

AFPC Rock Check Program

Sample No. 2008-11

	Method #	# of Anal.	Grand Median	Std Dev
Moisture				
Ground Sample AFPC 9-2	101	20	0.69	0.079
Other (describe)	102	8	0.64	0.075
Method Group 100		28	0.67	0.07
BPL or P₂O₅				
Gravimetric AFPC 9-5	201	5	29.03	0.194
ICP-induced coupled plasma	202	3	29.15	0.022
Photometric-AFPC 9-6	203	13	29.09	0.302
Automated -AOAC 978.01-15th	204	12	29.15	0.140
Other(describe)	205	4	28.97	0.142
Method Group 200		37	29.09	0.16
BPL or P₂O₅ (on Dry Basis)				
Gravimetric AFPC 9-5	211	3	29.17	0.037
ICP-induced coupled plasma	212	3	29.34	0.058
Photometric-AFPC 9-6	213	7	29.29	0.286
Automated -AOAC 978.01-15th	214	12	29.33	0.173
Other(describe)	215	2	29.37	0.123
Method Group 210		27	29.32	0.19
Fe₂O₃				
Atomic Absorption-AFPC 9-12,13	301	6	0.58	0.117
ICP-induced coupled plasma	302	29	0.53	0.022
Other(describe)	303			
Method Group 300		35	0.53	0.03
Al₂O₃				
Atomic Absorption-AFPC 9-16,17	401	5	0.82	0.146
ICP-induced coupled plasma	402	28	0.84	0.162
Other(describe)	403			
Method Group 400		33	0.82	0.17
MgO				
Atomic Absorption-AFPC 9-18,19	501	7	0.39	0.058
ICP-induced coupled plasma	502	27	0.37	0.015
Other(describe)	503	1	0.29	0.000
Method Group 500		35	0.37	0.02
Acid Insoluble				
Insoluble-AFPC 9-8	601	21	12.97	0.239
Other(describe)	602	1	13.03	0.000
Method Group 600		22	12.99	0.23
CaO				
Gravimetric sulfate	701			
ICP-induced coupled plasma	702	14	43.22	0.637
Ceric Sulfate volumetric	703			
Permanganate	704	6	42.95	0.614
EDTA Volumetric	705	7	43.19	0.996
Other(describe)	706	7	43.21	0.522
Method Group 700		34	43.14	0.67
CaO (on Dry Basis)				
Gravimetric sulfate	711			
ICP-induced coupled plasma	712	11	43.41	0.475
Ceric Sulfate volumetric	713			
Permanganate	714	4	43.20	0.345
EDTA Volumetric	715	6	43.35	0.533
Other(describe)	716	7	43.50	0.524
Method Group 710		28	43.37	0.55

	Method #	# of Anal.	Grand Median	Std Dev
Fluorine, F				
Volumetric-AFPC 9-37	801	1	3.24	0.000
Specific Ion Electrode	802	22	3.04	0.137
Other (describe)	803	2	3.01	0.015
Method Group 800		25	3.03	0.12
Arsenic, As				
Atomic Absorption	911	1	1.0	0.00
ICP-induced coupled plasma	912	8	12.8	5.27
Other(describe)	913	3	8.4	1.69
Method Group 900		12	10.4	4.22
Cadmium, Cd				
Atomic Absorption	921	2	96	4.9
ICP-induced coupled plasma	922	11	90	3.9
Other(describe)	923	2	93	0.1
Method Group 910		15	91	2.9
Cobalt, Co				
Atomic Absorption	931	1	13	0.0
ICP-induced coupled plasma	932	12	1	0.5
Other(describe)	933	2	2	0.0
Method Group 920		15	2	0.7
Mercury, Hg				
Atomic Absorption	941			
ICP-induced coupled plasma	942	1	0.5	0.00
Other(describe)	943	1	0.2	0.00
Method Group 930		2	0.3	0.12
Molybdenum, Mo				
Atomic Absorption	951			
ICP-induced coupled plasma	952	9	9	1.2
Other(describe)	953	2	11	1.5
Method Group 940		11	9	2.2
Nickel, Ni				
Atomic Absorption	961	2	106	14.2
ICP-induced coupled plasma	962	13	83	9.3
Other(describe)	963	2	91	1.9
Method Group 950		17	87	10.1
Lead, Pb				
Atomic Absorption	971	2	8	0.4
ICP-induced coupled plasma	972	9	9	1.7
Other(describe)	973	1	5	0.0
Method Group 960		12	8	2.0
Selenium, Se				
Atomic Absorption	981			
ICP-induced coupled plasma	982	4	16	0.7
Other(describe)	983	1	15	0.0
Method Group 970		5	16	1.4
Zinc, Zn				
Atomic Absorption	991	2	817	17
ICP-induced coupled plasma	992	14	792	31
Other(describe)	993	2	776	3
Method Group 980		18	792	29

101 Ground Sample AFPC 9-2			
Lab	%	H ₂ O	
27	0.89	-2.522	
13	0.86	-2.207	
Std Dev	0.76	-1.000	
16	0.74	-0.694	
24	0.73	-0.568	
10	0.73	-0.504	
16	0.72	-0.441	
10	0.72	-0.378	
24	0.71	-0.315	
13	0.69	-0.063	
15	0.69	0.000	
15	0.69	0.000	
Median	0.69	0.000	
6	0.68	0.063	
49	0.68	0.063	
75	0.66	0.378	
75	0.62	0.883	
75	0.62	0.883	
Std Dev	0.61	1.000	
35	0.52	2.081	
30	0.49	2.459	
77	0.49	2.459	
77	0.35	4.225	

102 Other (describe)			
Lab	%	H ₂ O	
9	0.70	-0.737	
9	0.66	-0.268	
21	0.66	-0.268	
21	0.64	0.000	
55	0.64	0.000	
Median	0.64	0.000	
51	0.63	0.134	
Std Dev	0.57	1.000	
55	0.35	3.886	
241	0.29	4.690	

201 Gravimetric AFPC 9-5			
Lab	%	P2O5	
51	29.06	-0.155	
241	29.06	-0.155	
77	29.03	0.000	

Median	29.03	0.000	
Std Dev	28.84	1.000	
50	28.80	1.185	
26	28.80	1.211	

202 ICP-induced coupled plasma			
Lab	%	P2O5	
10	29.20	-2.010	
Std Dev	29.17	-1.000	
55	29.15	0.000	
Median	29.15	0.000	
10	29.14	0.670	

203 Photometric-AFPC 9-6			
Lab	%	P2O5	
36	32.39	-10.919	
Std Dev	29.39	-1.000	
30	29.34	-0.827	
16	29.23	-0.447	
16	29.21	-0.380	
78	29.17	-0.265	
60	29.15	-0.199	
78	29.09	0.000	
Median	29.09	0.000	
9	29.09	0.017	
9	28.95	0.463	
35	28.80	0.960	
Std Dev	28.79	1.000	
244	28.74	1.158	
270	28.67	1.390	
27	28.50	1.969	

244	28.74	1.158	
270	28.67	1.390	
27	28.50	1.969	

204 Automated -AOAC 978.01-15th			
Lab	%	P2O5	
15	29.53	-2.698	
15	29.52	-2.626	
Std Dev	29.29	-1.000	
13	29.27	-0.875	
13	29.17	-0.161	
75	29.15	-0.018	
75	29.15	-0.018	
Median	29.15	0.000	
24	29.15	0.018	
21	29.13	0.125	

6	29.02	0.911	
Std Dev	29.01	1.000	
77	28.97	1.269	
21	28.95	1.411	
24	28.95	1.411	

205 Other(describe)			
Lab	%	P2O5	
55	29.35	-2.680	
Std Dev	29.11	-1.000	
49	29.01	-0.282	
Median	28.97	0.000	
244	28.93	0.282	
51	28.83	0.987	

211 Gravimetric AFPC 9-5			
Lab	%	P2O5	dB
51	29.24	-1.916	
Std Dev	29.21	-1.000	
77	29.17	0.000	
Median	29.17	0.000	
241	29.14	0.764	

212 ICP-induced coupled plasma			
Lab	%	P2O5	dB
10	29.41	-1.090	
Std Dev	29.40	-1.000	
10	29.34	0.000	
Median	29.34	0.000	
Std Dev	29.29	1.000	
55	29.25	1.590	

213 Photometric-AFPC 9-6			
Lab	%	P2O5	dB
30	29.48	-0.685	
16	29.44	-0.539	
16	29.42	-0.448	
9	29.29	0.000	
Median	29.29	0.000	
9	29.14	0.511	
Std Dev	29.00	1.000	
35	28.95	1.181	
27	28.75	1.884	

214 Automated -AOAC 978.01-15th			
Lab	%	P2O5	dB
15	29.73	-2.297	
15	29.72	-2.239	
Std Dev	29.50	-1.000	
13	29.47	-0.825	
13	29.42	-0.534	
24	29.36	-0.167	
75	29.33	0.000	
75	29.33	0.000	
Median	29.33	0.000	
21	29.32	0.039	
6	29.22	0.644	
24	29.16	1.000	
Std Dev	29.16	1.000	
21	29.14	1.118	
77	29.07	1.492	

215 Other(describe)			
Lab	%	P2O5	dB
55	29.54	-1.340	
Std Dev	29.50	-1.000	
Median	29.37	0.000	
Std Dev	29.25	1.000	
49	29.21	1.340	

301 Atomic Absorption-AFPC 9-12,13			
Lab	%	Fe2O3	
30	0.67	-0.750	
27	0.63	-0.407	
241	0.61	-0.236	
Median	0.58	0.000	
55	0.56	0.236	
Std Dev	0.47	1.000	
51	0.44	1.222	
60	0.44	1.222	

302 ICP-induced coupled plasma			
Lab	%	Fe2O3	
35	1.46	-41.540	
77	0.59	-2.680	
77	0.58	-2.233	
55	0.57	-1.563	
78	0.57	-1.563	

Std Dev	0.55	-1.000
78	0.55	-0.893
6	0.54	-0.447
15	0.54	-0.447
51	0.54	-0.447
75	0.54	-0.385
50	0.54	-0.384
9	0.53	0.000
15	0.53	0.000
49	0.53	0.000
270	0.53	0.000
Median	0.53	0.000
75	0.52	0.417
75	0.52	0.417
9	0.52	0.670
10	0.52	0.670
26	0.52	0.670
10	0.51	0.893
13	0.51	0.893
16	0.51	0.893
Std Dev	0.51	1.000
13	0.50	1.340
16	0.50	1.340
24	0.49	1.787
24	0.49	1.787
21	0.45	3.573
21	0.44	4.020

303 Other(describe)			
Lab	%	Fe2O3	
Median	0.00		0.000

401 Atomic Absorption-AFPC 9-16,17			
Lab	%	Al2O3	
30	1.07		-1.718
51	1.01		-1.306
Std Dev	0.97		-1.000
241	0.82		0.000
Median	0.82		0.000
55	0.82		0.034
27	0.78		0.309

402 ICP-induced coupled plasma			
Lab	%	Al2O3	

78	1.72	-5.423
78	1.70	-5.299
77	1.54	-4.310
77	1.51	-4.125
51	1.10	-1.591
Std Dev	1.00	-1.000
21	0.95	-0.664
270	0.95	-0.664
35	0.93	-0.541
15	0.90	-0.324
15	0.90	-0.324
21	0.89	-0.294
9	0.88	-0.232
6	0.87	-0.170
26	0.87	-0.139
Median	0.84	0.000
9	0.82	0.139
55	0.82	0.139
75	0.80	0.236
24	0.77	0.479
24	0.75	0.572
75	0.72	0.741
75	0.72	0.741
16	0.71	0.850
16	0.69	0.942
49	0.69	0.942
Std Dev	0.68	1.000
10	0.68	1.004
10	0.67	1.097
13	0.65	1.190
13	0.57	1.684

403 Other(describe)			
Lab	%	Al2O3	
Median	0.00		0.000

501 Atomic Absorption-AFPC 9-18,19			
Lab	%	MgO	
35	0.99		-10.374
36	0.50		-1.902
Std Dev	0.45		-1.000
27	0.40		-0.086
30	0.39		0.000
55	0.39		0.000

Median	0.39	0.000
51	0.35	0.692
Std Dev	0.33	1.000
60	0.33	1.124

502 ICP-induced coupled plasma			
Lab	%	MgO	
78	0.40		-2.010
9	0.39		-1.340
78	0.39		-1.340
55	0.39		-1.005
Std Dev	0.38		-1.000
9	0.38		-0.670
13	0.38		-0.670
13	0.38		-0.670
15	0.38		-0.670
15	0.38		-0.670
24	0.38		-0.335
6	0.37		0.000
24	0.37		0.000
49	0.37		0.000
51	0.37		0.000
Median	0.37		0.000
26	0.37		0.335
50	0.36		0.436
10	0.36		0.670
16	0.36		0.670
16	0.36		0.670
77	0.36		0.670
77	0.36		0.670
Std Dev	0.36		1.000
10	0.36		1.005
21	0.35		1.340
75	0.34		1.723
21	0.34		2.010
75	0.33		2.945
75	0.33		2.945

503 Other(describe)			
Lab	%	MgO	
270	0.29		0.000
Median	0.29		0.000

601 Insoluble-AFPC 9-8			
Lab	%	Al	
55	16.70		-15.640
55	16.55		-15.012
15	15.90		-12.269
15	15.87		-12.165
16	13.23		-1.110
Std Dev	13.20		-1.000
21	13.18		-0.900
26	13.14		-0.733
27	13.10		-0.544
13	13.07		-0.440
16	13.01		-0.188
24	12.97		0.000
Median	12.97		0.000
9	12.95		0.063
51	12.92		0.188
13	12.90		0.272
9	12.89		0.314
21	12.86		0.440
24	12.86		0.440
10	12.81		0.649
10	12.76		0.858
Std Dev	12.73		1.000
30	12.47		2.073
35	10.63		9.778

602 Other(describe)			
Lab	%	Al	
6	13.03		0.000
Median	13.03		0.000

701 Gravimetric sulfate			
Lab	%	CaO	
Median	0.00		0.000

702 ICP-induced coupled plasma			
Lab	%	CaO	
75	44.25		-1.619
Std Dev	43.86		-1.000
78	43.84		-0.969
78	43.72		-0.781
75	43.69		-0.740
75	43.69		-0.740

49	43.38	-0.247
6	43.35	-0.200
Median	43.22	0.000
16	43.10	0.200
10	42.94	0.443
10	42.93	0.459
16	42.81	0.647
50	42.74	0.757
77	42.60	0.977
77	42.60	0.977

703 Ceric Sulfate volumetric		
Lab	%	CaO
Median	0.00	0.000

704 Permanganate		
Lab	%	CaO
26	45.33	-3.877
30	43.82	-1.417
Std Dev	43.56	-1.000
21	43.05	-0.163
Median	42.95	0.000
60	42.85	0.163
21	42.79	0.261
27	42.62	0.546

705 EDTA Volumetric		
Lab	%	CaO
270	45.99	-2.816
35	44.85	-1.671
Std Dev	44.18	-1.000
51	43.46	-0.276
9	43.19	0.000
Median	43.19	0.000
9	42.93	0.261
55	42.72	0.472
55	42.45	0.738

706 Other(describe)		
Lab	%	CaO
241	49.00	-11.093
Std Dev	43.73	-1.000
24	43.52	-0.593
24	43.48	-0.526

15	43.21	0.000
Median	43.21	0.000
15	42.89	0.613
13	42.71	0.948
Std Dev	42.68	1.000
13	42.67	1.024

711 Gravimetric sulfate			
Lab	%	CaO	dB
Median	0.00	0.000	

712 ICP-induced coupled plasma			
Lab	%	CaO	dB
75	44.55	-2.396	
75	43.96	-1.172	
75	43.96	-1.172	
Std Dev	43.88	-1.000	
49	43.68	-0.567	
6	43.65	-0.504	
16	43.41	0.000	
Median	43.41	0.000	
10	43.25	0.324	
10	43.24	0.354	
16	43.13	0.586	
Std Dev	42.93	1.000	
77	42.81	1.258	
77	42.75	1.385	

713 Ceric Sulfate volumetric			
Lab	%	CaO	dB
Median	0.00	0.000	

714 Permanganate			
Lab	%	CaO	dB
30	44.04	-2.417	
Std Dev	43.55	-1.000	
21	43.34	-0.391	
Median	43.20	0.000	
21	43.07	0.391	
27	43.00	0.594	
26			

715 EDTA Volumetric			
Lab	%	CaO	dB

35	45.08	-3.255
Std Dev	43.88	-1.000
51	43.74	-0.726
9	43.47	-0.231
Median	43.35	0.000
9	43.23	0.231
55	42.87	0.907
Std Dev	42.82	1.000
55	42.72	1.173

716 Other(describe)			
Lab	%	CaO	dB
241	49.14	-10.757	
Std Dev	44.03	-1.000	
24	43.83	-0.633	
24	43.79	-0.549	
15	43.50	0.000	
Median	43.50	0.000	
15	43.18	0.615	
13	43.04	0.883	
13	43.01	0.947	

801 Volumetric-AFPC 9-37			
Lab	%	Fluorine, F	
30	3.24	0.000	
Median	3.24	0.000	

802 Specific Ion Electrode			
Lab	%	Fluorine, F	
35	3.48	-3.190	
21	3.33	-2.097	
36	3.32	-2.024	
Std Dev	3.18	-1.000	
15	3.14	-0.711	
51	3.11	-0.492	
15	3.11	-0.456	
21	3.10	-0.419	
55	3.10	-0.383	
9	3.08	-0.237	
9	3.07	-0.201	
49	3.06	-0.128	
Median	3.04	0.000	
24	3.03	0.128	
55	3.00	0.310	

24	2.95	0.675
75	2.95	0.675
270	2.95	0.675
13	2.91	0.966
Std Dev	2.91	1.000
13	2.90	1.039
6	2.88	1.185
75	2.88	1.185
75	2.88	1.185
27	2.82	1.623

803 Other(describe)		
Lab	%	Fluorine, F
77	3.03	-1.340
Std Dev	3.02	-1.000
Median	3.01	0.000
Std Dev	3.00	1.000
77	2.99	1.340

911 Atomic Absorption-AFPC 9-18,19			
Lab	ppm	Arsenic, As	
27	1.0	0.000	
Median	1.0	0.000	

912 ICP-induced coupled plasma		
Lab	ppm	Arsenic, As
78	24.5	-2.223
78	22.5	-1.844
Std Dev	18.1	-1.000
6	17.0	-0.800
55	13.1	-0.054
Median	12.8	0.000
270	12.5	0.054
55	12.3	0.101
77	8.5	0.813
24	8.4	0.841

913 Other(describe)		
Lab	ppm	Arsenic, As
13	8.5	-0.083
77	8.4	0.000
Median	8.4	0.000
Std Dev	6.7	1.000
51	4.0	2.597

921 Atomic Absorption-AFPC 9-12,13			
Lab	ppm	Cadmium, Cd	
27	102		-1.340
Std Dev	100		-1.000
Median	96		0.000
Std Dev	91		1.000
51	89		1.340

922 ICP-induced coupled plasma			
Lab	ppm	Cadmium, Cd	
78	94		-1.100
Std Dev	93		-1.000
55	93		-0.906
6	93		-0.854
78	93		-0.790
55	91		-0.427
75	90		0.000
Median	90		0.000
77	89		0.129
77	89		0.129
75	86		0.906
75	86		0.906
Std Dev	86		1.000
270	78		3.017

923 Other(describe)			
Lab	ppm	Cadmium, Cd	
51	93		-1.340
Std Dev	93		-1.000
Median	93		0.000
Std Dev	93		1.000
13	93		1.340

931 Atomic Absorption-AFPC 9-16,17			
Lab	ppm	Cobalt, Co	
27	13		0.000
Median	13		0.000

932 ICP-induced coupled plasma			
Lab	ppm	Cobalt, Co	
6	2		-2.561
77	2		-1.687
55	2		-1.191

Std Dev	2		-1.000
55	2		-0.993
50	2		-0.735
270	1		-0.298
Median	1		0.000
75	1		0.298
75	1		0.298
75	1		0.298
77	1		0.298
78	1		0.298
78	1		0.298

933 Other(describe)			
Lab	ppm	Cobalt, Co	
51	2		-1.340
Std Dev	2		-1.000
Median	2		0.000
Std Dev	2		1.000
13	2		1.340

941 Atomic Absorption-AFPC 9-18,19			
Lab	ppm	Mercury, Hg	
Median	0.0		0.000

942 ICP-induced coupled plasma			
Lab	ppm	Mercury, Hg	
270	0.5		0.000
Median	0.5		0.000

943 Other(describe)			
Lab	ppm	Mercury, Hg	
13	0.2		0.000
Median	0.2		0.000

951 Atomic Absorption-AFPC 9-18,19			
Lab	ppm	Molybdenum, Mo	
Median	0		0.000

952 ICP-induced coupled plasma			
Lab	ppm	Molybdenum, Mo	
78	14		-3.811
78	12		-2.596
Std Dev	10		-1.000
6	10		-0.377

50	9		-0.226
55	9		0.000
Median	9		0.000
77	8		0.963
270	8		0.963
Std Dev	8		1.000
77	7		1.801
55	7		2.178

953 Other(describe)			
Lab	ppm	Molybdenum, Mo	
51	13		-1.340
Std Dev	13		-1.000
Median	11		0.000
Std Dev	10		1.000
13	9		1.340

961 Atomic Absorption-AFPC 9-12,13			
Lab	ppm	Nickel, Ni	
27	125		-1.340
Std Dev	120		-1.000
Median	106		0.000
Std Dev	92		1.000
51	87		1.340

962 ICP-induced coupled plasma			
Lab	ppm	Nickel, Ni	
6	94		-1.179
55	93		-1.072
78	93		-1.072
Std Dev	92		-1.000
78	92		-0.965
55	89		-0.718
270	87		-0.482
75	83		0.000
Median	83		0.000
	83		0.000
75	79		0.375
75	79		0.375
Std Dev	73		1.000
77	73		1.018
77	71		1.233
26	38		4.770

963 Other(describe)			
Lab	ppm	Nickel, Ni	
51	93		-1.340
Std Dev	92		-1.000
Median	91		0.000
Std Dev	89		1.000
13	88		1.340

971 Atomic Absorption-AFPC 9-16,17			
Lab	ppm	Lead, Pb	
51	8		-1.340
Std Dev	8		-1.000
Median	8		0.000
Std Dev	7		1.000
27	7		1.340

972 ICP-induced coupled plasma			
Lab	ppm	Lead, Pb	
6	12		-1.923
26	11		-1.165
78	11		-1.165
Std Dev	10		-1.000
270	9		-0.291
78	9		0.000
Median	9		0.000
55	8		0.117
55	8		0.175
Std Dev	7		1.000
77	6		1.457
77	5		2.039

973 Other(describe)			
Lab	ppm	Lead, Pb	
13	5		0.000
Median	5		0.000

981 Atomic Absorption-AFPC 9-18,19			
Lab	ppm	Selenium, Se	
Median	0		0.000

982 ICP-induced coupled plasma			
Lab	ppm	Selenium, Se	
55	16		-0.344
55	16		-0.344

Median	16	0.000
6	16	0.344
Std Dev	15	1.000
270	14	2.955

983 Other(describe)		
Lab	ppm	Selenium, Se
13	15	0.000
Median	15	0.000

991 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Zinc, Zn
27	840	-1.340
Std Dev	834	-1.000
Median	817	0.000
Std Dev	800	1.000
60	794	1.340

992 ICP-induced coupled plasma		
Lab	ppm	Zinc, Zn
270	1127	-10.949
55	842	-1.649
Std Dev	823	-1.000
55	809	-0.556
6	806	-0.458
78	806	-0.458
78	802	-0.310
75	792	0.000
Median	792	0.000
	792	0.000
50	788	0.137
75	765	0.882
75	765	0.882
Std Dev	761	1.000
77	655	4.478
77	635	5.131
26	0	25.884

993 Other(describe)		
Lab	ppm	Zinc, Zn
51	780	-1.340
Std Dev	779	-1.000
Median	776	0.000
Std Dev	773	1.000
13	772	1.340