

magruder fertilizer

check sample program



STRIVING FOR EXCELLENCE IN ANALYSIS

Analyte Proficiency From All Labs

Sample # 210411

Potash

Statistical Summary

Analytes: 29

Labs Reporting: 85

Issue Date : 05/31/2021

Analyte Code	Analyte Sample # 210411	# Tests Submitted	# Tests in Robust Calculations	Raw Mean	Raw SD	Assigned Value Robust Mean	IA at Analyte Value	Robust sd	Robust Uncertainty (U)	Robust % RSD	Analyte IA Ratio	Average Range (R-bar)	Horwitz %RSD
001	Ammoniacal N (%)	1		0.0008									
002	Nitrate N (%)	1		0.0069									
010	Total N (%)	6	4	10.21	24.96	15.31	0.6562	30.56	19.10	199.57%	108.50	0.6796	2.56%
020	Total P2O5 (%)	3	1	0.0006	0.0005	15.31		30.56	38.20	199.57%		0.0002	2.56%
041	Direct Available P2O5 (%)	4	1	0.0049	0.0061	15.31	0.7000	30.56	38.20	199.57%	101.72	0.0010	2.56%
050	Soluble K2O (62%)	85	83	61.98	2.198	62.23	1.8023	1.374	0.1885	2.21%	1.78	0.6457	1.27%
060	Water (Free) (%)	9	6	0.1384	0.1724	0.0424		0.0132	0.0068	31.25%		0.0211	6.44%
101	Acid Soluble Ca (%)	6	5	0.0108	0.0095	0.0127	0.2006	0.0091	0.0051	71.77%	0.11	0.0028	7.71%
121	Acid Soluble Mg (%)	7	4	0.0047	0.0037	0.0029	0.2001	0.0006	0.0004	22.09%	0.01	0.0001	9.62%
143	Elemental S (%)	1		21.50									
145	Sulfate S, HCl soluble (%)	1		0.0145									
148	Total S (%)	1		0.0200									
149	S - HNO3 soluble (%)	1		0.0035									
151	Acid Soluble As (ppm)	12	6	0.4802	0.5928	0.4275		0.6501	0.3318	152.06%		0.0184	18.18%
165	Acid Soluble B (%)	5	2	0.0043	0.0052	0.0002	0.0030	0.0001	0.0001	70.71%	0.11	0.0000	14.41%
181	Acid Soluble Cd (ppm)	13	2	0.2505	0.4826	0.8180		1.092	0.9650	133.48%		0.0116	16.49%
190	Water Soluble Cl (%)	23	23	47.34	1.580	47.21	1.0000	1.077	0.2806	2.28%	2.51	0.4706	1.46%
191	Acid Soluble Cr (ppm)	9	4	0.3918	0.4429	0.1690		0.0686	0.0429	40.57%		0.0955	20.90%
202	Acid Soluble Co (ppm)	10	5	1.692	3.678	2.576	1.7728	5.277	2.950	204.87%	6.94	0.2093	13.87%
221	Acid Soluble Cu (%)	9	1	0.0020	0.0034	2.576	0.2626	5.277	6.597	204.87%	46.83	0.0001	3.47%
241	Acid Soluble Fe (%)	5	1	0.0031	0.0044	2.576	0.2626	5.277	6.597	204.87%	46.83	0.0002	3.47%
251	Acid Soluble Pb (ppm)	13	5	1.616	3.422	2.607		5.421	3.030	207.95%		0.1968	13.85%
261	Acid Soluble Mn (%)	4	0	0.0038	0.0047	2.607	0.2657	5.421		207.95%	47.54	0.0000	3.46%
281	Acid Soluble Hg (ppm)	8	1	0.0689	0.1743	2.607		5.421	6.776	207.95%		0.0005	13.85%
289	Acid Soluble Mo (ppm)	8	5	1.075	2.282	1.450	1.4350	2.899	1.621	199.93%	4.71	0.1212	15.13%
291	Acid Soluble Ni (ppm)	11	6	1.365	2.619	1.212		1.774	0.9053	146.40%		0.4279	15.54%
301	Acid Soluble Se (ppm)	10	5	0.5849	0.4178	0.5029		0.4308	0.2408	85.66%		0.0162	17.74%
311	Sodium (%)	18	16	0.4349	0.2796	0.3838	0.0434	0.0700	0.0219	18.23%	3.76	0.0149	4.62%
321	Acid Soluble Zn (%)	11	2	1.295	3.153	2.114	0.2164	2.989	2.642	141.38%	32.18	0.8051	3.57%

The Analyte IA Ratio = 2.33 * Robust SD / IA at the Analyte Assigned Value. IA ratios of 1 and less indicate participant data dispersion is as good or less than the IA. Red indicates the IA ratio is significantly greater than 1, Orange indicates marginally greater than 1, Green indicates IA ratio is not significantly greater than 1 and Grey indicates < 6 labs reporting. The Horwitz %RSD is calculated using the Thompson Modification, Analyst,2000,125,385-386.

Horwitz %RSD	
Average Range (R-bar)	
Analyte IA Ratio	
Robust % RSD	
Robust Uncertainty (U)	
Robust sd	
IA at Analyte Value	
Assigned Value Robust Mean	
Raw SD	
Raw Mean	
# Tests in Robust Calculations	
# Tests Submitted	
Analyte Sample # 210411	
Analyte Code	

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Analyte Proficiency From All Labs

Sample # 210411

Potash

Lab Values

Analytes: 29

Labs Reporting: 85

Issue Date : 05/31/2021

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
001	Ammoniacal N (%)	0553	0.0008	0.0000				1	001.99	0	
002	Nitrate N (%)	0553	0.0069	0.0001				1	002.99	0	
010	Total N (%)	0568	0.0036	0.0007	15.31	30.56	0.6796	4	-0.42	010.12	0
010	Total N (%)	0354	0.0405	0.0070	15.31	30.56	0.6796	4	-0.42	010.60	0
010	Total N (%)	0524	0.0542	0.0107	15.31	30.56	0.6796	4	-0.42	010.99	0
010	Total N (%)	0042	61.15	2.700	15.31	30.56	0.6796	4	1.27	010.60	0
010	Total N (%)	0325	0.0000	0.0000	15.31	30.56	0.6796	4		010.60	4
010	Total N (%)	0422	0.0000	0.0000	15.31	30.56	0.6796	4		010.60	4
020	Total P2O5 (%)	0524	0.0007	0.0002				1		020.50	0
020	Total P2O5 (%)	0422	0.0000	0.0000				1		020.50	4
020	Total P2O5 (%)	0527	< 0.001					1		020.50	5
041	Direct Available P2O5 (%)	0354	0.0125	0.0010				1		041.21	0
041	Direct Available P2O5 (%)	0568	0.0000	0.0000				1		041.21	4
041	Direct Available P2O5 (%)	0325	0.0000	0.0000				1		041.50	4
041	Direct Available P2O5 (%)	0553	< 0.007					1		041.20	5
050	Soluble K2O (62%)	0324	52.45†	2.100	62.23	1.374	0.6457	83	-7.12	050.50	0
050	Soluble K2O (62%)	0568	56.22†	0.1400	62.23	1.374	0.6457	83	-4.38	050.51	0
050	Soluble K2O (62%)	0157	58.70†	3.600	62.23	1.374	0.6457	83	-2.57	050.30	0
050	Soluble K2O (62%)	0472	59.14†	1.530	62.23	1.374	0.6457	83	-2.25	050.31	0
050	Soluble K2O (62%)	0524	59.82†	0.5026	62.23	1.374	0.6457	83	-1.75	050.99	0
050	Soluble K2O (62%)	0486	59.93†	0.1400	62.23	1.374	0.6457	83	-1.68	050.52	0
050	Soluble K2O (62%)	0025	59.95†	0.7000	62.23	1.374	0.6457	83	-1.66	050.52	0
050	Soluble K2O (62%)	0157	60.35†	1.700	62.23	1.374	0.6457	83	-1.37	050.99	0
050	Soluble K2O (62%)	0532	60.41†	0.1100	62.23	1.374	0.6457	83	-1.33	050.99	0
050	Soluble K2O (62%)	0055	60.45	0.2900	62.23	1.374	0.6457	83	-1.30	050.50	0
050	Soluble K2O (62%)	0451	60.47	1.630	62.23	1.374	0.6457	83	-1.29	050.99	0
050	Soluble K2O (62%)	0043	60.60	0.8100	62.23	1.374	0.6457	83	-1.19	050.52	0
050	Soluble K2O (62%)	0371	61.19	0.0000	62.23	1.374	0.6457	83	-0.76	050.99	0
050	Soluble K2O (62%)	0493	61.20	0.2000	62.23	1.374	0.6457	83	-0.75	050.99	0
050	Soluble K2O (62%)	0377	61.24	0.6200	62.23	1.374	0.6457	83	-0.72	050.52	0
050	Soluble K2O (62%)	0450	61.24	3.780	62.23	1.374	0.6457	83	-0.72	050.99	0
050	Soluble K2O (62%)	0292	61.27	0.4600	62.23	1.374	0.6457	83	-0.70	050.50	0
050	Soluble K2O (62%)	0510	61.27	0.5248	62.23	1.374	0.6457	83	-0.70	050.60	0
050	Soluble K2O (62%)	0498	61.30	0.2000	62.23	1.374	0.6457	83	-0.68	050.31	0
050	Soluble K2O (62%)	0485	61.30	2.000	62.23	1.374	0.6457	83	-0.68	050.52	0
050	Soluble K2O (62%)	0537	61.34	0.0200	62.23	1.374	0.6457	83	-0.65	050.99	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
050	Soluble K2O (62%)	0029	61.36	0.2000	62.23	1.374	0.6457	83	-0.63	050.62	0
050	Soluble K2O (62%)	0102	61.44	2.750	62.23	1.374	0.6457	83	-0.58	050.00	0
050	Soluble K2O (62%)	0136	61.55	0.3000	62.23	1.374	0.6457	83	-0.50	050.52	0
050	Soluble K2O (62%)	0538	61.68	0.0600	62.23	1.374	0.6457	83	-0.40	050.99	0
050	Soluble K2O (62%)	0169	61.69	0.1200	62.23	1.374	0.6457	83	-0.39	050.99	0
050	Soluble K2O (62%)	0550	61.80	0.1000	62.23	1.374	0.6457	83	-0.31	050.00	0
050	Soluble K2O (62%)	0421	61.80	0.4000	62.23	1.374	0.6457	83	-0.31	050.99	0
050	Soluble K2O (62%)	0522	61.84	0.0868	62.23	1.374	0.6457	83	-0.28	050.00	0
050	Soluble K2O (62%)	0540	61.86	0.2400	62.23	1.374	0.6457	83	-0.27	050.99	0
050	Soluble K2O (62%)	0549	61.87	0.0100	62.23	1.374	0.6457	83	-0.27	050.99	0
050	Soluble K2O (62%)	0569	61.87	0.0400	62.23	1.374	0.6457	83	-0.26	050.99	0
050	Soluble K2O (62%)	0494	61.95	0.0400	62.23	1.374	0.6457	83	-0.21	050.00	0
050	Soluble K2O (62%)	0035	61.96	1.190	62.23	1.374	0.6457	83	-0.20	050.61	0
050	Soluble K2O (62%)	0055	61.98	0.1200	62.23	1.374	0.6457	83	-0.18	050.00	0
050	Soluble K2O (62%)	0230	62.00	2.000	62.23	1.374	0.6457	83	-0.17	050.50	0
050	Soluble K2O (62%)	0564	62.04	0.0300	62.23	1.374	0.6457	83	-0.14	050.99	0
050	Soluble K2O (62%)	0565	62.04	0.0200	62.23	1.374	0.6457	83	-0.14	050.99	0
050	Soluble K2O (62%)	0518	62.10	0.4000	62.23	1.374	0.6457	83	-0.10	050.99	0
050	Soluble K2O (62%)	0563	62.15	0.0551	62.23	1.374	0.6457	83	-0.06	050.99	0
050	Soluble K2O (62%)	0553	62.15	0.5000	62.23	1.374	0.6457	83	-0.06	050.99	0
050	Soluble K2O (62%)	0559	62.20	0.0100	62.23	1.374	0.6457	83	-0.03	050.99	0
050	Soluble K2O (62%)	0356	62.21	0.5600	62.23	1.374	0.6457	83	-0.02	050.30	0
050	Soluble K2O (62%)	0452	62.22	0.2300	62.23	1.374	0.6457	83	-0.01	050.51	0
050	Soluble K2O (62%)	0536	62.23	0.1500	62.23	1.374	0.6457	83	-0.01	050.99	0
050	Soluble K2O (62%)	0444	62.28	0.1400	62.23	1.374	0.6457	83	0.03	050.00	0
050	Soluble K2O (62%)	0231	62.34	0.1100	62.23	1.374	0.6457	83	0.07	050.00	0
050	Soluble K2O (62%)	0561	62.39	0.0400	62.23	1.374	0.6457	83	0.11	050.99	0
050	Soluble K2O (62%)	0546	62.40	0.4900	62.23	1.374	0.6457	83	0.12	050.99	0
050	Soluble K2O (62%)	0040	62.45	0.5000	62.23	1.374	0.6457	83	0.16	050.30	0
050	Soluble K2O (62%)	0291	62.47	0.0600	62.23	1.374	0.6457	83	0.17	050.51	0
050	Soluble K2O (62%)	0547	62.54	0.2100	62.23	1.374	0.6457	83	0.22	050.52	0
050	Soluble K2O (62%)	0368	62.56	0.7898	62.23	1.374	0.6457	83	0.24	050.51	0
050	Soluble K2O (62%)	0433	62.62	0.3100	62.23	1.374	0.6457	83	0.28	050.99	0
050	Soluble K2O (62%)	0354	62.65	0.1000	62.23	1.374	0.6457	83	0.30	050.52	0
050	Soluble K2O (62%)	0423	62.65	0.2400	62.23	1.374	0.6457	83	0.30	050.52	0
050	Soluble K2O (62%)	0177	62.67	0.2397	62.23	1.374	0.6457	83	0.32	050.99	0
050	Soluble K2O (62%)	0533	62.68	0.0600	62.23	1.374	0.6457	83	0.33	050.99	0
050	Soluble K2O (62%)	0049	62.71	0.1100	62.23	1.374	0.6457	83	0.34	050.00	0
050	Soluble K2O (62%)	0405	62.78	0.0300	62.23	1.374	0.6457	83	0.40	050.00	0
050	Soluble K2O (62%)	0521	62.86	0.0000	62.23	1.374	0.6457	83	0.45	050.99	0
050	Soluble K2O (62%)	0527	62.86	0.2118	62.23	1.374	0.6457	83	0.46	050.99	0
050	Soluble K2O (62%)	0095	62.88	0.0800	62.23	1.374	0.6457	83	0.47	050.62	0
050	Soluble K2O (62%)	0444	62.92	0.2300	62.23	1.374	0.6457	83	0.50	050.50	0
050	Soluble K2O (62%)	0169	63.20	0.1500	62.23	1.374	0.6457	83	0.70	050.60	0
050	Soluble K2O (62%)	0023	63.25	0.9000	62.23	1.374	0.6457	83	0.74	050.52	0
050	Soluble K2O (62%)	0234	63.25	0.5000	62.23	1.374	0.6457	83	0.74	050.99	0
050	Soluble K2O (62%)	0455	63.29	0.0200	62.23	1.374	0.6457	83	0.77	050.31	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
050	Soluble K2O (62%)	0220	63.33	0.1000	62.23	1.374	0.6457	83	0.80	050.00	0
050	Soluble K2O (62%)	0556	63.60	0.0200	62.23	1.374	0.6457	83	1.00	050.99	0
050	Soluble K2O (62%)	0506	63.80	1.000	62.23	1.374	0.6457	83	1.14	050.99	0
050	Soluble K2O (62%)	0114	63.97	0.3600	62.23	1.374	0.6457	83	1.26	050.00	0
050	Soluble K2O (62%)	0516	64.21‡	1.260	62.23	1.374	0.6457	83	1.44	050.99	0
050	Soluble K2O (62%)	0325	64.30‡	1.000	62.23	1.374	0.6457	83	1.50	050.99	0
050	Soluble K2O (62%)	0131	64.52‡	0.1300	62.23	1.374	0.6457	83	1.66	050.51	0
050	Soluble K2O (62%)	0255	64.56‡	3.143	62.23	1.374	0.6457	83	1.70	050.99	0
050	Soluble K2O (62%)	0027	64.58‡	0.2700	62.23	1.374	0.6457	83	1.71	050.99	0
050	Soluble K2O (62%)	0422	64.65‡	0.9000	62.23	1.374	0.6457	83	1.76	050.50	0
050	Soluble K2O (62%)	0106	64.78‡	2.200	62.23	1.374	0.6457	83	1.85	050.50	0
050	Soluble K2O (62%)	0034	64.89‡	2.000	62.23	1.374	0.6457	83	1.93	050.62	0
050	Soluble K2O (62%)	0572	65.10‡	0.7400	62.23	1.374	0.6457	83	2.09	050.99	0
050	Soluble K2O (62%)	0086	65.68‡	3.694	62.23	1.374	0.6457	83	2.51	050.50	0
050	Soluble K2O (62%)	0073	67.60‡	0.5900	62.23	1.374	0.6457	83	3.90	050.30	0
050	Soluble K2O (62%)	0523	53.75†	6.300	62.23	1.374	0.6457	83	-6.17	050.99	1
050	Soluble K2O (62%)	0260	56.55†	5.320	62.23	1.374	0.6457	83	-4.14	050.99	1
060	Water (Free) (%)	0510	0.0311	0.0015	0.0424	0.0132	0.0211	6	-0.76	060.99	0
060	Water (Free) (%)	0498	0.0350	0.0100	0.0424	0.0132	0.0211	6	-0.50	060.30	0
060	Water (Free) (%)	0405	0.0360	0.0060	0.0424	0.0132	0.0211	6	-0.43	060.99	0
060	Water (Free) (%)	0561	0.0400	0.0200	0.0424	0.0132	0.0211	6	-0.16	060.30	0
060	Water (Free) (%)	0220	0.0500	0.0800	0.0424	0.0132	0.0211	6	0.51	060.99	0
060	Water (Free) (%)	0476	0.1433	0.0089	0.0424	0.0132	0.0211	6	6.78	060.99	0
060	Water (Free) (%)	0572	0.3600	0.2000	0.0424	0.0132	0.0211	6	21.36	060.99	1
060	Water (Free) (%)	0136	< 0.05		0.0424	0.0132	0.0211	6		060.99	5
060	Water (Free) (%)	0450	< 0.5		0.0424	0.0132	0.0211	6		060.00	5
101	Acid Soluble Ca (%)	0568	0.0058	0.0005	0.0127	0.0091	0.0028	5	-0.67	101.30	0
101	Acid Soluble Ca (%)	0368	0.0061	0.0002	0.0127	0.0091	0.0028	5	-0.63	101.99	0
101	Acid Soluble Ca (%)	0553	0.0067	0.0006	0.0127	0.0091	0.0028	5	-0.58	101.00	0
101	Acid Soluble Ca (%)	0563	0.0201	0.0028	0.0127	0.0091	0.0028	5	0.70	101.33	0
101	Acid Soluble Ca (%)	0354	0.0250	0.0100	0.0127	0.0091	0.0028	5	1.17	101.30	0
101	Acid Soluble Ca (%)	0527	< 0.001		0.0127	0.0091	0.0028	5		101.33	5
121	Acid Soluble Mg (%)	0568	0.0024	0.0001	0.0029	0.0006	0.0001	4	-0.75	121.30	0
121	Acid Soluble Mg (%)	0368	0.0027	0.0000	0.0029	0.0006	0.0001	4	-0.30	121.99	0
121	Acid Soluble Mg (%)	0524	0.0028	0.0000	0.0029	0.0006	0.0001	4	-0.16	121.99	0
121	Acid Soluble Mg (%)	0553	0.0039	0.0003	0.0029	0.0006	0.0001	4	1.21	121.00	0
121	Acid Soluble Mg (%)	0527	< 0.001		0.0029	0.0006	0.0001	4		121.33	5
121	Acid Soluble Mg (%)	0354	< 0.01		0.0029	0.0006	0.0001	4		121.30	5
121	Acid Soluble Mg (%)	0563	< 0.01		0.0029	0.0006	0.0001	4		121.33	5
143	Elemental S (%)	0368	21.50	43.00				1		143.99	0
145	Sulfate S, HCl soluble (%)	0553	0.0145	0.0010				1		145.99	0
148	Total S (%)	0354	0.0200	0.0000				1		148.99	0
149	S - HNO3 soluble (%)	0524	0.0035	0.0008				1		149.04	0
151	Acid Soluble As (ppm)	0524	0.0034	0.0008	0.4275	0.6501	0.0184	6	-0.65	151.30	0
151	Acid Soluble As (ppm)	0529	0.0100	0.0000	0.4275	0.6501	0.0184	6	-0.64	151.32	0
151	Acid Soluble As (ppm)	0255	0.0990	0.0000	0.4275	0.6501	0.0184	6	-0.51	151.30	0
151	Acid Soluble As (ppm)	0563	0.2001	0.0098	0.4275	0.6501	0.0184	6	-0.35	151.33	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
151	Acid Soluble As (ppm)	0220	0.8500	0.1000	0.4275	0.6501	0.0184	6	0.65	151.32	0
151	Acid Soluble As (ppm)	0405	2.000	0.0000	0.4275	0.6501	0.0184	6	2.42	151.99	0
151	Acid Soluble As (ppm)	0220	0.8000	0.8000	0.4275	0.6501	0.0184	6	0.57	151.99	1
151	Acid Soluble As (ppm)	0527	< 0.0001		0.4275	0.6501	0.0184	6		151.33	5
151	Acid Soluble As (ppm)	0498	< 0.2		0.4275	0.6501	0.0184	6		151.00	5
151	Acid Soluble As (ppm)	0368	< 0.3		0.4275	0.6501	0.0184	6		151.34	5
151	Acid Soluble As (ppm)	0572	< 0.3		0.4275	0.6501	0.0184	6		151.99	5
151	Acid Soluble As (ppm)	0136	< 1		0.4275	0.6501	0.0184	6		151.33	5
165	Acid Soluble B (%)	0524	0.0001	0.0000				2		165.99	0
165	Acid Soluble B (%)	0563	0.0003	0.0000				2		165.99	0
165	Acid Soluble B (%)	0553	< 0.001					2		165.00	5
165	Acid Soluble B (%)	0354	< 0.01					2		165.30	5
165	Acid Soluble B (%)	0527	< 0.01					2		165.99	5
181	Acid Soluble Cd (ppm)	0563	0.0460	0.0031				2		181.33	0
181	Acid Soluble Cd (ppm)	0553	1.590	0.0200				2		181.99	0
181	Acid Soluble Cd (ppm)	0255	0.0000	0.0000				2		181.30	4
181	Acid Soluble Cd (ppm)	0524	0.0004	0.0007				2		181.30	4
181	Acid Soluble Cd (ppm)	0527	< 0.0001					2		181.33	5
181	Acid Soluble Cd (ppm)	0529	< 0.01					2		181.32	5
181	Acid Soluble Cd (ppm)	0405	< 0.01					2		181.99	5
181	Acid Soluble Cd (ppm)	0498	< 0.1					2		181.00	5
181	Acid Soluble Cd (ppm)	0220	< 0.1					2		181.32	5
181	Acid Soluble Cd (ppm)	0368	< 0.1					2		181.34	5
181	Acid Soluble Cd (ppm)	0220	< 0.1					2		181.99	5
181	Acid Soluble Cd (ppm)	0572	< 0.2					2		181.99	5
181	Acid Soluble Cd (ppm)	0136	< 1					2		181.33	5
190	Water Soluble Cl (%)	0550	44.85	0.0000	47.21	1.077	0.4706	23	-2.19	190.00	0
190	Water Soluble Cl (%)	0572	45.16	1.060	47.21	1.077	0.4706	23	-1.90	190.00	0
190	Water Soluble Cl (%)	0572	45.67	1.790	47.21	1.077	0.4706	23	-1.43	190.99	0
190	Water Soluble Cl (%)	0029	46.00	0.3690	47.21	1.077	0.4706	23	-1.12	190.00	0
190	Water Soluble Cl (%)	0498	46.30	0.4000	47.21	1.077	0.4706	23	-0.84	190.00	0
190	Water Soluble Cl (%)	0506	46.40	0.6000	47.21	1.077	0.4706	23	-0.75	190.99	0
190	Water Soluble Cl (%)	0423	46.57	0.1900	47.21	1.077	0.4706	23	-0.60	190.99	0
190	Water Soluble Cl (%)	0029	46.78	0.3700	47.21	1.077	0.4706	23	-0.40	190.99	0
190	Water Soluble Cl (%)	0476	47.20	0.0563	47.21	1.077	0.4706	23	0.00	190.00	0
190	Water Soluble Cl (%)	0546	47.31	0.0700	47.21	1.077	0.4706	23	0.09	190.00	0
190	Water Soluble Cl (%)	0553	47.40	0.6000	47.21	1.077	0.4706	23	0.18	190.00	0
190	Water Soluble Cl (%)	0564	47.43	0.0400	47.21	1.077	0.4706	23	0.21	190.00	0
190	Water Soluble Cl (%)	0220	47.47	0.1300	47.21	1.077	0.4706	23	0.24	190.00	0
190	Water Soluble Cl (%)	0538	47.52	0.0200	47.21	1.077	0.4706	23	0.29	190.00	0
190	Water Soluble Cl (%)	0444	47.59	0.3800	47.21	1.077	0.4706	23	0.35	190.00	0
190	Water Soluble Cl (%)	0563	47.64	1.620	47.21	1.077	0.4706	23	0.40	190.00	0
190	Water Soluble Cl (%)	0405	47.68	0.0200	47.21	1.077	0.4706	23	0.44	190.00	0
190	Water Soluble Cl (%)	0537	47.74	0.5179	47.21	1.077	0.4706	23	0.49	190.00	0
190	Water Soluble Cl (%)	0532	47.75	0.0700	47.21	1.077	0.4706	23	0.50	190.99	0
190	Water Soluble Cl (%)	0117	48.23	0.5400	47.21	1.077	0.4706	23	0.95	190.00	0
190	Water Soluble Cl (%)	0561	48.55	0.3000	47.21	1.077	0.4706	23	1.25	190.00	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
190	Water Soluble Cl (%)	0533	48.57	0.0800	47.21	1.077	0.4706	23	1.27	190.00	0
190	Water Soluble Cl (%)	0136	53.00	1.600	47.21	1.077	0.4706	23	5.38	190.99	0
191	Acid Soluble Cr (ppm)	0572	0.0850	0.0100	0.1690	0.0686	0.0955	4	-1.04	191.99	0
191	Acid Soluble Cr (ppm)	0529	0.1550	0.0100	0.1690	0.0686	0.0955	4	-0.17	191.32	0
191	Acid Soluble Cr (ppm)	0368	0.1860	0.0620	0.1690	0.0686	0.0955	4	0.21	191.34	0
191	Acid Soluble Cr (ppm)	0220	0.2500	0.3000	0.1690	0.0686	0.0955	4	1.00	191.99	0
191	Acid Soluble Cr (ppm)	0527	< 0.0001		0.1690	0.0686	0.0955	4		191.33	5
191	Acid Soluble Cr (ppm)	0563	< 0.1		0.1690	0.0686	0.0955	4		191.33	5
191	Acid Soluble Cr (ppm)	0498	< 0.5		0.1690	0.0686	0.0955	4		191.00	5
191	Acid Soluble Cr (ppm)	0405	< 1		0.1690	0.0686	0.0955	4		191.99	5
191	Acid Soluble Cr (ppm)	0136	< 1.25		0.1690	0.0686	0.0955	4		191.33	5
202	Acid Soluble Co (ppm)	0255	0.0190	0.0180	2.576	5.277	0.2093	5	-0.42	202.99	0
202	Acid Soluble Co (ppm)	0563	0.0376	0.0084	2.576	5.277	0.2093	5	-0.42	202.33	0
202	Acid Soluble Co (ppm)	0524	0.0699	0.0079	2.576	5.277	0.2093	5	-0.41	202.30	0
202	Acid Soluble Co (ppm)	0368	0.7530	0.4120	2.576	5.277	0.2093	5	-0.30	202.34	0
202	Acid Soluble Co (ppm)	0553	12.00	0.6000	2.576	5.277	0.2093	5	1.56	202.99	0
202	Acid Soluble Co (ppm)	0260	1.897	1.913	2.576	5.277	0.2093	5	-0.11	202.33	1
202	Acid Soluble Co (ppm)	0527	< 0.0001		2.576	5.277	0.2093	5		202.33	5
202	Acid Soluble Co (ppm)	0405	< 0.1		2.576	5.277	0.2093	5		202.99	5
202	Acid Soluble Co (ppm)	0572	< 0.79		2.576	5.277	0.2093	5		202.99	5
202	Acid Soluble Co (ppm)	0136	< 1.25		2.576	5.277	0.2093	5		202.33	5
221	Acid Soluble Cu (%)	0368	0.0002	0.0001				1		221.99	0
221	Acid Soluble Cu (%)	0255	0.0000	0.0000				1		221.30	4
221	Acid Soluble Cu (%)	0527	< 0.0001					1		221.33	5
221	Acid Soluble Cu (%)	0563	< 0.0001					1		221.33	5
221	Acid Soluble Cu (%)	0405	< 0.0001					1		221.99	5
221	Acid Soluble Cu (%)	0572	< 0.0001					1		221.99	5
221	Acid Soluble Cu (%)	0136	< 0.0025					1		221.33	5
221	Acid Soluble Cu (%)	0553	< 0.005					1		221.00	5
221	Acid Soluble Cu (%)	0354	< 0.01					1		221.30	5
241	Acid Soluble Fe (%)	0524	0.0005	0.0002				1		241.99	0
241	Acid Soluble Fe (%)	0527	< 0.0001					1		241.33	5
241	Acid Soluble Fe (%)	0563	< 0.0001					1		241.33	5
241	Acid Soluble Fe (%)	0553	< 0.005					1		241.00	5
241	Acid Soluble Fe (%)	0354	< 0.01					1		241.30	5
251	Acid Soluble Pb (ppm)	0524	0.0492	0.0339	2.607	5.421	0.1968	5	-0.47	251.30	0
251	Acid Soluble Pb (ppm)	0529	0.1000	0.0200	2.607	5.421	0.1968	5	-0.46	251.32	0
251	Acid Soluble Pb (ppm)	0572	0.1350	0.0300	2.607	5.421	0.1968	5	-0.46	251.99	0
251	Acid Soluble Pb (ppm)	0220	0.4500	0.1000	2.607	5.421	0.1968	5	-0.40	251.99	0
251	Acid Soluble Pb (ppm)	0553	12.30	0.8000	2.607	5.421	0.1968	5	1.79	251.99	0
251	Acid Soluble Pb (ppm)	0260	3.649	3.197	2.607	5.421	0.1968	5	0.19	251.33	1
251	Acid Soluble Pb (ppm)	0255	0.0040	0.0080	2.607	5.421	0.1968	5		251.30	4
251	Acid Soluble Pb (ppm)	0527	< 0.0001		2.607	5.421	0.1968	5		251.33	5
251	Acid Soluble Pb (ppm)	0563	< 0.02		2.607	5.421	0.1968	5		251.33	5
251	Acid Soluble Pb (ppm)	0405	< 0.2		2.607	5.421	0.1968	5		251.99	5
251	Acid Soluble Pb (ppm)	0498	< 0.5		2.607	5.421	0.1968	5		251.00	5
251	Acid Soluble Pb (ppm)	0368	< 0.6		2.607	5.421	0.1968	5		251.34	5

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
251	Acid Soluble Pb (ppm)	0136	< 3		2.607	5.421	0.1968	5	251.33	5	
261	Acid Soluble Mn (%)	0527	< 0.0001					0	261.35	5	
261	Acid Soluble Mn (%)	0563	< 0.0001					0	261.35	5	
261	Acid Soluble Mn (%)	0553	< 0.005					0	261.00	5	
261	Acid Soluble Mn (%)	0354	< 0.01					0	261.30	5	
281	Acid Soluble Hg (ppm)	0524	0.0006	0.0005				1	281.99	0	
281	Acid Soluble Hg (ppm)	0527	< 0.001					1	281.30	5	
281	Acid Soluble Hg (ppm)	0529	< 0.005					1	281.30	5	
281	Acid Soluble Hg (ppm)	0368	< 0.005					1	281.99	5	
281	Acid Soluble Hg (ppm)	0220	< 0.01					1	281.99	5	
281	Acid Soluble Hg (ppm)	0405	< 0.01					1	281.99	5	
281	Acid Soluble Hg (ppm)	0563	< 0.02					1	281.30	5	
281	Acid Soluble Hg (ppm)	0498	< 0.5					1	281.00	5	
289	Acid Soluble Mo (ppm)	0524	0.0127	0.0236	1.450	2.899	0.1212	5	-0.43	289.30	0
289	Acid Soluble Mo (ppm)	0563	0.0179	0.0000	1.450	2.899	0.1212	5	-0.43	289.33	0
289	Acid Soluble Mo (ppm)	0405	0.2400	0.1400	1.450	2.899	0.1212	5	-0.36	289.99	0
289	Acid Soluble Mo (ppm)	0220	0.3500	0.1000	1.450	2.899	0.1212	5	-0.33	289.32	0
289	Acid Soluble Mo (ppm)	0260	6.630	0.3424	1.450	2.899	0.1212	5	1.56	289.33	0
289	Acid Soluble Mo (ppm)	0255	0.0000	0.0000	1.450	2.899	0.1212	5		289.30	4
289	Acid Soluble Mo (ppm)	0368	< 0.1		1.450	2.899	0.1212	5		289.34	5
289	Acid Soluble Mo (ppm)	0136	< 1.25		1.450	2.899	0.1212	5		289.33	5
291	Acid Soluble Ni (ppm)	0524	0.0349	0.0292	1.212	1.774	0.4279	6	-0.59	291.30	0
291	Acid Soluble Ni (ppm)	0572	0.0550	0.0300	1.212	1.774	0.4279	6	-0.58	291.99	0
291	Acid Soluble Ni (ppm)	0529	0.2650	0.0300	1.212	1.774	0.4279	6	-0.48	291.32	0
291	Acid Soluble Ni (ppm)	0255	0.7015	0.9650	1.212	1.774	0.4279	6	-0.26	291.99	0
291	Acid Soluble Ni (ppm)	0260	2.341	0.5233	1.212	1.774	0.4279	6	0.57	291.33	0
291	Acid Soluble Ni (ppm)	0553	8.965	0.9900	1.212	1.774	0.4279	6	3.89	291.99	0
291	Acid Soluble Ni (ppm)	0527	< 0.0001		1.212	1.774	0.4279	6		291.33	5
291	Acid Soluble Ni (ppm)	0563	< 0.1		1.212	1.774	0.4279	6		291.33	5
291	Acid Soluble Ni (ppm)	0368	< 0.3		1.212	1.774	0.4279	6		291.34	5
291	Acid Soluble Ni (ppm)	0405	< 1		1.212	1.774	0.4279	6		291.99	5
291	Acid Soluble Ni (ppm)	0136	< 1.25		1.212	1.774	0.4279	6		291.33	5
301	Acid Soluble Se (ppm)	0524	0.0052	0.0014	0.5029	0.4308	0.0162	5	-1.01	301.30	0
301	Acid Soluble Se (ppm)	0220	0.3000	0.0000	0.5029	0.4308	0.0162	5	-0.41	301.32	0
301	Acid Soluble Se (ppm)	0220	0.3000	0.0000	0.5029	0.4308	0.0162	5	-0.41	301.99	0
301	Acid Soluble Se (ppm)	0563	0.9095	0.0795	0.5029	0.4308	0.0162	5	0.82	301.33	0
301	Acid Soluble Se (ppm)	0405	1.000	0.0000	0.5029	0.4308	0.0162	5	1.01	301.99	0
301	Acid Soluble Se (ppm)	0255	1.134	0.1470	0.5029	0.4308	0.0162	5	1.28	301.99	1
301	Acid Soluble Se (ppm)	0527	< 0.001		0.5029	0.4308	0.0162	5		301.33	5
301	Acid Soluble Se (ppm)	0498	< 0.5		0.5029	0.4308	0.0162	5		301.00	5
301	Acid Soluble Se (ppm)	0572	< 0.8		0.5029	0.4308	0.0162	5		301.99	5
301	Acid Soluble Se (ppm)	0368	< 0.9		0.5029	0.4308	0.0162	5		301.34	5
311	Sodium (%)	0498	0.0140	0.0020	0.3838	0.0700	0.0149	16	-5.28	311.00	0
311	Sodium (%)	0527	0.3194	0.0055	0.3838	0.0700	0.0149	16	-0.92	311.33	0
311	Sodium (%)	0561	0.3200	0.0200	0.3838	0.0700	0.0149	16	-0.91	311.33	0
311	Sodium (%)	0572	0.3250	0.0100	0.3838	0.0700	0.0149	16	-0.84	311.99	0
311	Sodium (%)	0260	0.3409	0.0192	0.3838	0.0700	0.0149	16	-0.61	311.33	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
311	Sodium (%)	0405	0.3570	0.0020	0.3838	0.0700	0.0149	16	-0.38	311.00	0
311	Sodium (%)	0506	0.3585	0.0090	0.3838	0.0700	0.0149	16	-0.36	311.00	0
311	Sodium (%)	0368	0.3658	0.0066	0.3838	0.0700	0.0149	16	-0.26	311.99	0
311	Sodium (%)	0553	0.3885	0.0010	0.3838	0.0700	0.0149	16	0.07	311.00	0
311	Sodium (%)	0444	0.3900	0.0200	0.3838	0.0700	0.0149	16	0.09	311.32	0
311	Sodium (%)	0563	0.4236	0.0025	0.3838	0.0700	0.0149	16	0.57	311.33	0
311	Sodium (%)	0136	0.4250	0.0100	0.3838	0.0700	0.0149	16	0.59	311.33	0
311	Sodium (%)	0550	0.4260	0.0220	0.3838	0.0700	0.0149	16	0.60	311.00	0
311	Sodium (%)	0354	0.4450	0.0500	0.3838	0.0700	0.0149	16	0.87	311.99	0
311	Sodium (%)	0510	0.7630	0.0084	0.3838	0.0700	0.0149	16	5.42	311.30	0
311	Sodium (%)	0532	1.405	0.0500	0.3838	0.0700	0.0149	16	14.59	311.30	0
311	Sodium (%)	0255	0.2620	0.1040	0.3838	0.0700	0.0149	16	-1.74	311.99	1
311	Sodium (%)	0450	< 0.5		0.3838	0.0700	0.0149	16		311.99	5
321	Acid Soluble Zn (%)	0572	0.0006	0.0001				2		321.99	0
321	Acid Soluble Zn (%)	0368	4.228	1.610				2		321.99	0
321	Acid Soluble Zn (%)	0255	0.0000	0.0000				2		321.30	4
321	Acid Soluble Zn (%)	0527	< 0.0001					2		321.33	5
321	Acid Soluble Zn (%)	0563	< 0.0001					2		321.33	5
321	Acid Soluble Zn (%)	0405	< 0.0001					2		321.99	5
321	Acid Soluble Zn (%)	0553	< 0.002					2		321.00	5
321	Acid Soluble Zn (%)	0027	< 0.002					2		321.99	5
321	Acid Soluble Zn (%)	0136	< 0.0025					2		321.33	5
321	Acid Soluble Zn (%)	0354	< 0.01					2		321.30	5
321	Acid Soluble Zn (%)	0498	< 10					2		321.02	5

Interpreting Z Scores: Red indicates a normally distributed Z value >3 or <-3 (requires action), Orange = Z between 2 and 3 or -2 and -3 (warning) and Green = Z < 2 and >-2 (OK at 95%).
Flags indicate data usage: 0 = Used, 1 = rejected for duplicates too far apart, 2 = rejected as extreme outlier, 3 = removed from stats, 4 = rejected due to 0s submitted and 5 = LOD. A 9 flag indicates a data problem - scores not calculated. Robust statistics not used if < 6 labs used in calculations, in this case the Z Scores are grey and included for information only. Your offset values are higher (‡) or lower (†) than the Robust Analyte value ± Investigational Allowance. Analyte codes in light green indicate a guaranteed analyte. Individual lab values may be below detection limits but are reported solely for the purpose of this Proficiency Testing program.