



A Waters Company

Pam M. Varner  
Analytical Services Inc  
110 Technology Pkwy  
Norcross, GA 30092

**SOIL-73**



***Final Report***

# **Soil/Hazardous Waste Proficiency Testing**

**Soil Study**

**Open Date: 01/24/11**

**Close Date: 03/10/11**

**Report Issued Date: 03/29/11**



A Waters Company

March 29, 2011

Pam M. Varner  
Analytical Services Inc  
110 Technology Pkwy  
Norcross, GA 30092

Enclosed is your final report for ERA's SOIL-73 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-73 Proficiency Testing (PT) study have been evaluated using the following tiered approach. If the analyte is listed in the most current National Environmental Laboratory Accreditation Conference (NELAC) PT Field of Testing tables, the evaluation was completed by comparing the reported result to the acceptance limits generated using the criteria contained in the NELAC FoPT tables. If the analyte is not included in the NELAC 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 0260).

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 well over three hundred 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 helpful in helping you work through your technical issues.

Thank you for your participation in ERA's SOIL-73 Proficiency Testing study. If you have any questions, please contact the proficiency testing department, or myself, at 1-800-372-0122.

Sincerely,

A handwritten signature in black ink that reads "Jay R. McBurney".

Jay R. McBurney  
Quality Program Manager

attachments  
jrm



A Waters Company

<b>Report Recipient</b>	<b>Contact/Phone Number</b>	<b>Reporting Type</b>
Florida	Steve Arms / 904-791-1502	All Analytes
Louisiana	Paul Bergeron / 225-219-1244	All Analytes
Texas	Frank Jamison / (512) 239-3754	All Analytes

# SOIL-73 Definitions & Study Discussion

**Study Dates: 01/24/11 - 03/10/11**

**Report Issued: 03/29/11**

## SOIL Study Definitions

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

The ERA assigned value for the Organic Proficiency Testing Standards is 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 value for the Inorganic Proficiency Testing Standards, with the exception of the TCLP Metals in Soil, is equal to the maximum amount of the parameter available in the standard by applicable EPA methodologies. The ERA assigned value for the TCLP metals is equal to the mean of ERA's internal analytical analyses. The assigned values are directly traceable to the commercially prepared starting materials used to manufacture the PT standards. All NELAC parameters not added to a standard are given an assigned Value of "0", per the guidance issued by the NELAC Board of Directors, on December 14, 2000. Non-NELAC parameters not added to a standard may be given an assigned value of less than a minimum verified concentration as determined in the background soil for applicable EPA methodologies.

The Acceptance Limits are established per the NELAC PT program criteria 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-73 Proficiency Testing (PT) study has been reviewed by ERA senior management and certified compliant with the requirements of the National Environmental Laboratory Accreditation Conference (NELAC), Proficiency Testing Program Standards, Chapter 2, July 2003.

Per the requirements of the NELAC Proficiency Testing Program, a full review of all homogeneity, stability and accuracy verification data was completed. All analytical verification data for all analytes in the Soil study standards met the acceptance criteria contained in the NELAC Proficiency Testing Program Standards, Chapter 2, July 2003. If the analyte is included in the NELAC Fields of Testing list, the acceptance limits were calculated based on the NELAC Proficiency Testing Program Standards, Chapter 2, July 2003. If the analyte is not included in the NELAC Fields of Testing list, the acceptance limits were calculated using the procedures outlined in ERA's Standard Operating Procedure for the Generation of Performance Acceptance Limits (SOP 0260, Rev. 2.0).

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-73 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 Jay McBurney, Quality Program Manager, or the proficiency testing department at 1-800-372-0122.

Study: **SOIL-73**

ERA Customer Number: **A520001**

Laboratory Name: **Analytical Services Inc**

## Inorganic Results





A Waters Company

# SOIL-73 Final Complete Report

**Pam M. Varner**  
PT Manager  
Analytical Services Inc  
110 Technology Pkwy  
Norcross, GA 30092  
770-734-4200

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

**GA00051**  
**A520001**  
**03/29/11**  
**01/24/11 - 03/10/11**

Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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### SOIL Metals in Soil (cat# 620)

1000	Aluminum	mg/kg	6530	14000	4920 - 16300	Acceptable	EPA 6010C
1005	Antimony	mg/kg	91.6	260	26.0 - 303	Acceptable	EPA 6010C
1010	Arsenic	mg/kg	112	144	86.5 - 161	Acceptable	EPA 6010C
1015	Barium	mg/kg	289	332	234 - 398	Acceptable	EPA 6010C
1020	Beryllium	mg/kg	90.5	99.1	70.8 - 119	Acceptable	EPA 6010C
1025	Boron	mg/kg	124	173	95.6 - 201	Acceptable	EPA 6010C
1030	Cadmium	mg/kg	111	123	84.9 - 147	Acceptable	EPA 6010C
1035	Calcium	mg/kg	9830	12200	8250 - 13500	Acceptable	EPA 6010C
1040	Chromium	mg/kg	86.7	103	66.5 - 125	Acceptable	EPA 6010C
1050	Cobalt	mg/kg	133	147	102 - 173	Acceptable	EPA 6010C
1055	Copper	mg/kg	73.6	87.2	61.1 - 104	Acceptable	EPA 6010C
1070	Iron	mg/kg	13400	22900	7700 - 28800	Acceptable	EPA 6010C
1075	Lead	mg/kg	124	144	100 - 174	Acceptable	EPA 6010C
1085	Magnesium	mg/kg	2340	3530	2020 - 4070	Acceptable	EPA 6010C
1090	Manganese	mg/kg	543	598	448 - 708	Acceptable	EPA 6010C
1095	Mercury	mg/kg		15.2	7.82 - 22.6	Not Reported	
1100	Molybdenum	mg/kg	87.8	101	61.5 - 116	Acceptable	EPA 6010C
1105	Nickel	mg/kg	113	130	87.9 - 153	Acceptable	EPA 6010C
1125	Potassium	mg/kg	1630	1980	1060 - 2670	Acceptable	EPA 6010C
1140	Selenium	mg/kg	189	221	138 - 265	Acceptable	EPA 6010C
1150	Silver	mg/kg	50.8	56.0	35.7 - 71.4	Acceptable	EPA 6010C
1155	Sodium	mg/kg	627	823	410 - 1040	Acceptable	EPA 6010C
1160	Strontium	mg/kg	68.1	77.1	51.2 - 95.1	Acceptable	EPA 6010C
1165	Thallium	mg/kg	217	246	160 - 301	Acceptable	EPA 6010C
1175	Tin	mg/kg	122	143	78.0 - 186	Acceptable	EPA 6010C
1180	Titanium	mg/kg	291	488	0.00 - 820	Acceptable	EPA 6010C
1185	Vanadium	mg/kg	95.9	108	68.8 - 139	Acceptable	EPA 6010C
1190	Zinc	mg/kg	254	296	196 - 354	Acceptable	EPA 6010C



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 PT Manager  
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**SOIL Metals in Soil (cat# 620)**

1000	Aluminum	mg/kg		14000	4920 - 16300	Not Reported	
1005	Antimony	mg/kg		260	26.0 - 303	Not Reported	
1010	Arsenic	mg/kg		144	86.5 - 161	Not Reported	
1015	Barium	mg/kg		332	234 - 398	Not Reported	
1020	Beryllium	mg/kg		99.1	70.8 - 119	Not Reported	
1025	Boron	mg/kg		173	95.6 - 201	Not Reported	
1030	Cadmium	mg/kg		123	84.9 - 147	Not Reported	
1035	Calcium	mg/kg		12200	8250 - 13500	Not Reported	
1040	Chromium	mg/kg		103	66.5 - 125	Not Reported	
1050	Cobalt	mg/kg		147	102 - 173	Not Reported	
1055	Copper	mg/kg		87.2	61.1 - 104	Not Reported	
1070	Iron	mg/kg		22900	7700 - 28800	Not Reported	
1075	Lead	mg/kg		144	100 - 174	Not Reported	
1085	Magnesium	mg/kg		3530	2020 - 4070	Not Reported	
1090	Manganese	mg/kg		598	448 - 708	Not Reported	
1095	Mercury	mg/kg	14.8	15.2	7.82 - 22.6	Acceptable	EPA 7471B
1100	Molybdenum	mg/kg		101	61.5 - 116	Not Reported	
1105	Nickel	mg/kg		130	87.9 - 153	Not Reported	
1125	Potassium	mg/kg		1980	1060 - 2670	Not Reported	
1140	Selenium	mg/kg		221	138 - 265	Not Reported	
1150	Silver	mg/kg		56.0	35.7 - 71.4	Not Reported	
1155	Sodium	mg/kg		823	410 - 1040	Not Reported	
1160	Strontium	mg/kg		77.1	51.2 - 95.1	Not Reported	
1165	Thallium	mg/kg		246	160 - 301	Not Reported	
1175	Tin	mg/kg		143	78.0 - 186	Not Reported	
1180	Titanium	mg/kg		488	0.00 - 820	Not Reported	
1185	Vanadium	mg/kg		108	68.8 - 139	Not Reported	
1190	Zinc	mg/kg		296	196 - 354	Not Reported	

**SOIL Hexavalent Chromium in Soil (cat# 876)**

1045	Chromium VI	mg/kg	76.3	221	68.0 - 282	Acceptable	EPA 7196A
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**SOIL Anions in Soil (cat# 873)**

1540	Bromide	mg/kg	86.7	99.2	67.2 - 110	Acceptable	EPA 9056A
1575	Chloride	mg/kg	386	372	262 - 444	Acceptable	EPA 9056A
1730	Fluoride	mg/kg	61.5	417	41.7 - 459	Acceptable	EPA 9056A
1810	Nitrate as N	mg/kg	294	362	215 - 398	Acceptable	EPA 9056A
1870	Phosphate as P	mg/kg		365	36.5 - 402	Not Reported	
2000	Sulfate	mg/kg	236	332	130 - 437	Acceptable	EPA 9056A



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# SOIL-73 Final Complete Report

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### **SOIL Cyanide in Soil (cat# 621)**

1635	Cyanide, total	mg/kg	74.4	87.2	26.8 - 121	Acceptable	EPA 9010C/9014
1923	Reactive Cyanide	mg/kg		< 25.0		Not Reported	

### **SOIL Nutrients in Soil (cat# 869)**

1515	Ammonia as N	mg/kg	1060	1180	617 - 1360	Acceptable	EPA 350.1
1795	Total Kjeldahl Nitrogen	mg/kg	1650	1550	831 - 2240	Acceptable	EPA 351.2
2040	Total Organic Carbon (TOC)	mg/kg		2690	269 - 5920	Not Reported	
1910	Total Phosphorus	mg/kg	562	576	138 - 908	Acceptable	EPA 6010C

### **SOIL Corrosivity/pH in Soil (cat# 875)**

1625	Corrosivity (pH)	S.U.	6.81	6.97	6.37 - 7.57	Acceptable	EPA 9045D
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### **SOIL Ignitability/Flashpoint (cat# 874)**

1780	Ignitability/Flashpoint	°F	115	106	89.0 - 123	Acceptable	EPA 1010A
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Study: **SOIL-73**

ERA Customer Number: **A520001**

Laboratory Name: **Analytical Services Inc**

## Organic Results



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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
<b>SOIL Volatiles in Soil (cat# 623)</b>							
4315	Acetone	µg/kg	240	280	40.0 - 503	Acceptable	EPA 8260B
4320	Acetonitrile	µg/kg	439	659	148 - 967	Acceptable	EPA 8260B
4325	Acrolein	µg/kg	< 50	0.00		Acceptable	EPA 8260B
4375	Benzene	µg/kg	119	149	90.0 - 203	Acceptable	EPA 8260B
4385	Bromobenzene	µg/kg	71	91.6	56.6 - 136	Acceptable	EPA 8260B
4395	Bromodichloromethane	µg/kg	< 10	0.00		Acceptable	EPA 8260B
4400	Bromoform	µg/kg	< 9.3	0.00		Acceptable	EPA 8260B
4950	Bromomethane	µg/kg	< 20	0.00		Acceptable	EPA 8260B
4410	2-Butanone (MEK)	µg/kg	< 40	0.00		Acceptable	EPA 8260B
5000	tert-Butyl methyl ether (MTBE)	µg/kg	29.6	34.9	14.1 - 59.0	Acceptable	EPA 8260B
4450	Carbon disulfide	µg/kg	< 10	0.00		Acceptable	EPA 8260B
4455	Carbon tetrachloride	µg/kg	< 9.9	0.00		Acceptable	EPA 8260B
4475	Chlorobenzene	µg/kg	< 10	0.00		Acceptable	EPA 8260B
4575	Chlorodibromomethane	µg/kg	< 9.9	0.00		Acceptable	EPA 8260B
4485	Chloroethane	µg/kg	309	171	78.7 - 268	Not Acceptable	EPA 8260B
4500	2-Chloroethylvinylether	µg/kg	< 10	0.00		Acceptable	EPA 8260B
4505	Chloroform	µg/kg	73.4	87.2	52.5 - 122	Acceptable	EPA 8260B
4960	Chloromethane	µg/kg	81	114	31.7 - 188	Acceptable	EPA 8260B
4570	1,2-Dibromo-3-chloropropane (DBCP)	µg/kg	< 10	0.00		Acceptable	EPA 8260B
4585	1,2-Dibromoethane (EDB)	µg/kg	119	142	89.5 - 201	Acceptable	EPA 8260B
4595	Dibromomethane	µg/kg	< 10	0.00		Acceptable	EPA 8260B
4610	1,2-Dichlorobenzene	µg/kg	< 9	0.00		Acceptable	EPA 8260B
4615	1,3-Dichlorobenzene	µg/kg	< 5	0.00		Acceptable	EPA 8260B
4620	1,4-Dichlorobenzene	µg/kg	< 7	0.00		Acceptable	EPA 8260B
4625	Dichlorodifluoromethane (Freon 12)	µg/kg	< 20	0.00		Acceptable	EPA 8260B
4630	1,1-Dichloroethane	µg/kg	126	146	83.0 - 210	Acceptable	EPA 8260B
4635	1,2-Dichloroethane	µg/kg	159	186	107 - 257	Acceptable	EPA 8260B
4640	1,1-Dichloroethylene	µg/kg	180	176	113 - 271	Acceptable	EPA 8260B
4645	cis-1,2-Dichloroethylene	µg/kg	38.3	43.3	25.6 - 63.0	Acceptable	EPA 8260B
4700	trans-1,2-Dichloroethylene	µg/kg	116	126	81.2 - 183	Acceptable	EPA 8260B
4655	1,2-Dichloropropane	µg/kg	155	183	107 - 244	Acceptable	EPA 8260B
4680	cis-1,3-Dichloropropylene	µg/kg	< 10	0.00		Acceptable	EPA 8260B

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Anal. No.	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
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**SOIL Volatiles in Soil (cat# 623) (Continued)**

4685	trans-1,3-Dichloropropylene	µg/kg	92.1	147	75.6 - 207	Acceptable	EPA 8260B
4765	Ethylbenzene	µg/kg	90.5	117	65.1 - 167	Acceptable	EPA 8260B
4860	2-Hexanone	µg/kg	265	281	84.6 - 415	Acceptable	EPA 8260B
4900	Isopropylbenzene	µg/kg	103	113	56.4 - 183	Acceptable	EPA 8260B
4975	Methylene chloride	µg/kg	68.3	88.2	41.0 - 129	Acceptable	EPA 8260B
4995	4-Methyl-2-pentanone (MIBK)	µg/kg	183	211	92.4 - 307	Acceptable	EPA 8260B
5005	Naphthalene	µg/kg	62.1	82.8	39.6 - 121	Acceptable	EPA 8260B
5100	Styrene	µg/kg	44.1	48.7	29.8 - 75.1	Acceptable	EPA 8260B
5105	1,1,1,2-Tetrachloroethane	µg/kg	< 12	0.00		Acceptable	EPA 8260B
5110	1,1,2,2-Tetrachloroethane	µg/kg	< 8.9	0.00		Acceptable	EPA 8260B
5115	Tetrachloroethylene	µg/kg	< 8.3	0.00		Acceptable	EPA 8260B
5140	Toluene	µg/kg	75.1	92.9	53.2 - 131	Acceptable	EPA 8260B
5155	1,2,4-Trichlorobenzene	µg/kg	66.6	97.3	33.6 - 147	Acceptable	EPA 8260B
5160	1,1,1-Trichloroethane	µg/kg	87.9	109	61.6 - 156	Acceptable	EPA 8260B
5165	1,1,2-Trichloroethane	µg/kg	43.4	48.6	29.4 - 69.2	Acceptable	EPA 8260B
5170	Trichloroethylene	µg/kg	96.6	106	54.3 - 151	Acceptable	EPA 8260B
5175	Trichlorofluoromethane	µg/kg	< 20	0.00		Acceptable	EPA 8260B
5180	1,2,3-Trichloropropane (TCP)	µg/kg	116	140	60.3 - 218	Acceptable	EPA 8260B
5225	Vinyl acetate	µg/kg	< 10	0.00		Acceptable	EPA 8260B
5235	Vinyl chloride	µg/kg	< 20	0.00		Acceptable	EPA 8260B
5260	Xylenes, total	µg/kg	237	306	152 - 448	Acceptable	EPA 8260B

**SOIL Nitroaromatics & Nitramines in Soil (cat# 871)**

9306	4-Amino-2,6-dinitrotoluene	µg/kg		3860	1760 - 5330	Not Reported	
9303	2-Amino-4,6-dinitrotoluene	µg/kg		2650	1390 - 3470	Not Reported	
6160	1,3-Dinitrobenzene	µg/kg	4320	9420	4770 - 13000	Not Acceptable	EPA 8270D
6185	2,4-Dinitrotoluene	µg/kg		7090	1780 - 11600	Not Reported	
6190	2,6-Dinitrotoluene	µg/kg		5790	2250 - 8830	Not Reported	
9522	HMX	µg/kg		0.00		Not Reported	
5015	Nitrobenzene	µg/kg		2090	256 - 3710	Not Reported	
9507	2-Nitrotoluene	µg/kg		6400	4230 - 8470	Not Reported	
9510	3-Nitrotoluene	µg/kg		3090	2280 - 3790	Not Reported	
9513	4-Nitrotoluene	µg/kg		3560	2530 - 4440	Not Reported	
9432	RDX	µg/kg		6110	2250 - 8670	Not Reported	
6415	Tetryl	µg/kg		0.00		Not Reported	
6885	1,3,5-Trinitrobenzene	µg/kg	660	5570	2260 - 7800	Not Acceptable	EPA 8270D
9651	2,4,6-Trinitrotoluene	µg/kg		6130	3310 - 7200	Not Reported	



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### SOIL Base/Neutrals and Acids in Soil (cat# 467)

5500	Acenaphthene	µg/kg	4490	7170	2040 - 8910	Acceptable	EPA 8270D
5505	Acenaphthylene	µg/kg	4250	6750	1750 - 8970	Acceptable	EPA 8270D
5145	2-Amino-1-methylbenzene (o-toluidine)	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5545	Aniline	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5555	Anthracene	µg/kg	3840	5260	1370 - 7100	Acceptable	EPA 8270D
5595	Benzidine	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5610	Benzoic acid	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5575	Benzo(a)anthracene	µg/kg	2510	3630	1170 - 4720	Acceptable	EPA 8270D
5585	Benzo(b)fluoranthene	µg/kg	2780	3690	988 - 5050	Acceptable	EPA 8270D
5600	Benzo(k)fluoranthene	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5590	Benzo(g,h,i)perylene	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5580	Benzo(a)pyrene	µg/kg	5200	7920	1950 - 10800	Acceptable	EPA 8270D
5630	Benzyl alcohol	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5760	bis(2-Chloroethoxy)methane	µg/kg	5220	9500	2020 - 11900	Acceptable	EPA 8270D
5765	bis(2-Chloroethyl)ether	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5780	bis(2-Chloroisopropyl)ether	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5660	4-Bromophenyl-phenylether	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5670	Butylbenzylphthalate	µg/kg	7300	9630	2320 - 14200	Acceptable	EPA 8270D
5680	Carbazole	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5745	4-Chloroaniline	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5700	4-Chloro-3-methylphenol	µg/kg	6290	10500	3130 - 12500	Acceptable	EPA 8270D
5790	1-Chloronaphthalene	µg/kg		0.00		Not Reported	
5795	2-Chloronaphthalene	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5800	2-Chlorophenol	µg/kg	1430	2890	300 - 3680	Acceptable	EPA 8270D
5825	4-Chlorophenyl-phenylether	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5855	Chrysene	µg/kg	3080	5810	1630 - 7290	Acceptable	EPA 8270D
5895	Dibenz(a,h)anthracene	µg/kg	4710	9170	2680 - 11100	Acceptable	EPA 8270D
5905	Dibenzofuran	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5925	Di-n-butylphthalate	µg/kg	0.00	0.00		Acceptable	EPA 8270D
4610	1,2-Dichlorobenzene	µg/kg	3340	6930	693 - 8150	Acceptable	EPA 8270D
4615	1,3-Dichlorobenzene	µg/kg	0.00	0.00		Acceptable	EPA 8270D
4620	1,4-Dichlorobenzene	µg/kg	0.00	0.00		Acceptable	EPA 8270D



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**SOIL Base/Neutrals and Acids in Soil (cat# 467) (Continued)**

5945	3,3'-Dichlorobenzidine	µg/kg	0.00	0.00		Acceptable	EPA 8270D
6000	2,4-Dichlorophenol	µg/kg	4000	7690	1420 - 9680	Acceptable	EPA 8270D
6005	2,6-Dichlorophenol	µg/kg	4600	9140	1280 - 11200	Acceptable	EPA 8270D
6070	Diethylphthalate	µg/kg	7550	10900	2510 - 14700	Acceptable	EPA 8270D
6130	2,4-Dimethylphenol	µg/kg	0.00	0.00		Acceptable	EPA 8270D
6135	Dimethylphthalate	µg/kg	5310	8500	2530 - 10800	Acceptable	EPA 8270D
6175	2,4-Dinitrophenol	µg/kg	0.00	0.00		Acceptable	EPA 8270D
6185	2,4-Dinitrotoluene	µg/kg	4870	7910	1600 - 10700	Acceptable	EPA 8270D
6190	2,6-Dinitrotoluene	µg/kg	3850	6040	1820 - 7390	Acceptable	EPA 8270D
6200	Di-n-octylphthalate	µg/kg	0.00	0.00		Acceptable	EPA 8270D
6065	bis(2-Ethylhexyl)phthalate	µg/kg	6820	8860	2430 - 12500	Acceptable	EPA 8270D
6265	Fluoranthene	µg/kg	5700	8590	2960 - 11300	Acceptable	EPA 8270D
6270	Fluorene	µg/kg	2280	3440	970 - 4360	Acceptable	EPA 8270D
6275	Hexachlorobenzene	µg/kg	2790	4110	1290 - 5310	Acceptable	EPA 8270D
4835	Hexachlorobutadiene	µg/kg	0.00	0.00		Acceptable	EPA 8270D
6285	Hexachlorocyclopentadiene	µg/kg	0.00	0.00		Acceptable	EPA 8270D
4840	Hexachloroethane	µg/kg	5520	12800	794 - 14500	Acceptable	EPA 8270D
6315	Indeno(1,2,3-cd)pyrene	µg/kg	0.00	0.00		Acceptable	EPA 8270D
6320	Isophorone	µg/kg	6350	11100	2830 - 13900	Acceptable	EPA 8270D
6360	4,6-Dinitro-2-methylphenol	µg/kg	2550	7740	0.00 - 8510	Acceptable	EPA 8270D
6385	2-Methylnaphthalene	µg/kg	3350	5510	1010 - 7130	Acceptable	EPA 8270D
6400	2-Methylphenol	µg/kg	2850	8260	826 - 9090	Acceptable	EPA 8270D
6412	3&4-Methylphenol	µg/kg	3540	8620	262 - 10100	Acceptable	EPA 8270D
5005	Naphthalene	µg/kg	1420	2690	444 - 3270	Acceptable	EPA 8270D
6460	2-Nitroaniline	µg/kg	0.00	0.00		Acceptable	EPA 8270D
6465	3-Nitroaniline	µg/kg	0.00	0.00		Acceptable	EPA 8270D
6470	4-Nitroaniline	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5015	Nitrobenzene	µg/kg	5330	10100	2000 - 12700	Acceptable	EPA 8270D
6490	2-Nitrophenol	µg/kg	5830	11000	1400 - 13400	Acceptable	EPA 8270D
6500	4-Nitrophenol	µg/kg	0.00	0.00		Acceptable	EPA 8270D
6525	N-Nitrosodiethylamine	µg/kg	0.00	0.00		Acceptable	EPA 8270D
6530	N-Nitrosodimethylamine	µg/kg	2300	4940	207 - 5760	Acceptable	EPA 8270D

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**SOIL Base/Neutrals and Acids in Soil (cat# 467) (Continued)**

6535	N-Nitrosodiphenylamine	µg/kg	0.00	0.00		Acceptable	EPA 8270D
6545	N-Nitroso-di-n-propylamine	µg/kg	4850	8680	1140 - 11800	Acceptable	EPA 8270D
6590	Pentachlorobenzene	µg/kg	0.00	0.00		Acceptable	EPA 8270D
6605	Pentachlorophenol	µg/kg	1800	4520	600 - 4980	Acceptable	EPA 8270D
6615	Phenanthrene	µg/kg	7520	11200	3890 - 14000	Acceptable	EPA 8270D
6625	Phenol	µg/kg	4390	8510	851 - 11000	Acceptable	EPA 8270D
6665	Pyrene	µg/kg	1870	2760	825 - 3610	Acceptable	EPA 8270D
5095	Pyridine	µg/kg	0.00	0.00		Acceptable	EPA 8270D
6715	1,2,4,5-Tetrachlorobenzene	µg/kg	0.00	0.00		Acceptable	EPA 8270D
6735	2,3,4,6-Tetrachlorophenol	µg/kg	0.00	0.00		Acceptable	EPA 8270D
5155	1,2,4-Trichlorobenzene	µg/kg	0.00	0.00		Acceptable	EPA 8270D
6835	2,4,5-Trichlorophenol	µg/kg	5320	8980	1410 - 11200	Acceptable	EPA 8270D
6840	2,4,6-Trichlorophenol	µg/kg	1570	2670	323 - 3680	Acceptable	EPA 8270D

**SOIL Organochlorine Pesticides in Soil (cat# 468)**

7025	Aldrin	µg/kg	300	375	107 - 466	Acceptable	EPA 8081B
7110	alpha-BHC	µg/kg	220	292	81.0 - 373	Acceptable	EPA 8081B
7115	beta-BHC	µg/kg	260	309	60.2 - 436	Acceptable	EPA 8081B
7105	delta-BHC	µg/kg	130	180	37.6 - 250	Acceptable	EPA 8081B
7120	gamma-BHC(Lindane)	µg/kg	140	186	43.4 - 253	Acceptable	EPA 8081B
7240	alpha-Chlordane	µg/kg	330	393	127 - 494	Acceptable	EPA 8081B
7245	gamma-Chlordane	µg/kg	250	289	113 - 356	Acceptable	EPA 8081B
7355	4,4'-DDD	µg/kg	340	411	143 - 539	Acceptable	EPA 8081B
7360	4,4'-DDE	µg/kg	320	370	124 - 480	Acceptable	EPA 8081B
7365	4,4'-DDT	µg/kg	180	237	53.3 - 321	Acceptable	EPA 8081B
7470	Dieldrin	µg/kg	360	434	155 - 548	Acceptable	EPA 8081B
7540	Endrin	µg/kg	200	215	87.5 - 295	Acceptable	EPA 8081B
7530	Endrin aldehyde	µg/kg	210	286	29.6 - 360	Acceptable	EPA 8081B
7535	Endrin ketone	µg/kg	280	398	91.0 - 487	Acceptable	EPA 8081B
7510	Endosulfan I	µg/kg	190	394	79.1 - 433	Acceptable	EPA 8081B
7515	Endosulfan II	µg/kg	270	485	95.3 - 534	Acceptable	EPA 8081B
7520	Endosulfan sulfate	µg/kg	370	390	86.5 - 558	Acceptable	EPA 8081B
7685	Heptachlor	µg/kg	260	312	88.6 - 401	Acceptable	EPA 8081B
7690	Heptachlor epoxide	µg/kg	230	265	90.4 - 347	Acceptable	EPA 8081B
7810	Methoxychlor	µg/kg	210	185	18.5 - 309	Acceptable	EPA 8081B

**SOIL Chlordane in Soil (cat# 628)**

7250	Chlordane, technical	µg/kg	360	522	101 - 684	Acceptable	EPA 8081B
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**SOIL Toxaphene in Soil (cat# 627)**

8250	Toxaphene	µg/kg	1300	1710	171 - 2490	Acceptable	EPA 8081B
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**SOIL Organophosphorus Pesticides in Soil (cat# 878)**

7075	Azinphos-methyl (Guthion)	µg/kg		478	0.00 - 816	Not Reported	
7300	Chlorpyrifos	µg/kg		838	174 - 922	Not Reported	
7395	Demeton-O	µg/kg		0.00		Not Reported	
7385	Demeton-S	µg/kg		0.00		Not Reported	
7410	Diazinon	µg/kg		784	329 - 862	Not Reported	
8610	Dichlorvos (DDVP)	µg/kg		0.00		Not Reported	
8625	Disulfoton	µg/kg	443	784	322 - 862	Acceptable	EPA 8270D
7955	Ethyl Parathion	µg/kg	354	571	206 - 784	Acceptable	EPA 8270D
7770	Malathion	µg/kg		721	266 - 997	Not Reported	
7825	Methyl Parathion	µg/kg	226	428	29.8 - 555	Acceptable	EPA 8270D
7985	Phorate	µg/kg	437	632	270 - 695	Acceptable	EPA 8270D
8110	Ronnel	µg/kg		833	321 - 916	Not Reported	
8200	Stirophos (tetrachlorovinphos)	µg/kg		832	107 - 915	Not Reported	
8185	Terbufos	µg/kg		520	178 - 739	Not Reported	

**SOIL Chlorinated Acid Herbicides in Soil (cat# 626)**

8505	Acifluorfen	µg/kg		358	0.00 - 580	Not Reported	
8530	Bentazon	µg/kg		782	0.00 - 1020	Not Reported	
8540	Chloramben	µg/kg		468	0.00 - 515	Not Reported	
8545	2,4-D	µg/kg	50	150	20.0 - 241	Acceptable	EPA 8151A
8560	2,4-DB	µg/kg	180	784	0.00 - 1150	Acceptable	EPA 8151A
8550	Dacthal diacid (DCPA)	µg/kg		0.00		Not Reported	
8555	Dalapon	µg/kg	0.00	0.00		Acceptable	EPA 8151A
8595	Dicamba	µg/kg	96	370	37.0 - 501	Acceptable	EPA 8151A
8600	3,5-Dichlorobenzoic acid	µg/kg		0.00		Not Reported	
8605	Dichlorprop	µg/kg	260	905	0.00 - 1180	Acceptable	EPA 8151A
8620	Dinoseb	µg/kg	59	316	0.00 - 634	Acceptable	EPA 8151A
7775	MCPA	µg/kg	0.00	0.00		Acceptable	EPA 8151A
7780	MCPP	µg/kg	0.00	0.00		Acceptable	EPA 8151A
6500	4-Nitrophenol	µg/kg		712	0.00 - 1050	Not Reported	
6605	Pentachlorophenol	µg/kg		191	0.00 - 261	Not Reported	
8645	Picloram	µg/kg		370	0.00 - 519	Not Reported	
8655	2,4,5-T	µg/kg	210	953	95.3 - 1450	Acceptable	EPA 8151A
8650	2,4,5-TP (Silvex)	µg/kg	62	252	25.2 - 379	Acceptable	EPA 8151A



A Waters Company

# SOIL-73 Final Complete Report

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### SOIL PCBs in Soil (cat# 624)

8880	Aroclor 1016	mg/kg	0.00	0.00		Acceptable	EPA 8082A
8885	Aroclor 1221	mg/kg	0.00	0.00		Acceptable	EPA 8082A
8890	Aroclor 1232	mg/kg	0.00	0.00		Acceptable	EPA 8082A
8895	Aroclor 1242	mg/kg	0.00	0.00		Acceptable	EPA 8082A
8900	Aroclor 1248	mg/kg	0.00	0.00		Acceptable	EPA 8082A
8905	Aroclor 1254	mg/kg	8.2	15.3	3.85 - 21.8	Acceptable	EPA 8082A
8910	Aroclor 1260	mg/kg	0.00	0.00		Acceptable	EPA 8082A

### SOIL Oil and Grease (O&G) in Soil (cat# 867)

1860	n-Hexane Extractable Material(O&G)(Gravimet	mg/kg	1120	1610	566 - 2560	Acceptable	EPA 9071M
1860	n-Hexane Extractable Material(O&G)(IR)	mg/kg		1980	198 - 2180	Not Reported	

### SOIL Gasoline Range Organics (GRO) in Soil (cat# 630)

9408	Gasoline Range Organics (GRO)	mg/kg	1260	1120	225 - 1870	Acceptable	EPA 8015C
4375	Benzene in GRO	mg/kg		12.0	0.441 - 17.8	Not Reported	
4765	Ethylbenzene in GRO	mg/kg		36.0	27.9 - 52.0	Not Reported	
5140	Toluene in GRO	mg/kg		104	61.3 - 114	Not Reported	
5260	Xylenes, total in GRO	mg/kg		106	93.4 - 146	Not Reported	

### SOIL Diesel Range Organics (DRO) in Soil (cat# 631)

9369	Diesel Range Organics (DRO)	mg/kg	1480	2050	669 - 2590	Acceptable	EPA 8015C
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