

MAGRUDER - Fertilizer Check Sample No. - 200604 AmSul 21-0-0 (A), 0-0-0 MEM (B)

- Pass 1 Results for 81 Labs - - Pass 2 Results for 78 Labs -

Method	AOAC Ref.	Method Code	No. of Labs	Grand Avg.	Std. Dev.	Average Range of Dups	No. of Labs	Grand Avg.	Std. Dev.	Average Range of Dups
Ammoniacal Nitrogen, MgO Distillation	920.03	001.10	12	20.79	0.31	0.06	11	20.79	0.32	0.04
Ammoniacal Nitrogen, Other		001.99	6	20.95	0.07	0.04	6	20.95	0.07	0.04
Method Group 001.XX PCT			18	20.84	0.27	0.05	17	20.85	0.27	0.04
Ammon & Nitrate N, Devarda	892.01	009.10	4	21.10	0.12	0.03	4	21.10	0.12	0.03
Ammon & Nitrate N, Other		009.99	1	21.15	0.07	0.10	1	21.15	0.07	0.10
Method Group 009.XX PCT			5	21.11	0.11	0.04	5	21.11	0.11	0.04
Total Nitrogen, Modified Comprehensive	978.02	010.11	6	21.15	0.17	0.08	5	21.16	0.17	0.04
Total Nitrogen, Salicylic	955.04D	010.12	3	20.87	0.18	0.06	3	20.87	0.18	0.06
Total Nitrogen, Raney	970.03	010.16	1	21.01	0.04	0.06	1	21.01	0.04	0.06
Total Nitrogen, Combustion		010.60	49	21.16	0.19	0.12	45	21.18	0.15	0.08
Total Nitrogen, Other		010.99	6	21.09	0.25	0.06	6	21.09	0.25	0.06
Method Group 010.XX PCT			65	21.14	0.20	0.10	62	21.14	0.18	0.08
Total Phosphate, ICP		020.50	2	0.14	0.06	0.03	2	0.14	0.06	0.03
Dir Available Phosphate, ICP		041.50	1	0.10	0.00	0.00	1	0.10	0.00	0.00
Soluble Potash, STPB Citrate	969.04	050.10	1	0.07	0.00	0.01	1	0.07	0.00	0.01
Soluble Potash, ICP (Oxalate)		050.50	1	0.30	0.01	0.01	1	0.30	0.01	0.01
Soluble Potash, Other		050.99	3	0.18	0.12	0.01	3	0.18	0.12	0.01
Method Group 050.XX PCT			5	0.18	0.12	0.01	5	0.18	0.12	0.01
Free Water, Vacuum Oven	965.08B	060.00	4	0.04	0.03	0.01	4	0.04	0.03	0.01
Acid Soluble Calcium, ICP		101.30	11	6.01	1.41	0.14	10	6.12	1.43	0.10
Acid Soluble Magnesium, AA	984.01	121.00	1	3.05	0.01	0.02	1	3.05	0.01	0.02
Acid Soluble Magnesium, ICP		121.30	11	3.13	0.32	0.05	11	3.13	0.32	0.05
Method Group 121.XX PCT			12	3.12	0.30	0.04	12	3.12	0.30	0.04
Sulfur, Gravimetric	980.02a	144.01	16	24.36	0.39	0.18	16	24.36	0.39	0.18
Sulfur, Gravimetric	980.02b	144.02	4	24.03	0.88	0.09	4	24.03	0.88	0.09
Sulfur, Gravimetric	980.02c	144.03	1	23.63	0.02	0.03	1	23.63	0.02	0.03
Sulfur, Other		144.99	22	23.84	0.61	0.18	21	23.85	0.61	0.15
Method Group 144.XX PCT			44	24.08	0.64	0.18	43	24.09	0.64	0.16
Arsenic, Atomic Absorption		151.00	3	193.12	25.53	15.88	3	193.12	25.53	15.88
Arsenic, ICP		151.30	7	178.04	15.73	4.54	7	178.04	15.73	4.54
Arsenic, Other		151.99	1	208.00	0.00	0.00	1	208.00	0.00	0.00
Method Group 151.XX PPM			11	184.88	20.24	7.22	10	181.91	17.52	3.84
Acid Soluble Boron, Spectrometric	982.01	165.00	8	4.478	0.298	0.127	8	4.478	0.298	0.127
Acid Soluble Boron, Titrimetric	949.02	165.70	1	4.905	0.021	0.030	1	4.905	0.021	0.030
Acid Soluble Boron, Other		165.99	18	4.764	0.229	0.092	17	4.792	0.199	0.076
Method Group 165.XX PCT			29	4.693	0.336	0.108	28	4.689	0.340	0.098
Water Soluble Boron, Spectrometric	982.01	171.10	1	4.550	0.000	0.000	1	4.550	0.000	0.000
Water Soluble Boron, Titrimetric	949.03	171.70	1	4.515	0.021	0.030	1	4.515	0.021	0.030
Water Soluble Boron, Other		171.99	1	4.700	0.000	0.000	1	4.700	0.000	0.000

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Method	AOAC Ref.	Method Code	No. of Labs	Grand Avq.	Std. Dev.	Average Range of Dups	No. of Labs	Grand Avq.	Std. Dev.	Average Range of Dups
Method Group 171.XX PCT			3	4.588	0.088	0.010	3	4.588	0.088	0.010
Cadmium, Atomic Absorption		181.00	4	12.91	1.90	1.11	4	12.91	1.90	1.11
Cadmium, ICP		181.30	7	12.79	0.95	0.29	7	12.79	0.95	0.29
Cadmium, Other		181.99	1	13.10	0.00	0.00	1	13.10	0.00	0.00
Method Group 181.XX PPM			12	12.86	1.27	0.54	11	12.62	0.94	0.34
Water Soluble Chlorine, Titrimetric ...	928.02	190.00	1	0.30	0.00	0.00	1	0.30	0.00	0.00
Water Soluble Chlorine, Other		190.99	1	0.07	0.00	0.00	1	0.07	0.00	0.00
Method Group 190.XX PCT			2	0.19	0.13	0.00	2	0.19	0.13	0.00
Chromium, Atomic Absorption		191.00	1	223.50	6.36	9.00	1	223.50	6.36	9.00
Chromium, ICP		191.30	9	148.29	89.42	6.26	9	148.29	89.42	6.26
Chromium, Other		191.99	1	184.00	0.00	0.00	1	184.00	0.00	0.00
Method Group 191.XX PPM			11	158.38	83.84	5.94	11	158.38	83.84	5.94
Acid Soluble Cobalt, AA		202.00	2	102.75	9.43	10.50	2	102.75	9.43	10.50
Acid Soluble Cobalt, ICP	965.11	202.30	11	77.52	38.48	3.01	10	79.79	39.67	2.14
Acid Soluble Cobalt, Other		202.99	1	112.00	0.00	0.00	1	112.00	0.00	0.00
Method Group 202.XX PPM			14	83.59	36.13	3.87	14	83.59	36.13	3.87
Acid Soluble Copper, Atomic Absorption	975.01	221.00	5	0.1287	0.0050	0.0034	4	0.1275	0.0035	0.0010
Acid Soluble Copper, ICP		221.30	14	0.1296	0.0113	0.0031	13	0.1299	0.0116	0.0025
Acid Soluble Copper, Other		221.99	1	0.1280	0.0000	0.0000	1	0.1280	0.0000	0.0000
Method Group 221.XX PCT			21	0.1278	0.0118	0.0037	19	0.1291	0.0098	0.0025
Acid Soluble Iron, ICP		241.30	11	1.27	0.63	0.05	10	1.29	0.66	0.03
Lead, Atomic Absorption		251.00	3	780.96	43.73	34.68	3	780.96	43.73	34.68
Lead, ICP		251.30	8	632.38	88.63	19.45	7	618.72	85.43	13.08
Lead, Other		251.99	1	773.00	0.00	0.00	1	773.00	0.00	0.00
Method Group 251.XX PPM			12	681.24	102.60	21.64	12	681.24	102.60	21.64
Acid Soluble Manganese, AA	972.02a	261.00	13	13.179	0.395	0.255	13	13.179	0.395	0.255
Acid Soluble Manganese, AA	972.02b	261.11	3	13.229	0.322	0.167	3	13.229	0.322	0.167
Acid Soluble Manganese, ICP	972.02a	261.30	17	13.937	0.983	0.265	16	13.852	0.940	0.210
Acid Soluble Manganese, ICP	972.02b	261.31	4	14.189	0.308	0.060	4	14.189	0.308	0.060
Acid Soluble Manganese, Other		261.99	2	13.143	0.454	0.245	2	13.143	0.454	0.245
Method Group 261.XX PCT			39	13.615	0.810	0.232	38	13.571	0.767	0.208
Water Soluble Manganese, ICP	972.03	271.30	1	14.150	0.071	0.100	1	14.150	0.071	0.100
Mercury, Atomic Absorption		281.00	2	0.71	0.52	0.02	2	0.71	0.52	0.02
Mercury, ICP		281.30	1	0.00	0.00	0.00	1	0.00	0.00	0.00
Mercury, Other		281.99	3	2.39	3.26	0.01	3	2.39	3.26	0.01
Method Group 281.XX PPM			6	1.43	2.44	0.01	6	1.43	2.44	0.01
Molybdenum, ICP		289.30	10	20.56	10.91	0.68	9	20.20	11.47	0.43
Molybdenum, Other		289.99	1	22.90	0.00	0.00	1	22.90	0.00	0.00
Method Group 289.XX PPM			11	20.78	10.40	0.62	10	20.47	10.88	0.39

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<u>Method</u>	<u>AOAC Ref.</u>	<u>Method Code</u>	<u>No. of Labs</u>	<u>Grand Avq.</u>	<u>Std. Dev.</u>	<u>Average Range of Dups</u>	<u>No. of Labs</u>	<u>Grand Avq.</u>	<u>Std. Dev.</u>	<u>Average Range of Dups</u>
Nickel, Atomic Absorption		291.00	1	105.00	11.31	16.00	1	105.00	11.31	16.00
Nickel, ICP		291.30	7	81.80	42.59	4.54	6	73.32	39.78	2.52
Nickel, Other		291.99	1	16.50	3.54	5.00	1	16.50	3.54	5.00
Method Group 291.XX PPM			9	77.12	44.01	5.87	9	77.12	44.01	5.87
Selenium, ICP		301.30	6	36.46	35.64	1.22	5	23.48	20.69	0.56
Sodium, Other		311.99	7	4.06	1.54	0.10	7	4.06	1.54	0.10
Acid Soluble Zinc, Atomic Absorption ..	975.02	321.00	17	4.125	0.213	0.093	17	4.125	0.213	0.093
Acid Soluble Zinc, ICP		321.30	23	4.225	0.268	0.121	23	4.225	0.268	0.121
Acid Soluble Zinc, Other		321.99	1	4.196	0.062	0.087	1	4.196	0.062	0.087
Method Group 321.XX PCT			41	4.183	0.247	0.109	41	4.183	0.247	0.109
Water Soluble Zinc, ICP		325.30	1	4.250	0.071	0.100	1	4.250	0.071	0.100

Laboratory Averages & Accuracy Indexes

Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index
Meth: 001.10 PCT			Meth: 001.XX PCT			Meth: 010.11 PCT			Meth: 010.60 PCT			Meth: 010.60 PCT		
<u>Ammoniacal Nitrogen</u>			<u>Ammoniacal Nitrogen</u>			<u>Total Nitrogen</u>			<u>Total Nitrogen</u>			<u>Total Nitrogen</u>		
<u>MgO Distillation</u>			288 20.85 .18			<u>Modified Comprehensi</u>			<u>Combustion</u>			<u>Combustion</u>		
291	21.40	1.88	418	20.87 X	.08	309	21.30	.83	262	21.20	.68	018	21.15 R	-3.64
405	21.05	.80	372	20.85	.07	114	21.27	.62	425	21.28	.65	428	20.20 s	-6.59
232	21.01	.67	Avg	20.85		405	21.22	.32	055	21.23	.59			
416	20.94	.44	371	20.84	-.08	Avg	21.16		360	21.26	.53	Meth: 010.99 PCT		
288	20.85	.24	351	20.76	-.35	288	21.16	-.47	233	21.25	.46	<u>Total Nitrogen</u>		
371	20.84	.16	324	20.75	-.40	029	21.09 R	-.98	040	21.21	.40	<u>Other</u>		
Avg	20.79		029	20.75 R	-.65	322	20.86	-1.76	136	21.23	.37	354	22.20 S	4.36
351	20.76	-.16	415	20.53	-1.19				096	21.19	.24	430	21.55 S	2.06
324	20.75	-.18	389	20.40	-1.65	Meth: 010.12 PCT			029	21.18	.13	372	21.41	1.29
029	20.75 R	-.47	309	20.20	-2.38	<u>Total Nitrogen</u>			Avg	21.18		409	21.32	.93
415	20.53	-.83				<u>Salicylic</u>			381	21.17	-.08	377	21.19	.41
389	20.40	-1.22	Meth: 009.10 PCT			185	21.08	1.16	025	21.17	-.13	Avg	21.09	
309	20.20	-1.83	<u>Ammon & Nitrate N</u>			Avg	20.87		324	21.16	-.18	376	21.00	-.34
			<u>Devarda</u>			434	20.86	-.18	231	21.17	-.20	072	20.88	-.83
			392	21.18	.69	254	20.68	-1.06	426	21.15	-.27	415	20.73	-1.42
			257	21.17	.60	Meth: 010.16 PCT			247	21.15	-.27			
			090	21.14	.35	<u>Total Nitrogen</u>			028	21.14	-.28	Meth: 010.XX PCT		
			Avg	21.10		<u>Raney</u>			390	21.18	-.30	<u>Total Nitrogen</u>		
			200	20.92	-1.59	434	21.01	.71	296	21.13	-.32	354	22.20 s	5.74
						Meth: 009.99 PCT			423	21.11	-.49	102	21.69 s	3.39
						<u>Ammon & Nitrate N</u>			070	21.12	-.55	018	21.15 R	2.98
						<u>Other</u>			351	21.10	-.57	430	21.55 s	2.60
			007	21.15	.71	<u>Total Nitrogen</u>			131	21.07	-.71	422	21.51	1.98
						<u>Combustion</u>			009	21.06	-.84	177	21.47	1.75
						102	21.69 s	3.93	034	21.05	-.90	234	21.43	1.56
						422	21.51	2.18	043	21.04	-.91	372	21.41	1.49
						177	21.47	1.91	157	21.05	-.94	291	21.40	1.39
						234	21.43	1.68	073	21.03	-.99	024	21.38	1.29
						291	21.40	1.46	037	21.10	-1.04	409	21.32	1.00
						024	21.38	1.34	361	21.00	-1.17	325	21.32	.97
						325	21.32	.96	041	20.98	-1.34	406	21.31	.92
						Avg	21.11		162	21.02	-1.35	309	21.30	.86
			200	20.92	-1.82	406	21.31	.89	369	21.12 R	-1.37	389	21.30	.86
						027	21.22	.84	072	20.91	-1.86	292	21.29	.81
						389	21.30	.81	042	20.90 R	-2.26	330	21.29	.78
						292	21.29	.77	307	20.80	-2.64	027	21.22	.78
						330	21.29	.72	023	20.76 A	-2.95	095	21.27	.73
						095	21.27	.69						

* X=Excluded from lab performance S/s=Screened Outlier R=Duplicate Range too large A=Analysis beyond 3-s limits

Laboratory Averages & Accuracy Indexes

Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index
Meth: 010.XX PCT			Meth: 010.XX PCT			Meth: 050.99 PCT			Meth: 101.30 PCT			Meth: 121.XX PCT		
<u>Total Nitrogen</u>			<u>Total Nitrogen</u>			<u>Soluble Potash</u>			<u>Acid Soluble Calcium</u>			<u>Acid Soluble Magnesi</u>		
425	21.28	.72	041	20.98	-.90	Other			ICP			102	2.97	-.51
114	21.27	.67	162	21.02	-.97	307	0.33	1.29	307	4.91 R	-.87	307	2.91	-.71
262	21.20	.63	369	21.12 R	-1.09	Avg	0.18		065	4.48	-1.15	065	2.46	-2.21
360	21.26	.62	072	20.91	-1.35	232	0.12	-.58	232	0.61 s	-8.30	232	0.61 s	-8.30
055	21.23	.61	072	20.88	-1.43	325	0.10	-.71	Meth: 121.00 PCT			Meth: 144.01 PCT		
233	21.25	.57	322	20.86	-1.50	Meth: 050.XX PCT			<u>Acid Soluble Magnesi</u>			Sulfur		
136	21.23	.49	434	20.86	-1.53	<u>Soluble Potash</u>			AA			<u>Gravimetric</u>		
040	21.21	.46	042	20.90 R	-1.70	307	0.33	1.30	257	3.05	.71	262	25.55 s	3.08
288	21.16	.44	307	20.80	-1.98	422	0.30	.98	Meth: 121.30 PCT			055	25.02	1.81
405	21.22	.40	023	20.76	-2.24	Avg	0.18		<u>Acid Soluble Magnesi</u>			157	24.81	1.17
390	21.18	.30	415	20.73	-2.25	232	0.12	-.58	ICP			296	24.73	.95
096	21.19	.30	254	20.68	-2.50	325	0.10	-.71	422	3.66	1.68	043	24.67	.79
377	21.19	.28	428	20.20 s	-5.22	322	0.07	-1.00	390	3.44	.98	029	24.61	.66
029	21.18	.24	Meth: 020.50 PCT			Meth: 060.00 PCT			027	3.39	.82	040	24.50	.48
231	21.17	.22	<u>Total Phosphate</u>			<u>Free Water</u>			423	3.34	.66	025	24.42	.44
381	21.17	.16	ICP			<u>Vacuum Oven</u>			Avg	3.13		324	24.52	.41
025	21.17	.15	307	0.19	.90	416	0.07	1.38	288	3.12	-.07	Avg	24.36	
426	21.15	.14	Avg	0.14		247	0.05	.31	433	3.09	-.14	233	24.34	-.11
247	21.15	.14	422	0.10	-.83	Avg	0.04		131	3.05	-.28	095	24.25	-.29
324	21.16	.11	Meth: 041.50 PCT			193	0.02	-.81	009	3.02	-.38	351	24.25	-.30
Avg	21.14		Dir Available Phosph			007	0.02	-.92	102	2.97	-.51	416	24.23	-.35
296	21.13	-.08	ICP			Meth: 101.30 PCT			307	2.91	-.71	102	24.09	-.69
028	21.14	-.11	325	0.10	.00	<u>Acid Soluble Calcium</u>			065	2.46	-2.14	200	23.94	-1.09
423	21.11	-.21	Meth: 050.10 PCT			ICP			232	0.61 s	-7.97	371	23.92	-1.15
351	21.10	-.30	<u>Soluble Potash</u>			096	16.65 s	7.43	Meth: 121.XX PCT			193	23.50	-2.24
070	21.12	-.33	STPB Citrate			232	10.03	2.74	<u>Acid Soluble Magnesi</u>			Meth: 144.02 PCT		
131	21.07	-.39	322	0.07	.71	422	6.37	.17	390			Sulfur		
185	21.08	-.43	Meth: 050.50 PCT			Avg	6.12		027			<u>Gravimetric</u>		
009	21.06	-.51	<u>Soluble Potash</u>			423	5.99	-.11	423			292	26.28 s	2.55
043	21.04	-.56	ICP (Oxalate)			027	5.95	-.12	Avg			260	24.91	.99
034	21.05	-.57	422	0.30	.71	433	5.89	-.16	288			029	24.41	.43
157	21.05	-.60	Meth: 050.50 PCT			009	5.84	-.21	433			136	24.12	.10
073	21.03	-.63	<u>Soluble Potash</u>			288	5.76	-.26	257			Avg	24.03	
434	21.01	-.73	ICP (Oxalate)			131	5.69	-.30	131			434	22.69	-1.52
376	21.00	-.77	422			102	5.20	-.65	009					
361	21.00	-.77	422			* X=Excluded from lab performance			R=Duplicate Range too large			A=Analysis beyond 3-s limits		
037	21.10	-.77	422			S/s=Screened Outlier								
029	21.09	-.86	422											

Laboratory Averages & Accuracy Indexes

Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index
Meth: 144.03 PCT			Meth: 144.XX PCT			Meth: 144.XX PCT			Meth: 151.XX PPM			Meth: 165.99 PCT		
Sulfur			Sulfur			Sulfur			Arsenic			Acid Soluble Boron		
<u>Gravimetric</u>												<u>Other</u>		
372	23.63	.71	296	24.73	1.00	434	22.69	-2.19	Avg	181.91		009	4.865	.41
			043	24.67	.89	096	22.36	-2.69	009	180.85	-.09	324	4.825	.17
			390	24.62	.88	307	22.26 s	-3.04	434	174.50	-.49	Avg	4.792	
Meth: 144.99 PCT			390			Meth: 151.00 PPM			434			291		
Sulfur			029			Arsenic			040			422		
<u>Other</u>			423			<u>Atomic Absorption</u>			291			422		
361	24.79	1.52	324	24.52	.66	220	214.50	1.16	065	150.45	-1.80	231	4.725	-.34
390	24.62	1.29	040	24.50	.66	136	198.50	.23	233	91.93 s	-5.15	389	4.700	-.46
423	24.53	1.15	025	24.42	.56	Avg			Meth: 165.00 PCT			423		
430	24.35	.91	430	24.35	.56	193.12			Acid Soluble Boron			102		
028	24.33	.80	029	24.41	.50	040			<u>Spectrometric</u>			434		
177	24.29	.72	028	24.33	.41	166.35			262			043		
009	24.20	.58	233	24.34	.39	-1.05			5.625 S			4.595		
131	24.13	.50	177	24.29	.31	Meth: 151.30 PPM			029			288		
291	24.13	.46	177	24.29	.31	Arsenic			4.810			4.475		
232	24.03	.29	351	24.25	.26	<u>ICP</u>			040			354		
389	24.00	.24	095	24.25	.24	037			4.745			042		
Avg	23.85		131	24.13	.23	102			4.650			4.069 s		
376	23.80	-.09	416	24.23	.21	096			4.625			Meth: 165.XX PCT		
360	23.84	-.16	009	24.20	.20	096			4.565			<u>Acid Soluble Boron</u>		
037	23.85	-.16	291	24.13	.08	009			4.478			232		
090	23.60	-.44	136	24.12	.05	Avg			392			13.000 s		
247	23.46	-.66	Avg	24.09		434			4.250			262		
027	23.42	-.72	102	24.09	-.06	178.04			4.160			5.625 s		
330	23.61 R	-.78	232	24.03	-.10	291			4.015			372		
354	23.20	-1.09	389	24.00	-.14	165.56			-1.07			426		
372	23.10	-1.23	200	23.94	-.26	-1.76			-1.56			360		
422	22.91	-1.55	371	23.92	-.31	233			Meth: 165.70 PCT			432		
096	22.36	-2.44	037	23.85	-.41	91.93 s			Acid Soluble Boron			432		
307	22.26 s	-2.83	360	23.84	-.43	-5.50			Titrimetric			330		
			376	23.80	-.45	Meth: 151.99 PPM			220			029		
			372	23.63	-.73	Arsenic			4.905			220		
			090	23.60	-.78	<u>Other</u>			Meth: 165.99 PCT			009		
			193	23.50	-.97	409			Acid Soluble Boron			090		
			330	23.61 R	-.98	208.00			Other			324		
			247	23.46	-1.00	Meth: 151.XX PPM			232			102		
			027	23.42	-1.05	Arsenic			13.000 s			291		
			354	23.20	-1.41	220			5.540 s			422		
			372	23.10	-1.54	220			5.360			040		
						214.50 R			4.970			231		
						208.00			4.915			433		
						198.50			.85			389		
						196.15			.75			4.700		
						193.79			.52			.03		
						.68			Meth: 165.99 PCT					
									Acid Soluble Boron					
									Other					
									232					
									372					
									426					
									360					
									432					
									330					
									029					
									220					
									009					
									090					
									324					
									102					
									291					
									422					
									040					
									231					
									433					
									389					
									A=Analysis beyond 3-s limits					

Laboratory Averages & Accuracy Indexes

Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index			
Meth: 165.XX PCT			Meth: 181.00 PPM			Meth: 181.XX PPM			Meth: 191.99 PPM			Meth: 202.30 PPM					
<u>Acid Soluble Boron</u>			Cadmium			<u>Cadmium</u>			Chromium			Acid Soluble Cobalt					
Avg	4.689		<u>Atomic Absorption</u>			434	11.95	-.71	<u>Other</u>			<u>ICP</u>					
423	4.660	-.09	040	15.47	1.53	065	11.12	-1.59	409	184.00	.00	065	36.78	-1.09			
292	4.650	-.16	Avg 12.91			193	11.00	-1.73	Meth: 191.XX PPM			232	2.25	-1.95			
296	4.625	-.23	136	12.65	-.16	Meth: 190.00 PCT			<u>Chromium</u>			Meth: 202.99 PPM					
043	4.595	-.29	220	12.50	-.34	Water Soluble Chlori			009	260.80	1.23	Acid Soluble Cobalt					
434	4.665	-.29	193	11.00	-1.01	<u>Titrimetric</u>			291	229.55	.85	<u>Other</u>					
037	4.565	-.50	Meth: 181.30 PPM			422	0.30	.00	220	223.50	.78	409 112.00 .00					
288	4.475	-.64	Cadmium			Meth: 190.99 PCT			102	204.04	.55	Meth: 202.XX PPM					
354	4.294	-1.27	<u>ICP</u>			Water Soluble Chlori			096	194.50	.44	<u>Acid Soluble Cobalt</u>					
392	4.250	-1.30	291	20.22 s	7.80	<u>Other</u>			409	184.00	.31	390	121.30	1.04			
055	4.160	-1.56	102	13.79	1.05	288 0.07 .00			037	175.90	.21	291	118.76	.97			
042	4.069	-1.85	009	13.55	.87	Meth: 190.XX PCT			324	173.50	.19	096	115.00	.87			
220	4.015	-1.99	037	13.55	.87	Water Soluble Chlori			Avg	158.38		409	112.00	.79			
Meth: 171.10 PCT			233	12.84	.07	422 0.30 .87			065	61.91	-1.15	009	111.75	.78			
Water Soluble Boron			Avg 12.79			Meth: 191.00 PPM			232	10.60	-1.76	434	109.00	.72			
<u>Spectrometric</u>			324	12.75	-.07	Chromium			Meth: 202.00 PPM			037	97.95	.40			
296	4.550	.00	434	11.95	-.88	Avg 0.19			Acid Soluble Cobalt			220	96.50	.39			
Meth: 171.70 PCT			065	11.12	-1.75	288 0.07 -.87			AA			Avg	83.59				
Water Soluble Boron			Meth: 181.99 PPM			Meth: 191.30 PPM			Acid Soluble Cobalt			423	80.35	-.09			
<u>Titrimetric</u>			Cadmium			Chromium			AA			040	66.50	-.47			
416	4.515	-.71	<u>Other</u>			Atomic Absorption			Avg			102	54.87	-.81			
Meth: 171.99 PCT			409	13.10	.00	220 223.50 .71			220			96.50	-.88	324	47.25	-1.01	
Water Soluble Boron			Meth: 181.XX PPM			Meth: 191.30 PPM			Meth: 202.30 PPM			065	36.78	-1.30	232	2.25	-2.25
<u>Other</u>			Cadmium			Chromium			Acid Soluble Cobalt			Meth: 221.00 PCT					
430	4.700	.00	291	20.22 s	8.09	<u>ICP</u>			ICP			Acid Soluble Copper					
Meth: 171.XX PCT			040	15.47 R	3.36	009 260.80 1.26			390			121.30	1.05	<u>Atomic Absorption</u>			
Water Soluble Boron			102	13.79	1.25	291 229.55 .91			291			118.76	.98	220 0.1335 R 2.52			
430	4.700	1.26	037	13.55	1.06	102 204.04 .62			096			115.00	.89	028 0.1305 .87			
Avg	4.588		009	13.55	1.06	096 194.50 .52			009			111.75	.81	043 0.1300 .71			
296	4.550	-.43	409	13.10	.51	037 175.90 .31			037			97.95	.46	Avg 0.1275			
416	4.515	-.85	233	12.84	.24	324 173.50 .28			423			80.35	.02	095 0.1270 X -.14			
Meth: 171.99 PCT			136	12.65	.16	Avg 148.29			Avg			79.79		434 0.1225 -1.49			
Water Soluble Boron			324	12.75	.15	065 61.91 -.97			040			66.50	-.34	193 0.0980 s -8.72			
<u>Other</u>			Avg 12.62			434 23.85 -1.39			102			54.87 R	-.65				
Meth: 171.99 PCT			220	12.50	-.55	232 10.60 -1.54			324			47.25	-.82				
Water Soluble Boron			S/s=Screened Outlier			R=Duplicate Range too large			A=Analysis beyond 3-s limits								

Laboratory Averages & Accuracy Indexes

Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index
Meth: 221.30 PCT			Meth: 221.XX PCT			Meth: 251.30 PPM			Meth: 261.00 PCT			Meth: 261.30 PCT		
<u>Acid Soluble Copper</u>			<u>Acid Soluble Copper</u>			<u>Lead</u>			<u>Acid Soluble Mangane</u>			<u>Acid Soluble Mangane</u>		
ICP			043	0.1300	.09	ICP			AA			ICP		
232	1.2500	s 97.24	Avg	0.1291		324	728.00	R 1.33	043	13.510	.88	291	13.401	-.48
389	0.1800	S 4.31	409	0.1280	-.11	102	718.30	1.17	177	13.515	.86	372	13.400	-.48
390	0.1490	1.65	095	0.1270	X -.21	291	711.37	1.10	392	13.400	.61	426	13.365	-.53
027	0.1445	1.26	131	0.1272	-.33	009	657.95	.46	425	13.340	.41	292	13.125	-.80
433	0.1398	.86	009	0.1259	-.36	Avg	618.72		Avg	13.179		422	12.465	-1.48
354	0.1375	.66	037	0.1241	-.51	037	608.55	-.12	381	13.140	-.14	041	12.300	-1.65
288	0.1325	.45	040	0.1265	-.62	434	614.50	-.14	095	13.150	-.30	037	10.045	S -4.06
423	0.1343	.38	434	0.1225	-.69	065	550.75	-.80	028	13.165	-.47	233	9.565	S -4.57
324	0.1300	.01	102	0.1194	-.99	233	469.60	-1.75	257	13.030	-.48	423	7.790	S -6.45
Avg	0.1299		065	0.1182	-1.11	232	8.05	s -7.15	193	12.950	-.59	288	6.360	S -8.08
131	0.1272	-.33	307	0.1058	-2.39	Meth: 251.99 PPM			262	13.020	-.81	065	2.160	S -12.44
009	0.1259	-.36	193	0.0980	R -3.27	<u>Lead</u>			296	12.870	-1.12	232	0.032	s -14.70
037	0.1241	-.50	291	0.0640	s -6.62	<u>Other</u>			055	12.360	-2.10	Meth: 261.31 PCT		
040	0.1265	R -.55	Meth: 241.30 PCT			409	773.00	.00	Meth: 261.11 PCT			<u>Acid Soluble Mangane</u>		
102	0.1194	-.90	<u>Acid Soluble Iron</u>			Meth: 251.XX PPM			<u>Acid Soluble Mangane</u>			<u>ICP</u>		
065	0.1182	-1.01	ICP			<u>Lead</u>			AA			324	14.475	.93
307	0.1058	-2.09	390	2.00	1.07	136	831.50	1.48	029	13.565	1.24	027	14.427	.77
291	0.0640	s -5.67	027	1.80	.77	409	773.00	.89	Avg	13.229		Avg	14.189	
Meth: 221.99 PCT			009	1.73	.67	040	757.87	.77	040	13.206	-.09	432	14.090	-.35
<u>Acid Soluble Copper</u>			433	1.69	.61	220	753.50	.71	434	12.915	-.98	231	13.765	-1.38
<u>Other</u>			131	1.68	.59	324	728.00	.55	Meth: 261.30 PCT			Meth: 261.99 PCT		
409	0.1280	.00	423	1.42	.20	102	718.30	.37	<u>Acid Soluble Mangane</u>			<u>Acid Soluble Mangane</u>		
Meth: 221.XX PCT			102	1.30	.02	291	711.37	.32	<u>ICP</u>			<u>Other</u>		
<u>Acid Soluble Copper</u>			Avg	1.29		Avg	681.24		330	15.665	1.94	220	13.500	.94
232	1.2500	s 115.06	065	1.05	-.37	009	657.95	-.23	354	15.285	R 1.64	Avg	13.143	
389	0.1800	s 5.18	288	1.05	R -.39	434	614.50	-.66	090	15.150	1.41	042	12.785	-.79
390	0.1490	2.03	422	0.13	-1.76	037	608.55	-.71	390	15.134	1.36	Meth: 261.XX PCT		
027	0.1445	1.57	232	0.09	-1.82	065	550.75	-1.27	102	14.858	1.08	<u>Acid Soluble Mangane</u>		
433	0.1398	1.10	Meth: 251.00 PPM			233	469.60	-2.06	009	14.145	.32	330	15.665	2.75
354	0.1375	.86	<u>Lead</u>			232	8.05	s -6.56	389	13.900	.05	354	15.285	R 2.36
220	0.1335	R .80	<u>Atomic Absorption</u>			Meth: 261.00 PCT			Avg	13.852		090	15.150	2.08
288	0.1325	.57	136	831.50	1.25	<u>AA</u>			433	13.820	-.06	390	15.134	2.04
423	0.1343	.53	Avg	780.96		351	13.871	1.78	023	13.610	-.30	102	14.858	1.69
028	0.1305	.15	040	757.87	-.68	* X=Excluded from lab performance S/s=Screened Outlier R=Duplicate Range too large A=Analysis beyond 3-s limits			360	13.585	-.33	324	14.475	1.18
324	0.1300	.09	220	753.50	-.69				131	13.715	-.37			

Laboratory Averages & Accuracy Indexes

Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index	Lab	Average*	Index
Meth: 261.XX PCT			Meth: 261.XX PCT			Meth: 289.30 PPM			Meth: 291.30 PPM			Meth: 311.99 PCT		
<u>Acid Soluble Manganese</u>			<u>Acid Soluble Manganese</u>			<u>Molybdenum</u>			<u>Nickel</u>			<u>Sodium</u>		
027	14.427	1.12	065	2.160 s	-14.87	<u>ICP</u>			<u>ICP</u>			<u>Other</u>		
009	14.145	.75	232	0.032 s	-17.65	433	42.58	1.95	009	132.65 R	1.51	288	4.84	.51
432	14.090	.68				291	32.27	1.05	037	106.65	.84	423	4.82	.50
131	13.715	.45	Meth: 271.30 PCT			009	23.85 R	.34	102	103.05	.75	009	4.80	.48
351	13.871	.43	Water Soluble Mangan			102	22.98	.24	040	97.35	.61	422	4.75	.45
389	13.900	.43	<u>ICP</u>			324	22.70	.22	324	91.00	.45	307	4.56	.34
433	13.820	.33	430	14.150	.71	434	20.65	.04	Avg	73.32		102	4.18	.09
231	13.765	.26				Avg	20.20		065	33.38	-1.00	Avg	4.06	
360	13.585	.20	Meth: 281.00 PPM			065	13.17	-.61	232	8.50	-1.63	232	0.47	-2.33
023	13.610	.20	Mercury			037	12.51	-.67	Meth: 291.99 PPM			Meth: 321.00 PCT		
Avg	13.571		<u>Atomic Absorption</u>			423	10.89	-.81	<u>Nickel</u>			<u>Acid Soluble Zinc</u>		
177	13.515	-.10	193	1.16	.87	232	4.05	-1.41	<u>Other</u>			<u>Atomic Absorption</u>		
043	13.510	-.16	Avg	0.71		Meth: 289.99 PPM			220	16.50	.71	428	11.614 s	35.16
291	13.401	-.22	040	0.27	-.87	<u>Molybdenum</u>			Meth: 291.XX PPM			257	4.415	1.36
372	13.400	-.22	Meth: 281.30 PPM			<u>Other</u>			<u>Nickel</u>			029	4.380	1.32
392	13.400	-.26	Mercury			409	22.90	.00	009			028	4.355	1.10
029	13.565	-.28	<u>ICP</u>			Meth: 289.XX PPM			037			055	4.340	1.01
426	13.365	-.29	291	0.00	.00	<u>Molybdenum</u>			220			040	4.255	.80
425	13.340	-.30				433	42.58	2.03	102			043	4.140	.47
220	13.500	-.31	Meth: 281.99 PPM			291	32.27	1.08	040			177	4.215	.42
040	13.206	-.48	Mercury			009	23.85 R	.34	324			Avg	4.125	
381	13.140	-.56	<u>Other</u>			102	22.98	.23	Avg			296	4.055	-.33
095	13.150	-.57	409	6.60	1.29	409	22.90	.22	065			095	4.043	-.39
028	13.165	-.58	Avg	2.39		324	22.70	.21	220			220	4.035	-.43
292	13.125	-.62	296	0.29	-.64	434	20.65	.03	232			425	4.025	-.48
257	13.030	-.72	220	0.28	-.65	Avg	20.47		Meth: 301.30 PPM			262	3.990	-.68
262	13.020	-.81	Meth: 281.XX PPM			065	13.17	-.67	<u>Selenium</u>			351	3.964	-.83
193	12.950	-.81	Mercury			037	12.51	-.73	<u>ICP</u>			392	3.950	-.86
434	12.915	-.85	<u>ICP</u>			423	10.89	-.88	434			193	3.920	-1.17
296	12.870	-1.00	409	6.60	2.12	232	4.05	-1.51	037			434	3.680	-2.09
042	12.785	-1.02	Avg	1.43		Meth: 291.00 PPM			065			Meth: 321.30 PCT		
422	12.465	-1.44	193	1.16	-.11	<u>Nickel</u>			009			<u>Acid Soluble Zinc</u>		
055	12.360	-1.59	296	0.29	-.47	<u>Atomic Absorption</u>			Avg			<u>ICP</u>		
041	12.300	-1.66	220	0.28	-.47	220			409			422		
037	10.045 s	-4.60	040	0.27	-.48	105.00			050			12.465 s		
233	9.565 s	-5.24	291	0.00	-.59	.71			0.50			30.70		
423	7.790 s	-7.54							-1.11			432		
288	6.360 s	-9.54							-1.13			4.750		
* X=Excluded from lab performance S/s=Screened Outlier R=Duplicate Range too large A=Analysis beyond 3-s limits														

Method Evaluation - Z Values Based on 1 Reports

Method Code	Number Of Labs	Avg Bias of Labs	Std Dev of Biases	Std Dev Within Labs	Method Code	Number Of Labs	Avg Bias of Labs	Std Dev of Biases	Std Dev Within Labs
001.10	12	- 0.01	0.97	0.15	202.XX	14	0.00	1.02	0.08
001.99	7	2.02	5.42	0.35	221.00	6	- 1.117	3.7301	1.2146
001.XX	19	0.20	1.37	0.15	221.30	17	5.5732	23.485	3.1355
009.10	4	0.00	1.07	0.13	221.XX	24	4.5788	23.407	3.1279
009.XX	5	0.00	1.02	0.24	241.30	11	- 0.03	0.98	0.06
010.11	6	- 0.07	0.94	0.41	241.XX	11	- 0.03	0.98	0.06
010.12	3	0.00	1.09	0.19	251.00	3	0.00	1.00	0.40
010.60	51	- 0.16	1.43	0.75	251.30	9	- 0.65	2.63	0.15
010.99	8	0.77	1.81	0.37	251.XX	13	- 0.50	2.06	0.13
010.XX	66	0.10	1.39	0.58	261.00	13	0.000	0.936	0.390
020.50	2	0.00	1.16	0.27	261.11	3	0.000	1.012	0.388
020.XX	2	0.00	1.16	0.27	261.30	23	- 2.115	4.409	0.342
050.99	3	0.00	1.12	0.03	261.31	4	0.000	1.074	0.101
050.XX	5	0.00	1.06	0.04	261.99	2	0.000	1.114	0.359
060.00	4	0.00	1.05	0.23	261.XX	45	- 1.268	3.975	0.324
060.XX	4	0.00	1.05	0.23	281.00	2	0.00	1.22	0.02
101.30	12	0.54	2.35	0.30	281.99	3	0.00	1.12	0.00
101.XX	12	0.54	2.35	0.30	281.XX	6	0.00	1.05	0.00
121.30	12	- 0.66	2.50	0.09	289.30	10	0.03	0.98	0.05
121.XX	13	- 0.64	2.50	0.09	289.XX	11	0.03	0.98	0.05
144.01	17	0.18	1.19	0.32	291.30	7	0.21	1.11	0.09
144.02	5	0.51	1.47	0.11	291.XX	8	0.05	0.94	0.37
144.99	23	- 0.13	1.10	0.31	301.30	6	0.63	1.81	0.05
144.XX	44	0.01	1.17	0.26	301.XX	6	0.63	1.81	0.05
151.00	3	0.00	0.96	0.47	311.99	7	0.00	1.04	0.04
151.30	8	- 0.68	2.16	0.22	311.XX	7	0.00	1.04	0.04
151.XX	12	- 0.27	1.86	0.38	321.00	18	1.953	8.341	0.299
165.00	9	0.428	1.583	0.303	321.30	27	- 0.056	7.218	0.331
165.99	21	1.850	9.155	1.151	321.XX	46	0.634	7.455	0.320
165.XX	30	0.942	4.557	0.630					
171.XX	3	0.000	1.112	0.098					
181.00	4	0.00	0.98	0.39					
181.30	8	0.97	2.91	0.24					
181.XX	13	0.85	2.50	0.48					
190.XX	2	0.00	1.22	0.00					
191.30	9	0.00	1.03	0.05					
191.XX	11	0.00	1.02	0.05					
202.00	2	0.00	0.94	0.56					
202.30	11	- 0.06	0.99	0.05					