PERFORMANCE EVALUATION

Scheduled Study

LPTP16-S2

13-Apr-2016 Through 27-May-2016

49732057
RTC Labcode

TX01520
EPA Labcode

Participating Laboratory:

Energy Laboratories-College Station
Amanda J Myatt
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Thank you for participating in study LPTP16-S2. Additional information about this study may be found online at www.sigmaaldrich.com/pt.

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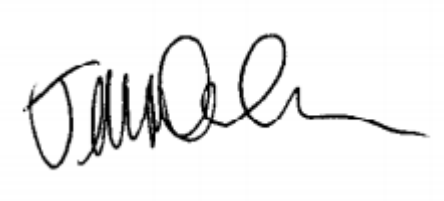
Sincerely,



Jennifer Duhon
Proficiency Testing Supervisor

Accreditors

Evaluations of this dataset will be sent to the accreditor(s) listed below using your laboratory's labcode listed above each accrediting agency. If any of the information listed below is incorrect, please contact RTC immediately.

Accredating Labcode
Texas CEQ

Frank Jamison
PROGRAM MANAGER
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PO Box 13087 (MC-176)
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RTC is accrediated to perform PT programs for the scope of accredation to ISO/IEC 17043 under ANAB certificate AP-1469

Minerals

Method:EPA 300.0 2.1 (1993) [10053200]

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Bromide [1,2] 1540 / SPE013-30G - Lot LRAA8536 /Analyst:PH/ Analysis Date: 2016-05-03	66.0 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	64.4	46.8 to 82	0.27 *Evaluation Parameter - c:0.0848, d:0.3989*	Acceptable
Chloride [1,2] 1575 / SPE013-30G - Lot LRAA8536 /Analyst:PH/ Analysis Date: 2016-05-03	691 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	729	518 to 940	-0.54 *Evaluation Parameter - c:0.0892, d:5.3941*	Acceptable
Fluoride [1,2] 1730 / SPE013-30G - Lot LRAA8536 /Analyst:PH/ Analysis Date: 2016-05-03	29.0 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	44.7	14.7 to 74.7	-1.57 *Evaluation Parameter - c:0.1781, d:2.0366*	Acceptable
Nitrate as N [1,2] 1810 / SPE013-30G - Lot LRAA8536 /Analyst:PH/ Analysis Date: 2016-05-03	413 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	399	311 to 488	0.47 *Evaluation Parameter - c:0.0676, d:2.4605*	Acceptable
Sulfate [1,2] 2000 / SPE013-30G - Lot LRAA8536 /Analyst:PH/ Analysis Date: 2016-05-03	262 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	290	157 to 423	-0.63 *Evaluation Parameter - c:0.1354, d:5.1265*	Acceptable

Method:EPA 353.2 2 (1993) [10067604]

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Nitrate as N [1,2] 1810 / SPE013-30G - Lot LRAA8536 /Analyst:RA/ Analysis Date: 2016-05-04	396 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	399	311 to 488	-0.1 *Evaluation Parameter - c:0.0676, d:2.4605*	Acceptable

Miscellaneous Analytes

Method:EPA 300.0 2.1 (1993) [10053200]

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Nitrate+nitrite as N [1,2] 1820 / SPE013-30G - Lot LRAA8536 /Analyst:PH/ Analysis Date: 2016-05-03	413 mg/Kg *Evaluation Criteria - 1* ☐*Voluntary*	422	232 to 612	-0.14	Acceptable *Evaluation Parameter - a:1, b:0, c:0.15, d:0*
Nitrite as N [1,2] 1840 / SPE013-30G - Lot LRAA8536 /Analyst:PH/ Analysis Date: 2016-05-03	<0.5 mg/Kg *Evaluation Criteria - 5* ☐*Voluntary*	0	0 to 0	0	Acceptable *Evaluation Parameter - deviations:3*

Method:EPA 353.2 2 (1993) [10067604]

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Nitrate+nitrite as N [1,2] 1820 / SPE013-30G - Lot LRAA8536 /Analyst:RA/ Analysis Date: 2016-05-04	396 mg/Kg *Evaluation Criteria - 1* ☐*Voluntary*	422	232 to 612	-0.41	Acceptable *Evaluation Parameter - a:1, b:0, c:0.15, d:0*
Nitrite as N [1,2] 1840 / SPE013-30G - Lot LRAA8536 /Analyst:RA/ Analysis Date: 2016-05-04	<0.1 mg/Kg *Evaluation Criteria - 5* ☐*Voluntary*	0	0 to 0	0	Acceptable *Evaluation Parameter - deviations:3*

Method:EPA 365.1 2 (1993) [10070005]

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Orthophosphate as P [1,2] 1870 / SPE013-30G - Lot LRAA8536 /Analyst:RA/ Analysis Date: 2016-05-05	109 mg/Kg *Evaluation Criteria - 5* ☐*Voluntary*	121	0 to 295	-0.21	Acceptable *Evaluation Parameter - deviations:3*

Method:EPA 6010D (2012) [10155916]

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation

Silica as SiO_2 [1,2]	1830 mg/Kg	1670	0 to 5400	0.13	Acceptable
1990 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-05-04	*Evaluation Criteria - 5* ☐*Voluntary*			*Evaluation Parameter - deviations:3*	

Method:EPA 9045D 4 (2004) [10198455]

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation
pH [1,2]	6.04 Units	6.03	5.7 to 6.36	0.09	Acceptable
1900 / SPE001-30G - Lot LRAA8596 /Analyst:JP/ Analysis Date: 2016-04-21	*Evaluation Criteria - 5* ☐*Voluntary*			*Evaluation Parameter - deviations:3*	

Method:TNRCC 1005 3 (2001) [90019208]

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Diesel-range total petroleum hydrocarbons, >C12-C28 [2]	38.8 mg/Kg	51.3	20.5 to 82.1	-1.21	Acceptable
9372 / SPE026TXL-30G - Lot LRAB1264 /Analyst:AM/ Analysis Date: 2016-05-19	*Evaluation Criteria - 1* ☐*Voluntary*			*Evaluation Parameter - a:1, b:0, c:0.2, d:0*	
Gasoline Range Organics, C6-C12 [1,2]	46.2 mg/Kg	54.9	30.2 to 79.6	-1.06	Acceptable
9408 / SPE026TXL-30G - Lot LRAB1264 /Analyst:AM/ Analysis Date: 2016-05-19	*Evaluation Criteria - 1* ☐*Voluntary*			*Evaluation Parameter - a:1, b:0, c:0.15, d:0*	

Group Analysis Summary

Acceptable : 9 / 9

Score : 100% - (Acceptable)

Petroleum Hydrocarbons - Soil

Method:TNRCC 1005 3 (2001) [90019208]

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Total Petroleum Hydrocarbons (TPH), (C6-C35) [2] 2050 / SPE026TXH-30G - Lot LRAB1262 /Analyst:AM/ Analysis Date: 2016-05-20	6550 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	5490	2650 to 8340	1.12 *Evaluation Parameter - c:0.1567, d:88.0394*	Acceptable
Total Petroleum Hydrocarbons (TPH), (C6-C35) [2] 2050 / SPE026TXL-30G - Lot LRAB1264 /Analyst:AM/ Analysis Date: 2016-05-19	103 mg/Kg *Evaluation Criteria - 1* ☐ *Voluntary*	151	53.6 to 248	-1.48 *Evaluation Parameter - a:1, b:0, c:0.1567, d:8.80394*	Acceptable
Diesel-range total petroleum hydrocarbons, >C12-C28 [2] 9372 / SPE026TXH-30G - Lot LRAB1262 /Analyst:AM/ Analysis Date: 2016-05-20	2260 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	1850	770 to 2920	1.14 *Evaluation Parameter - c:0.1798, d:26.8656*	Acceptable
Gasoline Range Organics, C6-C12 [1,2] 9408 / SPE026TXH-30G - Lot LRAB1262 /Analyst:AM/ Analysis Date: 2016-05-20	3190 mg/Kg *Evaluation Criteria - 1* ☐ *Voluntary*	4350	1810 to 6880	-1.37 *Evaluation Parameter - a:1.0682, b:21.3958, c:0.190, d:74.9808*	Acceptable

Trace Metals - Solids

Method:EPA 6010D (2012) [10155916]

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Antimony, Sb [1,2] 1005 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	25.3 mg/Kg *Evaluation Criteria - 2* ☐*Voluntary*	79.4	0 to 208	-1.26	Acceptable *Evaluation Parameter - c:0.4385, d:8.1700*
Arsenic, As [1,2] 1010 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	59.7 mg/Kg *Evaluation Criteria - 2* ☐*Voluntary*	59	39.6 to 78.4	0.11	Acceptable *Evaluation Parameter - c:0.0915, d:1.0653*
Barium, Ba [1,2] 1015 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	232 mg/Kg *Evaluation Criteria - 2* ☐*Voluntary*	233	171 to 294	-0.05	Acceptable *Evaluation Parameter - c:0.0823, d:1.3346*
Beryllium, Be [1,2] 1020 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	57.6 mg/Kg *Evaluation Criteria - 2* ☐*Voluntary*	59.5	43.6 to 75.4	-0.36	Acceptable *Evaluation Parameter - c:0.0782, d:0.6438*
Boron, B [1,2] 1025 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-05-04	74.2 mg/Kg *Evaluation Criteria - 2* ☐*Voluntary*	79.6	47.7 to 111	-0.51	Acceptable *Evaluation Parameter - c:0.1333, d:0*
Cadmium, Cd [1,2] 1030 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	94.1 mg/Kg *Evaluation Criteria - 2* ☐*Voluntary*	98.7	72.4 to 125	-0.52	Acceptable *Evaluation Parameter - c:0.0884, d:0.0629*
Calcium, Ca [1,2] 1035 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-05-04	3600 mg/Kg *Evaluation Criteria - 2* ☐*Voluntary*	3760	2670 to 4840	-0.44	Acceptable *Evaluation Parameter - c:0.0730, d:87.3802*
Chromium, Cr (total) [1,2] 1040 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	239 mg/Kg *Evaluation Criteria - 2* ☐*Voluntary*	240	170 to 310	-0.04	Acceptable *Evaluation Parameter - c:0.0937, d:0.8163*
Cobalt, Co [1,2] 1050 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	153 mg/Kg *Evaluation Criteria - 2* ☐*Voluntary*	153	114 to 192	0	Acceptable *Evaluation Parameter - c:0.0851, d:0.0292*

Method:EPA 6010D (2012) (Continued)

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Copper, Cu [1,2] 1055 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	88.0 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	89.6	66.3 to 113	-0.21	Acceptable *Evaluation Parameter - c:0.0770, d:0.8423*
Iron, Fe [1,2] 1070 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	7220 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	6980	167 to 13800	0.11	Acceptable *Evaluation Parameter - c:0.1102, d:1500.6038*
Lead, Pb [1,2] 1075 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	270 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	276	208 to 343	-0.27	Acceptable *Evaluation Parameter - c:0.0725, d:2.4410*
Lithium, Li [2] 1080 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-05-19	145 mg/Kg *Evaluation Criteria - 5* ☐ *Voluntary*	158	107 to 209	-0.76	Acceptable *Evaluation Parameter - deviations:3*
Magnesium, Mg [1,2] 1085 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-05-04	1560 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	1510	800 to 2230	0.21	Acceptable *Evaluation Parameter - c:0.0685, d:134.2111*
Manganese, Mn [1,2] 1090 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	837 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	837	658 to 1020	0	Acceptable *Evaluation Parameter - c:0.0639, d:6.3268*
Molybdenum, Mo [1,2] 1100 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	49.9 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	56.4	37.9 to 74.9	-1.06	Acceptable *Evaluation Parameter - c:0.0893, d:1.1242*
Nickel, Ni [1,2] 1105 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	289 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	298	222 to 374	-0.35	Acceptable *Evaluation Parameter - c:0.0819, d:1.0454*
Potassium, K [1,2] 1125 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-05-04	4020 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	4040	2630 to 5460	-0.04	Acceptable *Evaluation Parameter - c:0.0938, d:92.7318*

Method:EPA 6010D (2012) (Continued)

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Selenium, Se [1,2] 1140 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	108 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	100	65.4 to 136	0.68 *Evaluation Parameter - c:0.0935, d:2.2902*	Acceptable
Silver, Ag [1,2] 1150 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	39.7 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	39.7	26.2 to 53.3	0 *Evaluation Parameter - c:0.1047, d:0.3423*	Acceptable
Sodium, Na [1,2] 1155 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-05-10	362 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	327	135 to 519	0.55 *Evaluation Parameter - c:0.1028, d:30.5312*	Acceptable
Strontium, Sr [1,2] 1160 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	189 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	176	125 to 228	0.76 *Evaluation Parameter - c:0.0961, d:0.2863*	Acceptable
Thallium, Tl [1,2] 1165 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	129 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	128	86.9 to 169	0.07 *Evaluation Parameter - c:0.0961, d:1.4134*	Acceptable
Tin, Sn [1,2] 1175 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	86.0 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	90.7	50.7 to 131	-0.35 *Evaluation Parameter - c:0.1134, d:3.0560*	Acceptable
Titanium, Ti [1,2] 1180 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-05-16	35.6 mg/Kg *Evaluation Criteria - 5* ☐ *Voluntary*	47.6	0 to 106	-0.61 *Evaluation Parameter - deviations:3*	Acceptable
Vanadium, V [1,2] 1185 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	201 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	201	147 to 254	0 *Evaluation Parameter - c:0.0624, d:5.2391*	Acceptable
Zinc, Zn [1,2] 1190 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	566 mg/Kg *Evaluation Criteria - 2* ☐ *Voluntary*	590	433 to 746	-0.46 *Evaluation Parameter - c:0.0823, d:3.6814*	Acceptable

Method:EPA 6010D (2012) (Continued)

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Phosphorus as P, total [1,2] 1910 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	214 mg/Kg *Evaluation Criteria - 5* ☐*Voluntary*	169	26.4 to 312	0.95 *Evaluation Parameter - deviations:3*	Acceptable
Aluminum, Al [1,2] 1000 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-04-28	11200 mg/Kg *Evaluation Criteria - 2* ☐*Voluntary*	6780	2320 to 11200	2.97 *Evaluation Parameter - c:0.1082, d:753.6118*	Acceptable
Silicon, Si [1,2] 1145 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-05-04	856 mg/Kg *Evaluation Criteria - 5* ☐*Voluntary*	562	0 to 1780	0.73 *Evaluation Parameter - deviations:3*	Acceptable

Method:EPA 7062 (1994) [10159407]

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Antimony, Sb [1,2] 1005 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-05-16	30.3 mg/Kg *Evaluation Criteria - 2* ☐*Voluntary*	79.4	0 to 208	-1.14 *Evaluation Parameter - c:0.4385, d:8.1700*	Acceptable
Arsenic, As [1,2] 1010 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-05-13	68.4 mg/Kg *Evaluation Criteria - 2* ☐*Voluntary*	59	39.6 to 78.4	1.46 *Evaluation Parameter - c:0.0915, d:1.0653*	Acceptable

Method:EPA 7471B 2 (2007) [10166457]

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Mercury, Hg [1,2] 1095 / SPE001-30G - Lot LRAA8596 /Analyst:SS/ Analysis Date: 2016-05-26	15.5 mg/Kg *Evaluation Criteria - 2* ☐*Voluntary*	16	8.23 to 23.8	-0.19 *Evaluation Parameter - c:0.1615, d:0.0077*	Acceptable

Method:EPA 7742 (1994) [10169207]

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Selenium, Se [1,2]	117 mg/Kg	100	65.4 to 136	1.45	Acceptable
1140 / SPE001-30G - Lot LRAA8596 /Analyst:JR/ Analysis Date: 2016-05-12	*Evaluation Criteria - 2* ☐*Voluntary*			*Evaluation Parameter - c:0.0935, d:2.2902*	

Method:In House Method [0]

Analyte	Result Units	Assigned Value	Accept. Window	Z	Evaluation
Carbon, C [1,2]	<1000 mg/Kg	945	662 to 1230	-10	Acceptable
1553 / SPE001-30G - Lot LRAA8596 /Analyst:JP/ Analysis Date: 2016-04-20	*Evaluation Criteria - 1* ☐*Voluntary*			*Evaluation Parameter - a:1, b:0, c:0.1, d:0*	

Sample Information

Metals in Soil

SPE001-30G / Lot LRAA8596

Analytes	Units	Gravimetric Value	Study Mean	Study Std. Dev.
Bismuth, Bi [1,2] 1023 Trace Metals - Solids	mg/Kg	0	0	0
Carbon, C [1,2] 1553 Trace Metals - Solids	mg/Kg	945	0	0
Antimony, Sb [1,2] 1005 Trace Metals - Solids	mg/Kg	162±0.829	79.4	47.4
Arsenic, As [1,2] 1010 Trace Metals - Solids	mg/Kg	63.2±0.322	59	4.52
Barium, Ba [1,2] 1015 Trace Metals - Solids	mg/Kg	204±1.04	233	19.6
Beryllium, Be [1,2] 1020 Trace Metals - Solids	mg/Kg	62.4±0.318	59.5	4.93
Boron, B [1,2] 1025 Trace Metals - Solids	mg/Kg	95.2±0.486	79.6	11.8
Cadmium, Cd [1,2] 1030 Trace Metals - Solids	mg/Kg	97.7±0.498	98.7	7.95
Calcium, Ca [1,2] 1035 Trace Metals - Solids	mg/Kg	3008±15.3	3760	282
Chromium, Cr (total) [1,2] 1040 Trace Metals - Solids	mg/Kg	236±1.2	240	18.2
Cobalt, Co [1,2] 1050 Trace Metals - Solids	mg/Kg	169±0.863	153	12.2
Copper, Cu [1,2] 1055 Trace Metals - Solids	mg/Kg	93.2±0.475	89.6	7.66
Iron, Fe [1,2] 1070 Trace Metals - Solids	mg/Kg	2622±13.4	6980	610
Lead, Pb [1,2] 1075 Trace Metals - Solids	mg/Kg	294±1.5	276	22.7
Lithium, Li [2] 1080 Trace Metals - Solids	mg/Kg	160±0.816	158	17
Magnesium, Mg [1,2] 1085 Trace Metals - Solids	mg/Kg	1420±7.24	1510	131
Manganese, Mn [1,2] 1090 Trace Metals - Solids	mg/Kg	856±4.37	837	83.2
Mercury, Hg [1,2] 1095 Trace Metals - Solids	mg/Kg	17.8±0.091	16	1.31
Molybdenum, Mo [1,2] 1100 Trace Metals - Solids	mg/Kg	64.2±0.327	56.4	6.07

Nickel, Ni [1,2] 1105 Trace Metals - Solids	mg/Kg	321±1.64	298	24.1
Potassium, K [1,2] 1125 Trace Metals - Solids	mg/Kg	3582±18.3	4040	337
Selenium, Se [1,2] 1140 Trace Metals - Solids	mg/Kg	125±0.635	100	7.33
Silver, Ag [1,2] 1150 Trace Metals - Solids	mg/Kg	42.2±0.215	39.7	3.91
Sodium, Na [1,2] 1155 Trace Metals - Solids	mg/Kg	260±1.32	327	44
Strontium, Sr [1,2] 1160 Trace Metals - Solids	mg/Kg	111±0.567	176	28
Thallium, Tl [1,2] 1165 Trace Metals - Solids	mg/Kg	142±0.724	128	13.4
Tin, Sn [1,2] 1175 Trace Metals - Solids	mg/Kg	95±0.485	90.7	9.21
Titanium, Ti [1,2] 1180 Trace Metals - Solids	mg/Kg	48.2±0.246	47.6	19.6
Vanadium, V [1,2] 1185 Trace Metals - Solids	mg/Kg	185±0.945	201	12
Zinc, Zn [1,2] 1190 Trace Metals - Solids	mg/Kg	628±3.2	590	45.3
pH [1,2] 1900 Miscellaneous Analytes	Units	6.0	6.03	0.11
Phosphorus as P, total [1,2] 1910 Trace Metals - Solids	mg/Kg	180	169	47.5
Silica as SiO_2 [1,2] 1990 Miscellaneous Analytes	mg/Kg	1500	1670	1240
Sulfur [1,2] 2017 Miscellaneous Analytes	mg/Kg	300	111	126
Aluminum, Al [1,2] 1000 Trace Metals - Solids	mg/Kg	3401±17.3	6780	2150
Silicon, Si [1,2] 1145 Trace Metals - Solids	mg/Kg	785±4.01	562	405
Ammonia as N [1,2] 1515	mg/Kg		0	0
Chloride [1,2] 1575	mg/Kg		0	0
Phosphorus as P, Total [1,2] 1910 Trace Metals - Solids	mg/Kg	86.3±0.44	0	0
Fluoride [1,2] 1730	mg/Kg	200	0	0
pH [1,2] 1900	Units	6.0	6.03	0.11
Silica as SiO_2 [1,2] 1990	mg/Kg	1500	1670	1240
Sulfate [1,2] 2000	mg/Kg		0	0
Sulfur [1,2] 2017	mg/Kg	300	111	126

Total cyanide [1,2] 1645	mg/Kg	165	0	0
Carbon, Total [2] 2041	wt%		0	0

ANIONS IN SOIL - PT

SPE013-30G / Lot LRAA8536

Analytes	Units	Gravimetric Value	Study Mean	Study Std. Dev.
Bromide [1,2] 1540 Minerals	mg/Kg	68.2	64.4	6.2
Chloride [1,2] 1575 Minerals	mg/Kg	733±3.74	729	77.5
Fluoride [1,2] 1730 Minerals	mg/Kg	81.4	44.7	36.3
Nitrate as N [1,2] 1810 Minerals	mg/Kg	422±2.15	399	16.8
Nitrate+nitrite as N [1,2] 1820 Miscellaneous Analytes	mg/Kg	422±2.15	402	15.5
Nitrite as N [1,2] 1840 Miscellaneous Analytes	mg/Kg	0±0	0	0
Orthophosphate as P [1,2] 1870 Miscellaneous Analytes	mg/Kg	420±2.14	121	58
Sulfate [1,2] 2000 Minerals	mg/Kg	298±1.52	290	92.9
Bromide [1,2] 1540 Miscellaneous Analytes	mg/Kg	68.2	64.4	6.2
Chloride [1,2] 1575 Miscellaneous Analytes	mg/Kg	733±3.74	729	77.5
Fluoride [1,2] 1730 Miscellaneous Analytes	mg/Kg	81.4	44.7	36.3
Nitrate as N [1,2] 1810 Miscellaneous Analytes	mg/Kg	422±2.15	399	16.8
Sulfate [1,2] 2000 Miscellaneous Analytes	mg/Kg	298±1.52	290	92.9

TPH IN SOIL - HIGH - PT

SPE026TXH-30G / Lot LRAB1262

Analytes	Units	Gravimetric Value	Study Mean	Study Std. Dev.
C6 Aliphatics [2] 30026 Petroleum Hydrocarbons - Soil	mg/Kg	62.5±0.606	0	0
VPH Aliphatic >C6-C8 [1,2] 5301 Petroleum Hydrocarbons - Soil	mg/Kg	695±6.75	0	0
EPH Aliphatic C8 to C10 [1,2] 6219 Petroleum Hydrocarbons - Soil	mg/Kg	289±2.81	0	0
EPH Aliphatic >C10-C12 [1,2] 6211 Petroleum Hydrocarbons - Soil	mg/Kg	325±3.15	0	0
EPH Aliphatic >C12-C16 [1,2] 6212 Petroleum Hydrocarbons - Soil	mg/Kg	423±4.11	0	0
EPH Aliphatic >C16-C21 [2] 6214 Petroleum Hydrocarbons - Soil	mg/Kg	370±3.59	0	0
EPH Aliphatic >C21-C34 [2] 6216 Petroleum Hydrocarbons - Soil	mg/Kg	1090±18.3	0	0
>C7-C8 Aromatics [2] 8 Petroleum Hydrocarbons - Soil	mg/Kg	224±2.17	0	0
EPH Aromatics C8 to C10 [2] 6236 Petroleum Hydrocarbons - Soil	mg/Kg	495±4.81	0	0
EPH Aromatic >C10-C12 [1,2] 6224 Petroleum Hydrocarbons - Soil	mg/Kg	391±3.79	0	0
EPH Aromatic >C12-C16 [1,2] 6226 Petroleum Hydrocarbons - Soil	mg/Kg	460±4.47	0	0
EPH Aromatic >C16-C21 [1,2] 6228 Petroleum Hydrocarbons - Soil	mg/Kg	298±2.89	0	0
EPH Aromatic >C21-C34 [1,2] 6231 Petroleum Hydrocarbons - Soil	mg/Kg	605±7.36	0	0
RRO (Residual Range Organics, C28-C35) [2] 9506 Petroleum Hydrocarbons - Soil	mg/Kg	2430±24.3	0	0
Total Petroleum Hydrocarbons (TPH), (C6-C35) [2] 2050 Petroleum Hydrocarbons - Soil	mg/Kg	8930±89	5490	1390
Diesel Range Organics (DRO) [1,2] 9369 Petroleum Hydrocarbons - Soil	mg/Kg	2450±23.8	0	0
Diesel-range total petroleum hydrocarbons, >C12-C28 [2] 9372 Petroleum Hydrocarbons - Soil	mg/Kg	2450±23.8	1850	531
Gasoline Range Organics, C6-C12 [1,2] 9408 Petroleum Hydrocarbons - Soil	mg/Kg	4050±39.2	3050	387
C6 Aliphatics [2] 30026	mg/Kg	62.5±0.606	0	0
VPH Aliphatic >C6-C8 [1,2] 5301	mg/Kg	695±6.75	0	0

EPH Aliphatic C8 to C10 [1,2] 6219	mg/Kg	289±2.81	0	0
EPH Aliphatic >C10-C12 [1,2] 6211	mg/Kg	325±3.15	0	0
EPH Aliphatic >C12-C16 [1,2] 6212	mg/Kg	423±4.11	0	0
EPH Aliphatic >C16-C21 [2] 6214	mg/Kg	370±3.59	0	0
EPH Aliphatic >C21-C34 [2] 6216	mg/Kg	1090±18.3	0	0
>C7-C8 Aromatics [2] 8	mg/Kg	224±2.17	0	0
EPH Aromatics C8 to C10 [2] 6236	mg/Kg	495±4.81	0	0
EPH Aromatic >C10-C12 [1,2] 6224	mg/Kg	391±3.79	0	0
EPH Aromatic >C12-C16 [1,2] 6226	mg/Kg	460±4.47	0	0
EPH Aromatic >C16-C21 [1,2] 6228	mg/Kg	298±2.89	0	0
EPH Aromatic >C21-C34 [1,2] 6231	mg/Kg	605±7.36	0	0
RRO (Residual Range Organics, C28-C35) [2] 9506	mg/Kg	2430±24.3	0	0
Total Petroleum Hydrocarbons (TPH), (C6-C35) [2] 2050	mg/Kg	8930±89	5490	1390
Diesel-range total petroleum hydrocarbons, >C12-C28 [2] 9372	mg/Kg	2450±23.8	1850	531
Gasoline Range Organics, C6-C12 [1,2] 9408	mg/Kg	4050±39.2	3050	387

TPH IN SOIL - LOW - PT

SPE026TXL-30G / Lot LRAB1264

Analytes	Units	Gravimetric Value	Study Mean	Study Std. Dev.
C6 Aliphatics [2] 30026 Petroleum Hydrocarbons - Soil	mg/Kg	0.790	0	0
VPH Aliphatic >C6-C8 [1,2] 5301 Petroleum Hydrocarbons - Soil	mg/Kg	8.76	0	0
EPH Aliphatic C8 to C10 [1,2] 6219 Petroleum Hydrocarbons - Soil	mg/Kg	2.64	0	0
EPH Aliphatic >C10-C12 [1,2] 6211 Petroleum Hydrocarbons - Soil	mg/Kg	4.06	0	0
EPH Aliphatic >C12-C16 [1,2] 6212 Petroleum Hydrocarbons - Soil	mg/Kg	6.87	0	0
EPH Aliphatic >C16-C21 [2] 6214 Petroleum Hydrocarbons - Soil	mg/Kg	4.80	0	0
EPH Aliphatic >C21-C34 [2] 6216 Petroleum Hydrocarbons - Soil	mg/Kg	0.350	0	0
>C7-C8 Aromatics [2] 8 Petroleum Hydrocarbons - Soil	mg/Kg	8.59	0	0
EPH Aromatics C8 to C10 [2] 6236 Petroleum Hydrocarbons - Soil	mg/Kg	8.85	0	0
EPH Aromatic >C10-C12 [1,2] 6224 Petroleum Hydrocarbons - Soil	mg/Kg	2.92	0	0
EPH Aromatic >C12-C16 [1,2] 6226 Petroleum Hydrocarbons - Soil	mg/Kg	3.65	0	0
EPH Aromatic >C16-C21 [1,2] 6228 Petroleum Hydrocarbons - Soil	mg/Kg	3.24	0	0
EPH Aromatic >C21-C34 [1,2] 6231 Petroleum Hydrocarbons - Soil	mg/Kg	0.00	0	0
RRO (Residual Range Organics, C28-C35) [2] 9506 Petroleum Hydrocarbons - Soil	mg/Kg	44.8	0	0
Total Petroleum Hydrocarbons (TPH), (C6-C35) [2] 2050 Petroleum Hydrocarbons - Soil	mg/Kg	151±1.46	109	14.8
Diesel-range total petroleum hydrocarbons, >C12-C28 [2] 9372	mg/Kg	51.3±0.498	39.1	8.34
Gasoline Range Organics, C6-C12 [1,2] 9408	mg/Kg	54.9±0.532	59.1	22.9
Diesel-range total petroleum hydrocarbons, >C12-C28 [2] 9372 Petroleum Hydrocarbons - Soil	mg/Kg	51.3±0.498	39.1	8.34
Gasoline Range Organics, C6-C12 [1,2] 9408 Petroleum Hydrocarbons - Soil	mg/Kg	54.9±0.532	59.1	22.9
C6 Aliphatics [2] 30026	mg/Kg	0.790	0	0

VPH Aliphatic >C6-C8 [1,2] 5301	mg/Kg	8.76	0	0
EPH Aliphatic C8 to C10 [1,2] 6219	mg/Kg	2.64	0	0
EPH Aliphatic >C10-C12 [1,2] 6211	mg/Kg	4.06	0	0
EPH Aliphatic >C12-C16 [1,2] 6212	mg/Kg	6.87	0	0
EPH Aliphatic >C16-C21 [2] 6214	mg/Kg	4.80	0	0
EPH Aliphatic >C21-C34 [2] 6216	mg/Kg	0.350	0	0
>C7-C8 Aromatics [2] 8	mg/Kg	8.59	0	0
EPH Aromatics C8 to C10 [2] 6236	mg/Kg	8.85	0	0
EPH Aromatic >C10-C12 [1,2] 6224	mg/Kg	2.92	0	0
EPH Aromatic >C12-C16 [1,2] 6226	mg/Kg	3.65	0	0
EPH Aromatic >C16-C21 [1,2] 6228	mg/Kg	3.24	0	0
EPH Aromatic >C21-C34 [1,2] 6231	mg/Kg	0.00	0	0
RRO (Residual Range Organics, C28-C35) [2] 9506	mg/Kg	44.8	0	0
Total Petroleum Hydrocarbons (TPH), (C6-C35) [2] 2050	mg/Kg	151±1.46	109	14.8

Definitions and Interpretation of Statistical Analysis:

Assigned Value: Value attributed to a particular quantity and accepted, sometimes by convention, as having an uncertainty appropriate for a given purpose. See ISO/IEC 17043 for additional information. In general the assigned value is the value used to assess proficiency and may or may not be the made to value (gravimetric value).

Accept. Window: The range of values that constitute acceptable performance for a laboratory participating in this PT study.

Z: A Z-Score tells how a single data point compares to normal data. A Z-Score says not only whether a point was above or below average, but how unusual the measurement is. Generally, a method result with a Z-Score less than |2| is considered to be in control, a Z-Score between |2| and |3| is considered 'Questionable', but still within control and a Z greater than |3| is considered not acceptable and the method is out of control. For WS studies, a z-score greater than |2| is unacceptable. Calculated as **Z = (Reported Value - Assigned Value) / Proficiency Std. Dev.**

Proficiency Std. Dev.: Standard deviation calculated based on **Evaluation Criteria.**

Study Mean: Statistical study mean calculated using a robust statisitical model (RTC employs the 'Biweight Program'). Robust statistical techniques to minimize the influence that extreme results can have on estimates of the mean and standard deviation. NOTE - These techniques assign less weight to extreme results, rather than eliminate them from a data set.

Study Std. Dev.: Standard deviation calculated from study data using robust statisicals (Biweight).

Gravimetric Value: The 'prepared to' value, determined by gravimetric means. The uncertainty associated to this value is standard uncertainty and based on RTC's gravimetric tolerances.

Evaluation Criteria:

1 - Regression Equation - Acceptance windows based on TNI adopted equation of proficiency value +/- 3 proficiency standard deviations and check limits of proficiency value +/- 2 proficiency standard deviations. Proficiency value and proficiency standard deviation are calculated from gravimetric variables a, b, c, & d as proficiency value = a * gravimetric + b and proficiency standard deviation = c * gravimetric + d.

2 - Study Robust Mean and c,d regression - Acceptance windows based on TNI adopted equation of proficiency value +/- 3 proficiency standard deviations and check limits of proficiency value +/- 2 proficiency standard deviations. Proficiency value and proficiency standard deviation calculated from robust study mean and variables c & d as proficiency value = robust mean and proficiency standard deviation = c * proficiency value + d.

3 - Fixed Limits - Acceptance windows based on span of gravimetric percentage from gravimetric as gravimetric +/- gravimetric * percentage.

4 - Adjustable Fixed Limits - Acceptance windows base on a span of gravimetric percentage from gravimetric as gravimetric +/- gravimetric * lowPercentage where gravimetric < break and gravimetric +/-

gravimetric * highPercentage where gravimetric >= break.

5 - Study Statistics - Acceptance windows based on a number of standard deviations span from the study mean as study mean +/- (deviations * standard deviation).

6 - Log Transform Statistics - Acceptance windows based on lognormal distributed data. Acceptance windows = mean(lognormal) +/- span * standard deviation(lognormal).

7 - Reserved

8 - Regression Equation 2SD - Acceptance windows based on EPA equation of proficiency value +/- 2 proficiency standard deviations. Proficiency value and proficiency standard deviation are calculated from gravimetric variables a, b, c, & d as proficiency value = a * gravimetric + b and proficiency standard deviation = c * gravimetric + d. Generally reserved for drinking water studies.

Proficiency Test Item Preparation, Homogeneity and Stability Assessment - RTC uses proprietary and published methods for the manufacture, homogeneity and stability testing of proficiency test items. RTC's proficiency test materials meet requirements of ISO Guide 34. For more information contact RTC. Additionally RTC complies with TNI Volume 3 'General Requirements for Environmental Proficiency Test Providers', EL-V3-2009, 2009 for all TNI Fields of Proficiency Testing analytes.

Metrological Traceability - All preparations are made using balances calibrated annually traceable to NIST standards. Where appropriate analytical measurements are traceable through an unbroken chain to NIST standards, or a Certified Reference Material manufactured under ISO Guide 34 in conjunction with ISO/IEC 17025.

Statistical Analysis - RTC uses robust statistics to calculate study means and standard deviations - Reference - Kafadar, K, A Biweight Approach to the One-Sample Problem, Journal of the American Statistical Association, Vol. 77, No. 378, June, 1982, pp. 416-424.

Additional Information - Go to www.rt-corp.com/reporting for additional information on summary statistics for specific methods, advice on the interpretation of the statistical analysis, and additional comments/recommendations. If you failed an analyte it may be required to perform a corrective action and/or retest. RTC recommends that you contact your accreditation body for specific instruction.

Program analyte accrediting footnotes

[1] NELAC Compliant, covered by RTC's ANAB Proficiency Testing Provider accreditation, Cert. AP-1469

[2] ISO 17043 Accredited, covered by RTC's ANAB Proficiency Testing Provider accreditation, Cert AP-1469

Authorizing Officer: 

Date: 6/18/2016

Patrick Brumfield, ASQ CQA

QA Manager

This section of the report is for informational purposes only. If you are unsure about specific accreditation requirements, please contact your state coordinator.

UNACCEPTABLE ANALYTES

PASS RATE

Number of Reported Results:	54
Number of Passing Results:	54
Pass Rate:	100%