

AFPC Rock Check Program

Sample No. 2019-11

	Method #	# of Anal.	Grand Median	Std Dev
Moisture				
Ground Sample AFPC IX.2.A	101	26	1.73	0.279
Other (describe)	102			
Method Group 100		26	1.73	0.28
P₂O₅				
Gravimetric AFPC IX.3.B	201	3	29.98	0.136
ICP-induced coupled plasma AFPC IX.3.D	202	2	30.27	0.207
Photometric-AFPC IX.3.C	203	23	29.87	0.200
Automated -AOAC 978.01-15th	204	7	30.02	0.159
Other(describe)	205	2	30.25	0.243
Method Group 200		37	29.92	0.13
P₂O₅ (on Dry Basis)				
Gravimetric AFPC IX.3.B	211	2	30.48	0.057
ICP-induced coupled plasma AFPC IX.3.D	212	2	30.75	0.131
Photometric-AFPC IX.3.C	213	14	30.53	0.354
Automated -AOAC 978.01-15th	214	7	30.49	0.131
Other(describe)	215	1	30.42	0.000
Method Group 210		26	30.53	0.20
Fe₂O₃				
Atomic Absorption-AFPC IX.6.B	301			
ICP-induced coupled plasma-AFPC IX.6.C	302	25	0.61	0.216
Other(describe)	303	4	0.61	0.043
Method Group 300		29	0.61	0.13
Al₂O₃				
Atomic Absorption-AFPC IX.7.B	401			
ICP-induced coupled plasma-AFPC IX.7.C	402	25	0.33	0.045
Other(describe)	403	4	0.36	0.043
Method Group 400		29	0.33	0.04
MgO				
Atomic Absorption-AFPC IX.8.A	501	3	0.59	0.026
ICP-induced coupled plasma-AFPC IX.8.B	502	22	0.59	0.017
Other(describe)	503	4	0.58	0.071
Method Group 500		29	0.59	0.03
Acid Insoluble				
Insoluble-AFPC IX.4.A	601	20	1.74	0.255
Other(describe)	602	1	1.28	0.000
Method Group 600		21	1.74	0.26
Carbon Dioxide				
Gasometric-AFPC IX.13.B	651	9	5.70	0.388
Other(describe)	652	9	6.98	3.821
Method Group 650		18	6.15	0.98
CaO				
Gravimetric sulfate-AFPC IX.12.A	701			
ICP-induced coupled plasma-AFPC IX.12.D	702	16	47.97	0.415
Ceric Sulfate volumetric-AFPC IX.12.B	703			
Permanganate	704	3	52.45	1.754
EDTA Volumetric-AFPC IX.12.C	705	2	48.89	0.354
Other(describe)	706	8	48.30	0.168
Method Group 700		29	48.13	0.44
CaO (on Dry Basis)				
Gravimetric sulfate-AFPC IX.12.A	711			
ICP-induced coupled plasma-AFPC IX.12.D	712	8	48.89	0.156
Ceric Sulfate volumetric-AFPC IX.12.B	713			
Permanganate	714	3	53.40	1.845
EDTA Volumetric-AFPC IX.12.C	715	2	49.21	0.556
Other(describe)	716	7	49.15	0.115
Method Group 710		20	49.00	0.25

	Method #	# of Anal.	Grand Median	Std Dev
Fluorine, F				
Volumetric-AFPC IX.14.A	801			
Specific Ion Electrode-AFPC IX.14.B	802	22	3.55	0.157
Other (describe)	803	2	3.36	0.007
Method Group 800		24	3.53	0.17
Arsenic, As				
Atomic Absorption	911	1	10.0	0.00
ICP-induced coupled plasma-AFPC IX.15.B	912	12	12.8	2.85
Other(describe)	913	1	16.2	0.00
Method Group 900		14	12.8	3.09
Cadmium, Cd				
Atomic Absorption-AFPC IX.11.A	921	1	39	0.0
ICP-induced coupled plasma-AFPC IX.11.B	922	17	45	3.7
Other(describe)	923	1	56	0.0
Method Group 910		19	45	4.2
Cobalt, Co				
Atomic Absorption-AFPC IX.16.B	931	1	8	0.0
ICP-induced coupled plasma-AFPC IX.16.A	932	12	2	0.5
Other(describe)	933	1	2	0.0
Method Group 920		14	2	0.8
Mercury, Hg				
Atomic Absorption-AFPC IX.16.B	941			
ICP-induced coupled plasma-AFPC IX.16.A	942	1	0.1	0.00
Other (describe)	943	3	82.0	30.68
Method Group 930		4	41.4	60.94
Molybdenum, Mo				
Atomic Absorption-AFPC IX.16.B	951	1	16	0.0
ICP-induced coupled plasma-AFPC IX.16.A	952	10	8	2.3
Other(describe)	953	1	14	0.0
Method Group 940		12	9	3.9
Nickel, Ni				
Atomic Absorption-AFPC IX.16.B	961	1	27	0.0
ICP-induced coupled plasma-AFPC IX.16.A	962	13	18	3.4
Other(describe)	963	1	22	0.0
Method Group 950		15	18	3.8
Lead, Pb				
Atomic Absorption-AFPC IX.16.B	971	1	12	0.0
ICP-induced coupled plasma-AFPC IX.16.A	972	14	3	1.2
Other(describe)	973	1	5	0.0
Method Group 960		16	3	1.2
Selenium, Se				
Atomic Absorption-AFPC IX.16.B	981			
ICP-induced coupled plasma-AFPC IX.16.A	982	3	1	0.8
Other(describe)	983	1	4	0.0
Method Group 970		4	2	1.8
Zinc, Zn				
Atomic Absorption-AFPC IX.16.B	991	1	355	0
ICP-induced coupled plasma-AFPC IX.16.A	992	13	362	30
Other(describe)	993	1	460	0
Method Group 980		15	362	28

101 Ground Sample AFPC IX.2.A			
Lab	%	H ₂ O	
49	2.15		-1.506
49	2.13		-1.416
Std Dev	2.01		-1.000
24	2.01		-0.986
13	2.00		-0.950
24	1.98		-0.878
77	1.94		-0.753
26	1.89		-0.574
10	1.88		-0.538
13	1.87		-0.502
26	1.86		-0.466
27	1.79		-0.215
27	1.78		-0.179
9	1.73		0.000
9	1.73		0.000
Median	1.73		0.000
77	1.69		0.143
55	1.65		0.287
52	1.62		0.394
275	1.61		0.430
15	1.56		0.627
15	1.50		0.825
30	1.47		0.932
Std Dev	1.45		1.000
275	1.40		1.183
113	1.38		1.255
266	1.20		1.900
35	0.14		5.701
35	0.12		5.772

102 Other (describe)			
Lab	%	H ₂ O	
Median	0.00		0.000

201 Gravimetric AFPC IX.3.B			
Lab	%	P2O5	
56	30.33		-2.533
Std Dev	30.12		-1.000
113	29.98		0.000
Median	29.98		0.000
77	29.96		0.147

202 ICP-induced coupled plasma AFPC IX.3.D			
Lab	%	P2O5	
266	30.55		-1.340
Std Dev	30.48		-1.000
Median	30.27		0.000
Std Dev	30.07		1.000
10	30.00		1.340

203 Photometric-AFPC IX.3.C			
Lab	%	P2O5	
35	30.77		-4.508
52	30.72		-4.258
35	30.28		-2.054
9	30.16		-1.453
Std Dev	30.07		-1.000
9	30.06		-0.952
26	30.01		-0.701
26	29.99		-0.601
51	29.95		-0.401
51	29.92		-0.250
78	29.92		-0.225
49	29.89		-0.100
45	29.87		0.000
92	29.87		0.000
Median	29.87		0.000
49	29.87		0.025
30	29.85		0.100
92	29.85		0.100
45	29.76		0.551
78	29.71		0.827
Std Dev	29.67		1.000
275	29.63		1.202
275	29.57		1.503
27	28.83		5.210
27	28.72		5.761
30	28.29		7.915

204 Automated -AOAC 978.01-15th			
Lab	%	P2O5	
15	30.08		-0.347
13	30.03		-0.063
13	30.02		0.000
15	30.02		0.000
Median	30.02		0.000

Std Dev	29.86		1.000
24	29.86		1.040
77	29.77		1.576
24	29.72		1.892

205 Other(describe)			
Lab	%	P2O5	
56	30.57		-1.340
Std Dev	30.49		-1.000
Median	30.25		0.000
Std Dev	30.00		1.000
55	29.92		1.340

211 Gravimetric AFPC IX.3.B			
Lab	%	P2O5	dB
77	30.55		-1.340
Std Dev	30.53		-1.000
Median	30.48		0.000
Std Dev	30.42		1.000
113	30.40		1.340

212 ICP-induced coupled plasma AFPC IX.3.D			
Lab	%	P2O5	dB
266	30.92		-1.340
Std Dev	30.88		-1.000
Median	30.75		0.000
Std Dev	30.61		1.000
10	30.57		1.340

213 Photometric-AFPC IX.3.C			
Lab	%	P2O5	dB
52	31.23		-1.964
Std Dev	30.88		-1.000
35	30.81		-0.782
9	30.69		-0.454
9	30.59		-0.167
26	30.59		-0.164
26	30.56		-0.080
49	30.54		-0.025
Median	30.53		0.000
49	30.52		0.025
35	30.32		0.586
30	30.30		0.663
Std Dev	30.18		1.000

275	30.05		1.344
275	30.05		1.353
27	29.36		3.316
27	29.24		3.640

214 Automated -AOAC 978.01-15th			
Lab	%	P2O5	dB
13	30.63		-1.046
Std Dev	30.63		-1.000
13	30.60		-0.826
15	30.53		-0.297
15	30.49		0.000
Median	30.49		0.000
24	30.46		0.288
Std Dev	30.36		1.000
24	30.33		1.269
77	30.28		1.623

215 Other(describe)			
Lab	%	P2O5	dB
55	30.42		0.000
Median	30.42		0.000

301 Atomic Absorption-AFPC IX.6.B			
Lab	%	Fe2O3	
Median	0.00		0.000

302 ICP-induced coupled plasma-AFPC IX.6.C			
Lab	%	Fe2O3	
35	0.70		-0.416
35	0.66		-0.231
266	0.66		-0.231
78	0.65		-0.185
15	0.64		-0.139
15	0.64		-0.139
45	0.64		-0.139
78	0.63		-0.092
92	0.62		-0.046
92	0.62		-0.046
275	0.62		-0.046
45	0.61		0.000
275	0.61		0.000
Median	0.61		0.000
51	0.58		0.139

51	0.56	0.231
24	0.55	0.277
24	0.55	0.277
52	0.46	0.693
Std Dev	0.39	1.000
9	0.35	1.201
9	0.34	1.271
13	0.31	1.386
10	0.30	1.432
49	0.29	1.479
49	0.29	1.479
13	0.29	1.502

303 Other(describe)		
Lab	%	Fe2O3
77	0.67	-1.398
Std Dev	0.65	-1.000
77	0.63	-0.466
Median	0.61	0.000
56	0.59	0.466
Std Dev	0.57	1.000
55	0.56	1.165

401 Atomic Absorption-AFPC IX.6.B		
Lab	%	Al2O3
Median	0.00	0.000

402 ICP-induced coupled plasma-AFPC IX.6.C		
Lab	%	Al2O3
35	0.42	-2.010
266	0.41	-1.787
92	0.38	-1.117
78	0.38	-1.005
Std Dev	0.37	-1.000
35	0.37	-0.893
92	0.37	-0.893
78	0.37	-0.782
49	0.34	-0.223
9	0.34	-0.112
9	0.33	0.000
24	0.33	0.000
45	0.33	0.000
51	0.33	0.000
275	0.33	0.000

275	0.33	0.000
Median	0.33	0.000
24	0.32	0.223
15	0.32	0.335
45	0.31	0.447
15	0.31	0.558
49	0.31	0.558
51	0.30	0.670
10	0.30	0.782
52	0.29	0.893
Std Dev	0.29	1.000
13	0.28	1.228
13	0.28	1.228

403 Other(describe)		
Lab	%	Al2O3
77	0.43	-1.631
Std Dev	0.40	-1.000
77	0.38	-0.466
Median	0.36	0.000
55	0.34	0.466
56	0.32	0.932

501 Atomic Absorption-AFPC IX.8.A		
Lab	%	MgO
27	0.61	-0.766
35	0.59	0.000
Median	0.59	0.000
Std Dev	0.56	1.000
27	0.54	1.914

502 ICP-induced coupled plasma-AFPC IX.8.B		
Lab	%	MgO
13	0.64	-2.978
13	0.64	-2.978
92	0.64	-2.978
45	0.63	-2.382
49	0.62	-1.787
92	0.61	-1.191
Std Dev	0.61	-1.000
15	0.60	-0.596
15	0.60	-0.596
45	0.60	-0.596
45	0.60	-0.596
49	0.60	-0.596

10	0.59	0.000
24	0.59	0.000
266	0.59	0.000
Median	0.59	0.000
9	0.59	0.298
9	0.59	0.298
24	0.59	0.298
78	0.59	0.298
78	0.58	0.893
Std Dev	0.57	1.000
35	0.56	1.787
51	0.56	1.787
51	0.54	2.978
52	0.40	11.316

503 Other(describe)		
Lab	%	MgO
77	0.67	-1.269
Std Dev	0.65	-1.000
77	0.62	-0.564
Median	0.58	0.000
55	0.54	0.564
56	0.53	0.705

601 Insoluble-AFPC IX.4.A		
Lab	%	Al
45	2.46	-2.847
45	2.01	-1.080
Std Dev	1.99	-1.000
15	1.99	-0.982
15	1.95	-0.825
55	1.84	-0.412
49	1.81	-0.295
10	1.77	-0.137
13	1.77	-0.118
51	1.76	-0.098
9	1.74	0.000
13	1.74	0.000
Median	1.74	0.000
9	1.71	0.098
51	1.69	0.177
49	1.68	0.236
Std Dev	1.48	1.000
24	1.48	1.001

24	1.47	1.060
35	1.29	1.747
35	1.26	1.865
26	1.19	2.140
26	1.14	2.336

602 Other(describe)		
Lab	%	Al
266	1.28	0.000
Median	1.28	0.000

651 Gasometric-AFPC IX.13.B		
Lab	%	CO2
24	6.33	-1.636
24	6.23	-1.379
15	6.15	-1.173
15	6.15	-1.173
Std Dev	6.08	-1.000
49	5.70	0.000
Median	5.70	0.000
30	5.65	0.116
13	5.63	0.167
13	5.62	0.193
49	5.47	0.580

652 Other(describe)		
Lab	%	CO2
78	12.24	-1.375
78	12.13	-1.347
35	11.07	-1.070
35	11.01	-1.055
Std Dev	10.80	-1.000
51	6.98	0.000
Median	6.98	0.000
51	6.87	0.029
55	5.95	0.270
266	5.59	0.364
56	5.50	0.387

701 Gravimetric sulfate-AFPC IX.12.A		
Lab	%	CaO
Median	0.00	0.000

702 ICP-induced coupled plasma-AFPC IX.12.D			
Lab	%	CaO	
78	49.71		-4.180
45	48.99		-2.457
92	48.53		-1.349
92	48.48		-1.229
Std Dev	48.39		-1.000
49	48.12		-0.349
10	48.03		-0.132
13	48.01		-0.096
9	48.01		-0.084
Median	47.97		0.000
9	47.94		0.084
49	47.90		0.181
13	47.74		0.554
51	47.68		0.699
51	47.56		0.988
Std Dev	47.55		1.000
78	47.55		1.012
35	46.60		3.300
45	46.46		3.638

703 Ceric Sulfate volumetric-AFPC IX.12.B			
Lab	%	CaO	
Median	0.00		0.000

704 Permanganate			
Lab	%	CaO	
27	52.50		-0.029
27	52.45		0.000
Median	52.45		0.000
Std Dev	50.70		1.000
30	47.80		2.651

705 EDTA Volumetric-AFPC IX.12.C			
Lab	%	CaO	
266	49.36		-1.340
Std Dev	49.24		-1.000
Median	48.89		0.000
Std Dev	48.53		1.000
35	48.41		1.340

706 Other(describe)			
Lab	%	CaO	

56	48.76		-2.740
Std Dev	48.47		-1.000
15	48.42		-0.685
15	48.41		-0.625
77	48.40		-0.596
Median	48.30		0.000
24	48.20		0.596
55	48.20		0.596
Std Dev	48.13		1.000
77	48.13		1.012
24	48.04		1.548

711 Gravimetric sulfate-AFPC IX.12.A			
Lab	%	CaO	dB
Median	0.00		0.000

712 ICP-induced coupled plasma-AFPC IX.12.D			
Lab	%	CaO	dB
49	49.17		-1.792
Std Dev	49.05		-1.000
13	48.99		-0.608
10	48.95		-0.338
49	48.93		-0.272
Median	48.89		0.000
9	48.85		0.272
9	48.78		0.728
Std Dev	48.74		1.000
13	48.65		1.555
35	46.67		14.272

713 Ceric Sulfate volumetric-AFPC IX.12.B			
Lab	%	CaO	dB
Median	0.00		0.000

714 Permanganate			
Lab	%	CaO	dB
27	53.46		-0.031
27	53.40		0.000
Median	53.40		0.000
Std Dev	51.56		1.000
30	48.51		2.649

715 EDTA Volumetric-AFPC IX.12.C			
Lab	%	CaO	dB

266	49.96		-1.340
Std Dev	49.77		-1.000
Median	49.21		0.000
Std Dev	48.66		1.000
35	48.47		1.340

716 Other(describe)			
Lab	%	CaO	dB
77	49.36		-1.779
Std Dev	49.27		-1.000
24	49.17		-0.163
15	49.17		-0.150
15	49.15		0.000
Median	49.15		0.000
Std Dev	49.04		1.000
24	49.02		1.121
55	49.01		1.245
77	48.96		1.690

801 Volumetric-AFPC IX.14.A			
Lab	%	Fluorine, F	
Median	0.00		0.000

802 Specific Ion Electrode-AFPC IX.14.B			
Lab	%	Fluorine, F	
49	3.92		-2.361
49	3.89		-2.170
52	3.80		-1.627
Std Dev	3.70		-1.000
15	3.69		-0.925
15	3.66		-0.702
24	3.63		-0.542
9	3.60		-0.319
24	3.59		-0.287
9	3.59		-0.255
26	3.56		-0.096
26	3.55		-0.032
Median	3.55		0.000
30	3.54		0.032
51	3.52		0.160
13	3.50		0.287
51	3.50		0.287
13	3.45		0.638
266	3.40		0.925

Std Dev	3.39		1.000
35	3.37		1.117
55	3.36		1.180
35	3.30		1.563
27	3.24		1.946
27	2.93		3.924

803 Other(describe)			
Lab	%	Fluorine, F	
77	3.37		-1.340
Std Dev	3.37		-1.000
Median	3.36		0.000
Std Dev	3.35		1.000
77	3.35		1.340

911 Atomic Absorption-AFPC			
Lab	ppm	Arsenic, As	
55	10.0		0.000
Median	10.0		0.000

912 ICP-induced coupled plasma-AFPC IX.15.I			
Lab	ppm	Arsenic, As	
24	16.0		-1.142
18	15.8		-1.072
24	15.8		-1.072
18	15.7		-1.019
Std Dev	15.6		-1.000
35	15.0		-0.791
35	13.0		-0.088
Median	12.8		0.000
78	12.5		0.088
78	12.5		0.088
51	12.0		0.264
266	11.5		0.439
51	11.0		0.615
52	10.4		0.826

913 Other(describe)			
Lab	ppm	Arsenic, As	
13	16.2		0.000
Median	16.2		0.000

921 Atomic Absorption-AFPC IX.11.A			
Lab	ppm	Cadmium, Cd	

55	39	0.000
Median	39	0.000

922	ICP-induced coupled plasma-AFPC IX.11.B	
Lab	ppm	Cadmium, Cd

78	84	-10.583
77	52	-1.889
266	51	-1.729
Std Dev	49	-1.000
78	48	-0.915
52	48	-0.817
18	47	-0.482
18	47	-0.429
24	46	-0.147
24	45	0.000
Median	45	0.000
275	44	0.244
35	43	0.523
35	43	0.523
51	43	0.523
275	42	0.764
Std Dev	41	1.000
51	41	1.059
45	40	1.327
45	40	1.327

923	Other(describe)	
Lab	ppm	Cadmium, Cd

13	56	0.000
Median	56	0.000

931	Atomic Absorption-AFPC IX.16.B	
Lab	ppm	Cobalt, Co

55	8	0.000
Median	8	0.000

932	ICP-induced coupled plasma-AFPC IX.16.A	
Lab	ppm	Cobalt, Co

78	4	-3.970
78	4	-3.970
35	3	-1.985
Std Dev	3	-1.000
266	2	-0.596
35	2	0.000

45	2	0.000
45	2	0.000
Median	2	0.000

24	2	0.298
18	2	0.397
18	2	0.397
Std Dev	1	1.000
24	1	1.985
77	1	1.985

933	Other(describe)	
Lab	ppm	Cobalt, Co

13	2	0.000
Median	2	0.000

941	Atomic Absorption-AFPC IX.16.B	
Lab	ppm	Mercury, Hg

Median	0.0	0.000
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942	ICP-induced coupled plasma-AFPC IX.16.A	
Lab	ppm	Mercury, Hg

266	0.1	0.000
Median	0.1	0.000

943	Other(describe)	
Lab	ppm	Mercury, Hg

24	83.0	-0.033
24	82.0	0.000
Median	82.0	0.000
Std Dev	51.3	1.000
13	0.8	2.647

951	Atomic Absorption-AFPC IX.16.B	
Lab	ppm	Molybdenum, Mo

55	16	0.000
Median	16	0.000

952	ICP-induced coupled plasma-AFPC IX.16.A	
Lab	ppm	Molybdenum, Mo

45	12	-1.581
45	12	-1.581
Std Dev	11	-1.000
24	9	-0.462
266	9	-0.445

24	9	-0.398
Median	8	0.000
78	7	0.398
78	7	0.527
Std Dev	6	1.000
77	6	1.000
18	4	2.011
18	4	2.076

953	Other(describe)	
Lab	ppm	Molybdenum, Mo

13	14	0.000
Median	14	0.000

961	Atomic Absorption-AFPC IX.16.B	
Lab	ppm	Nickel, Ni

55	27	0.000
Median	27	0.000

962	ICP-induced coupled plasma-AFPC IX.16.A	
Lab	ppm	Nickel, Ni

35	29	-3.261
35	25	-2.070
Std Dev	21	-1.000
78	21	-0.878
78	20	-0.581
18	18	-0.104
18	18	-0.045
24	18	0.000
Median	18	0.000
77	18	0.015
24	18	0.089
52	16	0.759
45	15	0.908
45	15	0.908
Std Dev	15	1.000
266	14	1.176

963	Other(describe)	
Lab	ppm	Nickel, Ni

13	22	0.000
Median	22	0.000

971	Atomic Absorption-AFPC IX.16.B	
Lab	ppm	Lead, Pb
55	12	0.000
Median	12	0.000

972	ICP-induced coupled plasma-AFPC IX.16.A	
Lab	ppm	Lead, Pb

18	4	-1.056
Std Dev	4	-1.000
266	4	-0.812
18	4	-0.772
35	4	-0.731
51	4	-0.731
275	3	-0.244
275	3	-0.081
Median	3	0.000
35	3	0.081
51	3	0.081
77	3	0.487
78	2	0.650
78	2	0.975
Std Dev	2	1.000
24	2	1.096
24	2	1.178

973	Other(describe)	
Lab	ppm	Lead, Pb

13	5	0.000
Median	5	0.000

981	Atomic Absorption-AFPC IX.16.B	
Lab	ppm	Selenium, Se

Median	0	0.000
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982	ICP-induced coupled plasma-AFPC IX.16.A	
Lab	ppm	Selenium, Se

266	3	-2.674
Std Dev	2	-1.000
18	1	0.000
Median	1	0.000
18	1	0.006

983	Other(describe)	
Lab	ppm	Selenium, Se

13	4	0.000
Median	4	0.000

991 Atomic Absorption-AFPC IX.16.B		
Lab	ppm	Zinc, Zn
55	355	0.000
Median	355	0.000

992 ICP-induced coupled plasma-AFPC IX.16.A		
Lab	ppm	Zinc, Zn
24	437	-2.491
24	430	-2.256
Std Dev	392	-1.000
77	374	-0.397
78	373	-0.347
18	370	-0.265
18	367	-0.149
52	362	0.000
Median	362	0.000
78	361	0.033
35	339	0.761
35	332	0.993
Std Dev	332	1.000
266	320	1.390
45	307	1.820
45	304	1.919

993 Other(describe)		
Lab	ppm	Zinc, Zn
13	460	0.000
Median	460	0.000