

AFPC Rock Check Program

Sample No. 2009-08

	Method #	# of Anal.	Grand Median	Std Dev
Moisture				
Ground Sample AFPC 9-2	101	17	0.17	0.082
Other (describe)	102	8	0.19	0.083
Method Group 100		25	0.18	0.08
BPL or P₂O₅				
Gravimetric AFPC 9-5	201	3	29.92	0.086
ICP-induced coupled plasma	202	4	29.78	0.051
Photometric-AFPC 9-6	203	11	29.49	0.041
Automated -AOAC 978.01-15th	204	9	29.48	0.101
Other(describe)	205	5	29.68	0.422
Method Group 200		32	29.53	0.20
BPL or P₂O₅ (on Dry Basis)				
Gravimetric AFPC 9-5	211	2	29.83	0.083
ICP-induced coupled plasma	212	2	29.83	0.019
Photometric-AFPC 9-6	213	8	29.53	0.077
Automated -AOAC 978.01-15th	214	9	29.54	0.117
Other(describe)	215	4	29.85	0.235
Method Group 210		25	29.61	0.19
Fe₂O₃				
Atomic Absorption-AFPC 9-12,13	301	4	0.72	0.081
ICP-induced coupled plasma	302	23	0.71	0.037
Other(describe)	303	2	0.75	0.000
Method Group 300		29	0.73	0.04
Al₂O₃				
Atomic Absorption-AFPC 9-16,17	401	3	0.48	0.039
ICP-induced coupled plasma	402	22	0.44	0.025
Other(describe)	403	2	0.55	0.000
Method Group 400		27	0.45	0.04
MgO				
Atomic Absorption-AFPC 9-18,19	501	3	0.56	0.026
ICP-induced coupled plasma	502	23	0.66	0.017
Other(describe)	503	3	0.69	0.021
Method Group 500		29	0.66	0.03
Acid Insoluble				
Insoluble-AFPC 9-8	601	18	10.79	0.181
Other(describe)	602	3	11.24	0.118
Method Group 600		21	10.81	0.18
CaO				
Gravimetric sulfate	701			
ICP-induced coupled plasma	702	12	47.16	0.359
Ceric Sulfate volumetric	703			
Permanganate	704	4	46.86	0.245
EDTA Volumetric	705	5	47.27	0.582
Other(describe)	706	8	47.09	0.356
Method Group 700		29	47.15	0.34
CaO (on Dry Basis)				
Gravimetric sulfate	711			
ICP-induced coupled plasma	712	11	47.25	0.343
Ceric Sulfate volumetric	713			
Permanganate	714	3	46.91	0.383
EDTA Volumetric	715	5	47.37	0.540
Other(describe)	716	6	47.23	0.177
Method Group 710		25	47.25	0.35

	Method #	# of Anal.	Grand Median	Std Dev
Fluorine, F				
Volumetric-AFPC 9-37	801			
Specific Ion Electrode	802	17	3.42	0.175
Other (describe)	803	2	3.35	0.007
Method Group 800		19	3.36	0.17
Arsenic, As				
Atomic Absorption	911			
ICP-induced coupled plasma	912	5	31.2	11.57
Other(describe)	913	1	14.9	0.00
Method Group 900		6	24.6	12.87
Cadmium, Cd				
Atomic Absorption	921	1	42	0.0
ICP-induced coupled plasma	922	11	33	3.7
Other(describe)	923	1	34	0.0
Method Group 910		13	34	3.4
Cobalt, Co				
Atomic Absorption	931			
ICP-induced coupled plasma	932	9	2	0.6
Other(describe)	933	2	8	3.7
Method Group 920		11	3	0.7
Mercury, Hg				
Atomic Absorption	941			
ICP-induced coupled plasma	942			
Other(describe)	943			
Method Group 930		0	#NUM!	
Molybdenum, Mo				
Atomic Absorption	951			
ICP-induced coupled plasma	952	8	9	1.5
Other(describe)	953	1	10	0.0
Method Group 940		9	10	1.3
Nickel, Ni				
Atomic Absorption	961	1	52	0.0
ICP-induced coupled plasma	962	10	19	3.3
Other(describe)	963	3	86	22.4
Method Group 950		14	21	6.1
Lead, Pb				
Atomic Absorption	971	1	22	0.0
ICP-induced coupled plasma	972	6	4	2.6
Other(describe)	973	1	3	0.0
Method Group 960		8	4	3.2
Selenium, Se				
Atomic Absorption	981			
ICP-induced coupled plasma	982	3	3	0.3
Other(describe)	983	1	4	0.0
Method Group 970		4	3	0.6
Zinc, Zn				
Atomic Absorption	991	4	303	5
ICP-induced coupled plasma	992	11	303	34
Other(describe)	993	1	290	0
Method Group 980		16	302	18

101 Ground Sample AFPC 9-2			
Lab	%	H ₂ O	
15	0.29		-1.523
Std Dev	0.25		-1.000
27	0.25		-0.975
15	0.24		-0.853
10	0.23		-0.731
10	0.21		-0.548
24	0.21		-0.548
49	0.19		-0.305
16	0.18		-0.183
16	0.17		0.000
Median	0.17		0.000
75	0.15		0.244
75	0.14		0.305
24	0.13		0.426
30	0.10		0.792
30	0.10		0.792
237	0.09		0.914
Std Dev	0.08		1.000
77	0.07		1.157
77	0.05		1.401

102 Other (describe)			
Lab	%	H ₂ O	
6	0.23		-0.482
9	0.21		-0.181
13	0.20		-0.120
13	0.20		-0.120
Median	0.19		0.000
9	0.18		0.120
Std Dev	0.11		1.000
26	0.10		1.084
55	0.06		1.566
55	0.06		1.566

201 Gravimetric AFPC 9-5			
Lab	%	P2O5	
50	29.92		0.000
77	29.92		0.000
Median	29.92		0.000
Std Dev	29.83		1.000
26	29.69		2.680

202 ICP-induced coupled plasma			
Lab	%	P2O5	
6	29.96		-3.508
Std Dev	29.83		-1.000
10	29.79		-0.195
Median	29.78		0.000
6	29.77		0.195
10	29.75		0.682

203 Photometric-AFPC 9-6			
Lab	%	P2O5	
6	29.71		-5.360
9	29.59		-2.436
16	29.56		-1.705
Std Dev	29.53		-1.000
6	29.50		-0.244
60	29.50		-0.244
30	29.49		0.000
30	29.49		0.000
Median	29.49		0.000
16	29.49		0.122
9	29.47		0.609
Std Dev	29.45		1.000
27	29.04		10.964
19	28.77		17.542

204 Automated -AOAC 978.01-15th			
Lab	%	P2O5	
77	29.84		-3.573
15	29.65		-1.638
15	29.61		-1.241
Std Dev	29.58		-1.000
75	29.50		-0.199
13	29.48		0.000
Median	29.48		0.000
24	29.48		0.000
13	29.47		0.099
75	29.45		0.298
24	29.41		0.695

205 Other(describe)			
Lab	%	P2O5	
55	29.96		-0.664
55	29.95		-0.640

49	29.68		0.000
Median	29.68		0.000
237	29.39		0.700
Std Dev	29.26		1.000
19	28.77		2.158

211 Gravimetric AFPC 9-5			
Lab	%	P2O5	dB
77	29.94		-1.340
Std Dev	29.91		-1.000
Median	29.83		0.000
Std Dev	29.75		1.000
26	29.72		1.340

212 ICP-induced coupled plasma			
Lab	%	P2O5	dB
10	29.86		-1.340
Std Dev	29.85		-1.000
Median	29.83		0.000
Std Dev	29.81		1.000
10	29.81		1.340

213 Photometric-AFPC 9-6			
Lab	%	P2O5	dB
6	29.78		-3.261
9	29.65		-1.607
16	29.61		-1.122
Std Dev	29.60		-1.000
16	29.53		-0.092
Median	29.53		0.000
30	29.52		0.092
30	29.52		0.092
9	29.52		0.110
Std Dev	29.45		1.000
27	29.11		5.377

214 Automated -AOAC 978.01-15th			
Lab	%	P2O5	dB
77	29.85		-2.707
15	29.73		-1.647
15	29.67		-1.163
Std Dev	29.66		-1.000
75	29.54		-0.020
13	29.54		0.000

Median	29.54		0.000
13	29.53		0.086
24	29.52		0.177
75	29.49		0.397
24	29.47		0.576

215 Other(describe)			
Lab	%	P2O5	dB
55	29.98		-0.535
55	29.97		-0.492
Median	29.85		0.000
49	29.74		0.492
Std Dev	29.62		1.000
237	29.41		1.874

301 Atomic Absorption-AFPC 9-12,13			
Lab	%	Fe2O3	
30	0.76		-0.524
30	0.76		-0.524
Median	0.72		0.000
27	0.68		0.524
Std Dev	0.64		1.000
60	0.58		1.694

302 ICP-induced coupled plasma			
Lab	%	Fe2O3	
77	0.83		-3.245
77	0.83		-3.245
49	0.77		-1.623
10	0.75		-1.082
10	0.75		-1.082
Std Dev	0.75		-1.000
9	0.74		-0.811
9	0.74		-0.811
16	0.74		-0.811
16	0.74		-0.811
13	0.73		-0.541
13	0.73		-0.541
15	0.71		0.000
15	0.71		0.000
Median	0.71		0.000
50	0.71		0.035
24	0.70		0.270
24	0.70		0.406

75	0.69	0.516
6	0.69	0.541
55	0.69	0.541
55	0.69	0.541
75	0.68	0.837
Std Dev	0.67	1.000
237	0.67	1.136
26	0.66	1.352

303 Other(describe)		
Lab	%	Fe2O3
19	0.75	0.000
19	0.75	0.000
Median	0.75	0.000

401 Atomic Absorption-AFPC 9-16,17		
Lab	%	Al2O3
27	0.59	-2.680
Std Dev	0.52	-1.000
30	0.48	0.000
30	0.48	0.000
Median	0.48	0.000

402 ICP-induced coupled plasma		
Lab	%	Al2O3
77	0.53	-3.731
77	0.53	-3.731
237	0.50	-2.319
24	0.47	-1.311
Std Dev	0.46	-1.000
75	0.46	-0.929
24	0.46	-0.907
75	0.46	-0.823
10	0.45	-0.504
9	0.45	-0.302
10	0.45	-0.302
49	0.44	-0.101
Median	0.44	0.000
9	0.44	0.101
13	0.43	0.302
13	0.43	0.302
55	0.43	0.302
55	0.43	0.302
16	0.43	0.504

16	0.43	0.504
15	0.42	0.706
Std Dev	0.41	1.000
15	0.41	1.109
26	0.41	1.109
6	0.36	3.126

403 Other(describe)		
Lab	%	Al2O3
19	0.55	0.000
19	0.55	0.000
Median	0.55	0.000

501 Atomic Absorption-AFPC 9-18,19		
Lab	%	MgO
60	0.63	-2.680
Std Dev	0.59	-1.000
30	0.56	0.000
30	0.56	0.000
Median	0.56	0.000

502 ICP-induced coupled plasma		
Lab	%	MgO
237	0.71	-3.067
13	0.69	-2.084
49	0.68	-1.489
55	0.68	-1.489
55	0.68	-1.191
Std Dev	0.67	-1.000
16	0.67	-0.596
9	0.66	-0.298
15	0.66	-0.298
15	0.66	-0.298
50	0.66	-0.060
9	0.66	0.000
10	0.66	0.000
10	0.66	0.000
15	0.66	0.000
Median	0.66	0.000
26	0.65	0.298
24	0.65	0.596
13	0.64	0.893
24	0.64	0.893
Std Dev	0.64	1.000

77	0.63	1.489
77	0.62	2.084
6	0.61	2.680
75	0.54	6.799
75	0.54	7.075

503 Other(describe)		
Lab	%	MgO
19	0.69	0.000
19	0.69	0.000
Median	0.69	0.000
Std Dev	0.67	1.000
27	0.64	2.680

601 Insoluble-AFPC 9-8		
Lab	%	Al
6	11.32	-2.956
24	10.98	-1.078
Std Dev	10.97	-1.000
30	10.91	-0.691
30	10.91	-0.691
16	10.86	-0.414
24	10.86	-0.414
16	10.84	-0.276
15	10.81	-0.138
9	10.79	-0.028
Median	10.79	0.000
15	10.78	0.028
9	10.77	0.111
10	10.68	0.608
13	10.67	0.635
Std Dev	10.60	1.000
13	10.60	1.022
10	10.55	1.326
26	7.91	15.887
55	0.59	56.335
55	0.58	56.391

602 Other(describe)		
Lab	%	Al
19	11.24	0.000
19	11.24	0.000
Median	11.24	0.000
Std Dev	11.12	1.000

27	10.93	2.680
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701 Gravimetric sulfate		
Lab	%	CaO
Median	0.00	0.000

702 ICP-induced coupled plasma		
Lab	%	CaO
50	48.62	-4.072
75	47.75	-1.641
237	47.65	-1.371
Std Dev	47.52	-1.000
75	47.43	-0.745
49	47.42	-0.731
10	47.17	-0.035
Median	47.16	0.000
10	47.15	0.035
6	47.10	0.160
77	47.00	0.439
77	47.00	0.439
16	46.97	0.536
16	46.96	0.564

703 Ceric Sulfate volumetric		
Lab	%	CaO
Median	0.00	0.000

704 Permanganate		
Lab	%	CaO
27	47.82	-3.893
Std Dev	47.11	-1.000
30	46.86	0.000
30	46.86	0.000
Median	46.86	0.000
Std Dev	46.61	1.000
60	46.50	1.467

705 EDTA Volumetric		
Lab	%	CaO
55	48.10	-1.426
55	47.95	-1.168
Std Dev	47.85	-1.000
9	47.27	0.000
Median	47.27	0.000

9	47.17	0.172
Std Dev	46.69	1.000
26	46.12	1.976

706 Other(describe)		
Lab	%	CaO
24	47.49	-1.101
Std Dev	47.45	-1.000
24	47.41	-0.877
13	47.16	-0.189
13	47.12	-0.077
Median	47.09	0.000
15	47.07	0.077
15	46.98	0.330
Std Dev	46.74	1.000
19	46.05	2.926
19	46.05	2.926

711 Gravimetric sulfate			
Lab	%	CaO	dB
Median	0.00	0.000	

712 ICP-induced coupled plasma			
Lab	%	CaO	dB
75	47.82	-1.647	
237	47.69	-1.287	
Std Dev	47.59	-1.000	
49	47.51	-0.755	
75	47.49	-0.700	
10	47.27	-0.052	
10	47.25	0.000	
Median	47.25	0.000	
6	47.21	0.125	
16	47.04	0.608	
16	47.04	0.617	
77	47.03	0.637	
77	47.02	0.664	

713 Ceric Sulfate volumetric			
Lab	%	CaO	dB
Median	0.00	0.000	

714 Permanganate			
Lab	%	CaO	dB

27	47.93	-2.680
Std Dev	47.29	-1.000
30	46.91	0.000
30	46.91	0.000
Median	46.91	0.000

715 EDTA Volumetric			
Lab	%	CaO	dB
55	48.13	-1.410	
55	47.98	-1.133	
Std Dev	47.91	-1.000	
9	47.37	0.000	
Median	47.37	0.000	
9	47.26	0.207	
Std Dev	46.83	1.000	
26	46.17	2.224	

716 Other(describe)			
Lab	%	CaO	dB
24	47.55	-1.765	
24	47.50	-1.527	
Std Dev	47.41	-1.000	
13	47.25	-0.113	
Median	47.23	0.000	
13	47.21	0.113	
15	47.20	0.184	
15	47.09	0.841	

801 Volumetric-AFPC 9-37			
Lab	%	Fluorine, F	
Median	0.00	0.000	

802 Specific Ion Electrode			
Lab	%	Fluorine, F	
15	3.55	-0.770	
30	3.52	-0.599	
30	3.52	-0.599	
15	3.50	-0.485	
9	3.49	-0.428	
49	3.48	-0.371	
9	3.47	-0.285	
75	3.42	-0.029	
237	3.42	0.000	
Median	3.42	0.000	

75	3.35	0.371
24	3.31	0.627
24	3.26	0.884
27	3.26	0.912
Std Dev	3.24	1.000
55	3.05	2.081
55	3.05	2.081
13	2.98	2.480
13	2.98	2.480

803 Other(describe)		
Lab	%	Fluorine, F
77	3.36	-1.340
Std Dev	3.36	-1.000
Median	3.35	0.000
Std Dev	3.34	1.000
77	3.34	1.340

911 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Arsenic, As
Median	0.0	0.000

912 ICP-induced coupled plasma		
Lab	ppm	Arsenic, As
26	42.0	-0.934
55	33.5	-0.199
55	31.2	0.000
Median	31.2	0.000
Std Dev	19.6	1.000
6	18.0	1.141
24	14.6	1.435

913 Other(describe)		
Lab	ppm	Arsenic, As
13	14.9	0.000
Median	14.9	0.000

921 Atomic Absorption-AFPC 9-12,13		
Lab	ppm	Cadmium, Cd
27	42	0.000
Median	42	0.000

922 ICP-induced coupled plasma		
Lab	ppm	Cadmium, Cd

55	39	-1.696
55	38	-1.613
26	37	-1.094
Std Dev	36	-1.000
24	34	-0.492
24	34	-0.438
6	33	0.000
Median	33	0.000
77	32	0.137
77	32	0.137
75	29	0.957
75	29	0.957
Std Dev	29	1.000
237	28	1.367

923 Other(describe)		
Lab	ppm	Cadmium, Cd
13	34	0.000
Median	34	0.000

931 Atomic Absorption-AFPC 9-16,17		
Lab	ppm	Cobalt, Co
Median	0	0.000

932 ICP-induced coupled plasma		
Lab	ppm	Cobalt, Co
55	3	-1.591
55	3	-1.591
6	3	-1.256
Std Dev	3	-1.000
50	3	-0.821
237	2	0.000
Median	2	0.000
75	2	0.084
75	2	0.084
77	2	0.084
77	2	0.084

933 Other(describe)		
Lab	ppm	Cobalt, Co
27	13	-1.340
Std Dev	12	-1.000
Median	8	0.000
Std Dev	4	1.000

13 3 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
Median	0.0	0.000

943 Other(describe)		
Lab	ppm	Mercury, Hg
13	<0.07	0.000
Median	0.0	0.000

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

952 ICP-induced coupled plasma		
Lab	ppm	Iolybdenum, Mo
50	11	-0.955
6	10	-0.859
55	10	-0.515
55	10	-0.241
Median	9	0.000
24	9	0.241
237	8	0.722
77	8	0.790
Std Dev	8	1.000
77	7	1.477

953 Other(describe)		
Lab	ppm	Iolybdenum, Mo
13	10	0.000
Median	10	0.000

961 Atomic Absorption-AFPC 9-12,13		
Lab	ppm	Nickel, Ni
27	52	0.000
Median	52	0.000

962 ICP-induced coupled plasma		
Lab	ppm	Nickel, Ni

55	23	-1.061
55	23	-1.016
Std Dev	23	-1.000
6	21	-0.369
24	21	-0.339
237	20	-0.188
Median	19	0.000
24	19	0.188
75	17	0.866
Std Dev	16	1.000
75	16	1.016
77	16	1.016
77	15	1.317

963 Other(describe)		
Lab	ppm	Nickel, Ni
19	86	0.000
19	86	0.000
Median	86	0.000
Std Dev	64	1.000
13	26	2.680

971 Atomic Absorption-AFPC 9-16,17		
Lab	ppm	Lead, Pb
27	22	0.000
Median	22	0.000

972 ICP-induced coupled plasma		
Lab	ppm	Lead, Pb
77	<1	0.000
77	<1	0.000
55	8	-1.312
55	8	-1.274
Std Dev	7	-1.000
24	5	-0.274
Median	4	0.000
6	3	0.274
237	3	0.330
26		0.425

973 Other(describe)		
Lab	ppm	Lead, Pb
13	3	0.000
Median	3	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	4	-2.297
Std Dev	3	-1.000
55	3	0.000
Median	3	0.000
24	3	0.383

983 Other(describe)		
Lab	ppm	Selenium, Se
13	4	0.000
Median	4	0.000

991 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Zinc, Zn
19	305	-0.397
19	305	-0.397
Median	303	0.000
60	301	0.397
Std Dev	298	1.000
27	290	2.581

992 ICP-induced coupled plasma		
Lab	ppm	Zinc, Zn
55	356	-1.541
55	354	-1.491
Std Dev	337	-1.000
50	324	-0.615
24	314	-0.322
24	310	-0.205
6	303	0.000
Median	303	0.000
26	291	0.366
75	275	0.820
75	272	0.923
Std Dev	269	1.000
77	237	1.933
77	232	2.080

993 Other(describe)		
Lab	ppm	Zinc, Zn
13	290	0.000
Median	290	0.000

