



Donny Juarez
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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

Donny Juarez
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2393 Salt Creek Hwy
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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,

A handwritten signature in black ink, appearing to read "Matthew Seebeck".

Matthew Seebeck
Quality Officer

attachments



A Waters Company

Report Recipient	Contact/Phone Number	Reporting Type
EPA Region 8	Marcie Tidd / (303) 462-9476	All Analytes
Florida	Vanessa Soto / 904-791-1599	All Analytes
Idaho	Ernie Bader / 208-334-2235 x 290	All Analytes
Montana	Russell Leu / 406-444-5259	All Analytes
Nebraska	Laurie Wieting / 402-471-8407	All Analytes
Nevada	Paige Menicucci / 775-687-9311	All Analytes
New Mexico (WP)	Barbara Cooney / 505-827-0212	All Analytes
North Dakota	Cynthia Auen / 701-328-6172	All Analytes
Oregon	Stephanie Ringsage / 503-693-4126	All Analytes
South Dakota	Stacy Ellwanger / 605-773-4757	All Analytes
Texas	Frank Jamison / (512) 239-3754	All Analytes
Utah	Cathy Mitchell / (801) 965-2588	All Analytes



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



A Waters Company

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Not Acceptable Evaluations

There were no Not Acceptable evaluations for this study.



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Final Report Results For Laboratory Energy Laboratories





Final Evaluation Report

Study: **SOIL-109**

ERA Customer Number: **E772828**

Laboratory Name: **Energy Laboratories**

Inorganic Results





SOIL-109 Final Evaluation 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# D109-540)

1000	Aluminum	mg/kg	8768	10100	4060 - 12200	Acceptable	EPA 6010B 2 1996	2/11/2020	0.413	8130	1550	jcg
1005	Antimony	mg/kg	130	259	25.9 - 335	Acceptable	EPA 6010B 2 1996	2/19/2020	-0.0561	134	75.9	jcg
1010	Arsenic	mg/kg	163	171	109 - 203	Acceptable	EPA 6010B 2 1996	1/28/2020	0.432	156	16.0	jcg
1015	Barium	mg/kg	258	253	179 - 298	Acceptable	EPA 6010B 2 1996	2/3/2020	0.910	239	21.4	jcg
1020	Beryllium	mg/kg	166	179	127 - 212	Acceptable	EPA 6010B 2 1996	1/28/2020	-0.217	169	15.2	jcg
1025	Boron	mg/kg	88.5	114	52.5 - 125	Acceptable	EPA 6010B 2 1996	2/19/2020	0.0831	87.5	12.2	jcg
1030	Cadmium	mg/kg	147	149	103 - 171	Acceptable	EPA 6010B 2 1996	2/11/2020	0.858	137	11.9	jcg
1035	Calcium	mg/kg	4920	5190	3460 - 6070	Acceptable	EPA 6010B 2 1996	1/28/2020	0.332	4760	467	jcg
1040	Chromium	mg/kg	155	163	108 - 200	Acceptable	EPA 6010B 2 1996	1/28/2020	0.0856	154	12.8	jcg
1050	Cobalt	mg/kg	119	127	90.8 - 151	Acceptable	EPA 6010B 2 1996	2/3/2020	-0.203	121	10.2	jcg
1055	Copper	mg/kg	56.1	57.0	41.1 - 68.6	Acceptable	EPA 6010B 2 1996	1/28/2020	0.243	54.9	5.13	jcg
1070	Iron	mg/kg	17730	15000	4920 - 23200	Acceptable	EPA 6010B 2 1996	2/11/2020	1.20	14100	3040	jcg
1075	Lead	mg/kg	128	133	93.3 - 167	Acceptable	EPA 6010B 2 1996	1/28/2020	-0.150	130	12.8	jcg
1085	Magnesium	mg/kg	2341	2570	1440 - 3200	Acceptable	EPA 6010B 2 1996	1/28/2020	0.0873	2320	280	jcg
1090	Manganese	mg/kg	273	277	199 - 340	Acceptable	EPA 6010B 2 1996	2/3/2020	0.167	269	21.9	jcg
1095	Mercury	mg/kg		21.6	12.3 - 28.6	Not Reported				20.5	3.01	
1100	Molybdenum	mg/kg	93.5	108	66.9 - 124	Acceptable	EPA 6010B 2 1996	2/3/2020	-0.197	95.4	9.72	jcg
1105	Nickel	mg/kg	52.8	58.7	37.7 - 70.0	Acceptable	EPA 6010B 2 1996	2/3/2020	-0.219	53.9	4.84	jcg
1125	Potassium	mg/kg	1983	2420	1190 - 2850	Acceptable	EPA 6010B 2 1996	1/28/2020	-0.125	2020	293	jcg
1140	Selenium	mg/kg	173	181	113 - 221	Acceptable	EPA 6010B 2 1996	2/3/2020	0.357	167	17.0	jcg



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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	34.4	35.5	23.0 - 44.1	Acceptable	EPA 6010B 2 1996	1/28/2020	0.214	33.6	3.96	jcg
1155	Sodium	mg/kg	157	161	46.5 - 220	Acceptable	EPA 6010B 2 1996	2/19/2020	0.917	133	25.9	jcg
1160	Strontium	mg/kg	84.9	89.7	62.8 - 113	Acceptable	EPA 6010B 2 1996	1/28/2020	-0.346	87.9	8.74	jcg
1165	Thallium	mg/kg	110	121	76.1 - 147	Acceptable	EPA 6010B 2 1996	1/28/2020	-0.143	112	10.6	jcg
1175	Tin	mg/kg	73.4	83.5	39.7 - 108	Acceptable	EPA 6010B 2 1996	2/3/2020	-0.0738	74.0	8.01	jcg
1180	Titanium	mg/kg	416	474	46.3 - 620	Acceptable	EPA 6010B 2 1996	2/11/2020	0.868	333	95.6	jcg
3055	Uranium	mg/kg	60.2	51.9	35.9 - 68.0	Acceptable	EPA 6010B 2 1996	2/3/2020	1.54	51.9	5.36	jcg
1185	Vanadium	mg/kg	65.8	68.1	37.0 - 88.3	Acceptable	EPA 6010B 2 1996	2/3/2020	0.376	62.6	8.50	jcg
1190	Zinc	mg/kg	155	165	111 - 205	Acceptable	EPA 6010B 2 1996	2/3/2020	-0.233	158	12.9	jcg



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

1000	Aluminum	mg/kg	8478	10100	4060 - 12200	Acceptable	EPA 6020A 1 2007	1/29/2020	0.226	8130	1550	meh
1005	Antimony	mg/kg	122	259	25.9 - 335	Acceptable	EPA 6020A 1 2007	1/29/2020	-0.161	134	75.9	meh
1010	Arsenic	mg/kg	166	171	109 - 203	Acceptable	EPA 6020A 1 2007	1/25/2020	0.619	156	16.0	meh
1015	Barium	mg/kg	257	253	179 - 298	Acceptable	EPA 6020A 1 2007	1/25/2020	0.864	239	21.4	meh
1020	Beryllium	mg/kg	178	179	127 - 212	Acceptable	EPA 6020A 1 2007	1/25/2020	0.570	169	15.2	meh
1025	Boron	mg/kg	93.7	114	52.5 - 125	Acceptable	EPA 6020A 1 2007	1/27/2020	0.511	87.5	12.2	meh
1030	Cadmium	mg/kg	143	149	103 - 171	Acceptable	EPA 6020A 1 2007	1/25/2020	0.523	137	11.9	meh
1035	Calcium	mg/kg	4582	5190	3460 - 6070	Acceptable	EPA 6020A 1 2007	1/25/2020	-0.392	4760	467	meh
1040	Chromium	mg/kg	156	163	108 - 200	Acceptable	EPA 6020A 1 2007	1/25/2020	0.164	154	12.8	meh
1050	Cobalt	mg/kg	122	127	90.8 - 151	Acceptable	EPA 6020A 1 2007	1/29/2020	0.0898	121	10.2	meh
1055	Copper	mg/kg	57.7	57.0	41.1 - 68.6	Acceptable	EPA 6020A 1 2007	1/25/2020	0.555	54.9	5.13	meh
1070	Iron	mg/kg	16900	15000	4920 - 23200	Acceptable	EPA 6020A 1 2007	1/29/2020	0.929	14100	3040	meh
1075	Lead	mg/kg	134	133	93.3 - 167	Acceptable	EPA 6020A 1 2007	1/27/2020	0.319	130	12.8	meh
1085	Magnesium	mg/kg	2291	2570	1440 - 3200	Acceptable	EPA 6020A 1 2007	1/29/2020	-0.0915	2320	280	meh
1090	Manganese	mg/kg	273	277	199 - 340	Acceptable	EPA 6020A 1 2007	1/25/2020	0.167	269	21.9	meh
1095	Mercury	mg/kg		21.6	12.3 - 28.6	Not Reported				20.5	3.01	
1100	Molybdenum	mg/kg	94.2	108	66.9 - 124	Acceptable	EPA 6020A 1 2007	1/25/2020	-0.125	95.4	9.72	meh
1105	Nickel	mg/kg	55.2	58.7	37.7 - 70.0	Acceptable	EPA 6020A 1 2007	1/25/2020	0.277	53.9	4.84	meh
1125	Potassium	mg/kg	2041	2420	1190 - 2850	Acceptable	EPA 6020A 1 2007	1/29/2020	0.0727	2020	293	meh
1140	Selenium	mg/kg	174	181	113 - 221	Acceptable	EPA 6020A 1 2007	1/29/2020	0.416	167	17.0	meh



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

1150	Silver	mg/kg	37	35.5	23.0 - 44.1	Acceptable	EPA 6020A 1 2007	1/25/2020	0.871	33.6	3.96	meh
1155	Sodium	mg/kg	158	161	46.5 - 220	Acceptable	EPA 6020A 1 2007	2/19/2020	0.955	133	25.9	meh
1160	Strontium	mg/kg	86.6	89.7	62.8 - 113	Acceptable	EPA 6020A 1 2007	1/31/2020	-0.151	87.9	8.74	meh
1165	Thallium	mg/kg	113	121	76.1 - 147	Acceptable	EPA 6020A 1 2007	1/31/2020	0.141	112	10.6	meh
1175	Tin	mg/kg	77.8	83.5	39.7 - 108	Acceptable	EPA 6020A 1 2007	1/25/2020	0.476	74.0	8.01	meh
1180	Titanium	mg/kg	436	474	46.3 - 620	Acceptable	EPA 6020A 1 2007	1/29/2020	1.08	333	95.6	meh
3055	Uranium	mg/kg	57	51.9	35.9 - 68.0	Acceptable	EPA 6020A 1 2007	1/25/2020	0.943	51.9	5.36	meh
1185	Vanadium	mg/kg	62.9	68.1	37.0 - 88.3	Acceptable	EPA 6020A 1 2007	1/25/2020	0.0347	62.6	8.50	meh
1190	Zinc	mg/kg	160	165	111 - 205	Acceptable	EPA 6020A 1 2007	1/25/2020	0.154	158	12.9	meh



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Final Evaluation Report

Study: **SOIL-109**

ERA Customer Number: **E772828**

Laboratory Name: **Energy Laboratories**

Organic Results





SOIL-109 Final Evaluation Report

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

9369	Diesel Range Organics (DRO)	mg/kg	1549	2160	626 - 2870	Acceptable	EPA 8015C 3 2007	1/31/2020	-0.543	1750	368	bah
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CERTIFICATE OF EXCELLENCE

In recognition of the quality of your laboratory in proficiency testing for

SOIL-109

Energy Laboratories

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 275 participating laboratories. This achievement is a demonstration of the superior quality of the laboratory in evaluation of the standards listed below.

Diesel Range Organics
(DRO) in Soil
Metals in Soil



Matthew Seebeck
Quality Officer