



A Waters Company

Thekkekalathil Madhavan Chandrasekhar  
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2600 Blair Stone Road  
Room A416D, MS 6512  
Tallahassee, FL 32399-2400  
USA

**SOIL-93**



***Final Report***

## **Soil/Hazardous Waste Proficiency Testing**

**Soil Study**

**Open Date: 01/25/16**

**Close Date: 03/10/16**

**Report Issued Date: 03/14/16**



A Waters Company

March 14, 2016

Thekkekalathil Madhavan Chandrasekhar  
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Tallahassee, FL 32399-2400

Enclosed is your final report for ERA's SOIL-93 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-93 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 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 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-93 Proficiency Testing study. If you have any questions, please contact our Proficiency Testing Department at 1-800-372-0122.

Sincerely,

Patrick Larson  
Quality Officer

attachments



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| Report Recipient | Contact/Phone Number        | Reporting Type | Evaluation Type |
|------------------|-----------------------------|----------------|-----------------|
| Florida          | Vanessa Soto / 904-791-1599 | All Analytes   | 2009 TNI        |



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## SOIL-93 Definitions & Study Discussion

Study Dates: 01/25/16 - 03/10/16

Report Issued: 03/14/16

### 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, with the exception of Acetonitrile in the Volatiles in Soil sample, 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 value for Acetonitrile is equal to the mean of the study data, after the removal of outliers. 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-93 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-93 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-93 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-93 Laboratory Exception Report

Thekkekalathil Madhavan Chandrasekhar  
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Room A416D, MS 6512  
Tallahassee, FL 32399-2400  
(850) 245-8075

EPA ID:  
ERA Customer Number:  
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FL01181  
S744803  
03/14/16  
01/25/16 - 03/10/16

## 2009 TNI Evaluation Checks

There are no values reported with < where the assigned value was greater than 0.

## 2009 TNI Not Acceptable Evaluations

There were no Not Acceptable evaluations for this study.



# Final Report Results For Laboratory State of Florida DEP Chemistry Laboratory

## **2009 TNI Evaluation Report**

Study: **SOIL-93**

ERA Customer Number: **S744803**

Laboratory Name: **State of Florida DEP  
Chemistry Laboratory**

### **Inorganic Results**



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# SOIL-93 2009 TNI Evaluation Final Complete Report

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01/25/16 - 03/10/16

| 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 |
|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|
|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|

## SOIL Metals in Soil (cat# 620, lot# D093-540)

|      |            |       |       |       |              |              |                  |          |         |       |       |         |
|------|------------|-------|-------|-------|--------------|--------------|------------------|----------|---------|-------|-------|---------|
| 1000 | Aluminum   | mg/kg | 9540  | 9950  | 3660 - 13900 | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | 0.414   | 8770  | 1860  | AYRES_J |
| 1005 | Antimony   | mg/kg | 77.2  | 245   | 24.5 - 295   | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | -0.624  | 117   | 63.8  | AYRES_J |
| 1010 | Arsenic    | mg/kg | 26.7  | 52.6  | 18.3 - 57.9  | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | -0.922  | 29.6  | 3.20  | AYRES_J |
| 1015 | Barium     | mg/kg | 192   | 218   | 145 - 251    | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | -0.356  | 198   | 16.9  | AYRES_J |
| 1020 | Beryllium  | mg/kg | 103   | 96.4  | 68.5 - 116   | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | 1.41    | 92.0  | 7.78  | AYRES_J |
| 1025 | Boron      | mg/kg | 118   | 152   | 72.0 - 168   | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | -0.142  | 120   | 14.3  | AYRES_J |
| 1030 | Cadmium    | mg/kg | 72.3  | 76.8  | 52.3 - 90.6  | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | 0.146   | 71.5  | 5.57  | AYRES_J |
| 1035 | Calcium    | mg/kg | 6490  | 6420  | 4670 - 7960  | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | 0.349   | 6310  | 513   | AYRES_J |
| 1040 | Chromium   | mg/kg | 104   | 111   | 70.8 - 133   | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | 0.249   | 102   | 8.65  | AYRES_J |
| 1050 | Cobalt     | mg/kg | 52.8  | 53.0  | 38.2 - 64.6  | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | 0.300   | 51.4  | 4.75  | AYRES_J |
| 1055 | Copper     | mg/kg | 143   | 166   | 115 - 190    | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | -0.708  | 153   | 13.5  | AYRES_J |
| 1070 | Iron       | mg/kg | 16700 | 16300 | 5660 - 24700 | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | 0.497   | 15200 | 3050  | AYRES_J |
| 1075 | Lead       | mg/kg | 128   | 146   | 101 - 176    | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | -0.894  | 139   | 11.9  | AYRES_J |
| 1085 | Magnesium  | mg/kg | 2890  | 3010  | 1790 - 3730  | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | 0.388   | 2760  | 326   | AYRES_J |
| 1090 | Manganese  | mg/kg | 267   | 284   | 199 - 340    | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | -0.109  | 270   | 24.6  | AYRES_J |
| 1095 | Mercury    | mg/kg |       | 6.65  | 3.41 - 9.91  | Not Reported |                  |          |         | 6.66  | 0.896 |         |
| 1100 | Molybdenum | mg/kg | 38.7  | 44.1  | 25.2 - 52.9  | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | -0.0984 | 39.1  | 3.68  | AYRES_J |
| 1105 | Nickel     | mg/kg | 128   | 141   | 94.3 - 164   | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | -0.102  | 129   | 11.3  | AYRES_J |
| 1125 | Potassium  | mg/kg | 2570  | 2630  | 1460 - 3370  | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | 0.498   | 2420  | 310   | AYRES_J |
| 1140 | Selenium   | mg/kg | 56.3  | 67.0  | 36.8 - 84.5  | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | -0.684  | 60.6  | 6.35  | AYRES_J |



All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

16341 Table Mountain Pkwy • Golden, CO 80403 • 800.372.0122 • 303.431.8454 • fax 303.421.0159 • www.eraqc.com





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# SOIL-93 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 |
|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|
|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|

## SOIL Metals in Soil (cat# 620, lot# D093-540) (Continued)

|      |           |       |      |      |             |              |                  |          |         |      |      |         |
|------|-----------|-------|------|------|-------------|--------------|------------------|----------|---------|------|------|---------|
| 1150 | Silver    | mg/kg | 33.8 | 39.0 | 23.9 - 48.9 | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | -0.818  | 36.4 | 3.18 | AYRES_J |
| 1155 | Sodium    | mg/kg | 820  | 883  | 475 - 1160  | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | 0.0179  | 819  | 73.2 | AYRES_J |
| 1160 | Strontium | mg/kg | 89.1 | 87.4 | 62.1 - 115  | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | 0.0702  | 88.4 | 9.33 | AYRES_J |
| 1165 | Thallium  | mg/kg | 106  | 112  | 67.6 - 134  | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | 0.502   | 101  | 10.2 | AYRES_J |
| 1175 | Tin       | mg/kg | 83.6 | 94.3 | 47.4 - 124  | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | -0.258  | 85.8 | 8.48 | AYRES_J |
| 1180 | Titanium  | mg/kg | 502  | 530  | 157 - 797   | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | 0.233   | 477  | 107  | AYRES_J |
| 3055 | Uranium   | mg/kg |      | 58.6 | 37.3 - 83.0 | Not Reported |                  |          |         | 60.1 | 7.61 |         |
| 1185 | Vanadium  | mg/kg | 81.1 | 88.1 | 50.4 - 112  | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | -0.0245 | 81.3 | 9.57 | AYRES_J |
| 1190 | Zinc      | mg/kg | 220  | 212  | 157 - 289   | Acceptable   | EPA 6010C 3 2007 | 3/1/2016 | -0.143  | 223  | 18.8 | AYRES_J |



All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

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|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|

## SOIL Metals in Soil (cat# 620, lot# D093-540)

|      |            |       |      |       |              |              |                  |           |        |       |       |            |
|------|------------|-------|------|-------|--------------|--------------|------------------|-----------|--------|-------|-------|------------|
| 1000 | Aluminum   | mg/kg |      | 9950  | 3660 - 13900 | Not Reported |                  |           |        | 8770  | 1860  |            |
| 1005 | Antimony   | mg/kg | 80.2 | 245   | 24.5 - 295   | Acceptable   | EPA 6020A 1 2007 | 2/23/2016 | -0.577 | 117   | 63.8  | PETERSON_C |
| 1010 | Arsenic    | mg/kg | 29.7 | 52.6  | 18.3 - 57.9  | Acceptable   | EPA 6020A 1 2007 | 2/23/2016 | 0.0166 | 29.6  | 3.20  | PETERSON_C |
| 1015 | Barium     | mg/kg | 189  | 218   | 145 - 251    | Acceptable   | EPA 6020A 1 2007 | 2/23/2016 | -0.534 | 198   | 16.9  | PETERSON_C |
| 1020 | Beryllium  | mg/kg | 96.4 | 96.4  | 68.5 - 116   | Acceptable   | EPA 6020A 1 2007 | 2/23/2016 | 0.564  | 92.0  | 7.78  | PETERSON_C |
| 1025 | Boron      | mg/kg |      | 152   | 72.0 - 168   | Not Reported |                  |           |        | 120   | 14.3  |            |
| 1030 | Cadmium    | mg/kg | 73.6 | 76.8  | 52.3 - 90.6  | Acceptable   | EPA 6020A 1 2007 | 2/23/2016 | 0.379  | 71.5  | 5.57  | PETERSON_C |
| 1035 | Calcium    | mg/kg |      | 6420  | 4670 - 7960  | Not Reported |                  |           |        | 6310  | 513   |            |
| 1040 | Chromium   | mg/kg | 99.2 | 111   | 70.8 - 133   | Acceptable   | EPA 6020A 1 2007 | 2/23/2016 | -0.306 | 102   | 8.65  | PETERSON_C |
| 1050 | Cobalt     | mg/kg | 47.2 | 53.0  | 38.2 - 64.6  | Acceptable   | EPA 6020A 1 2007 | 2/23/2016 | -0.879 | 51.4  | 4.75  | PETERSON_C |
| 1055 | Copper     | mg/kg | 137  | 166   | 115 - 190    | Acceptable   | EPA 6020A 1 2007 | 2/23/2016 | -1.15  | 153   | 13.5  | PETERSON_C |
| 1070 | Iron       | mg/kg |      | 16300 | 5660 - 24700 | Not Reported |                  |           |        | 15200 | 3050  |            |
| 1075 | Lead       | mg/kg | 133  | 146   | 101 - 176    | Acceptable   | EPA 6020A 1 2007 | 2/23/2016 | -0.473 | 139   | 11.9  | PETERSON_C |
| 1085 | Magnesium  | mg/kg |      | 3010  | 1790 - 3730  | Not Reported |                  |           |        | 2760  | 326   |            |
| 1090 | Manganese  | mg/kg | 259  | 284   | 199 - 340    | Acceptable   | EPA 6020A 1 2007 | 2/23/2016 | -0.434 | 270   | 24.6  | PETERSON_C |
| 1095 | Mercury    | mg/kg |      | 6.65  | 3.41 - 9.91  | Not Reported |                  |           |        | 6.66  | 0.896 |            |
| 1100 | Molybdenum | mg/kg | 40.9 | 44.1  | 25.2 - 52.9  | Acceptable   | EPA 6020A 1 2007 | 2/23/2016 | 0.500  | 39.1  | 3.68  | PETERSON_C |
| 1105 | Nickel     | mg/kg | 122  | 141   | 94.3 - 164   | Acceptable   | EPA 6020A 1 2007 | 2/23/2016 | -0.634 | 129   | 11.3  | PETERSON_C |
| 1125 | Potassium  | mg/kg |      | 2630  | 1460 - 3370  | Not Reported |                  |           |        | 2420  | 310   |            |
| 1140 | Selenium   | mg/kg | 63.9 | 67.0  | 36.8 - 84.5  | Acceptable   | EPA 6020A 1 2007 | 2/23/2016 | 0.514  | 60.6  | 6.35  | PETERSON_C |



All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

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|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|
|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|

## SOIL Metals in Soil (cat# 620, lot# D093-540) (Continued)

|      |           |       |      |      |             |              |                  |           |        |      |      |            |
|------|-----------|-------|------|------|-------------|--------------|------------------|-----------|--------|------|------|------------|
| 1150 | Silver    | mg/kg | 35.0 | 39.0 | 23.9 - 48.9 | Acceptable   | EPA 6020A 1 2007 | 2/23/2016 | -0.441 | 36.4 | 3.18 | PETERSON_C |
| 1155 | Sodium    | mg/kg |      | 883  | 475 - 1160  | Not Reported |                  |           |        | 819  | 73.2 |            |
| 1160 | Strontium | mg/kg |      | 87.4 | 62.1 - 115  | Not Reported |                  |           |        | 88.4 | 9.33 |            |
| 1165 | Thallium  | mg/kg | 103  | 112  | 67.6 - 134  | Acceptable   | EPA 6020A 1 2007 | 2/23/2016 | 0.207  | 101  | 10.2 | PETERSON_C |
| 1175 | Tin       | mg/kg |      | 94.3 | 47.4 - 124  | Not Reported |                  |           |        | 85.8 | 8.48 |            |
| 1180 | Titanium  | mg/kg |      | 530  | 157 - 797   | Not Reported |                  |           |        | 477  | 107  |            |
| 3055 | Uranium   | mg/kg |      | 58.6 | 37.3 - 83.0 | Not Reported |                  |           |        | 60.1 | 7.61 |            |
| 1185 | Vanadium  | mg/kg |      | 88.1 | 50.4 - 112  | Not Reported |                  |           |        | 81.3 | 9.57 |            |
| 1190 | Zinc      | mg/kg | 217  | 212  | 157 - 289   | Acceptable   | EPA 6020A 1 2007 | 2/23/2016 | -0.303 | 223  | 18.8 | PETERSON_C |



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|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|

## SOIL Metals in Soil (cat# 620, lot# D093-540)

|      |            |       |      |       |              |              |               |           |         |       |       |            |
|------|------------|-------|------|-------|--------------|--------------|---------------|-----------|---------|-------|-------|------------|
| 1000 | Aluminum   | mg/kg |      | 9950  | 3660 - 13900 | Not Reported |               |           |         | 8770  | 1860  |            |
| 1005 | Antimony   | mg/kg |      | 245   | 24.5 - 295   | Not Reported |               |           |         | 117   | 63.8  |            |
| 1010 | Arsenic    | mg/kg |      | 52.6  | 18.3 - 57.9  | Not Reported |               |           |         | 29.6  | 3.20  |            |
| 1015 | Barium     | mg/kg |      | 218   | 145 - 251    | Not Reported |               |           |         | 198   | 16.9  |            |
| 1020 | Beryllium  | mg/kg |      | 96.4  | 68.5 - 116   | Not Reported |               |           |         | 92.0  | 7.78  |            |
| 1025 | Boron      | mg/kg |      | 152   | 72.0 - 168   | Not Reported |               |           |         | 120   | 14.3  |            |
| 1030 | Cadmium    | mg/kg |      | 76.8  | 52.3 - 90.6  | Not Reported |               |           |         | 71.5  | 5.57  |            |
| 1035 | Calcium    | mg/kg |      | 6420  | 4670 - 7960  | Not Reported |               |           |         | 6310  | 513   |            |
| 1040 | Chromium   | mg/kg |      | 111   | 70.8 - 133   | Not Reported |               |           |         | 102   | 8.65  |            |
| 1050 | Cobalt     | mg/kg |      | 53.0  | 38.2 - 64.6  | Not Reported |               |           |         | 51.4  | 4.75  |            |
| 1055 | Copper     | mg/kg |      | 166   | 115 - 190    | Not Reported |               |           |         | 153   | 13.5  |            |
| 1070 | Iron       | mg/kg |      | 16300 | 5660 - 24700 | Not Reported |               |           |         | 15200 | 3050  |            |
| 1075 | Lead       | mg/kg |      | 146   | 101 - 176    | Not Reported |               |           |         | 139   | 11.9  |            |
| 1085 | Magnesium  | mg/kg |      | 3010  | 1790 - 3730  | Not Reported |               |           |         | 2760  | 326   |            |
| 1090 | Manganese  | mg/kg |      | 284   | 199 - 340    | Not Reported |               |           |         | 270   | 24.6  |            |
| 1095 | Mercury    | mg/kg | 6.61 | 6.65  | 3.41 - 9.91  | Acceptable   | EPA 7473 1998 | 2/18/2016 | -0.0590 | 6.66  | 0.896 | TOPOLSKI_B |
| 1100 | Molybdenum | mg/kg |      | 44.1  | 25.2 - 52.9  | Not Reported |               |           |         | 39.1  | 3.68  |            |
| 1105 | Nickel     | mg/kg |      | 141   | 94.3 - 164   | Not Reported |               |           |         | 129   | 11.3  |            |
| 1125 | Potassium  | mg/kg |      | 2630  | 1460 - 3370  | Not Reported |               |           |         | 2420  | 310   |            |
| 1140 | Selenium   | mg/kg |      | 67.0  | 36.8 - 84.5  | Not Reported |               |           |         | 60.6  | 6.35  |            |



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A Waters Company

# SOIL-93 2009 TNI Evaluation Final Complete Report

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(850) 245-8075

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

FL01181  
S744803  
03/14/16  
01/25/16 - 03/10/16

| 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 |
|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|
|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|

## SOIL Metals in Soil (cat# 620, lot# D093-540) (Continued)

|      |           |       |  |      |             |              |  |  |  |      |      |  |
|------|-----------|-------|--|------|-------------|--------------|--|--|--|------|------|--|
| 1150 | Silver    | mg/kg |  | 39.0 | 23.9 - 48.9 | Not Reported |  |  |  | 36.4 | 3.18 |  |
| 1155 | Sodium    | mg/kg |  | 883  | 475 - 1160  | Not Reported |  |  |  | 819  | 73.2 |  |
| 1160 | Strontium | mg/kg |  | 87.4 | 62.1 - 115  | Not Reported |  |  |  | 88.4 | 9.33 |  |
| 1165 | Thallium  | mg/kg |  | 112  | 67.6 - 134  | Not Reported |  |  |  | 101  | 10.2 |  |
| 1175 | Tin       | mg/kg |  | 94.3 | 47.4 - 124  | Not Reported |  |  |  | 85.8 | 8.48 |  |
| 1180 | Titanium  | mg/kg |  | 530  | 157 - 797   | Not Reported |  |  |  | 477  | 107  |  |
| 3055 | Uranium   | mg/kg |  | 58.6 | 37.3 - 83.0 | Not Reported |  |  |  | 60.1 | 7.61 |  |
| 1185 | Vanadium  | mg/kg |  | 88.1 | 50.4 - 112  | Not Reported |  |  |  | 81.3 | 9.57 |  |
| 1190 | Zinc      | mg/kg |  | 212  | 157 - 289   | Not Reported |  |  |  | 223  | 18.8 |  |





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|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|
|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|

## SOIL Metals in Soil (cat# 620, lot# D093-540)

|      |            |       |      |       |              |              |                 |           |        |       |       |          |
|------|------------|-------|------|-------|--------------|--------------|-----------------|-----------|--------|-------|-------|----------|
| 1000 | Aluminum   | mg/kg |      | 9950  | 3660 - 13900 | Not Reported |                 |           |        | 8770  | 1860  |          |
| 1005 | Antimony   | mg/kg |      | 245   | 24.5 - 295   | Not Reported |                 |           |        | 117   | 63.8  |          |
| 1010 | Arsenic    | mg/kg |      | 52.6  | 18.3 - 57.9  | Not Reported |                 |           |        | 29.6  | 3.20  |          |
| 1015 | Barium     | mg/kg |      | 218   | 145 - 251    | Not Reported |                 |           |        | 198   | 16.9  |          |
| 1020 | Beryllium  | mg/kg |      | 96.4  | 68.5 - 116   | Not Reported |                 |           |        | 92.0  | 7.78  |          |
| 1025 | Boron      | mg/kg |      | 152   | 72.0 - 168   | Not Reported |                 |           |        | 120   | 14.3  |          |
| 1030 | Cadmium    | mg/kg |      | 76.8  | 52.3 - 90.6  | Not Reported |                 |           |        | 71.5  | 5.57  |          |
| 1035 | Calcium    | mg/kg |      | 6420  | 4670 - 7960  | Not Reported |                 |           |        | 6310  | 513   |          |
| 1040 | Chromium   | mg/kg |      | 111   | 70.8 - 133   | Not Reported |                 |           |        | 102   | 8.65  |          |
| 1050 | Cobalt     | mg/kg |      | 53.0  | 38.2 - 64.6  | Not Reported |                 |           |        | 51.4  | 4.75  |          |
| 1055 | Copper     | mg/kg |      | 166   | 115 - 190    | Not Reported |                 |           |        | 153   | 13.5  |          |
| 1070 | Iron       | mg/kg |      | 16300 | 5660 - 24700 | Not Reported |                 |           |        | 15200 | 3050  |          |
| 1075 | Lead       | mg/kg |      | 146   | 101 - 176    | Not Reported |                 |           |        | 139   | 11.9  |          |
| 1085 | Magnesium  | mg/kg |      | 3010  | 1790 - 3730  | Not Reported |                 |           |        | 2760  | 326   |          |
| 1090 | Manganese  | mg/kg |      | 284   | 199 - 340    | Not Reported |                 |           |        | 270   | 24.6  |          |
| 1095 | Mercury    | mg/kg | 6.24 | 6.65  | 3.41 - 9.91  | Acceptable   | DEPSOP:HG-008-3 | 2/19/2016 | -0.472 | 6.66  | 0.896 | ACOSTA_M |
| 1100 | Molybdenum | mg/kg |      | 44.1  | 25.2 - 52.9  | Not Reported |                 |           |        | 39.1  | 3.68  |          |
| 1105 | Nickel     | mg/kg |      | 141   | 94.3 - 164   | Not Reported |                 |           |        | 129   | 11.3  |          |
| 1125 | Potassium  | mg/kg |      | 2630  | 1460 - 3370  | Not Reported |                 |           |        | 2420  | 310   |          |
| 1140 | Selenium   | mg/kg |      | 67.0  | 36.8 - 84.5  | Not Reported |                 |           |        | 60.6  | 6.35  |          |



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|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|
|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|

## SOIL Metals in Soil (cat# 620, lot# D093-540) (Continued)

|      |           |       |  |      |             |              |  |  |  |      |      |  |
|------|-----------|-------|--|------|-------------|--------------|--|--|--|------|------|--|
| 1150 | Silver    | mg/kg |  | 39.0 | 23.9 - 48.9 | Not Reported |  |  |  | 36.4 | 3.18 |  |
| 1155 | Sodium    | mg/kg |  | 883  | 475 - 1160  | Not Reported |  |  |  | 819  | 73.2 |  |
| 1160 | Strontium | mg/kg |  | 87.4 | 62.1 - 115  | Not Reported |  |  |  | 88.4 | 9.33 |  |
| 1165 | Thallium  | mg/kg |  | 112  | 67.6 - 134  | Not Reported |  |  |  | 101  | 10.2 |  |
| 1175 | Tin       | mg/kg |  | 94.3 | 47.4 - 124  | Not Reported |  |  |  | 85.8 | 8.48 |  |
| 1180 | Titanium  | mg/kg |  | 530  | 157 - 797   | Not Reported |  |  |  | 477  | 107  |  |
| 3055 | Uranium   | mg/kg |  | 58.6 | 37.3 - 83.0 | Not Reported |  |  |  | 60.1 | 7.61 |  |
| 1185 | Vanadium  | mg/kg |  | 88.1 | 50.4 - 112  | Not Reported |  |  |  | 81.3 | 9.57 |  |
| 1190 | Zinc      | mg/kg |  | 212  | 157 - 289   | Not Reported |  |  |  | 223  | 18.8 |  |

## SOIL Nutrients in Soil (cat# 869, lot# D093-542)

|      |                            |       |      |      |             |              |                  |           |       |      |      |          |
|------|----------------------------|-------|------|------|-------------|--------------|------------------|-----------|-------|------|------|----------|
| 1515 | Ammonia as N               | mg/kg |      | 318  | 126 - 548   | Not Reported |                  |           |       | 337  | 53.7 |          |
| 1795 | Total Kjeldahl Nitrogen    | mg/kg |      | 925  | 494 - 1390  | Not Reported |                  |           |       | 942  | 126  |          |
| 2040 | Total Organic Carbon (TOC) | mg/kg | 6230 | 5590 | 1350 - 9830 | Acceptable   | DEPSOP: NU-076-1 | 2/19/2016 | 0.452 | 5590 | 1410 | TURNER_D |
| 1910 | Total Phosphorus           | mg/kg |      | 871  | 209 - 1560  | Not Reported |                  |           |       | 887  | 121  |          |



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## 2009 TNI Evaluation Report

Study: **SOIL-93**

ERA Customer Number: **S744803**

Laboratory Name: **State of Florida DEP  
Chemistry Laboratory**

### Organic Results



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|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|
|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|

## SOIL Volatiles in Soil (cat# 623, lot# D093-721)

|      |                                |       |        |        |             |              |                |           |        |      |      |       |
|------|--------------------------------|-------|--------|--------|-------------|--------------|----------------|-----------|--------|------|------|-------|
| 4315 | Acetone                        | µg/kg | 456    | 520    | 52.0 - 821  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.0459 | 450  | 126  | LUO_Y |
| 4320 | Acetonitrile                   | µg/kg |        | 461    | 142 - 781   | Not Reported |                |           |        | 461  | 107  |       |
| 4325 | Acrolein                       | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |        |      |      |       |
| 4375 | Benzene                        | µg/kg | 76.6   | 75.8   | 44.6 - 105  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.295  | 73.9 | 9.22 | LUO_Y |
| 4385 | Bromobenzene                   | µg/kg |        | < 40.0 | 0.00 - 40.0 | Not Reported |                |           |        |      |      |       |
| 4390 | Bromochloromethane             | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |        |      |      |       |
| 4395 | Bromodichloromethane           | µg/kg | 135    | 125    | 81.6 - 172  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.772  | 124  | 14.7 | LUO_Y |
| 4400 | Bromoform                      | µg/kg | 117    | 111    | 56.1 - 165  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.548  | 109  | 14.1 | LUO_Y |
| 4950 | Bromomethane                   | µg/kg | < 2.00 | < 80.0 | 0.00 - 80.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |        |      |      | LUO_Y |
| 4410 | 2-Butanone (MEK)               | µg/kg | 118    | 165    | 36.0 - 265  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | -0.723 | 140  | 30.6 | LUO_Y |
| 4435 | n-Butylbenzene                 | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |        |      |      |       |
| 4440 | sec-Butylbenzene               | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |        |      |      |       |
| 4445 | tert-Butylbenzene              | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |        |      |      |       |
| 5000 | tert-Butyl methyl ether (MTBE) | µg/kg | 100    | 99.4   | 41.7 - 150  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.159  | 98.2 | 11.4 | LUO_Y |
| 4450 | Carbon disulfide               | µg/kg | < 2.00 | < 20.0 | 0.00 - 20.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |        |      |      | LUO_Y |
| 4455 | Carbon tetrachloride           | µg/kg | 91.0   | 91.5   | 44.7 - 135  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.477  | 84.9 | 12.7 | LUO_Y |
| 4475 | Chlorobenzene                  | µg/kg | 129    | 130    | 73.4 - 180  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.290  | 124  | 18.0 | LUO_Y |
| 4575 | Chlorodibromomethane           | µg/kg | < 2.00 | < 9.90 | 0.00 - 9.90 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |        |      |      | LUO_Y |
| 4485 | Chloroethane                   | µg/kg | < 2.00 | < 80.0 | 0.00 - 80.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |        |      |      | LUO_Y |
| 4500 | 2-Chloroethylvinylether        | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |        |      |      |       |



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|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|
|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|

## SOIL Volatiles in Soil (cat# 623, lot# D093-721) (Continued)

|      |                                    |       |        |        |             |              |                |           |       |      |      |       |
|------|------------------------------------|-------|--------|--------|-------------|--------------|----------------|-----------|-------|------|------|-------|
| 4505 | Chloroform                         | µg/kg | 97.9   | 94.7   | 57.1 - 132  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.610 | 89.7 | 13.5 | LUO_Y |
| 4960 | Chloromethane                      | µg/kg | < 2.00 | < 80.0 | 0.00 - 80.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |       |      |      | LUO_Y |
| 4535 | 2-Chlorotoluene                    | µg/kg | < 2.00 | < 20.0 | 0.00 - 20.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |       |      |      | LUO_Y |
| 4540 | 4-Chlorotoluene                    | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |       |      |      |       |
| 4570 | 1,2-Dibromo-3-chloropropane (DBCP) | µg/kg |        | 164    | 101 - 237   | Not Reported |                |           |       | 151  | 30.0 |       |
| 4585 | 1,2-Dibromoethane (EDB)            | µg/kg |        | 48.8   | 28.9 - 69.5 | Not Reported |                |           |       | 45.8 | 5.94 |       |
| 4595 | Dibromomethane                     | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |       |      |      |       |
| 4610 | 1,2-Dichlorobenzene                | µg/kg | 114    | 114    | 55.0 - 161  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.608 | 103  | 18.5 | LUO_Y |
| 4615 | 1,3-Dichlorobenzene                | µg/kg | 184    | 184    | 72.5 - 272  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.552 | 167  | 31.4 | LUO_Y |
| 4620 | 1,4-Dichlorobenzene                | µg/kg | 101    | 98.0   | 33.8 - 139  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.563 | 90.7 | 18.2 | LUO_Y |
| 4625 | Dichlorodifluoromethane (Freon 12) | µg/kg | < 2.00 | < 80.0 | 0.00 - 80.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |       |      |      | LUO_Y |
| 4630 | 1,1-Dichloroethane                 | µg/kg | < 2.00 | < 11.0 | 0.00 - 11.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |       |      |      | LUO_Y |
| 4635 | 1,2-Dichloroethane                 | µg/kg | < 2.00 | < 12.0 | 0.00 - 12.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |       |      |      | LUO_Y |
| 4640 | 1,1-Dichloroethylene               | µg/kg | < 2.00 | < 13.0 | 0.00 - 13.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |       |      |      | LUO_Y |
| 4645 | cis-1,2-Dichloroethylene           | µg/kg | < 2.00 | < 20.0 | 0.00 - 20.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |       |      |      | LUO_Y |
| 4700 | trans-1,2-Dichloroethylene         | µg/kg | < 2.00 | < 23.0 | 0.00 - 23.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |       |      |      | LUO_Y |
| 4655 | 1,2-Dichloropropane                | µg/kg | < 2.00 | < 12.0 | 0.00 - 12.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |       |      |      | LUO_Y |
| 4660 | 1,3-Dichloropropane                | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |       |      |      |       |
| 4665 | 2,2-Dichloropropane                | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |       |      |      |       |
| 4670 | 1,1-Dichloropropene                | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |       |      |      |       |



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## SOIL Volatiles in Soil (cat# 623, lot# D093-721) (Continued)

|      |                             |       |        |        |             |              |                |           |        |      |      |       |
|------|-----------------------------|-------|--------|--------|-------------|--------------|----------------|-----------|--------|------|------|-------|
| 4680 | cis-1,3-Dichloropropylene   | µg/kg | < 2.00 | < 40.0 | 0.00 - 40.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |        |      |      | LUO_Y |
| 4685 | trans-1,3-Dichloropropylene | µg/kg | < 2.00 | < 40.0 | 0.00 - 40.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |        |      |      | LUO_Y |
| 4765 | Ethylbenzene                | µg/kg | < 2.00 | < 9.40 | 0.00 - 9.40 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |        |      |      | LUO_Y |
| 4835 | Hexachlorobutadiene         | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |        |      |      |       |
| 4840 | Hexachloroethane            | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |        |      |      |       |
| 4860 | 2-Hexanone                  | µg/kg | 330    | 334    | 147 - 487   | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.245  | 319  | 46.1 | LUO_Y |
| 4900 | Isopropylbenzene            | µg/kg |        | < 40.0 | 0.00 - 40.0 | Not Reported |                |           |        |      |      |       |
| 4910 | 4-Isopropyltoluene          | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |        |      |      |       |
| 4975 | Methylene chloride          | µg/kg | 171    | 184    | 86.2 - 265  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.174  | 166  | 26.2 | LUO_Y |
| 4995 | 4-Methyl-2-pentanone (MIBK) | µg/kg | 77.9   | 85.6   | 34.6 - 129  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | -0.333 | 81.3 | 10.2 | LUO_Y |
| 5005 | Naphthalene                 | µg/kg |        | < 6.00 | 0.00 - 6.00 | Not Reported |                |           |        |      |      |       |
| 5015 | Nitrobenzene                | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |        |      |      |       |
| 5090 | n-Propylbenzene             | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |        |      |      |       |
| 5100 | Styrene                     | µg/kg | 194    | 191    | 129 - 261   | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.415  | 185  | 20.7 | LUO_Y |
| 5105 | 1,1,1,2-Tetrachloroethane   | µg/kg |        | 126    | 82.2 - 171  | Not Reported |                |           |        | 122  | 17.5 |       |
| 5110 | 1,1,2,2-Tetrachloroethane   | µg/kg | 73.5   | 69.4   | 35.2 - 103  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.843  | 64.7 | 10.5 | LUO_Y |
| 5115 | Tetrachloroethylene         | µg/kg | 141    | 149    | 67.1 - 216  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.281  | 135  | 22.8 | LUO_Y |
| 5140 | Toluene                     | µg/kg | < 2.00 | < 11.0 | 0.00 - 11.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |        |      |      | LUO_Y |
| 5150 | 1,2,3-Trichlorobenzene      | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |        |      |      |       |
| 5155 | 1,2,4-Trichlorobenzene      | µg/kg |        | 102    | 40.8 - 163  | Not Reported |                |           |        | 81.6 | 29.8 |       |



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# SOIL-93 2009 TNI Evaluation Final Complete Report

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EPA ID:  
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Study Dates:

FL01181  
S744803  
03/14/16  
01/25/16 - 03/10/16

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|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|
|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|

## SOIL Volatiles in Soil (cat# 623, lot# D093-721) (Continued)

|      |                              |       |        |        |             |              |                |           |        |     |      |       |
|------|------------------------------|-------|--------|--------|-------------|--------------|----------------|-----------|--------|-----|------|-------|
| 5160 | 1,1,1-Trichloroethane        | µg/kg | 125    | 124    | 70.4 - 177  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.669  | 112 | 19.2 | LUO_Y |
| 5165 | 1,1,2-Trichloroethane        | µg/kg | < 2.00 | < 13.0 | 0.00 - 13.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |        |     |      | LUO_Y |
| 5170 | Trichloroethylene            | µg/kg | 142    | 162    | 83.4 - 231  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | -0.738 | 157 | 20.9 | LUO_Y |
| 5175 | Trichlorofluoromethane       | µg/kg | < 2.00 | < 80.0 | 0.00 - 80.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |        |     |      | LUO_Y |
| 5180 | 1,2,3-Trichloropropane (TCP) | µg/kg |        | < 8.30 | 0.00 - 8.30 | Not Reported |                |           |        |     |      |       |
| 5210 | 1,2,4-Trimethylbenzene       | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |        |     |      |       |
| 5215 | 1,3,5-Trimethylbenzene       | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |        |     |      |       |
| 5225 | Vinyl acetate                | µg/kg |        | < 20.0 | 0.00 - 20.0 | Not Reported |                |           |        |     |      |       |
| 5235 | Vinyl chloride               | µg/kg | < 2.00 | < 80.0 | 0.00 - 80.0 | Acceptable   | EPA 8260C 2006 | 2/25/2016 |        |     |      | LUO_Y |
| 5240 | m&p-Xylene                   | µg/kg | 168    | 171    | 83.7 - 252  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.159  | 164 | 24.6 | LUO_Y |
| 5250 | o-Xylene                     | µg/kg | 158    | 157    | 76.6 - 232  | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.256  | 153 | 19.8 | LUO_Y |
| 5260 | Xylenes, total               | µg/kg | 326    | 328    | 163 - 480   | Acceptable   | EPA 8260C 2006 | 2/25/2016 | 0.185  | 319 | 37.8 | LUO_Y |





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## SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D093-727)

|      |                                       |       |        |        |              |              |                |           |        |      |      |            |
|------|---------------------------------------|-------|--------|--------|--------------|--------------|----------------|-----------|--------|------|------|------------|
| 5500 | Acenaphthene                          | µg/kg | 7450   | 8140   | 2190 - 9460  | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 1.13   | 5820 | 1440 | GHAFFARI_M |
| 5505 | Acenaphthylene                        | µg/kg | 5760   | 6640   | 1620 - 8370  | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.624  | 5000 | 1220 | GHAFFARI_M |
| 5145 | 2-Amino-1-methylbenzene (o-toluidine) | µg/kg | < 180  | < 1000 | 0.00 - 1000  | Acceptable   | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 5545 | Aniline                               | µg/kg | < 360  | < 1000 | 0.00 - 1000  | Acceptable   | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 5555 | Anthracene                            | µg/kg | 4430   | 5490   | 1370 - 7060  | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.230  | 4220 | 935  | GHAFFARI_M |
| 5595 | Benzidine                             | µg/kg | < 1300 | < 1000 | 0.00 - 1000  | Acceptable   | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 5610 | Benzoic acid                          | µg/kg |        | < 1000 | 0.00 - 1000  | Not Reported |                |           |        |      |      |            |
| 5575 | Benzo(a)anthracene                    | µg/kg | 2110   | 2850   | 890 - 3730   | Acceptable   | EPA 8270D 2007 | 2/16/2016 | -0.439 | 2310 | 455  | GHAFFARI_M |
| 5585 | Benzo(b)fluoranthene                  | µg/kg | 3700   | 4100   | 1090 - 5470  | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.606  | 3280 | 699  | GHAFFARI_M |
| 5600 | Benzo(k)fluoranthene                  | µg/kg | 4380   | 4760   | 1350 - 6450  | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.507  | 3900 | 943  | GHAFFARI_M |
| 5590 | Benzo(g,h,i)perylene                  | µg/kg | 2390   | 2830   | 592 - 4030   | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.145  | 2310 | 562  | GHAFFARI_M |
| 5580 | Benzo(a)pyrene                        | µg/kg | 5070   | 5650   | 1420 - 7840  | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.464  | 4630 | 946  | GHAFFARI_M |
| 5630 | Benzyl alcohol                        | µg/kg | < 60.0 | < 1000 | 0.00 - 1000  | Acceptable   | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 5760 | bis(2-Chloroethoxy)methane            | µg/kg | 2560   | 3140   | 524 - 3970   | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.570  | 2250 | 548  | GHAFFARI_M |
| 5765 | bis(2-Chloroethyl)ether               | µg/kg | < 60.0 | < 150  | 0.00 - 150   | Acceptable   | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 5780 | bis(2-Chloroisopropyl)ether           | µg/kg | < 60.0 | < 150  | 0.00 - 150   | Acceptable   | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 5660 | 4-Bromophenyl-phenylether             | µg/kg | 11200  | 10900  | 3380 - 13900 | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 1.64   | 8650 | 1560 | GHAFFARI_M |
| 5670 | Butylbenzylphthalate                  | µg/kg | 12100  | 11000  | 2490 - 15300 | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 1.33   | 8880 | 2420 | GHAFFARI_M |
| 5680 | Carbazole                             | µg/kg | < 60.0 | < 1000 | 0.00 - 1000  | Acceptable   | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 5745 | 4-Chloroaniline                       | µg/kg |        | < 1000 | 0.00 - 1000  | Not Reported |                |           |        |      |      |            |



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## SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D093-727) (Continued)

|      |                            |       |        |        |              |              |                |           |        |      |      |            |
|------|----------------------------|-------|--------|--------|--------------|--------------|----------------|-----------|--------|------|------|------------|
| 5700 | 4-Chloro-3-methylphenol    | µg/kg | 11300  | 11900  | 3300 - 13100 | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 1.60   | 8140 | 1970 | GHAFFARI_M |
| 5790 | 1-Chloronaphthalene        | µg/kg |        | < 1000 | 0.00 - 1000  | Not Reported |                |           |        |      |      |            |
| 5795 | 2-Chloronaphthalene        | µg/kg | < 60.0 | < 100  | 0.00 - 100   | Acceptable   | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 5800 | 2-Chlorophenol             | µg/kg | 10200  | 12700  | 2190 - 14000 | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.948  | 7990 | 2330 | GHAFFARI_M |
| 5825 | 4-Chlorophenyl-phenylether | µg/kg | 11700  | 11500  | 3100 - 14400 | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 1.37   | 8750 | 2160 | GHAFFARI_M |
| 5855 | Chrysene                   | µg/kg | 1170   | 1720   | 499 - 2310   | Acceptable   | EPA 8270D 2007 | 2/16/2016 | -0.758 | 1400 | 306  | GHAFFARI_M |
| 5895 | Dibenz(a,h)anthracene      | µg/kg | 4230   | 4930   | 1340 - 6510  | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.322  | 3920 | 949  | GHAFFARI_M |
| 5905 | Dibenzofuran               | µg/kg | 7180   | 7560   | 2000 - 9230  | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 1.11   | 5620 | 1410 | GHAFFARI_M |
| 5925 | Di-n-butylphthalate        | µg/kg | 8740   | 8590   | 2120 - 11700 | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 1.32   | 6890 | 1410 | GHAFFARI_M |
| 4610 | 1,2-Dichlorobenzene        | µg/kg |        | 8260   | 826 - 9180   | Not Reported |                |           |        | 4860 | 1660 |            |
| 4615 | 1,3-Dichlorobenzene        | µg/kg |        | < 150  | 0.00 - 150   | Not Reported |                |           |        |      |      |            |
| 4620 | 1,4-Dichlorobenzene        | µg/kg |        | < 150  | 0.00 - 150   | Not Reported |                |           |        |      |      |            |
| 5945 | 3,3'-Dichlorobenzidine     | µg/kg | < 3600 | < 1000 | 0.00 - 1000  | Acceptable   | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 6000 | 2,4-Dichlorophenol         | µg/kg | 6800   | 8030   | 1320 - 9160  | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 1.12   | 5240 | 1390 | GHAFFARI_M |
| 6005 | 2,6-Dichlorophenol         | µg/kg | < 60.0 | < 1500 | 0.00 - 1500  | Acceptable   | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 6070 | Diethylphthalate           | µg/kg | 5710   | 6890   | 1470 - 9180  | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.368  | 5330 | 1040 | GHAFFARI_M |
| 6130 | 2,4-Dimethylphenol         | µg/kg | < 360  | < 3000 | 0.00 - 3000  | Acceptable   | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 6135 | Dimethylphthalate          | µg/kg | < 60.0 | < 150  | 0.00 - 150   | Acceptable   | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 6175 | 2,4-Dinitrophenol          | µg/kg | < 360  | < 3000 | 0.00 - 3000  | Acceptable   | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 6185 | 2,4-Dinitrotoluene         | µg/kg | < 60.0 | < 150  | 0.00 - 150   | Acceptable   | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |



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## SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D093-727) (Continued)

|      |                            |       |        |        |              |              |                |           |       |      |      |            |
|------|----------------------------|-------|--------|--------|--------------|--------------|----------------|-----------|-------|------|------|------------|
| 6190 | 2,6-Dinitrotoluene         | µg/kg | 4460   | 4930   | 1380 - 5940  | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.967 | 3660 | 827  | GHAFFARI_M |
| 6200 | Di-n-octylphthalate        | µg/kg | < 60.0 | < 150  | 0.00 - 150   | Acceptable   | EPA 8270D 2007 | 2/16/2016 |       |      |      | GHAFFARI_M |
| 6065 | bis(2-Ethylhexyl)phthalate | µg/kg | 12300  | 11200  | 3050 - 15200 | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 1.41  | 9120 | 2260 | GHAFFARI_M |
| 6265 | Fluoranthene               | µg/kg | 5300   | 6390   | 2100 - 8120  | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.195 | 5110 | 964  | GHAFFARI_M |
| 6270 | Fluorene                   | µg/kg | 7670   | 7530   | 2390 - 8990  | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 1.47  | 5690 | 1340 | GHAFFARI_M |
| 6275 | Hexachlorobenzene          | µg/kg | 4550   | 5140   | 1600 - 6500  | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.658 | 4050 | 760  | GHAFFARI_M |
| 4835 | Hexachlorobutadiene        | µg/kg | < 180  | < 150  | 0.00 - 150   | Acceptable   | EPA 8270D 2007 | 2/16/2016 |       |      |      | GHAFFARI_M |
| 6285 | Hexachlorocyclopentadiene  | µg/kg | < 60.0 | < 1500 | 0.00 - 1500  | Acceptable   | EPA 8270D 2007 | 2/16/2016 |       |      |      | GHAFFARI_M |
| 4840 | Hexachloroethane           | µg/kg | 8210   | 11300  | 1130 - 13100 | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.833 | 6510 | 2040 | GHAFFARI_M |
| 6315 | Indeno(1,2,3-cd)pyrene     | µg/kg | 4580   | 4980   | 498 - 7750   | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.542 | 4080 | 924  | GHAFFARI_M |
| 6320 | Isophorone                 | µg/kg | 6670   | 7570   | 1850 - 9040  | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.883 | 5440 | 1390 | GHAFFARI_M |
| 6360 | 4,6-Dinitro-2-methylphenol | µg/kg | < 60.0 | < 3000 | 0.00 - 3000  | Acceptable   | EPA 8270D 2007 | 2/16/2016 |       |      |      | GHAFFARI_M |
| 6385 | 2-Methylnaphthalene        | µg/kg | 2340   | 2880   | 723 - 3410   | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.519 | 2070 | 529  | GHAFFARI_M |
| 6400 | 2-Methylphenol             | µg/kg | 5000   | 9300   | 930 - 10200  | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 1.21  | 3920 | 894  | GHAFFARI_M |
| 6410 | 4-Methylphenol             | µg/kg | 4760   | 6730   | 673 - 7400   | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 1.51  | 3290 | 970  | GHAFFARI_M |
| 5005 | Naphthalene                | µg/kg | 11400  | 11800  | 2450 - 13100 | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 1.54  | 7760 | 2370 | GHAFFARI_M |
| 6460 | 2-Nitroaniline             | µg/kg | < 60.0 | < 1000 | 0.00 - 1000  | Acceptable   | EPA 8270D 2007 | 2/16/2016 |       |      |      | GHAFFARI_M |
| 6465 | 3-Nitroaniline             | µg/kg |        | < 1000 | 0.00 - 1000  | Not Reported |                |           |       |      |      |            |
| 6470 | 4-Nitroaniline             | µg/kg |        | < 1000 | 0.00 - 1000  | Not Reported |                |           |       |      |      |            |
| 5015 | Nitrobenzene               | µg/kg | 2550   | 3150   | 315 - 3930   | Acceptable   | EPA 8270D 2007 | 2/16/2016 | 0.735 | 2120 | 592  | GHAFFARI_M |



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## SOIL Base/Neutrals and Acids in Soil (cat# 467, lot# D093-727) (Continued)

|      |                            |       |        |        |              |            |                |           |        |      |      |            |
|------|----------------------------|-------|--------|--------|--------------|------------|----------------|-----------|--------|------|------|------------|
| 6490 | 2-Nitrophenol              | µg/kg | 3550   | 5040   | 504 - 5540   | Acceptable | EPA 8270D 2007 | 2/16/2016 | 0.712  | 2950 | 848  | GHAFFARI_M |
| 6500 | 4-Nitrophenol              | µg/kg | 8950   | 11900  | 1190 - 13900 | Acceptable | EPA 8270D 2007 | 2/16/2016 | 1.14   | 6420 | 2230 | GHAFFARI_M |
| 6525 | N-Nitrosodiethylamine      | µg/kg | < 60.0 | < 1000 | 0.00 - 1000  | Acceptable | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 6530 | N-Nitrosodimethylamine     | µg/kg | < 360  | < 1500 | 0.00 - 1500  | Acceptable | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 6535 | N-Nitrosodiphenylamine     | µg/kg | < 60.0 | < 1500 | 0.00 - 1500  | Acceptable | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 6545 | N-Nitroso-di-n-propylamine | µg/kg | 2810   | 3380   | 338 - 4600   | Acceptable | EPA 8270D 2007 | 2/16/2016 | 0.687  | 2380 | 622  | GHAFFARI_M |
| 6590 | Pentachlorobenzene         | µg/kg | < 60.0 | < 1000 | 0.00 - 1000  | Acceptable | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 6605 | Pentachlorophenol          | µg/kg | < 60.0 | < 300  | 0.00 - 300   | Acceptable | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 6615 | Phenanthrene               | µg/kg | 6610   | 7220   | 2300 - 8730  | Acceptable | EPA 8270D 2007 | 2/16/2016 | 1.01   | 5520 | 1090 | GHAFFARI_M |
| 6625 | Phenol                     | µg/kg | 5240   | 6700   | 670 - 8090   | Acceptable | EPA 8270D 2007 | 2/16/2016 | 0.741  | 4350 | 1190 | GHAFFARI_M |
| 6665 | Pyrene                     | µg/kg | 2500   | 3250   | 975 - 4220   | Acceptable | EPA 8270D 2007 | 2/16/2016 | -0.155 | 2600 | 640  | GHAFFARI_M |
| 5095 | Pyridine                   | µg/kg | < 360  | < 1000 | 0.00 - 1000  | Acceptable | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 6715 | 1,2,4,5-Tetrachlorobenzene | µg/kg | < 60.0 | < 1000 | 0.00 - 1000  | Acceptable | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 6735 | 2,3,4,6-Tetrachlorophenol  | µg/kg | < 60.0 | < 1000 | 0.00 - 1000  | Acceptable | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 5155 | 1,2,4-Trichlorobenzene     | µg/kg | < 180  | < 150  | 0.00 - 150   | Acceptable | EPA 8270D 2007 | 2/16/2016 |        |      |      | GHAFFARI_M |
| 6835 | 2,4,5-Trichlorophenol      | µg/kg | 5600   | 6400   | 907 - 7520   | Acceptable | EPA 8270D 2007 | 2/16/2016 | 1.34   | 4210 | 1040 | GHAFFARI_M |
| 6840 | 2,4,6-Trichlorophenol      | µg/kg | 4540   | 5380   | 875 - 6130   | Acceptable | EPA 8270D 2007 | 2/16/2016 | 1.26   | 3500 | 823  | GHAFFARI_M |



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01/25/16 - 03/10/16

| 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 |
|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|
|------------------|---------|-------|----------------|----------------|-------------------|------------------------|--------------------|---------------|---------|------------|--------------------------|--------------|

## SOIL Chlorinated Acid Herbicides in Soil (cat# 626, lot# D093-723)

|      |                          |       |        |        |             |              |                |           |       |     |      |       |
|------|--------------------------|-------|--------|--------|-------------|--------------|----------------|-----------|-------|-----|------|-------|
| 8505 | Acifluorfen              | µg/kg | 820    | 949    | 0.00 - 1370 | Acceptable   | EPA 8321B 1998 | 2/16/2016 | 0.899 | 586 | 260  | KIM_J |
| 8530 | Bentazon                 | µg/kg | 707    | 687    | 0.00 - 1020 | Acceptable   | EPA 8321B 1998 | 2/16/2016 | 1.33  | 461 | 186  | KIM_J |
| 8540 | Chloramben               | µg/kg |        | 740    | 0.00 - 814  | Not Reported |                |           |       | 195 | 138  |       |
| 8545 | 2,4-D                    | µg/kg | 440    | 628    | 62.8 - 897  | Acceptable   | EPA 8321B 1998 | 2/16/2016 | 0.518 | 344 | 184  | KIM_J |
| 8560 | 2,4-DB                   | µg/kg | 807    | 912    | 91.2 - 1270 | Acceptable   | EPA 8321B 1998 | 2/16/2016 | 1.18  | 508 | 253  | KIM_J |
| 8550 | Dacthal diacid (DCPA)    | µg/kg |        | < 100  | 0.00 - 100  | Not Reported |                |           |       |     |      |       |
| 8555 | Dalapon                  | µg/kg |        | < 100  | 0.00 - 100  | Not Reported |                |           |       |     |      |       |
| 8595 | Dicamba                  | µg/kg | 403    | 442    | 44.2 - 663  | Acceptable   | EPA 8321B 1998 | 2/16/2016 | 1.04  | 265 | 133  | KIM_J |
| 8600 | 3,5-Dichlorobenzoic acid | µg/kg |        | 668    | 0.00 - 846  | Not Reported |                |           |       | 309 | 179  |       |
| 8605 | Dichlorprop              | µg/kg | 620    | 611    | 0.00 - 851  | Acceptable   | EPA 8321B 1998 | 2/16/2016 | 1.67  | 331 | 173  | KIM_J |
| 8620 | Dinoseb                  | µg/kg | 487    | 594    | 59.4 - 772  | Acceptable   | EPA 8321B 1998 | 2/16/2016 | 1.32  | 262 | 170  | KIM_J |
| 7775 | MCPA                     | µg/kg | < 13.0 | < 1000 | 0.00 - 1000 | Acceptable   | EPA 8321B 1998 | 2/16/2016 |       |     |      | KIM_J |
| 7780 | MCPP                     | µg/kg | < 13.0 | < 1000 | 0.00 - 1000 | Acceptable   | EPA 8321B 1998 | 2/16/2016 |       |     |      | KIM_J |
| 6500 | 4-Nitrophenol            | µg/kg |        | 991    | 0.00 - 1250 | Not Reported |                |           |       | 612 | 213  |       |
| 6605 | Pentachlorophenol        | µg/kg |        | 665    | 66.5 - 802  | Not Reported |                |           |       | 375 | 142  |       |
| 8645 | Picloram                 | µg/kg | 155    | 198    | 0.00 - 372  | Acceptable   | EPA 8321B 1998 | 2/16/2016 | 0.298 | 131 | 80.2 | KIM_J |
| 8655 | 2,4,5-T                  | µg/kg | 550    | 648    | 64.8 - 883  | Acceptable   | EPA 8321B 1998 | 2/16/2016 | 1.11  | 354 | 176  | KIM_J |
| 8650 | 2,4,5-TP (Silvex)        | µg/kg | 252    | 288    | 28.8 - 411  | Acceptable   | EPA 8321B 1998 | 2/16/2016 | 1.02  | 170 | 80.5 | KIM_J |



# CERTIFICATE OF EXCELLENCE

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

SOIL-93

State of Florida DEP Chemistry Laboratory

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 199 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

Chlorinated Acid Herbicides in  
Soil

Metals in Soil

Nutrients in Soil

Volatiles in Soil



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Patrick Larson  
Quality Officer