7620	1810	
6065	bis(2-Ethylhexyl)phthalate	µg/kg	8410	12600	3180 - 15800	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.476	9470	2230	
6265	Fluoranthene	µg/kg	5820	7960	2410 - 9250	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.00579	5830	1270	
6270	Fluorene	µg/kg	3620	4480	1420 - 5120	Acceptable	EPA 8270C 3 1996	1/31/2020	0.565	3270	624	
6275	Hexachlorobenzene	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	1/31/2020				
4835	Hexachlorobutadiene	µg/kg	5350	7110	1240 - 7820	Acceptable	EPA 8270C 3 1996	1/31/2020	0.849	4390	1130	
6285	Hexachlorocyclopentadiene	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	1/31/2020				
4840	Hexachloroethane	µg/kg	4510	7490	749 - 8240	Acceptable	EPA 8270C 3 1996	1/31/2020	0.360	4070	1220	
6315	Indeno(1,2,3-cd)pyrene	µg/kg	2140	2850	489 - 3980	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.213	2240	450	
6320	Isophorone	µg/kg	1530	2320	419 - 2710	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.0965	1570	372	
6360	4,6-Dinitro-2-methylphenol	µg/kg	< 3000	< 3000	0.00 - 3000	Acceptable	EPA 8270C 3 1996	1/31/2020				
6385	2-Methylnaphthalene	µg/kg	2780	3890	949 - 4340	Acceptable	EPA 8270C 3 1996	1/31/2020	0.227	2640	607	
6400	2-Methylphenol	µg/kg	< 300	< 300	0.00 - 300	Acceptable	EPA 8270C 3 1996	1/31/2020				
6410	4-Methylphenol	µg/kg	< 300	< 300	0.00 - 300	Acceptable	EPA 8270C 3 1996	1/31/2020				
5005	Naphthalene	µg/kg	6600	10000	1610 - 11000	Acceptable	EPA 8270C 3 1996	1/31/2020	0.225	6180	1850	
6460	2-Nitroaniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	1/31/2020				
6465	3-Nitroaniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	1/31/2020				
6470	4-Nitroaniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	1/31/2020				
5015	Nitrobenzene	µg/kg	4480	6470	1200 - 7120	Acceptable	EPA 8270C 3 1996	1/31/2020	0.421	4040	1050	
6490	2-Nitrophenol	µg/kg	2590	3650	471 - 4020	Acceptable	EPA 8270C 3 1996	1/31/2020	0.837	2140	539	



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SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D109-727) (Continued)

6500	4-Nitrophenol	µg/kg	3550	5140	514 - 6390	Acceptable	EPA 8270C 3 1996	1/31/2020	0.935	2810	793	
6525	N-Nitrosodiethylamine	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	1/31/2020				
6530	N-Nitrosodimethylamine	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	1/31/2020				
6535	N-Nitrosodiphenylamine	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	1/31/2020				
6545	N-Nitroso-di-n-propylamine	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	1/31/2020				
4659	2,2'-Oxybis(1-Chloropropane)	µg/kg	2470	5040	717 - 5770	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.724	3240	1070	
6590	Pentachlorobenzene	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	1/31/2020				
6605	Pentachlorophenol	µg/kg	6240	11700	1170 - 12900	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.124	6460	1790	
6615	Phenanthrene	µg/kg	6190	9030	2960 - 9980	Acceptable	EPA 8270C 3 1996	1/31/2020	-0.190	6470	1470	
6625	Phenol	µg/kg	7590	13200	2020 - 14500	Acceptable	EPA 8270C 3 1996	1/31/2020	0.107	7360	2100	
6665	Pyrene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	1/31/2020				
5095	Pyridine	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	1/31/2020				
6715	1,2,4,5-Tetrachlorobenzene	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	1/31/2020				
6735	2,3,4,6-Tetrachlorophenol	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	1/31/2020				
5155	1,2,4-Trichlorobenzene	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	1/31/2020				
6835	2,4,5-Trichlorophenol	µg/kg	8770	12400	2260 - 13600	Acceptable	EPA 8270C 3 1996	1/31/2020	0.668	7540	1840	
6840	2,4,6-Trichlorophenol	µg/kg	5260	8430	1550 - 9270	Acceptable	EPA 8270C 3 1996	1/31/2020	0.812	4530	901	



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SOIL Organochlorine Pesticides in Soil (cat# 468, lot# D109-728)

7025	Aldrin	µg/kg	306	381	115 - 500	Acceptable	EPA 8081B 2000	2/4/2020	-0.0283	308	61.9	
7110	alpha-BHC	µg/kg	107	129	31.1 - 173	Acceptable	EPA 8081B 2000	2/4/2020	0.234	102	21.9	
7115	beta-BHC	µg/kg	82.1	108	11.3 - 159	Acceptable	EPA 8081B 2000	2/4/2020	-0.163	85.3	19.9	
7105	delta-BHC	µg/kg	125	144	30.1 - 212	Acceptable	EPA 8081B 2000	2/4/2020	0.153	121	26.7	
7120	gamma-BHC(Lindane)	µg/kg	294	352	99.0 - 467	Acceptable	EPA 8081B 2000	2/4/2020	0.189	283	57.8	
7240	alpha-Chlordane	µg/kg	309	393	138 - 503	Acceptable	EPA 8081B 2000	2/4/2020	-0.177	320	63.8	
7245	gamma-Chlordane	µg/kg	357	457	175 - 551	Acceptable	EPA 8081B 2000	2/4/2020	-0.0873	363	69.4	
7355	4,4'-DDD	µg/kg	133	172	45.1 - 239	Acceptable	EPA 8081B 2000	2/4/2020	-0.282	142	31.3	
7360	4,4'-DDE	µg/kg	177	222	72.0 - 303	Acceptable	EPA 8081B 2000	2/4/2020	-0.269	188	39.6	
7365	4,4'-DDT	µg/kg	127	160	32.9 - 217	Acceptable	EPA 8081B 2000	2/4/2020	0.0511	125	38.4	
7470	Dieldrin	µg/kg	358	452	175 - 577	Acceptable	EPA 8081B 2000	2/4/2020	-0.247	376	72.3	
7540	Endrin	µg/kg	314	378	152 - 457	Acceptable	EPA 8081B 2000	2/4/2020	0.140	304	68.0	
7530	Endrin aldehyde	µg/kg	294	454	60.9 - 533	Acceptable	EPA 8081B 2000	2/4/2020	-0.0343	297	84.5	
7535	Endrin ketone	µg/kg	360	478	118 - 617	Acceptable	EPA 8081B 2000	2/4/2020	-0.0775	367	93.5	
7510	Endosulfan I	µg/kg	78.7	102	21.6 - 141	Acceptable	EPA 8081B 2000	2/4/2020	-0.144	81.3	18.2	
7515	Endosulfan II	µg/kg	167	232	62.8 - 307	Acceptable	EPA 8081B 2000	2/4/2020	-0.426	185	41.8	
7520	Endosulfan sulfate	µg/kg	328	442	92.9 - 596	Acceptable	EPA 8081B 2000	2/4/2020	-0.191	344	84.9	
7685	Heptachlor	µg/kg	114	137	41.6 - 189	Acceptable	EPA 8081B 2000	2/4/2020	-0.0554	115	26.0	
7690	Heptachlor epoxide	µg/kg	43.5	53.5	14.0 - 77.9	Acceptable	EPA 8081B 2000	2/4/2020	-0.249	46.0	9.94	
7810	Methoxychlor	µg/kg	73.8	101	10.1 - 166	Acceptable	EPA 8081B 2000	2/4/2020	-0.297	81.9	27.3	



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SOIL Chlordane in Soil (cat# 628, lot# D109-725)

7250	Chlordane, technical	µg/kg	114	162	32.5 - 213	Acceptable	EPA 8081B 2000	2/4/2020	-0.278	123	31.3	
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SOIL Toxaphene in Soil (cat# 627, lot# D109-724)

8250	Toxaphene	µg/kg	883	1600	170 - 2090	Acceptable	EPA 8081B 2000	2/4/2020	-0.772	1130	320	
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SOIL Chlorinated Acid Herbicides in Soil (cat# 626, lot# D109-723)

8505	Acifluorfen	µg/kg	491	609	0.00 - 842	Acceptable	EPA 8151A 1996	2/5/2020	0.621	400	147	
8530	Bentazon	µg/kg	176	299	0.00 - 480	Acceptable	EPA 8151A 1996	2/5/2020	-0.315	205	91.8	
8540	Chloramben	µg/kg		476	0.00 - 563	Not Reported				184	127	
8545	2,4-D	µg/kg	433	601	60.1 - 993	Acceptable	EPA 8151A 1996	2/5/2020	0.219	389	201	
8560	2,4-DB	µg/kg	485	658	65.8 - 1050	Acceptable	EPA 8151A 1996	2/5/2020	0.224	440	203	
8550	Dacthal diacid (DCPA)	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8151A 1996	2/5/2020				
8555	Dalapon	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8151A 1996	2/5/2020				
8595	Dicamba	µg/kg	160	209	20.9 - 343	Acceptable	EPA 8151A 1996	2/5/2020	0.0717	156	62.3	
8600	3,5-Dichlorobenzoic acid	µg/kg	112	165	0.00 - 226	Acceptable	EPA 8151A 1996	2/5/2020	-0.710	121	13.1	
8605	Dichlorprop	µg/kg	369	496	0.00 - 739	Acceptable	EPA 8151A 1996	2/5/2020	0.108	355	128	
8620	Dinoseb	µg/kg	316	412	41.2 - 588	Acceptable	EPA 8151A 1996	2/5/2020	0.897	200	129	
7775	MCPA	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8151A 1996	2/5/2020				
7780	MCPP	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8151A 1996	2/5/2020				
6500	4-Nitrophenol	µg/kg		867	0.00 - 1140	Not Reported				432	237	
6605	Pentachlorophenol	µg/kg	253	412	41.2 - 480	Acceptable	EPA 8151A 1996	2/5/2020	0.476	210	89.9	
8645	Picloram	µg/kg	182	232	0.00 - 462	Acceptable	EPA 8151A 1996	2/5/2020	0.0869	174	96.0	
8655	2,4,5-T	µg/kg	640	877	87.7 - 1290	Acceptable	EPA 8151A 1996	2/5/2020	0.337	557	245	
8650	2,4,5-TP (Silvex)	µg/kg	136	208	20.8 - 319	Acceptable	EPA 8151A 1996	2/5/2020	-0.0363	138	60.3	



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ERA Customer Number:
Report Issued:
Study Dates:

IN00043
P041110
03/09/20
01/20/20 - 03/05/20

SOIL-109 Final Evaluation Report

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description	Analysis Date	Z Score	Study Mean	Study Standard Deviation	Analyst Name
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SOIL PCBs in Soil (cat# 624, lot# D109-726)

8880	Aroclor 1016	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	2/4/2020				
8885	Aroclor 1221	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	2/4/2020				
8890	Aroclor 1232	mg/kg	4.8	8.28	1.72 - 10.9	Acceptable	EPA 8082A 2000	2/4/2020	-0.726	6.32	2.09	
8895	Aroclor 1242	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	2/4/2020				
8900	Aroclor 1248	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	2/4/2020				
8905	Aroclor 1254	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	2/4/2020				
8910	Aroclor 1260	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	2/4/2020				

SOIL Gasoline Range Organics (GRO) in Soil (cat# 630, lot# D109-763)

9408	Gasoline Range Organics (GRO)	mg/kg	615	1060	106 - 1280	Acceptable	EPA 8015D 2003	1/23/2020	-0.221	674	269	
4375	Benzene in GRO	mg/kg		4.68	0.00 - 6.38	Not Reported				2.44	1.31	
4765	Ethylbenzene in GRO	mg/kg		17.8	6.28 - 22.4	Not Reported				14.3	2.68	
5140	Toluene in GRO	mg/kg		53.8	3.05 - 69.4	Not Reported				36.2	11.1	
5260	Xylenes, total in GRO	mg/kg		91.0	34.0 - 117	Not Reported				75.4	13.8	

SOIL Diesel Range Organics (DRO) in Soil (cat# 631, lot# D109-765)

9369	Diesel Range Organics (DRO)	mg/kg	1500	2160	626 - 2870	Acceptable	EPA 8015D 2003	1/27/2020	-0.676	1750	368	
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SOIL-109 Final Evaluation Report

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SOIL PCBs in Oil (cat# 817, lot# D109-563)

8880	Aroclor 1016	mg/kg	9.5	14.2	1.68 - 22.4	Acceptable	EPA 8082A 2007	1/23/2020	-0.876	12.5	3.42	
8885	Aroclor 1221	mg/kg	< 1.25	< 1.25	0.00 - 1.25	Acceptable	EPA 8082A 2007	1/23/2020				
8890	Aroclor 1232	mg/kg	< 1.25	< 1.25	0.00 - 1.25	Acceptable	EPA 8082A 2007	1/23/2020				
8895	Aroclor 1242	mg/kg	< 0.86	< 0.860	0.00 - 0.860	Acceptable	EPA 8082A 2007	1/23/2020				
8900	Aroclor 1248	mg/kg	< 1.25	< 1.25	0.00 - 1.25	Acceptable	EPA 8082A 2007	1/23/2020				
8905	Aroclor 1254	mg/kg	< 0.86	< 0.860	0.00 - 0.860	Acceptable	EPA 8082A 2007	1/23/2020				
8910	Aroclor 1260	mg/kg	< 0.86	< 0.860	0.00 - 0.860	Acceptable	EPA 8082A 2007	1/23/2020				



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CERTIFICATE OF RECOGNITION

ERA congratulates

Pace Analytical Services - Indianapolis
SOIL-109

For your participation and successful evaluation, we recognize the performance of this laboratory for achieving acceptable evaluation in the following standards.

Base/Neutrals and Acids in Soil	Chlordane in Soil	Chlorinated Acid Herbicides in Soil
Corrosivity/pH in Soil	Cyanide in Soil	Diesel Range Organics (DRO) in Soil
Gasoline Range Organics (GRO) in Soil	Ignitability/Flashpoint	Low-Level PAHs in Soil
Metals in Soil	Organochlorine Pesticides in Soil	PCBs in Oil
PCBs in Soil	TCLP Metals in Soil	Toxaphene in Soil



Matthew Seebeck
Quality Officer



A Waters Company

Beth Schrage
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USA

SOIL-111



Final Report

Soil/Hazardous Waste Proficiency Testing

Soil Study

Open Date: 07/20/20

Close Date: 09/03/20

Report Issued Date: 09/10/20



A Waters Company

September 10, 2020

Beth Schrage
Pace Analytical Services - Indianapolis
7726 Moller Road
Indianapolis, IN 46268

Enclosed is your final report for ERA's SOIL-111 Proficiency Testing (PT) study. Your final report includes an evaluation of all results submitted by your laboratory to ERA.

Data Evaluation Protocols: All analytes in ERA's SOIL-111 Proficiency Testing study have been evaluated using the following tiered approach. If the analyte is listed in the most current NELAC Fields of Proficiency Testing (FoPT) table the evaluation was completed by comparing the reported result to the acceptance limits generated using the criteria contained in the table and the evaluation criteria contained in the 2016 TNI Standard, Volume 3. If the analyte is not included in the NELAC FoPT table, the reported result has been evaluated using the procedures outlined in ERA's Standard Operating Procedure for the Generation of Performance Acceptance Limits (SOP 730002268).

Corrective Action Help: As part of your accreditation(s), you may be required to identify the root cause of any "Not Acceptable" results, implement the necessary corrective actions, and then satisfy your PT requirements by participating in a Supplemental (QuiK™Response) or future ERA PT study. ERA's technical staff is available to help your laboratory resolve any technical issues that may be impairing your PT performance and possibly affecting your routine data quality. Our laboratory and technical staff have many years of collective experience in performing the full range of environmental analyses. As part of our technical support, ERA offers QC samples that can be useful in helping you work through your technical issues.

Thank you for your participation in ERA's SOIL-111 Proficiency Testing study. If you have any questions, please contact our Proficiency Testing Department at 1-800-372-0122.

Sincerely,

Matthew Seebeck
Quality Officer

attachments



A Waters Company

Report Recipient	Contact/Phone Number	Reporting Type
Illinois	John South / (217) 558-7142	All Analytes
Kansas	Paul Harrison / 785-296-6198	All Analytes
Kentucky	Patrick Garrity / 502-782-6954	All Analytes
Texas	Frank Jamison / (512) 239-3754	All Analytes
West Virginia (DEP)	Justin D Carpenter / (304) 926-0499-1158	All Analytes



A Waters Company

SOIL-111 Definitions & Study Discussion

Study Dates: 07/20/20 - 09/03/20

Report Issued: 09/10/20

SOIL Study Definitions

The Reported Value is the value that the laboratory reported to ERA.

The ERA Assigned Values are compliant with the most current NELAC Fields of Proficiency Testing (FoPT) table. The Assigned Values for the Organic Proficiency Testing Standards are equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation as applicable. The assigned values for the Inorganic Proficiency Testing Standards, with the exception of the TCLP Metals in Soil and Total Organic Carbon (TOC) in the Nutrients in Soil sample, are equal to the maximum amount of the parameter available in the standard by applicable EPA methodologies. The assigned values for the TCLP metals and TOC are equal to the mean of the study data, after the removal of outliers. All parameters not added to the standard are given an Assigned Value of "< PTRL", per the guidelines contained in the 2009 TNI Standards. The assigned values are directly traceable to the commercially prepared starting materials used to manufacture the PT standards.

The Acceptance Limits are established per the criteria contained in the most current NELAC FoPT table or ERA's SOP for the Generation of Performance Acceptance Limits™ as applicable. This report is scored by the criteria in the 2016 TNI Standard, Volume 3, instead of by the criteria in the 2009 TNI Standard to which the Proficiency Testing Provider is accredited. This is a planned change and is endorsed by the TNI Proficiency Testing Program Executive Committee for transition to the 2016 TNI Standard.

The Performance Evaluation:

- | | |
|----------------|---|
| Acceptable | = Reported Value falls within the Acceptance Limits. |
| Not Acceptable | = Reported Value falls outside the Acceptance Limits. |
| No Evaluation | = Reported Value cannot be evaluated. |
| Not Reported | = No Value reported. |

The Method Description is the method the laboratory reported to ERA.

SOIL Study Discussion

ERA's SOIL-111 Proficiency Testing (PT) study has been reviewed by ERA senior management and certified compliant with the requirements of the 2009 TNI PT Standard and the 2016 TNI Standard, Volume 3, Section 5.9 and the criteria contained in the most current NELAC Fields of Proficiency Testing (FoPT) table.

ERA's SOIL-111 study standards were examined for any anomalies. A full review of all homogeneity, stability and accuracy verification data was completed. All analytical verification data for all analytes in the standards met the acceptance criteria contained in the 2009 TNI PT Standard and the criteria contained in the most current NELAC FoPT table.

All analytes are included in ERA's A2LA accreditation, certification number 1539.01.

The data submitted by participating laboratories was also examined for study anomalies. There were no anomalies observed during the statistical review of the data.

ERA's SOIL-111 Proficiency Testing study reports shall not be reproduced except in its entirety and not without the permission of the participating laboratory. The report must not be used by the participating laboratories to claim product endorsement any agency of the U. S. government.

The data contained herein are confidential and intended for your use only.

If you have any questions or concerns regarding your assessment in ERA's SOIL Proficiency Testing program, please contact our Proficiency Testing Department at 1-800-372-0122.





SOIL-111 Laboratory Exception Report

Beth Schrage
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EPA ID: IN00043
ERA Customer Number: P041110
Report Issued: 09/10/20
Study Dates: 07/20/20 - 09/03/20

Not Acceptable Evaluations

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D111-727)							
6625	Phenol	µg/kg	< 150	2820	389 - 3100	Not Acceptable	EPA 8270C 3 1996
SOIL Chlorinated Acid Herbicides in Soil (cat# 626, lot# D111-723)							
8560	2,4-DB	µg/kg	< 10	118	11.8 - 324	Not Acceptable	EPA 8151A 1996



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Final Report Results For Laboratory Pace Analytical Services - Indianapolis





Final Evaluation Report

Study: **SOIL-111**

ERA Customer Number: **P041110**

Laboratory Name: **Pace Analytical Services
- Indianapolis**

Inorganic Results





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SOIL-111 Final Evaluation Report

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description	Analysis Date	Z Score	Study Mean	Study Standard Deviation	Analyst Name
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SOIL Metals in Soil (cat# 620, lot# D111-540)

1000	Aluminum	mg/kg	7940	10100	4050 - 12200	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.0893	8110	1920	
1005	Antimony	mg/kg	83.4	269	26.9 - 336	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.635	134	80.1	
1010	Arsenic	mg/kg	169	185	119 - 221	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.0716	170	17.8	
1015	Barium	mg/kg	175	193	138 - 229	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.489	183	17.0	
1020	Beryllium	mg/kg	116	122	87.0 - 145	Acceptable	EPA 6010B 2 1996	7/30/2020	0.00213	116	9.98	
1025	Boron	mg/kg	192	273	120 - 300	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.359	200	22.2	
1030	Cadmium	mg/kg	90.4	98.3	67.1 - 112	Acceptable	EPA 6010B 2 1996	7/30/2020	0.124	89.5	7.27	
1035	Calcium	mg/kg	4410	5190	3490 - 6120	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.843	4810	474	
1040	Chromium	mg/kg	94.8	107	70.6 - 131	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.571	101	10.6	
1050	Cobalt	mg/kg	81.3	90.2	63.6 - 106	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.476	84.8	7.36	
1055	Copper	mg/kg	144	155	112 - 186	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.356	149	13.9	
1070	Iron	mg/kg	12900	15000	4920 - 23200	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.330	14100	3560	
1075	Lead	mg/kg	138	142	101 - 179	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.152	140	13.2	
1085	Magnesium	mg/kg	2220	2570	1460 - 3240	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.414	2350	313	
1090	Manganese	mg/kg	576	680	505 - 791	Acceptable	EPA 6010B 2 1996	7/30/2020	-1.38	648	52.3	
1095	Mercury	mg/kg		23.5	9.34 - 25.8	Not Reported				15.6	1.70	
1100	Molybdenum	mg/kg	91.8	108	66.2 - 123	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.289	94.3	8.82	
1105	Nickel	mg/kg	64.9	76.1	47.8 - 88.8	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.547	68.3	6.16	
1125	Potassium	mg/kg	1850	2420	1210 - 2880	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.567	2050	344	
1140	Selenium	mg/kg	182	194	124 - 240	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.00136	182	16.0	



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SOIL-111 Final Evaluation Report

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description	Analysis Date	Z Score	Study Mean	Study Standard Deviation	Analyst Name
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SOIL Metals in Soil (cat# 620, lot# D111-540) (Continued)

1150	Silver	mg/kg	47.2	52.6	35.1 - 65.2	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.512	50.1	5.75	
1155	Sodium	mg/kg	124	161	48.1 - 223	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.527	136	22.0	
1160	Strontium	mg/kg	164	180	122 - 213	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.227	167	14.9	
1165	Thallium	mg/kg	85.3	95.3	57.9 - 118	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.329	87.7	7.41	
1175	Tin	mg/kg	67.5	77.7	36.5 - 102	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.188	69.3	9.49	
1180	Titanium	mg/kg	271	433	0.00 - 670	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.458	324	115	
3055	Uranium	mg/kg		31.3	20.8 - 41.7	Not Reported				31.3	3.49	
1185	Vanadium	mg/kg	144	165	111 - 196	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.583	153	16.1	
1190	Zinc	mg/kg	221	238	159 - 296	Acceptable	EPA 6010B 2 1996	7/30/2020	-0.304	228	21.5	



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SOIL Metals in Soil (cat# 620, lot# D111-540)

1000	Aluminum	mg/kg	9230	10100	4050 - 12200	Acceptable	EPA 6020	8/6/2020	0.584	8110	1920	
1005	Antimony	mg/kg	40.0	269	26.9 - 336	Acceptable	EPA 6020	8/6/2020	-1.18	134	80.1	
1010	Arsenic	mg/kg	158	185	119 - 221	Acceptable	EPA 6020	8/6/2020	-0.690	170	17.8	
1015	Barium	mg/kg	199	193	138 - 229	Acceptable	EPA 6020	8/6/2020	0.923	183	17.0	
1020	Beryllium	mg/kg	115	122	87.0 - 145	Acceptable	EPA 6020	8/6/2020	-0.0981	116	9.98	
1025	Boron	mg/kg		273	120 - 300	Not Reported				200	22.2	
1030	Cadmium	mg/kg	93.4	98.3	67.1 - 112	Acceptable	EPA 6020	8/6/2020	0.536	89.5	7.27	
1035	Calcium	mg/kg		5190	3490 - 6120	Not Reported				4810	474	
1040	Chromium	mg/kg	99.0	107	70.6 - 131	Acceptable	EPA 6020	8/6/2020	-0.177	101	10.6	
1050	Cobalt	mg/kg	89.4	90.2	63.6 - 106	Acceptable	EPA 6020	8/6/2020	0.625	84.8	7.36	
1055	Copper	mg/kg	151	155	112 - 186	Acceptable	EPA 6020	8/6/2020	0.148	149	13.9	
1070	Iron	mg/kg		15000	4920 - 23200	Not Reported				14100	3560	
1075	Lead	mg/kg	150	142	101 - 179	Acceptable	EPA 6020	8/6/2020	0.758	140	13.2	
1085	Magnesium	mg/kg		2570	1460 - 3240	Not Reported				2350	313	
1090	Manganese	mg/kg	683	680	505 - 791	Acceptable	EPA 6020	8/6/2020	0.668	648	52.3	
1095	Mercury	mg/kg		23.5	9.34 - 25.8	Not Reported				15.6	1.70	
1100	Molybdenum	mg/kg		108	66.2 - 123	Not Reported				94.3	8.82	
1105	Nickel	mg/kg	70.6	76.1	47.8 - 88.8	Acceptable	EPA 6020	8/6/2020	0.378	68.3	6.16	
1125	Potassium	mg/kg		2420	1210 - 2880	Not Reported				2050	344	
1140	Selenium	mg/kg	179	194	124 - 240	Acceptable	EPA 6020	8/6/2020	-0.188	182	16.0	



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SOIL Metals in Soil (cat# 620, lot# D111-540) (Continued)

1150	Silver	mg/kg	52.0	52.6	35.1 - 65.2	Acceptable	EPA 6020	8/6/2020	0.322	50.1	5.75	
1155	Sodium	mg/kg		161	48.1 - 223	Not Reported				136	22.0	
1160	Strontium	mg/kg		180	122 - 213	Not Reported				167	14.9	
1165	Thallium	mg/kg	89.2	95.3	57.9 - 118	Acceptable	EPA 6020	8/6/2020	0.197	87.7	7.41	
1175	Tin	mg/kg		77.7	36.5 - 102	Not Reported				69.3	9.49	
1180	Titanium	mg/kg		433	0.00 - 670	Not Reported				324	115	
3055	Uranium	mg/kg		31.3	20.8 - 41.7	Not Reported				31.3	3.49	
1185	Vanadium	mg/kg	159	165	111 - 196	Acceptable	EPA 6020	8/6/2020	0.351	153	16.1	
1190	Zinc	mg/kg	236	238	159 - 296	Acceptable	EPA 6020	8/6/2020	0.392	228	21.5	



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SOIL-111 Final Evaluation Report

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SOIL Metals in Soil (cat# 620, lot# D111-540)

1000	Aluminum	mg/kg		10100	4050 - 12200	Not Reported				8110	1920	
1005	Antimony	mg/kg		269	26.9 - 336	Not Reported				134	80.1	
1010	Arsenic	mg/kg		185	119 - 221	Not Reported				170	17.8	
1015	Barium	mg/kg		193	138 - 229	Not Reported				183	17.0	
1020	Beryllium	mg/kg		122	87.0 - 145	Not Reported				116	9.98	
1025	Boron	mg/kg		273	120 - 300	Not Reported				200	22.2	
1030	Cadmium	mg/kg		98.3	67.1 - 112	Not Reported				89.5	7.27	
1035	Calcium	mg/kg		5190	3490 - 6120	Not Reported				4810	474	
1040	Chromium	mg/kg		107	70.6 - 131	Not Reported				101	10.6	
1050	Cobalt	mg/kg		90.2	63.6 - 106	Not Reported				84.8	7.36	
1055	Copper	mg/kg		155	112 - 186	Not Reported				149	13.9	
1070	Iron	mg/kg		15000	4920 - 23200	Not Reported				14100	3560	
1075	Lead	mg/kg		142	101 - 179	Not Reported				140	13.2	
1085	Magnesium	mg/kg		2570	1460 - 3240	Not Reported				2350	313	
1090	Manganese	mg/kg		680	505 - 791	Not Reported				648	52.3	
1095	Mercury	mg/kg	24.0	23.5	9.34 - 25.8	Acceptable	EPA 7471A 1 1994	7/29/2020	4.97	15.6	1.70	
1100	Molybdenum	mg/kg		108	66.2 - 123	Not Reported				94.3	8.82	
1105	Nickel	mg/kg		76.1	47.8 - 88.8	Not Reported				68.3	6.16	
1125	Potassium	mg/kg		2420	1210 - 2880	Not Reported				2050	344	
1140	Selenium	mg/kg		194	124 - 240	Not Reported				182	16.0	



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SOIL Metals in Soil (cat# 620, lot# D111-540) (Continued)

1150	Silver	mg/kg		52.6	35.1 - 65.2	Not Reported				50.1	5.75	
1155	Sodium	mg/kg		161	48.1 - 223	Not Reported				136	22.0	
1160	Strontium	mg/kg		180	122 - 213	Not Reported				167	14.9	
1165	Thallium	mg/kg		95.3	57.9 - 118	Not Reported				87.7	7.41	
1175	Tin	mg/kg		77.7	36.5 - 102	Not Reported				69.3	9.49	
1180	Titanium	mg/kg		433	0.00 - 670	Not Reported				324	115	
3055	Uranium	mg/kg		31.3	20.8 - 41.7	Not Reported				31.3	3.49	
1185	Vanadium	mg/kg		165	111 - 196	Not Reported				153	16.1	
1190	Zinc	mg/kg		238	159 - 296	Not Reported				228	21.5	

SOIL Hexavalent Chromium in Soil (cat# 876, lot# D111-921)

1045	Chromium VI	mg/kg	145	202	44.3 - 222	Acceptable	EPA 7196A 1 1992	7/30/2020	0.545	131	26.5	
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SOIL TCLP Metals in Soil (cat# 629, lot# D111-544)

1005	Antimony	mg/L	1.4	1.45	0.880 - 2.01	Acceptable	EPA 6010B 2 1996	8/5/2020	-0.243	1.45	0.189	
1010	Arsenic	mg/L	1.2	1.12	0.692 - 1.54	Acceptable	EPA 6010B 2 1996	8/5/2020	0.577	1.12	0.142	
1015	Barium	mg/L	2.2	2.22	1.72 - 2.71	Acceptable	EPA 6010B 2 1996	8/5/2020	-0.0940	2.22	0.164	
1020	Beryllium	mg/L	6.3	5.89	3.93 - 7.85	Acceptable	EPA 6010B 2 1996	8/5/2020	0.623	5.89	0.654	
1030	Cadmium	mg/L	4.6	4.49	3.26 - 5.72	Acceptable	EPA 6010B 2 1996	8/5/2020	0.270	4.49	0.410	
1040	Chromium	mg/L	6.3	6.38	3.87 - 8.89	Acceptable	EPA 6010B 2 1996	8/5/2020	-0.0928	6.38	0.836	
1075	Lead	mg/L	11.8	10.8	5.97 - 15.7	Acceptable	EPA 6010B 2 1996	8/5/2020	0.594	10.8	1.62	
1095	Mercury	mg/L		6.11	1.11 - 11.1	Not Reported				6.11	1.67	
1105	Nickel	mg/L	2.9	2.85	2.04 - 3.66	Acceptable	EPA 6010B 2 1996	8/5/2020	0.191	2.85	0.271	
1140	Selenium	mg/L	2.1	2.04	1.26 - 2.81	Acceptable	EPA 6010B 2 1996	8/5/2020	0.250	2.04	0.258	
1150	Silver	mg/L	0.51	0.471	0.0880 - 0.854	Acceptable	EPA 6010B 2 1996	8/5/2020	0.304	0.471	0.128	
1190	Zinc	mg/L	3.2	3.15	2.43 - 3.88	Acceptable	EPA 6010B 2 1996	8/5/2020	0.191	3.15	0.241	



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SOIL TCLP Metals in Soil (cat# 629, lot# D111-544)

1005	Antimony	mg/L		1.45	0.880 - 2.01	Not Reported				1.45	0.189	
1010	Arsenic	mg/L		1.12	0.692 - 1.54	Not Reported				1.12	0.142	
1015	Barium	mg/L		2.22	1.72 - 2.71	Not Reported				2.22	0.164	
1020	Beryllium	mg/L		5.89	3.93 - 7.85	Not Reported				5.89	0.654	
1030	Cadmium	mg/L		4.49	3.26 - 5.72	Not Reported				4.49	0.410	
1040	Chromium	mg/L		6.38	3.87 - 8.89	Not Reported				6.38	0.836	
1075	Lead	mg/L		10.8	5.97 - 15.7	Not Reported				10.8	1.62	
1095	Mercury	mg/L	1.2	6.11	1.11 - 11.1	Acceptable	EPA 7470A 1 1994	8/4/2020	-2.95	6.11	1.67	
1105	Nickel	mg/L		2.85	2.04 - 3.66	Not Reported				2.85	0.271	
1140	Selenium	mg/L		2.04	1.26 - 2.81	Not Reported				2.04	0.258	
1150	Silver	mg/L		0.471	0.0880 - 0.854	Not Reported				0.471	0.128	
1190	Zinc	mg/L		3.15	2.43 - 3.88	Not Reported				3.15	0.241	

SOIL Cyanide in Soil (cat# 621, lot# D111-541)

1645	Cyanide, total	mg/kg	96.3	141	39.6 - 155	Acceptable	EPA 9012A 1 1996	7/29/2020	0.0766	93.7	34.4	
1923	Reactive Cyanide	mg/kg		< 200	0.00 - 200	Not Reported				254	385	
1510	Amenable Cyanide	mg/kg	7.3	< 200	0.00 - 200	Acceptable	EPA 9012A 1 1996	7/29/2020	-0.912	37.1	32.7	

SOIL Corrosivity/pH in Soil (cat# 875, lot# D111-914)

1625	Corrosivity (pH)	S.U.	5.4	5.48	4.88 - 6.08	Acceptable	EPA 9045C 3 1995	7/28/2020	-0.759	5.57	0.222	
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SOIL Ignitability/Flashpoint (cat# 874, lot# D111-979)

1780	Ignitability/Flashpoint	°F	110	106	89.0 - 123	Acceptable	EPA 1010A 2002	7/28/2020	0.290	109	4.70	
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Final Evaluation Report

Study: **SOIL-111**

ERA Customer Number: **P041110**

Laboratory Name: **Pace Analytical Services
- Indianapolis**

Organic Results





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SOIL Volatiles in Soil (cat# 623, lot# D111-721)

4315	Acetone	µg/kg	612	916	98.6 - 1410	Acceptable	EPA 8260C 2006	8/5/2020	-0.391	695	212	
4320	Acetonitrile	µg/kg	< 200	478	0.00 - 962	Acceptable	EPA 8260C 2006	8/5/2020		485	202	
4325	Acrolein	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4375	Benzene	µg/kg	70.6	65.5	42.6 - 88.4	Acceptable	EPA 8260C 2006	8/5/2020	0.490	66.5	8.35	
4385	Bromobenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4390	Bromochloromethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4395	Bromodichloromethane	µg/kg	73.9	68.9	41.3 - 96.5	Acceptable	EPA 8260C 2006	8/5/2020	0.294	71.5	8.09	
4400	Bromoform	µg/kg	199	169	93.0 - 245	Acceptable	EPA 8260C 2006	8/5/2020	0.999	173	26.2	
4950	Bromomethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4410	2-Butanone (MEK)	µg/kg	386	404	131 - 622	Acceptable	EPA 8260C 2006	8/5/2020	-0.126	395	71.1	
4435	n-Butylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4440	sec-Butylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4445	tert-Butylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
5000	tert-Butyl methyl ether (MTBE)	µg/kg	< 12	< 12.0	0.00 - 12.0	Acceptable	EPA 8260C 2006	8/5/2020				
4450	Carbon disulfide	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4455	Carbon tetrachloride	µg/kg	172	171	85.5 - 257	Acceptable	EPA 8260C 2006	8/5/2020	-0.103	175	28.1	
4475	Chlorobenzene	µg/kg	< 10	< 10.0	0.00 - 10.0	Acceptable	EPA 8260C 2006	8/5/2020				
4575	Chlorodibromomethane	µg/kg	175	162	97.2 - 227	Acceptable	EPA 8260C 2006	8/5/2020	0.298	170	16.7	
4485	Chloroethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4500	2-Chloroethylvinylether	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				



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SOIL Volatiles in Soil (cat# 623, lot# D111-721) (Continued)

4505	Chloroform	µg/kg	197	187	112 - 262	Acceptable	EPA 8260C 2006	8/5/2020	0.555	188	16.2	
4960	Chloromethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4535	2-Chlorotoluene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4540	4-Chlorotoluene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4570	1,2-Dibromo-3-chloropropane (DBCP)	µg/kg	65.6	63.7	31.8 - 95.6	Acceptable	EPA 8260C 2006	8/5/2020	0.209	63.4	10.7	
4585	1,2-Dibromoethane (EDB)	µg/kg	< 13	< 13.0	0.00 - 13.0	Acceptable	EPA 8260C 2006	8/5/2020				
4595	Dibromomethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4610	1,2-Dichlorobenzene	µg/kg	39.7	41.5	24.9 - 58.1	Acceptable	EPA 8260C 2006	8/5/2020	-0.117	40.6	8.02	
4615	1,3-Dichlorobenzene	µg/kg	88.9	95.0	57.0 - 133	Acceptable	EPA 8260C 2006	8/5/2020	-0.0501	89.6	14.8	
4620	1,4-Dichlorobenzene	µg/kg	< 12	< 12.0	0.00 - 12.0	Acceptable	EPA 8260C 2006	8/5/2020				
4625	Dichlorodifluoromethane (Freon 12)	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4630	1,1-Dichloroethane	µg/kg	28.2	28.6	17.2 - 40.0	Acceptable	EPA 8260C 2006	8/5/2020	0.328	27.3	2.83	
4635	1,2-Dichloroethane	µg/kg	47.0	42.2	25.3 - 59.1	Acceptable	EPA 8260C 2006	8/5/2020	0.461	44.0	6.50	
4640	1,1-Dichloroethylene	µg/kg	176	159	79.5 - 239	Acceptable	EPA 8260C 2006	8/5/2020	0.285	169	26.3	
4645	cis-1,2-Dichloroethylene	µg/kg	199	197	118 - 276	Acceptable	EPA 8260C 2006	8/5/2020	0.137	196	22.9	
4700	trans-1,2-Dichloroethylene	µg/kg	26.9	23.4	14.0 - 32.8	Acceptable	EPA 8260C 2006	8/5/2020	0.0149	26.8	3.81	
4655	1,2-Dichloropropane	µg/kg	< 13	< 13.0	0.00 - 13.0	Acceptable	EPA 8260C 2006	8/5/2020				
4660	1,3-Dichloropropane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4665	2,2-Dichloropropane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4670	1,1-Dichloropropene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				



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SOIL Volatiles in Soil (cat# 623, lot# D111-721) (Continued)

4680	cis-1,3-Dichloropropylene	µg/kg	< 12	< 12.0	0.00 - 12.0	Acceptable	EPA 8260C 2006	8/5/2020				
4685	trans-1,3-Dichloropropylene	µg/kg	167	194	107 - 281	Acceptable	EPA 8260C 2006	8/5/2020	-1.16	185	15.5	
4765	Ethylbenzene	µg/kg	< 12	< 12.0	0.00 - 12.0	Acceptable	EPA 8260C 2006	8/5/2020				
4835	Hexachlorobutadiene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4840	Hexachloroethane	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
4860	2-Hexanone	µg/kg	190	233	116 - 350	Acceptable	EPA 8260C 2006	8/5/2020	-1.09	236	41.7	
4900	Isopropylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4910	4-Isopropyltoluene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
4975	Methylene chloride	µg/kg	197	183	91.5 - 275	Acceptable	EPA 8260C 2006	8/5/2020	0.459	188	19.2	
4995	4-Methyl-2-pentanone (MIBK)	µg/kg	373	379	190 - 569	Acceptable	EPA 8260C 2006	8/5/2020	-0.327	392	58.5	
5005	Naphthalene	µg/kg	141	151	75.5 - 227	Acceptable	EPA 8260C 2006	8/5/2020	0.282	130	38.4	
5015	Nitrobenzene	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
5090	n-Propylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
5100	Styrene	µg/kg	133	146	94.9 - 197	Acceptable	EPA 8260C 2006	8/5/2020	-0.292	140	24.5	
5105	1,1,1,2-Tetrachloroethane	µg/kg	141	132	79.2 - 185	Acceptable	EPA 8260C 2006	8/5/2020	0.0490	140	17.8	
5110	1,1,2,2-Tetrachloroethane	µg/kg	67.0	57.3	31.5 - 83.1	Acceptable	EPA 8260C 2006	8/5/2020	0.747	60.2	9.16	
5115	Tetrachloroethylene	µg/kg	44.5	55.3	27.6 - 83.0	Acceptable	EPA 8260C 2006	8/5/2020	-0.811	53.1	10.6	
5140	Toluene	µg/kg	133	132	85.8 - 178	Acceptable	EPA 8260C 2006	8/5/2020	0.00199	133	17.6	
5150	1,2,3-Trichlorobenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
5155	1,2,4-Trichlorobenzene	µg/kg	45.8	54.8	21.9 - 87.7	Acceptable	EPA 8260C 2006	8/5/2020	-0.168	48.4	15.6	



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SOIL Volatiles in Soil (cat# 623, lot# D111-721) (Continued)

5160	1,1,1-Trichloroethane	µg/kg	< 11	< 11.0	0.00 - 11.0	Acceptable	EPA 8260C 2006	8/5/2020				
5165	1,1,2-Trichloroethane	µg/kg	< 14	< 14.0	0.00 - 14.0	Acceptable	EPA 8260C 2006	8/5/2020				
5170	Trichloroethylene	µg/kg	74.6	74.5	44.7 - 104	Acceptable	EPA 8260C 2006	8/5/2020	0.0812	73.8	9.67	
5175	Trichlorofluoromethane	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
5180	1,2,3-Trichloropropane (TCP)	µg/kg	118	110	55.0 - 165	Acceptable	EPA 8260C 2006	8/5/2020	0.496	106	24.7	
5210	1,2,4-Trimethylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
5215	1,3,5-Trimethylbenzene	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
5225	Vinyl acetate	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
5235	Vinyl chloride	µg/kg	< 20	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C 2006	8/5/2020				
5240	m&p-Xylene	µg/kg	< 11	< 11.0	0.00 - 11.0	Acceptable	EPA 8260C 2006	8/5/2020				
5250	o-Xylene	µg/kg	< 11	< 11.0	0.00 - 11.0	Acceptable	EPA 8260C 2006	8/5/2020				
5260	Xylenes, total	µg/kg	< 22	< 22.0	0.00 - 22.0	Acceptable	EPA 8260C 2006	8/5/2020				



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SOIL-111 Final Evaluation Report

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SOIL Low-Level PAHs in Soil (cat# 625, lot# D111-722)

5500	Acenaphthene	µg/kg	367	613	118 - 674	Acceptable	EPA 8270C SIM	7/30/2020	-0.331	389	66.6	
5505	Acenaphthylene	µg/kg	168	284	28.4 - 321	Acceptable	EPA 8270C SIM	7/30/2020	0.378	158	26.5	
5555	Anthracene	µg/kg	77.2	143	28.3 - 157	Acceptable	EPA 8270C SIM	7/30/2020	-0.541	84.3	13.2	
5575	Benzo(a)anthracene	µg/kg	39.6	55.9	14.0 - 71.2	Acceptable	EPA 8270C SIM	7/30/2020	-0.496	42.6	6.07	
5585	Benzo(b)fluoranthene	µg/kg	51.8	77.5	23.8 - 88.5	Acceptable	EPA 8270C SIM	7/30/2020	-0.395	56.1	11.0	
5600	Benzo(k)fluoranthene	µg/kg	137	216	75.6 - 238	Acceptable	EPA 8270C SIM	7/30/2020	-0.507	151	27.0	
5590	Benzo(g,h,i)perylene	µg/kg	148	267	67.4 - 294	Acceptable	EPA 8270C SIM	7/30/2020	-0.671	168	29.6	
5580	Benzo(a)pyrene	µg/kg	79.8	133	25.2 - 146	Acceptable	EPA 8270C SIM	7/30/2020	0.139	77.9	14.0	
5855	Chrysene	µg/kg	76.0	135	37.8 - 148	Acceptable	EPA 8270C SIM	7/30/2020	-0.912	87.3	12.4	
5895	Dibenz(a,h)anthracene	µg/kg	121	201	61.5 - 221	Acceptable	EPA 8270C SIM	7/30/2020	-0.558	133	21.2	
6265	Fluoranthene	µg/kg	82.8	102	30.2 - 126	Acceptable	EPA 8270C SIM	7/30/2020	0.390	77.9	12.5	
6270	Fluorene	µg/kg	281	445	97.0 - 497	Acceptable	EPA 8270C SIM	7/30/2020	-0.365	297	43.7	
6315	Indeno(1,2,3-cd)pyrene	µg/kg	176	314	97.0 - 345	Acceptable	EPA 8270C SIM	7/30/2020	-0.704	192	23.4	
5005	Naphthalene	µg/kg	155	256	25.6 - 294	Acceptable	EPA 8270C SIM	7/30/2020	0.220	150	21.0	
6615	Phenanthrene	µg/kg	183	309	84.9 - 340	Acceptable	EPA 8270C SIM	7/30/2020	-0.682	202	27.4	
6665	Pyrene	µg/kg	152	274	77.4 - 301	Acceptable	EPA 8270C SIM	7/30/2020	-1.14	184	28.1	



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SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D111-727)

5500	Acenaphthene	µg/kg	5420	7340	2160 - 8430	Acceptable	EPA 8270C 3 1996	8/6/2020	0.149	5300	833	
5505	Acenaphthylene	µg/kg	4580	6690	1810 - 8050	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.391	4930	883	
5145	2-Amino-1-methylbenzene (o-toluidine)	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/6/2020				
5545	Aniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/6/2020				
5555	Anthracene	µg/kg	1920	2970	850 - 3400	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.693	2130	297	
5595	Benzidine	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/6/2020				
5610	Benzoic acid	µg/kg	< 3000	< 3000	0.00 - 3000	Acceptable	EPA 8270C 3 1996	8/6/2020				
5575	Benzo(a)anthracene	µg/kg	4280	6420	2390 - 7440	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.782	4910	812	
5585	Benzo(b)fluoranthene	µg/kg	1070	1460	433 - 1960	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.648	1200	194	
5600	Benzo(k)fluoranthene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/6/2020				
5590	Benzo(g,h,i)perylene	µg/kg	2100	3070	908 - 3880	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.592	2390	498	
5580	Benzo(a)pyrene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/6/2020				
5630	Benzyl alcohol	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/6/2020				
5760	bis(2-Chloroethoxy)methane	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/6/2020				
5765	bis(2-Chloroethyl)ether	µg/kg	4010	7280	1030 - 8010	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.374	4400	1050	
5660	4-Bromophenyl-phenylether	µg/kg	2910	4110	1250 - 5140	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.491	3200	584	
5670	Butylbenzylphthalate	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/6/2020				
5680	Carbazole	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/6/2020				
5745	4-Chloroaniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/6/2020				
5700	4-Chloro-3-methylphenol	µg/kg	5540	8450	1730 - 9300	Acceptable	EPA 8270C 3 1996	8/6/2020	0.884	4680	973	



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SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D111-727) (Continued)

5790	1-Chloronaphthalene	µg/kg		< 1000	0.00 - 1000	Not Reported						
5795	2-Chloronaphthalene	µg/kg	3620	5760	1350 - 6600	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.448	3980	801	
5800	2-Chlorophenol	µg/kg	3190	5870	795 - 6460	Acceptable	EPA 8270C 3 1996	8/6/2020	0.159	3060	807	
5825	4-Chlorophenyl-phenylether	µg/kg	3570	4900	1390 - 6070	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.200	3730	797	
5855	Chrysene	µg/kg	3120	5200	1810 - 5720	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.869	3710	676	
5895	Dibenz(a,h)anthracene	µg/kg	2710	4070	1070 - 4920	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.461	3000	626	
5905	Dibenzofuran	µg/kg	6490	8570	2860 - 9810	Acceptable	EPA 8270C 3 1996	8/6/2020	0.129	6330	1210	
5925	Di-n-butylphthalate	µg/kg	6370	7380	1980 - 10400	Acceptable	EPA 8270C 3 1996	8/6/2020	0.183	6210	897	
4610	1,2-Dichlorobenzene	µg/kg	3610	7390	739 - 8130	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.244	3950	1390	
4615	1,3-Dichlorobenzene	µg/kg	2920	6830	683 - 7510	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.319	3360	1390	
4620	1,4-Dichlorobenzene	µg/kg	3240	7280	728 - 8010	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.313	3660	1360	
5945	3,3'-Dichlorobenzidine	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/6/2020				
6000	2,4-Dichlorophenol	µg/kg	2440	4170	641 - 4590	Acceptable	EPA 8270C 3 1996	8/6/2020	0.305	2290	486	
6005	2,6-Dichlorophenol	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	8/6/2020				
6070	Diethylphthalate	µg/kg	6530	8140	2670 - 10400	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.0218	6550	1090	
6130	2,4-Dimethylphenol	µg/kg	< 3000	< 3000	0.00 - 3000	Acceptable	EPA 8270C 3 1996	8/6/2020				
6135	Dimethylphthalate	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/6/2020				
6175	2,4-Dinitrophenol	µg/kg	< 3000	< 3000	0.00 - 3000	Acceptable	EPA 8270C 3 1996	8/6/2020				
6185	2,4-Dinitrotoluene	µg/kg	5350	8470	2440 - 9740	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.628	6090	1180	
6190	2,6-Dinitrotoluene	µg/kg	6300	9180	3100 - 10600	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.571	6880	1010	



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SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D111-727) (Continued)

6200	Di-n-octylphthalate	µg/kg	4160	4490	1000 - 6510	Acceptable	EPA 8270C 3 1996	8/6/2020	0.525	3760	771	
6065	bis(2-Ethylhexyl)phthalate	µg/kg	7720	8150	2180 - 11300	Acceptable	EPA 8270C 3 1996	8/6/2020	0.737	6760	1300	
6265	Fluoranthene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/6/2020				
6270	Fluorene	µg/kg	2070	2770	905 - 3530	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.440	2220	334	
6275	Hexachlorobenzene	µg/kg	9150	12200	4680 - 14600	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.307	9660	1670	
4835	Hexachlorobutadiene	µg/kg	3710	6350	1120 - 6980	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.266	4010	1110	
6285	Hexachlorocyclopentadiene	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	8/6/2020				
4840	Hexachloroethane	µg/kg	3560	7620	762 - 8380	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.339	4060	1470	
6315	Indeno(1,2,3-cd)pyrene	µg/kg	1290	1390	250 - 2120	Acceptable	EPA 8270C 3 1996	8/6/2020	0.309	1180	347	
6320	Isophorone	µg/kg	4570	6780	1620 - 8040	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.239	4830	1080	
6360	4,6-Dinitro-2-methylphenol	µg/kg	< 3000	< 3000	0.00 - 3000	Acceptable	EPA 8270C 3 1996	8/6/2020				
6385	2-Methylnaphthalene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/6/2020				
6400	2-Methylphenol	µg/kg	< 300	< 300	0.00 - 300	Acceptable	EPA 8270C 3 1996	8/6/2020				
6410	4-Methylphenol	µg/kg	< 300	< 300	0.00 - 300	Acceptable	EPA 8270C 3 1996	8/6/2020				
5005	Naphthalene	µg/kg	3990	6680	1070 - 7440	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.254	4260	1050	
6460	2-Nitroaniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/6/2020				
6465	3-Nitroaniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/6/2020				
6470	4-Nitroaniline	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/6/2020				
5015	Nitrobenzene	µg/kg	1980	3200	496 - 3660	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.226	2080	427	
6490	2-Nitrophenol	µg/kg	4330	6760	975 - 7440	Acceptable	EPA 8270C 3 1996	8/6/2020	0.139	4180	1050	



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SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D111-727) (Continued)

6500	4-Nitrophenol	µg/kg	4370	7320	732 - 9500	Acceptable	EPA 8270C 3 1996	8/6/2020	0.0531	4300	1370	
6525	N-Nitrosodiethylamine	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/6/2020				
6530	N-Nitrosodimethylamine	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	8/6/2020				
6535	N-Nitrosodiphenylamine	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	8/6/2020				
6545	N-Nitroso-di-n-propylamine	µg/kg	3380	4990	850 - 5780	Acceptable	EPA 8270C 3 1996	8/6/2020	0.0775	3320	825	
4659	2,2'-Oxybis(1-Chloropropane)	µg/kg	< 150	< 150	0.00 - 150	Acceptable	EPA 8270C 3 1996	8/6/2020				
6590	Pentachlorobenzene	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/6/2020				
6605	Pentachlorophenol	µg/kg	4790	7110	711 - 8590	Acceptable	EPA 8270C 3 1996	8/6/2020	0.514	4270	1020	
6615	Phenanthrene	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8270C 3 1996	8/6/2020				
6625	Phenol	µg/kg	< 150	2820	389 - 3100	Not Acceptable	EPA 8270C 3 1996	8/6/2020		1640	367	
6665	Pyrene	µg/kg	3350	4720	1380 - 5890	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.417	3640	693	
5095	Pyridine	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/6/2020				
6715	1,2,4,5-Tetrachlorobenzene	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8270C 3 1996	8/6/2020				
6735	2,3,4,6-Tetrachlorophenol	µg/kg	< 1500	< 1500	0.00 - 1500	Acceptable	EPA 8270C 3 1996	8/6/2020				
5155	1,2,4-Trichlorobenzene	µg/kg	3850	6740	1250 - 7410	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.353	4250	1130	
6835	2,4,5-Trichlorophenol	µg/kg	1450	2200	400 - 2550	Acceptable	EPA 8270C 3 1996	8/6/2020	-0.0763	1470	319	
6840	2,4,6-Trichlorophenol	µg/kg	5920	8810	1710 - 9690	Acceptable	EPA 8270C 3 1996	8/6/2020	1.09	4930	909	



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SOIL Organochlorine Pesticides in Soil (cat# 468, lot# D111-728)

7025	Aldrin	µg/kg	143	194	56.7 - 260	Acceptable	EPA 8081B 2000	8/7/2020	-0.401	158	38.4	
7110	alpha-BHC	µg/kg	253	351	106 - 472	Acceptable	EPA 8081B 2000	8/7/2020	-0.633	289	56.6	
7115	beta-BHC	µg/kg	259	412	123 - 530	Acceptable	EPA 8081B 2000	8/7/2020	-0.956	327	70.7	
7105	delta-BHC	µg/kg	296	374	99.6 - 501	Acceptable	EPA 8081B 2000	8/7/2020	-0.0700	300	59.1	
7120	gamma-BHC(Lindane)	µg/kg	120	157	36.8 - 228	Acceptable	EPA 8081B 2000	8/7/2020	-0.373	132	33.3	
7240	alpha-Chlordane	µg/kg	259	363	132 - 483	Acceptable	EPA 8081B 2000	8/7/2020	-0.786	308	61.7	
7245	gamma-Chlordane	µg/kg	272	350	141 - 449	Acceptable	EPA 8081B 2000	8/7/2020	-0.359	295	64.6	
7355	4,4'-DDD	µg/kg	263	344	117 - 460	Acceptable	EPA 8081B 2000	8/7/2020	-0.378	289	68.5	
7360	4,4'-DDE	µg/kg	397	480	179 - 666	Acceptable	EPA 8081B 2000	8/7/2020	-0.309	422	81.9	
7365	4,4'-DDT	µg/kg	268	319	82.0 - 468	Acceptable	EPA 8081B 2000	8/7/2020	-0.0956	275	74.3	
7470	Dieldrin	µg/kg	150	191	69.8 - 259	Acceptable	EPA 8081B 2000	8/7/2020	-0.443	164	32.4	
7540	Endrin	µg/kg	137	171	62.6 - 233	Acceptable	EPA 8081B 2000	8/7/2020	-0.278	148	38.2	
7530	Endrin aldehyde	µg/kg	303	491	68.2 - 573	Acceptable	EPA 8081B 2000	8/7/2020	-0.174	321	102	
7535	Endrin ketone	µg/kg	268	385	86.5 - 466	Acceptable	EPA 8081B 2000	8/7/2020	-0.139	276	57.8	
7510	Endosulfan I	µg/kg	238	335	106 - 429	Acceptable	EPA 8081B 2000	8/7/2020	-0.502	268	59.3	
7515	Endosulfan II	µg/kg	167	286	66.5 - 322	Acceptable	EPA 8081B 2000	8/7/2020	-0.644	194	42.4	
7520	Endosulfan sulfate	µg/kg	330	432	93.3 - 598	Acceptable	EPA 8081B 2000	8/7/2020	-0.179	346	87.4	
7685	Heptachlor	µg/kg	93.3	126	41.9 - 191	Acceptable	EPA 8081B 2000	8/7/2020	-0.810	116	28.4	
7690	Heptachlor epoxide	µg/kg	82.3	107	36.9 - 154	Acceptable	EPA 8081B 2000	8/7/2020	-0.618	95.2	20.9	
7810	Methoxychlor	µg/kg	106	131	13.1 - 221	Acceptable	EPA 8081B 2000	8/7/2020	-0.206	112	30.6	



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SOIL-111 Final Evaluation Report

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description	Analysis Date	Z Score	Study Mean	Study Standard Deviation	Analyst Name
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SOIL Chlordane in Soil (cat# 628, lot# D111-725)

7250	Chlordane, technical	µg/kg	512	771	162 - 967	Acceptable	EPA 8081B 2000	8/7/2020	-0.432	565	122	
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SOIL Toxaphene in Soil (cat# 627, lot# D111-724)

8250	Toxaphene	µg/kg	477	805	186 - 911	Acceptable	EPA 8081B 2000	8/7/2020	-0.589	548	121	
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SOIL Chlorinated Acid Herbicides in Soil (cat# 626, lot# D111-723)

8505	Acifluorfen	µg/kg	461	927	0.00 - 1150	Acceptable	EPA 8151A 1996	8/8/2020	-0.221	508	213	
8530	Bentazon	µg/kg	98.8	258	0.00 - 379	Acceptable	EPA 8151A 1996	8/8/2020	-1.08	173	68.6	
8540	Chloramben	µg/kg		126	0.00 - 139	Not Reported				174	213	
8545	2,4-D	µg/kg	447	974	97.4 - 1440	Acceptable	EPA 8151A 1996	8/8/2020	-0.525	595	281	
8560	2,4-DB	µg/kg	< 10	118	11.8 - 324	Not Acceptable	EPA 8151A 1996	8/8/2020		124	66.9	
8550	Dacthal diacid (DCPA)	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8151A 1996	8/8/2020				
8555	Dalapon	µg/kg	< 100	< 100	0.00 - 100	Acceptable	EPA 8151A 1996	8/8/2020				
8595	Dicamba	µg/kg	78.6	101	10.1 - 186	Acceptable	EPA 8151A 1996	8/8/2020	0.0863	75.4	36.8	
8600	3,5-Dichlorobenzoic acid	µg/kg	649	982	0.00 - 1350	Acceptable	EPA 8151A 1996	8/8/2020	-0.264	659	36.6	
8605	Dichlorprop	µg/kg	553	935	0.00 - 1250	Acceptable	EPA 8151A 1996	8/8/2020	-0.232	603	214	
8620	Dinoseb	µg/kg	635	990	99.0 - 1480	Acceptable	EPA 8151A 1996	8/8/2020	0.434	493	327	
7775	MCPA	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8151A 1996	8/8/2020				
7780	MCPP	µg/kg	< 1000	< 1000	0.00 - 1000	Acceptable	EPA 8151A 1996	8/8/2020				
6500	4-Nitrophenol	µg/kg		752	0.00 - 1010	Not Reported				439	190	
6605	Pentachlorophenol	µg/kg	336	505	50.5 - 593	Acceptable	EPA 8151A 1996	8/8/2020	0.582	274	106	
8645	Picloram	µg/kg	23.7	278	0.00 - 356	Acceptable	EPA 8151A 1996	8/8/2020	-1.32	125	76.9	
8655	2,4,5-T	µg/kg	404	718	71.8 - 917	Acceptable	EPA 8151A 1996	8/8/2020	0.0209	400	172	
8650	2,4,5-TP (Silvex)	µg/kg	523	796	79.6 - 1010	Acceptable	EPA 8151A 1996	8/8/2020	0.215	486	174	



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SOIL PCBs in Soil (cat# 624, lot# D111-726)

8880	Aroclor 1016	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	8/7/2020				
8885	Aroclor 1221	mg/kg	19.4	27.3	6.27 - 34.1	Acceptable	EPA 8082A 2000	8/7/2020	-0.139	20.2	5.69	
8890	Aroclor 1232	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	8/7/2020				
8895	Aroclor 1242	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	8/7/2020				
8900	Aroclor 1248	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	8/7/2020				
8905	Aroclor 1254	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	8/7/2020				
8910	Aroclor 1260	mg/kg	< 0.1	< 0.100	0.00 - 0.100	Acceptable	EPA 8082A 2000	8/7/2020				

SOIL Gasoline Range Organics (GRO) in Soil (cat# 630, lot# D111-763)

9408	Gasoline Range Organics (GRO)	mg/kg	283	459	45.9 - 639	Acceptable	EPA 8015D 2003	7/28/2020	0.149	264	129	
4375	Benzene in GRO	mg/kg		2.03	0.00 - 2.23	Not Reported				0.702	0.305	
4765	Ethylbenzene in GRO	mg/kg		7.72	0.869 - 9.00	Not Reported				4.94	1.36	
5140	Toluene in GRO	mg/kg		23.4	0.00 - 25.7	Not Reported				11.7	3.97	
5260	Xylenes, total in GRO	mg/kg		39.5	6.20 - 46.4	Not Reported				26.3	6.69	

SOIL Diesel Range Organics (DRO) in Soil (cat# 631, lot# D111-765)

9369	Diesel Range Organics (DRO)	mg/kg	690	890	239 - 1170	Acceptable	EPA 8015D 2003	7/29/2020	-0.0846	705	174	
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SOIL PCBs in Oil (cat# 817, lot# D111-563)

8880	Aroclor 1016	mg/kg	< 0.86	< 0.860	0.00 - 0.860	Acceptable	EPA 8082A 2007	7/27/2020				
8885	Aroclor 1221	mg/kg	< 1.25	< 1.25	0.00 - 1.25	Acceptable	EPA 8082A 2007	7/27/2020				
8890	Aroclor 1232	mg/kg	< 1.25	< 1.25	0.00 - 1.25	Acceptable	EPA 8082A 2007	7/27/2020				
8895	Aroclor 1242	mg/kg	< 0.86	< 0.860	0.00 - 0.860	Acceptable	EPA 8082A 2007	7/27/2020				
8900	Aroclor 1248	mg/kg	< 1.25	< 1.25	0.00 - 1.25	Acceptable	EPA 8082A 2007	7/27/2020				
8905	Aroclor 1254	mg/kg	46.4	38.6	6.45 - 55.3	Acceptable	EPA 8082A 2007	7/27/2020	0.239	45.7	3.00	
8910	Aroclor 1260	mg/kg	< 0.86	< 0.860	0.00 - 0.860	Acceptable	EPA 8082A 2007	7/27/2020				



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CERTIFICATE OF RECOGNITION

ERA congratulates

Pace Analytical Services - Indianapolis

SOIL-111

For your participation and successful evaluation, we recognize the performance of this laboratory for achieving acceptable evaluation in the following standards.

Chlordane in Soil	Corrosivity/pH in Soil	Cyanide in Soil
Diesel Range Organics (DRO) in Soil	Gasoline Range Organics (GRO) in Soil	Hexavalent Chromium in Soil
Ignitability/Flashpoint	Low-Level PAHs in Soil	Metals in Soil
Organochlorine Pesticides in Soil	PCBs in Oil	PCBs in Soil
TCLP Metals in Soil	Toxaphene in Soil	Volatiles in Soil



Matthew Seebeck
Quality Officer