

CHEMICAL ANALYSES AND NORMS OF
 MEDICINE LAKE STRAT TEST 68-16 VOLCANIC ROCKS

file in Modoc
 prospect under strat
 test 68-16

Sample	68-16-9A	68-16-9B	68-16-10	68-16-11	68-16-12	68-16-13	68-16-14A	68-16-14B	68-16-15
Depth (ft)	1,276.5	1,276.5	1,290	1,304	1,468	1,611	1,713	1,713	1,742.5
Elevation (ft)	5,123.5	5,123.5	5,110	5,096	4,932	4,789	4,687	4,687	4,567.5
SiO ₂	74.17	74.71	67.90	71.56	74.00	72.37	74.93	76.15	62.22
TiO ₂	0.23	0.24	0.38	0.28	0.28	0.18	0.19	0.19	0.87
Al ₂ O ₃	12.84	12.97	15.60	13.40	13.66	12.71	12.77	12.94	15.66
Fe ₂ O ₃	1.26	1.48	2.53	1.74	1.51	1.24	1.01	1.48	5.85
FeO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MnO	0.03	0.03	0.05	0.04	0.04	0.03	0.03	0.03	0.09
MgO	0.18	0.20	0.68	0.27	0.21	0.22	0.15	0.14	1.68
CaO	0.88	0.90	1.66	1.20	1.13	0.84	0.79	0.81	4.27
Na ₂ O	2.99	3.15	2.44	3.02	3.33	2.67	3.07	3.16	3.53
K ₂ O	4.60	4.62	3.75	4.32	4.39	4.59	4.49	4.57	2.44
P ₂ O ₅	0.02	0.02	0.05	0.03	0.03	0.01	0.01	0.01	0.21
H ₂ O+	0.36	0.36	2.95	2.63	0.31	3.33	0.51	0.51	1.02
H ₂ O-	0.05	0.05	1.13	0.11	0.15	0.44	0.08	0.08	0.22
Total	97.61	98.73	99.12	98.60	99.04	98.63	98.03	100.07	98.06
q	37.07	36.53	34.92	34.57	35.18	37.17	38.00	38.36	21.31
c	1.39	1.20	4.63	1.65	1.45	1.85	1.45	1.35	0.0
or	27.18	27.30	22.16	25.53	25.94	27.12	26.53	27.01	14.42
ab	25.30	26.65	20.65	25.55	28.18	22.59	25.98	26.74	29.87
an	4.24	4.33	7.91	5.76	5.41	4.10	3.85	3.95	19.68
wo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-wo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-en	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-fs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hy-en	0.45	0.50	1.69	0.67	0.52	0.55	0.37	0.35	4.18
hy-fs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
mt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
il	0.06	0.06	0.11	0.09	0.09	0.06	0.06	0.06	0.19
hm	1.26	1.48	2.53	1.74	1.51	1.24	1.01	1.48	5.85
cn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.09
ru	0.20	0.21	0.32	0.23	0.23	0.15	0.16	0.16	0.73
ap	0.05	0.05	0.12	0.07	0.07	0.02	0.02	0.02	0.50
Total	97.20	98.32	95.04	95.86	98.58	94.86	97.44	99.48	96.83
Femic	2.02	2.30	4.77	2.80	2.43	2.02	1.63	2.07	11.55
Salic	95.18	96.02	90.27	93.05	96.15	92.83	95.81	97.40	85.28

All values are in weight percent

CHEMICAL ANALYSES AND NORMS OF
MEDICINE LAKE STRAT TEST 68-16 VOLCANIC ROCKS

Sample	68-16-9A	68-16-9B	68-16-10	68-16-11	68-16-12	68-16-13	68-16-14A	68-16-14B	68-16-15
Depth (ft)	1,276.5	1,276.5	1,290	1,304	1,468	1,611	1,713	1,713	1,742.5
Elevation (ft)	5,123.5	5,123.5	5,110	5,096	4,932	4,789	4,687	4,687	4,567.5
SiO ₂	74.17	74.71	67.90	71.56	74.00	72.37	74.93	76.15	62.22
TiO ₂	0.23	0.24	0.38	0.28	0.28	0.18	0.19	0.19	0.87
Al ₂ O ₃	12.84	12.97	15.60	13.40	13.66	12.71	12.77	12.94	15.66
Fe ₂ O ₃	1.26	1.48	2.53	1.74	1.51	1.24	1.01	1.48	5.85
FeO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MnO	0.03	0.03	0.05	0.04	0.04	0.03	0.03	0.03	0.09
MgO	0.18	0.20	0.68	0.27	0.21	0.22	0.15	0.14	1.68
CaO	0.88	0.90	1.66	1.20	1.13	0.84	0.79	0.81	4.27
Na ₂ O	2.99	3.15	2.44	3.02	3.33	2.67	3.07	3.16	3.53
K ₂ O	4.60	4.62	3.75	4.32	4.39	4.59	4.49	4.57	2.44
P ₂ O ₅	0.02	0.02	0.05	0.03	0.03	0.01	0.01	0.01	0.21
H ₂ O ⁺	0.36	0.36	2.95	2.63	0.31	3.33	0.51	0.51	1.02
H ₂ O ⁻	0.05	0.05	1.13	0.11	0.15	0.44	0.08	0.08	0.22
Total	97.61	98.73	99.12	98.60	99.04	98.63	98.03	100.07	98.06
q	37.07	36.53	34.92	34.57	35.18	37.17	38.00	38.36	21.51
c	1.39	1.20	4.63	1.65	1.45	1.85	1.45	1.35	0.0
or	27.18	27.30	22.16	25.53	25.94	27.12	26.53	27.01	14.42
ab	25.30	26.65	20.65	25.55	28.18	22.59	25.98	26.74	29.87
an	4.24	4.33	7.91	5.76	5.41	4.10	3.85	3.95	19.68
wo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-wo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-en	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-fs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hy-en	0.45	0.50	1.69	0.67	0.52	0.55	0.37	0.35	4.18
hy-fs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
mt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
il	0.06	0.06	0.11	0.09	0.09	0.06	0.06	0.06	0.19
hm	1.26	1.48	2.53	1.74	1.51	1.24	1.01	1.48	5.85
tn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.09
ru	0.20	0.21	0.32	0.23	0.23	0.15	0.16	0.16	0.73
ap	0.05	0.05	0.12	0.07	0.07	0.02	0.02	0.02	0.50
Total	97.20	98.32	95.04	95.86	98.58	94.86	97.44	99.48	96.83
Femic	2.02	2.30	4.77	2.80	2.43	2.02	1.63	2.07	11.55
Salic	95.18	96.02	90.27	93.05	96.15	92.83	95.81	97.40	85.28

All values are in weight percent

CHEMICAL ANALYSES AND NORMS OF
MEDICINE LAKE STRAT TEST 68-16 VOLCANIC ROCKS

Sample	68-16-9A	68-16-9B	68-16-10	68-16-11	68-16-12	68-16-13	68-16-14A	68-16-14B	68-16-1
Depth (ft)	1,276.5	1,276.5	1,290	1,304	1,468	1,611	1,713	1,713	1,742.5
Elevation (ft)	5,123.5	5,123.5	5,110	5,096	4,932	4,789	4,687	4,687	4,567.5
SiO ₂	74.17	74.71	67.90	71.56	74.00	72.37	74.93	76.15	62.22
TiO ₂	0.23	0.24	0.38	0.28	0.28	0.18	0.19	0.19	0.87
Al ₂ O ₃	12.84	12.97	15.60	13.40	13.66	12.71	12.77	12.94	15.66
Fe ₂ O ₃	1.26	1.48	2.53	1.74	1.51	1.24	1.01	1.48	5.85
FeO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MnO	0.03	0.03	0.05	0.04	0.04	0.03	0.03	0.03	0.09
MgO	0.18	0.20	0.68	0.27	0.21	0.22	0.15	0.14	1.68
CaO	0.88	0.90	1.66	1.20	1.13	0.84	0.79	0.81	4.27
Na ₂ O	2.99	3.15	2.44	3.02	3.33	2.67	3.07	3.16	3.53
K ₂ O	4.60	4.62	3.75	4.32	4.39	4.59	4.49	4.57	2.44
P ₂ O ₅	0.02	0.02	0.05	0.03	0.03	0.01	0.01	0.01	0.21
H ₂ O ⁺	0.36	0.36	2.95	2.63	0.31	3.33	0.51	0.51	1.02
H ₂ O ⁻	0.05	0.05	1.13	0.11	0.15	0.44	0.08	0.08	0.22
Total	97.61	98.73	99.12	98.60	99.04	98.63	98.03	100.07	98.06
q	37.07	36.53	34.92	34.57	35.18	37.17	38.00	38.36	21.31
c	1.39	1.20	4.63	1.65	1.45	1.85	1.45	1.35	0.0
or	27.18	27.30	22.16	25.53	25.94	27.12	26.53	27.01	14.42
ab	25.30	26.65	20.65	25.55	28.18	22.59	25.98	26.74	29.87
az	4.24	4.33	7.91	5.76	5.41	4.10	3.85	3.95	19.68
wo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-wo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-en	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-fs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hy-en	0.45	0.50	1.69	0.67	0.52	0.55	0.37	0.35	4.18
hy-fs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
mt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
il	0.06	0.06	0.11	0.09	0.09	0.06	0.06	0.06	0.19
hm	1.26	1.48	2.53	1.74	1.51	1.24	1.01	1.48	5.85
tn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.09
ru	0.20	0.21	0.32	0.23	0.23	0.15	0.16	0.16	0.73
ap	0.05	0.05	0.12	0.07	0.07	0.02	0.02	0.02	0.50
Total	97.20	98.32	95.04	95.86	98.58	94.86	97.44	99.48	96.83
Femic	2.02	2.30	4.77	2.80	2.43	2.02	1.63	2.07	11.55
Salic	95.18	96.02	90.27	93.05	96.15	92.83	95.81	97.40	85.28

All values are in weight percent

CHEMICAL ANALYSES AND NORMS OF
MEDICINE LAKE STRAT TEST 68-16 VOLCANIC ROCKS

Sample	68-16-9A	68-16-9B	68-16-10	68-16-11	68-16-12	68-16-13	68-16-14A	68-16-14B	68-16-1
Depth (ft)	1,276.5	1,276.5	1,290	1,304	1,468	1,611	1,713	1,713	1,742.5
Elevation (ft)	5,123.5	5,123.5	5,110	5,096	4,932	4,789	4,687	4,687	4,567.5
SiO ₂	74.17	74.71	67.90	71.56	74.00	72.37	74.93	76.15	62.22
TiO ₂	0.23	0.24	0.38	0.28	0.28	0.18	0.19	0.19	0.87
Al ₂ O ₃	12.84	12.97	15.60	13.40	13.66	12.71	12.77	12.94	15.66
Fe ₂ O ₃	1.26	1.48	2.53	1.74	1.51	1.24	1.01	1.48	5.85
FeO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MnO	0.03	0.03	0.05	0.04	0.04	0.03	0.03	0.03	0.09
MgO	0.18	0.20	0.68	0.27	0.21	0.22	0.15	0.14	1.68
CaO	0.88	0.90	1.66	1.20	1.13	0.84	0.79	0.81	4.27
Na ₂ O	2.99	3.15	2.44	3.02	3.33	2.67	3.07	3.16	3.53
K ₂ O	4.60	4.62	3.75	4.32	4.39	4.59	4.49	4.57	2.44
P ₂ O ₅	0.02	0.02	0.05	0.03	0.03	0.01	0.01	0.01	0.21
H ₂ O ⁺	0.36	0.36	2.95	2.63	0.31	3.33	0.51	0.51	1.02
H ₂ O ⁻	0.05	0.05	1.13	0.11	0.15	0.44	0.08	0.08	0.22
Total	97.61	98.73	99.12	98.60	99.04	98.63	98.03	100.07	98.06
q	37.07	36.53	34.92	34.57	35.18	37.17	38.00	38.36	21.31
c	1.39	1.20	4.63	1.65	1.45	1.85	1.45	1.35	0.0
or	27.18	27.30	22.16	25.53	25.94	27.12	26.53	27.01	14.42
ab	25.30	26.65	20.65	25.55	28.18	22.59	25.98	26.74	29.87
an	4.24	4.33	7.91	5.76	5.41	4.10	3.85	3.95	19.68
wo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-wo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-en	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-fs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hy-en	0.45	0.50	1.69	0.67	0.52	0.55	0.37	0.35	4.18
hy-fs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
mt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
il	0.06	0.06	0.11	0.09	0.09	0.06	0.06	0.06	0.19
hm	1.26	1.48	2.53	1.74	1.51	1.24	1.01	1.48	5.85
tn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.09
ru	0.20	0.21	0.32	0.23	0.23	0.15	0.16	0.16	0.73
ap	0.05	0.05	0.12	0.07	0.07	0.02	0.02	0.02	0.50
Total	97.20	98.32	95.04	95.86	98.58	94.86	97.44	99.48	96.83
Femic	2.02	2.30	4.77	2.80	2.43	2.02	1.63	2.07	11.55
Salic	95.18	96.02	90.27	93.05	96.15	92.83	95.81	97.40	85.28

All values are in weight percent

CHEMICAL ANALYSES AND NORMS OF
MEDICINE LAKE STRAT TEST 68-16 VOLCANIC ROCKS

Sample	<u>68-16-9A</u>	<u>68-16-9B</u>	<u>68-16-10</u>	<u>68-16-11</u>	<u>68-16-12</u>	<u>68-16-13</u>	<u>68-16-14A</u>	<u>68-16-14B</u>	<u>68-16-15</u>
Depth (ft)	1,276.5	1,276.5	1,290	1,304	1,468	1,611	1,713	1,713	1,742.5
Elevation (ft)	5,123.5	5,123.5	5,110	5,096	4,932	4,789	4,687	4,687	4,567.5
SiO ₂	74.17	74.71	67.90	71.56	74.00	72.37	74.93	76.15	62.22
TiO ₂	0.23	0.24	0.38	0.28	0.28	0.18	0.19	0.19	0.87
Al ₂ O ₃	12.84	12.97	15.60	13.40	13.66	12.71	12.77	12.94	15.66
Fe ₂ O ₃	1.26	1.48	2.53	1.74	1.51	1.24	1.01	1.48	5.85
FeO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MnO	0.03	0.03	0.05	0.04	0.04	0.03	0.03	0.03	0.09
MgO	0.18	0.20	0.68	0.27	0.21	0.22	0.15	0.14	1.68
CaO	0.88	0.90	1.66	1.20	1.13	0.84	0.79	0.81	4.27
Na ₂ O	2.99	3.15	2.44	3.02	3.33	2.67	3.07	3.16	3.53
K ₂ O	4.60	4.62	3.75	4.32	4.39	4.59	4.49	4.57	2.44
P ₂ O ₅	0.02	0.02	0.05	0.03	0.03	0.01	0.01	0.01	0.21
H ₂ O+	0.36	0.36	2.95	2.63	0.31	3.33	0.51	0.51	1.02
H ₂ O-	<u>0.05</u>	<u>0.05</u>	<u>1.13</u>	<u>0.11</u>	<u>0.15</u>	<u>0.44</u>	<u>0.08</u>	<u>0.08</u>	<u>0.22</u>
Total	97.61	98.73	99.12	98.60	99.04	98.63	98.03	100.07	98.06
q	37.07	36.53	34.92	34.57	35.18	37.17	38.00	38.36	21.31
c	1.39	1.20	4.63	1.65	1.45	1.85	1.45	1.35	0.0
or	27.18	27.30	22.16	25.53	25.94	27.12	26.53	27.01	14.42
ab	25.30	26.65	20.65	25.55	28.18	22.59	25.98	26.74	29.87
an	4.24	4.33	7.91	5.76	5.41	4.10	3.85	3.95	19.68
wo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-wo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-en	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-fs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hy-en	0.45	0.50	1.69	0.67	0.52	0.55	0.37	0.35	4.18
hy-fs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
mt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
il	0.06	0.06	0.11	0.09	0.09	0.06	0.06	0.06	0.19
hm	1.26	1.48	2.53	1.74	1.51	1.24	1.01	1.48	5.85
tn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.09
ru	0.20	0.21	0.32	0.23	0.23	0.15	0.16	0.16	0.73
ap	<u>0.05</u>	<u>0.05</u>	<u>0.12</u>	<u>0.07</u>	<u>0.07</u>	<u>0.02</u>	<u>0.02</u>	<u>0.02</u>	<u>0.50</u>
Total	97.20	98.32	95.04	95.86	98.58	94.86	97.44	99.48	96.83
Femic	2.02	2.30	4.77	2.80	2.43	2.02	1.63	2.07	11.55
Salic	95.18	96.02	90.27	93.05	96.15	92.83	95.81	97.40	85.28

All values are in weight percent

CHEMICAL ANALYSES AND NORMS OF
MEDICINE LAKE STRAT TEST 68-16 VOLCANIC ROCKS

Sample	68-16-9A	68-16-9B	68-16-10	68-16-11	68-16-12	68-16-13	68-16-14A	68-16-14B	68-16-1
Depth (ft)	1,276.5	1,276.5	1,290	1,304	1,468	1,611	1,713	1,713	1,742.5
Elevation (ft)	5,123.5	5,123.5	5,110	5,096	4,932	4,789	4,687	4,687	4,567.5
SiO ₂	74.17	74.71	67.90	71.56	74.00	72.37	74.93	76.15	62.22
TiO ₂	0.23	0.24	0.38	0.28	0.28	0.18	0.19	0.19	0.87
Al ₂ O ₃	12.84	12.97	15.60	13.40	13.66	12.71	12.77	12.94	15.66
Fe ₂ O ₃	1.26	1.48	2.53	1.74	1.51	1.24	1.01	1.48	5.85
FeO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MnO	0.03	0.03	0.05	0.04	0.04	0.03	0.03	0.03	0.09
MgO	0.18	0.20	0.68	0.27	0.21	0.22	0.15	0.14	1.68
CaO	0.88	0.90	1.66	1.20	1.13	0.84	0.79	0.81	4.27
Na ₂ O	2.99	3.15	2.44	3.02	3.33	2.67	3.07	3.16	3.53
K ₂ O	4.60	4.62	3.75	4.32	4.39	4.59	4.49	4.57	2.44
P ₂ O ₅	0.02	0.02	0.05	0.03	0.03	0.01	0.01	0.01	0.21
H ₂ O ⁺	0.36	0.36	2.95	2.63	0.31	3.33	0.51	0.51	1.02
H ₂ O ⁻	0.05	0.05	1.13	0.11	0.15	0.44	0.08	0.08	0.22
Total	97.61	98.73	99.12	98.60	99.04	98.63	98.03	100.07	98.06
q	37.07	36.53	34.92	34.57	35.18	37.17	38.00	38.36	21.31
c	1.39	1.20	4.63	1.65	1.45	1.85	1.45	1.35	0.0
or	27.18	27.30	22.16	25.53	25.94	27.12	26.53	27.01	14.42
ab	25.30	26.65	20.65	25.55	28.18	22.59	25.98	26.74	29.87
an	4.24	4.33	7.91	5.76	5.41	4.10	3.85	3.95	19.68
wo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-wo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-en	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-fs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hy-en	0.45	0.50	1.69	0.67	0.52	0.55	0.37	0.35	4.18
hy-fs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
mt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
il	0.06	0.06	0.11	0.09	0.09	0.06	0.06	0.06	0.19
hm	1.26	1.48	2.53	1.74	1.51	1.24	1.01	1.48	5.85
tn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.09
ru	0.20	0.21	0.32	0.23	0.23	0.15	0.16	0.16	0.73
ap	0.05	0.05	0.12	0.07	0.07	0.02	0.02	0.02	0.50
Total	97.20	98.32	95.04	95.86	98.58	94.86	97.44	99.48	96.83
Femic	2.02	2.30	4.77	2.80	2.43	2.02	1.63	2.07	11.55
Salic	95.18	96.02	90.27	93.05	96.15	92.83	95.81	97.40	85.28

All values are in weight percent

CHEMICAL ANALYSES AND NORMS OF
MEDICINE LAKE STRAT TEST 68-16 VOLCANIC ROCKS

Sample	68-16-9A	68-16-9B	68-16-10	68-16-11	68-16-12	68-16-13	68-16-14A	68-16-14B	68-16-15
Depth (ft)	1,276.5	1,276.5	1,290	1,304	1,468	1,611	1,713	1,713	1,742.5
Elevation (ft)	5,123.5	5,123.5	5,110	5,096	4,932	4,789	4,687	4,687	4,567.5
SiO ₂	74.17	74.71	67.90	71.56	74.00	72.37	74.93	76.15	62.22
TiO ₂	0.23	0.24	0.38	0.28	0.28	0.18	0.19	0.19	0.87
Al ₂ O ₃	12.84	12.97	15.60	13.40	13.66	12.71	12.77	12.94	15.66
Fe ₂ O ₃	1.26	1.48	2.53	1.74	1.51	1.24	1.01	1.48	5.85
FeO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MnO	0.03	0.03	0.05	0.04	0.04	0.03	0.03	0.03	0.09
MgO	0.18	0.20	0.68	0.27	0.21	0.22	0.15	0.14	1.68
CaO	0.88	0.90	1.66	1.20	1.13	0.84	0.79	0.81	4.27
Na ₂ O	2.99	3.15	2.44	3.02	3.33	2.67	3.07	3.16	3.53
K ₂ O	4.60	4.62	3.75	4.32	4.39	4.59	4.49	4.57	2.44
P ₂ O ₅	0.02	0.02	0.05	0.03	0.03	0.01	0.01	0.01	0.21
H ₂ O+	0.36	0.36	2.95	2.63	0.31	3.33	0.51	0.51	1.02
H ₂ O-	0.05	0.05	1.13	0.11	0.15	0.44	0.08	0.08	0.22
Total	97.61	98.73	99.12	98.60	99.04	98.63	98.03	100.07	98.06
q	37.07	36.53	34.92	34.57	35.18	37.17	38.00	38.36	21.31
c	1.39	1.20	4.63	1.65	1.45	1.85	1.45	1.35	0.0
or	27.18	27.30	22.16	25.53	25.94	27.12	26.53	27.01	14.42
ab	25.30	26.65	20.65	25.55	28.18	22.59	25.98	26.74	29.87
an	4.24	4.33	7.91	5.76	5.41	4.10	3.85	3.95	19.68
wo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-wo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-en	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-fs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hy-en	0.45	0.50	1.69	0.67	0.52	0.55	0.37	0.35	4.18
hy-fs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
mt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
il	0.06	0.06	0.11	0.09	0.09	0.06	0.06	0.06	0.19
hm	1.26	1.48	2.53	1.74	1.51	1.24	1.01	1.48	5.85
tn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.09
ru	0.20	0.21	0.32	0.23	0.23	0.15	0.16	0.16	0.73
ap	0.05	0.05	0.12	0.07	0.07	0.02	0.02	0.02	0.50
Total	97.20	98.32	95.04	95.86	98.58	94.86	97.44	99.48	96.83
Femic	2.02	2.30	4.77	2.80	2.43	2.02	1.63	2.07	11.55
Salic	95.18	96.02	90.27	93.05	96.15	92.83	95.81	97.40	85.28

All values are in weight percent

CHEMICAL ANALYSES AND NORMS OF
MEDICINE LAKE STRAT TEST 68-16 VOLCANIC ROCKS

Sample	<u>68-16-9A</u>	<u>68-16-9B</u>	<u>68-16-10</u>	<u>68-16-11</u>	<u>68-16-12</u>	<u>68-16-13</u>	<u>68-16-14A</u>	<u>68-16-14B</u>	<u>68-16-15</u>
Depth (ft)	1,276.5	1,276.5	1,290	1,304	1,468	1,611	1,713	1,713	1,742.5
Elevation (ft)	5,123.5	5,123.5	5,110	5,096	4,932	4,789	4,687	4,687	4,567.5
SiO ₂	74.17	74.71	67.90	71.56	74.00	72.37	74.93	76.15	62.22
TiO ₂	0.23	0.24	0.38	0.28	0.28	0.18	0.19	0.19	0.87
Al ₂ O ₃	12.84	12.97	15.60	13.40	13.66	12.71	12.77	12.94	15.66
Fe ₂ O ₃	1.26	1.48	2.53	1.74	1.51	1.24	1.01	1.48	5.85
FeO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MnO	0.03	0.03	0.05	0.04	0.04	0.03	0.03	0.03	0.09
MgO	0.18	0.20	0.68	0.27	0.21	0.22	0.15	0.14	1.68
CaO	0.88	0.90	1.66	1.20	1.13	0.84	0.79	0.81	4.27
Na ₂ O	2.99	3.15	2.44	3.02	3.33	2.67	3.07	3.16	3.53
K ₂ O	4.60	4.62	3.75	4.32	4.39	4.59	4.49	4.57	2.44
P ₂ O ₅	0.02	0.02	0.05	0.03	0.03	0.01	0.01	0.01	0.21
H ₂ O ⁺	0.36	0.36	2.95	2.63	0.31	3.33	0.51	0.51	1.02
H ₂ O ⁻	<u>0.05</u>	<u>0.05</u>	<u>1.13</u>	<u>0.11</u>	<u>0.15</u>	<u>0.44</u>	<u>0.08</u>	<u>0.08</u>	<u>0.22</u>
Total	97.61	98.73	99.12	98.60	99.04	98.63	98.03	100.07	98.06

q	37.07	36.53	34.92	34.57	35.18	37.17	38.00	38.36	21.31
c	1.39	1.20	4.63	1.65	1.45	1.85	1.45	1.35	0.0
or	27.18	27.30	22.16	25.53	25.94	27.12	26.53	27.01	14.42
ab	25.30	26.65	20.65	25.55	28.18	22.59	25.98	26.74	29.87
an	4.24	4.33	7.91	5.76	5.41	4.10	3.85	3.95	19.68
wo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-wo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-en	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
di-fs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
hy-en	0.45	0.50	1.69	0.67	0.52	0.55	0.37	0.35	4.18
hy-fs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
mt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
il	0.06	0.06	0.11	0.09	0.09	0.06	0.06	0.06	0.19
hm	1.26	1.48	2.53	1.74	1.51	1.24	1.01	1.48	5.85
tn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.09
ru	0.20	0.21	0.32	0.23	0.23	0.15	0.16	0.16	0.73
ap	<u>0.05</u>	<u>0.05</u>	<u>0.12</u>	<u>0.07</u>	<u>0.07</u>	<u>0.02</u>	<u>0.02</u>	<u>0.02</u>	<u>0.50</u>
Total	97.20	98.32	95.04	95.86	98.58	94.86	97.44	99.48	96.83
Femic	2.02	2.30	4.77	2.80	2.43	2.02	1.63	2.07	11.55
Salic	95.18	96.02	90.27	93.05	96.15	92.83	95.81	97.40	85.28

All values are in weight percent

TRACE ELEMENT ANALYSES
MEDICINE LAKE STRAT TEST 68-16

Sample	<u>68-16-9A</u>	<u>68-16-9B</u>	<u>68-16-10</u>	<u>68-16-11</u>	<u>68-16-12</u>	<u>68-16-13</u>	<u>68-16-14A</u>	<u>68-16-14B</u>	<u>68-16-15</u>
Depth (ft)	1,276.5	1,276.5	1,290	1,304	1,468	1,611	1,713	1,713	1,742.5
Elevation (ft)	5,123.5	5,123.5	5,110	5,096	4,932	4,789	4,687	4,687	4,567.5
S*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cl	361.46	353.34	170.48	222.04	<50.00	276.01	308.61	255.19	118.06
V	<20.00	<20.00	34.48	<20.00	27.66	<20.00	<20.00	<20.00	158.40
Ni	<20.00	<20.00	<20.00	<20.00	<20.00	<20.00	<20.00	<20.00	<20.00
Cu	<20.00	<20.00	65.20	<20.00	<20.00	<20.00	<20.00	<20.00	37.43
Zn	34.38	35.57	70.74	49.54	37.85	36.87	34.48	33.75	78.28
Rb	139.49	140.32	104.28	109.46	129.61	136.12	136.38	121.63	72.93
Sr	76.73	75.24	139.52	91.99	127.04	71.28	70.22	54.03	343.52
Zr	206.47	210.42	239.36	283.46	192.87	197.59	178.49	200.30	203.65
Ba	856.48	858.86	877.62	909.87	889.57	836.95	831.48	807.51	667.94
Pb	<40.0	<40.0	<40.0	<40.0	<40.0	<40.0	<40.00	<40.0	<40.0

All trace elements except S are in ppm

*Weight percent

TRACE ELEMENT ANALYSES
MEDICINE LAKE STRAT TEST 68-16

Sample	<u>68-16-9A</u>	<u>68-16-9B</u>	<u>68-16-10</u>	<u>68-16-11</u>	<u>68-16-12</u>	<u>68-16-13</u>	<u>68-16-14A</u>	<u>68-16-14B</u>	<u>68-16-15</u>
Depth (ft)	1,276.5	1,276.5	1,290	1,304	1,468	1,611	1,713	1,713	1,742.5
Elevation (ft)	5,123.5	5,123.5	5,110	5,096	4,932	4,789	4,687	4,687	4,567.5
S*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cl	361.46	353.34	170.48	222.04	<50.00	276.01	308.61	255.19	118.06
V	<20.00	<20.00	34.48	<20.00	27.66	<20.00	<20.00	<20.00	158.40
Ni	<20.00	<20.00	<20.00	<20.00	<20.00	<20.00	<20.00	<20.00	<20.00
Cu	<20.00	<20.00	65.20	<20.00	<20.00	<20.00	<20.00	<20.00	37.43
Zn	34.38	35.57	70.74	49.54	37.85	36.87	34.48	33.75	78.28
Rb	139.49	140.32	104.28	109.46	129.61	136.12	136.38	121.63	72.93
Sr	76.73	75.24	139.52	91.99	127.04	71.28	70.22	54.03	343.52
Zr	206.47	210.42	239.36	283.46	192.87	197.59	178.49	200.30	203.65
Ba	856.48	858.86	877.62	909.87	889.57	836.95	831.48	807.51	667.94
Pb	<40.0	<40.0	<40.0	<40.0	<40.0	<40.0	<40.00	<40.0	<40.0

All trace elements except S are in ppm

*Weight percent

TRACE ELEMENT ANALYSES
 MEDICINE LAKE STRAT TEST 68-16

Sample	<u>68-16-9A</u>	<u>68-16-9B</u>	<u>68-16-10</u>	<u>68-16-11</u>	<u>68-16-12</u>	<u>68-16-13</u>	<u>68-16-14A</u>	<u>68-16-14B</u> *	<u>68-16-15</u>
Depth (ft)	1,276.5	1,276.5	1,290	1,304	1,468	1,611	1,713	1,713	1,742.5
Elevation (ft)	5,123.5	5,123.5	5,110	5,096	4,932	4,789	4,687	4,687	4,567.5
S*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cl	361.46	353.34	170.48	222.04	<50.00	276.01	308.61	255.19	118.06
V	<20.00	<20.00	34.48	<20.00	27.66	<20.00	<20.00	<20.00	158.40
Ni	<20.00	<20.00	<20.00	<20.00	<20.00	<20.00	<20.00	<20.00	<20.00
Cu	<20.00	<20.00	65.20	<20.00	<20.00	<20.00	<20.00	<20.00	37.43
Zn	34.38	35.57	70.74	49.54	37.85	36.87	34.48	33.75	78.28
Rb	139.49	140.32	104.28	109.46	129.61	136.12	136.38	121.63	72.93
Sr	76.73	75.24	139.52	91.99	127.04	71.28	70.22	54.03	343.52
Zr	206.47	210.42	239.36	283.46	192.87	197.59	178.49	200.30	203.65
Ba	856.48	858.86	877.62	909.87	889.57	836.95	831.48	807.51	667.94
Pb	<40.0	<40.0	<40.0	<40.0	<40.0	<40.0	<40.00	<40.0	<40.0

All trace elements except S are in ppm

*Weight percent

TRACE ELEMENT ANALYSES
 MEDICINE LAKE STRAT TEST 68-16

Sample	<u>68-16-9A</u>	<u>68-16-9B</u>	<u>68-16-10</u>	<u>68-16-11</u>	<u>68-16-12</u>	<u>68-16-13</u>	<u>68-16-14A</u>	<u>68-16-14B</u>	<u>68-16-15</u>
Depth (ft)	1,276.5	1,276.5	1,290	1,304	1,468	1,611	1,713	1,713	1,742.5
Elevation (ft)	5,123.5	5,123.5	5,110	5,096	4,932	4,789	4,687	4,687	4,567.5
S*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cl	361.46	353.34	170.48	222.04	<50.00	276.01	308.61	255.19	118.06
V	<20.00	<20.00	34.48	<20.00	27.66	<20.00	<20.00	<20.00	158.40
Ni	<20.00	<20.00	<20.00	<20.00	<20.00	<20.00	<20.00	<20.00	<20.00
Cu	<20.00	<20.00	65.20	<20.00	<20.00	<20.00	<20.00	<20.00	37.43
Zn	34.38	35.57	70.74	49.54	37.85	36.87	34.48	33.75	78.28
Rb	139.49	140.32	104.28	109.46	129.61	136.12	136.38	121.63	72.93
Sr	76.73	75.24	139.52	91.99	127.04	71.28	70.22	54.03	343.52
Zr	206.47	210.42	239.36	283.46	192.87	197.59	178.49	200.30	203.65
Ba	856.48	858.86	877.62	909.87	889.57	836.95	831.48	807.51	667.94
Pb	<40.0	<40.0	<40.0	<40.0	<40.0	<40.0	<40.00	<40.0	<40.0

All trace elements except S are in ppm

*Weight percent