DR2015374

Supplementary Table 1 - Major,Trace and REE, and Isotopes. Compliled from Kennedy (2006) and Hon (1986)

Magma type	Sample type	Sample	Field No.	SiO_2 wt. (%)	Al_2O_3 wt. (%)	FeO wt. (%)	MgO wt. (%)	CaO wt. (%)	Na_2O wt. (%)	K_2O wt. (%)	TiO_2 wt. (%)	P_2O_5 wt. (%)	MnO wt. (%)	loi wt. (%)
rhyolite	pumice	11Tsplp	LC2004-08B	75.9	12.6	1.4	0.3	0.9	1.8	6.8	0.2	0.0	0.1	2.17
rhyolite	pumice	1Tspmps	RC-4-55A	76.4	13.0	1.0	0.2	0.6	4.2	4.4	0.2	0.1	0.1	
rhyolite	pumice	2Tspmps	RC-4-55P	76.2	13.1	1.0	0.2	0.6	4.2	4.5	0.2	0.1	0.1	
rhyolite	pumice	12Tspmps	LC2004-48B	77.8	11.9	1.1	0.2	0.2	2.7	5.9	0.2	0.0	0.0	1.10
trachyte	pumice	4Tspmpm	5-2C-122I	64.7	17.8	3.2	1.0	2.6	5.5	4.0	0.9	0.2	0.1	
trachyte	pumice	5Tspmpm	5-2C-116E	65.3	17.6	2.8	0.8	2.2	4.5	5.8	0.8	0.2	0.1	
trachyte	pumice	6Tspmpm	RC-4-55C	65.4	17.5	2.8	0.9	2.2	4.8	5.2	0.8	0.2	0.1	
trachyte	pumice	11Tspmpm	LC2004-55B altered	67.9	16.0	4.8	0.8	2.3	3.0	4.3	0.8	0.2	0.1	3.64
trachyte	pumice	12Tspmpm	LC2004-57A altered	65.3	17.5	2.8	0.9	2.1	5.7	4.7	0.8	0.2	0.1	3.29
trachyte HREE	pumice	2Tspup	RC-4-21P2	69.5	16.9	0.9	0.4	0.8	3.8	7.0	0.5	0.1	0.0	
trachyte HREE	pumice	3Tspup	RC-4-21P3	69.4	16.5	1.8	0.3	0.8	3.8	6.9	0.5	0.1	0.0	
trachyte HREE	pumice	4Tspup	RC-4-21P4	68.5	17.0	1.9	0.3	0.9	3.9	7.0	0.5	0.1	0.0	
trachyte HREE	pumice	5Tspup	RC-4-21P5	68.3	17.0	1.9	0.3	0.9	4.0	7.0	0.5	0.1	0.0	
trachyte HREE	pumice	6Tspupm	RC-4-21P6	68.6	17.0	1.6	0.3	0.8	3.8	7.2	0.6	0.1	0.0	
trachyte	pumice	1Tspupa	WC-1	69.5	15.8	2.7	0.8	1.4	3.3	5.8	0.5	0.2	0.1	
trachyte	pumice	2Tspupa	WC-2	69.9	15.6	2.5	0.7	1.7	3.2	5.7	0.5	0.2	0.1	
trachyte	pumice	3Tspupa	WC-3	69.0	16.5	2.9	0.5	1.0	3.4	5.9	0.5	0.2	0.1	
trachyte	pumice	4Tspupa	WC-4	69.0	16.1	2.5	0.9	1.8	3.3	5.6	0.5	0.1	0.1	
trachyte	pumice	5Tspupa	WC-F	69.5	16.1	2.3	0.9	1.5	3.3	5.7	0.5	0.1	0.1	
trachyte	pumice	1Tspupm	RC-4-21P1	66.9	17.6	2.2	0.6	1.4	3.9	6.3	0.9	0.2	0.0	
trachyandesite	pumice	11Tspupm	LC2004-50I altered	62.6	17.5	5.3	1.0	3.2	4.2	4.7	0.9	0.5	0.1	3.50
trachyandesite	pumice	6Tspupam	WC-M	62.4	17.4	5.9	0.6	2.9	4.1	4.8	1.1	0.5	0.3	
trachyandesite	pumice	7Tspupam	WC-1-MI	60.1	19.3	6.6	0.4	2.8	4.6	4.7	1.4	0.0	0.1	
rhyolite	intrusive	1Tsph	RC-2-3A	76.4	12.9	1.0	0.2	0.4	3.4	5.4	0.2	0.1	0.0	
rhyolite	intrusive	2Tsph	RC-2-160A	76.8	13.1	0.9	0.2	0.2	2.9	5.8	0.0	0.0	0.0	
rhyolite	intrusive	3Tsph	RC-2-160B	76.5	13.1	1.0	0.2	0.3	3.4	5.3	0.2	0.0	0.0	
rhyolite	intrusive	1Trh	2-5-9A	76.3	13.1	1.0	0.2	0.3	3.7	5.3	0.1	0.0	0.0	
rhyolite	intrusive	1Tbg	5-2C-124A	74.1	14.0	1.4	0.3	0.4	3.6	5.8	0.3	0.1	0.1	
rhyolite	intrusive	2Tbg	5-2C-115A	73.9	14.1	1.4	0.2	0.4	4.1	5.6	0.3	0.1	0.1	
rhyolite	intrusive	3Tbg	RC-2-210A	71.8	14.8	1.8	0.3	0.8	3.1	6.9	0.4	0.1	0.1	
rhyolite	intrusive	1Trp	RC-4-31D	72.9	14.5	1.6	0.3	1.2	2.8	6.3	0.4	0.1	0.1	
rhyolite	intrusive	5Trp	5-2C-15A	71.3	15.0	1.8	0.4	1.6	3.1	6.1	0.4	0.1	0.1	
rhyolite	intrusive	2Trh	2-5-9D	76.1	13.2	0.9	0.2	0.4	3.3	5.7	0.2	0.0	0.0	
rhyolite	intrusive	5Tsph	SC1045	75.6	13.0	1.5	0.0	0.7	3.7	5.3	0.2	0.0	0.0	
trachyte	intrusion	1Tsyd	2-6-13A	67.5	16.5	2.4	0.6	1.5	4.2	6.5	0.6	0.1	0.1	
trachyte	intrusion	2Tsyd	2-6-2A	67.0	16.8	2.5	0.9	1.4	3.9	6.6	0.7	0.1	0.1	
trachyte	intrusion	3Tsyd	2-6-11A	68.7	16.0	2.3	0.6	1.2	4.5	5.9	0.6	0.1	0.1	
trachyte	intrusion	4Tsyd	2-6-11B	66.9	16.8	2.5	0.7	1.5	4.5	6.3	0.6	0.1	0.1	
trachyte	intrusion	5Tsyd	2-5-9E	68.0	16.7	2.6	0.6	0.9	3.2	7.1	0.7	0.2	0.1	
trachyte	intrusion	6Tsyd	73L-55D	66.0	17.0	3.0	0.6	1.7	4.7	6.1	0.7	0.2	0.1	
trachyte	intrusion	1Tsy	RC-2-3B	66.6	16.9	2.7	0.7	1.3	4.4	6.4	0.7	0.2	0.1	
trachyte	intrusion	2Tsy	RC-2-5B	66.5	16.5	3.0	0.8	1.6	4.7	5.9	0.7	0.2	0.1	
trachyte	intrusion	3Tsy	5-2C-87A	66.1	16.4	3.2	1.1	2.1	4.2	5.8	0.8	0.2	0.1	
trachyte	intrusion	4Tsy	73L-54B	64.3	16.4	4.1	1.0	2.6	3.9	6.3	1.0	0.4	0.1	
trachyte	intrusion	5Tsy	RC-2-7B	67.3	16.2	2.9	0.7	1.6	4.4	5.9	0.7	0.2	0.1	
trachyte	intrusion	6Tsy	RC-2-8A	65.3	16.9	3.4	0.9	2.1	4.4	5.9	0.9	0.3	0.1	
trachyte	intrusion	11Tsy	LC2004-04J	68.1	15.7	2.4	0.6	1.6	3.5	7.3	0.6	0.1	0.1	2.11
trachyte	intrusion	12Tsy	LC2004-18D	66.8	16.2	2.9	0.8	1.8	4.6	6.0	0.7	0.2	0.1	1.89
trachyte	intrusion	13Tsy	LC2004-40A	66.7	16.5	2.6	0.8	1.5	4.6	6.4	0.7	0.2	0.1	1.42
trachyte	intrusion	14Tsy	LC2004-58A altered	66.6	16.3	2.9	0.7	2.6	3.7	6.0	0.7	0.2	0.1	3.36
mixed	enclave	12Tsypi	LC2004-40F	66.4	15.3	3.9	1.3	4.2	4.2	3.7	0.5	0.3	0.1	2.51
trachyandesite	enclave	11Tsyi	LC2004-15D	55.6	18.4	7.0	2.8	5.9	4.6	3.4	1.6	0.5	0.1	0.65
trachyandesite	enclave	13Tsypi	LC-85G	56.4	17.1	7.2	3.0	4.1	5.1	4.2	1.9	0.8	0.3	2.80
dacite	intrusion	1Tqm	6-1-12A	68.5	15.0	3.6	1.0	1.8	3.4	5.7	0.8	0.3	0.0	
dacite	intrusion	2Tqm	RC-2-178A	67.2	15.4	3.6	1.2	2.4	4.0	5.0	0.8	0.3	0.1	
dacite	intrusion	3Tqm	6-1-10E	61.8	16.5	5.5	1.6	3.8	4.5	4.5	1.3	0.4	0.2	
dacite	intrusion	4Tqm	6-1-12B	65.0	16.5	4.2	1.1	2.4	4.3	5.3	0.9	0.3	0.1	
dacite	intrusion	11Tqm	LC2004-23B	66.2	15.6	3.8	1.3	2.6	4.1	5.1	0.9	0.3	0.1	0.55
dacite	intrusion	12Tqm	LC2004-24	65.5	15.7	4.1	1.4	2.8	4.3	4.8	0.9	0.3	0.1	0.44
mixed	enclave	11Tqmp	LC2004-21	70.9	13.6	3.1	1.0	1.6	3.6	5.2	0.7	0.2	0.1	0.67
trachyandesite	enclave	12Tqmp	LC2004-26A	62.4	17.0	4.5	1.7	2.3	5.4	5.1	1.1	0.4	0.1	1.11
dacite	lava	1Tdg	73L-8	63.0	17.6	3.8	2.0	3.1	3.7	5.2	1.0	0.5	0.1	
dacite	lava	2Tdg	6-1-1C	65.5	16.0	4.3	1.8	2.3	3.5	5.2	1.0	0.3	0.1	
dacite	lava	3Tdg	6-1-3B	65.9	16.6	3.3	1.2	2.8	3.3	5.5	1.0	0.3	0.1	
dacite	lava	4Tdg	6-1-8A	64.4	16.5	4.2	1.3	2.8	4.0	5.3	1.1	0.3	0.1	
dacite	lava	6Tdg	6-3-95A	64.4	16.3	4.3	1.5	3.2	4.1	4.9	1.1	0.3	0.1	
dacite	lava	11Tdg	LC2004-52A very altered	64.6	15.6	4.1	1.0	4.2	3.4	5.6	1.0	0.3	0.1	4.38
dacite	intrusion	1Tdrp	6-1-5R	65.4	15.9	4.1	1.7	3.2	3.5	4.6	1.0	0.4	0.1	
dacite	intrusion	2Tdrp	LSC-1-15A	62.7	16.0	5.5	2.3	2.5	4.3	4.8	1.3	0.4	0.1	
dacite	intrusion	3Tdrp*	RM-2746	64.3	15.0	4.3	2.0	2.0	2.8	8.2	0.8	0.3	0.3	
dacite	intrusion	1Tdrd	RM-711	64.6	20.3	3.9	0.7	0.8	2.8	4.3	1.9	0.7	0.0	
dacite	intrusion	2Tdrd	RM-684	62.8	23.2	2.9	0.6	0.7	3.0	4.0	2.1	0.7	0.0	
mixed	enclave	11Tdgp	LC-67	65.7	16.0	3.9	1.8	2.0	3.8	5.5	0.9	0.3	0.1	2.90
trachyandesite	evclave	12Tdgp	LC2004-52CB very altered	56.7	17.1	8.4	2.8	4.3	4.1	3.8	2.0	0.7	0.1	4.05

Sample	V* (ppm)	V (ppm)	Cr_2O_3* (ppm)	Cr (ppm)	Co (ppm)	Ni* (ppm)	Ni (ppm)	Cu (ppm)	Zn (ppm)	Ga (ppm)	Ga (ppm)	Ge (ppm)	As (ppm)	Rb (ppm)	Rb* (ppm)	Rb (ppm)	Y (ppm)	Zr* (ppm)	Zr (ppm)	Nb (ppm)	Nb (ppm)	Mo (ppm)	Ag (ppm)	In (ppm)	Sn (ppm)	Sb (ppm)	Cs (ppm)	Ba (ppm)	BaO (ppm)
11Tsplp	8		48			11				13					291			171		65									416
1Tspmps														128	294		25	166		72						0.50	21.2	120	
2Tspmps															306		20	169		71									
12Tspmps	7		47			9				16					255			172		72									440
4Tspmpm															184		28	627		41						0.28	25.1	1410	
5Tspmpm															186		31	578		42						0.29		2320	
6Tspmpm														74	171		30	604		44									
11Tspmpm	97		39			6				19					173			252		18									1033
12Tspmpm	34	22	26	< 20	3	3	< 20	< 10	110	19	17	2	8		179	160	28	660	607	42	40	3	1	< 0.1	3	1	19	1280	1537
2Tspup															173		41	450		55						0.48	1.8	435	
3Tspup															164		50	450		66								301	
4Tspup															169		43	439		65						0.34	1.9	320	
5Tspup															188		38	470		68						0.43	1.8	330	
6Tspupm															165		41	556		49								429	
1Tspupa															235		37	391		55						0.37	7.3	484	
2Tspupa															215		37	356		57									
3Tspupa															219		34	358		56									
4Tspupa															229		38	395		53									
5Tspupa															246		43	430		58						0.27	7.8	465	
1Tspupm															150		35	584		51						0.40	2.0	1510	
11Tspupm	67	57	55	20	6	10	< 20	30	110	23	20	1	6		146	130	22	195	199	20	18	< 2	< 0.5	< 0.1	4	1	3	941	1093
6Tspupam															136		27	235		35						0.55	3.7	1190	
7Tspupam																													
1Tsph															285		24	166		57						0.16	4.0	36	
2Tsph															319		16	168		65									
3Tsph															258		19	189		67									
1Trh														176	312		23	165		72						0.33	2.9	66	
1Tbg															272		29	278		51						0.39	5.0	276	
2Tbg															262		17	272		66									
3Tbg															283		41	343		64									
1Trp															225		35	335		51						0.74	4.2	349	
5Trp															245		40	323		59									
2Trh															318		27	180		72									
5Tsph																													
1Tsyd														144	197		37	425		50						0.33	6.6	823	
2Tsyd														155	168		32	480		46						0.62	4.7	1020	
3Tsyd															191		37	391		54									
4Tsyd															176		33	431		47									
5Tsyd															251		34	529		43									
6Tsyd														169	181		38	651		50						0.20	4.5	770	
1Tsy															168		34	510		46						0.17	3.3	819	
2Tsy															158		38	463		49						0.11	2.3	796	
3Tsy															168		36	395		39						0.37	4.2	865	
4Tsy														200	220			614								0.25	4.4	816	
5Tsy															180		35	457		46									
6Tsy															170		30	491		42									
11Tsy	28		32			8				20					253			379		55									614
12Tsy	35	25	43	< 20	3	7	< 20	10	70	19	18	2	< 5		163	152	36	461	517	49	51	2	2	< 0.1	3	1	4	866	979
13Tsy	25		37			5				19					167			505		49									1026
14Tsy	40		29			6				19					176			413		49									926
12Tsypi	75		32			7				17					95			121		14									764
11Tsyi	126		23			10				22					86			323		32									2040
13Tsypi	131	117	16	20	13	-2	120	40	120	23	20	2	8		141	126	37	327	291	42	42	3	1	< 0.1	3	1	4	988	1160
1Tqm														130	123		20	239		30						0.89	9.0	931	
2Tqm															190		26	250		34									
3Tqm															123		24	346		38									
4Tqm															132		25	288		40						0.63	5.4	1140	
11Tqm	56		29			4				20					154			277		34									1062
12Tqm	59	51	30	< 20	8	4	< 20	< 10	70	20	18	2	< 5		158	142	29	281	302	34	40	< 2	< 0.5	< 0.1	3	0	3	851	995
11Tqmp	42		37			6				18					226			259		40									395
12Tqmp	64	56	26	< 20	8	1	< 20	< 10	90	21	19	1	8		143	128	28	433	389	37	39	< 2	< 0.5	< 0.1	2	1	3	1650	1936
1Tdg															148		27	310		28						0.18	1.9	956	
2Tdg															165		25	265		35						0.45	5.3	1130	
3Tdg															209		56	271		32						0.39	4.4	1390	
4Tdg															157		28	352		41						0.16	2.4	949	
6Tdg														106	141		34	382		45									
11Tdg	59	46	31	< 20	6	3	< 20	10	110	19	18	2	< 5		186	170	31	300	304	35	38	< 2	< 0.5	< 0.1	3	0	6	931	1066
1Tdrp														137	143		25	279		32						0.22	1.8	875	
2Tdrp															142		29	289		42									
3Tdrp*															305		30	290		35						0.47	10.0	906	
1Tdrd															137		47	310		48									
2Tdrd															133		198	334		50									
11Tdgp	50		25			5				20					172			339		41									1159
12Tdgp	120	107	15	< 20	19	-4	< 20	30	110	24	21	1	< 5		104	95	30	278	331	38	41	2	< 0.5	< 0.1	3	1	3	1140	1307

Sample	La (ppm)	Ce (ppm)	Nd (ppm)	Sm (ppm)	Eu (ppm)	Gd (ppm)	Tb (ppm)	Dy (ppm)	Ho (ppm)	Er (ppm)	Tm (ppm)	Yb (ppm)	Lu (ppm)	Hf (ppm)	Ta (ppm)	W (ppm)	Tl (ppm)	Pb* (ppm)	Pb (ppm)	Bi (ppm)	Th (ppm)	Th (ppm)	U (ppm)	U (ppm)	Sr (ppm)	Sr (ppm)	Co (ppm)	Cr (ppm)	Mn (ppm)	Sc (ppm)
11Tsplp																		32			53		15							
1Tspmps	55	95	30	4.5	0.24		0.63	3.7				3.5	0.54	6.7	5.5						51.3		16.2		56.9	73	0.3		626	1.6
2Tspmps																										81				
12Tspmps																		23			52		18							
4Tspmpm	58	111	48	7.5	2.65	6.9	0.96	5.4				3.0	0.44	13.5	2.8						14.1		3.5			537	3.0	0.4	743	6.3
5Tspmpm	61	115	49	9.5	2.61	6.1	0.99	5.6				2.8	0.47	13.0	2.9						16.7		5.3				3.0	4.4	712	5.7
6Tspmpm																					17.1		5.7		651	524				
11Tspmpm																		25			14		6							
12Tspmpm	62.1	118	48.1	9.18	2.56	6.0	0.95	5.03	1	3	0	2.77	0.43	13.0	3	1	2	17	23	0	16	17	7	5						
2Tspup	113	252	100	18.9	2.09		1.77					3.6	0.49	13.2	4.7						31.1		7.9			141	0.8	<.5		2.6
3Tspup	110	216	100																							111				
4Tspup	103	229	92	17.6	1.98		1.75					4.2	0.60	12.0	5.3						30.2		7.2			123	1.6	<.036		3.9
5Tspup	106	225	89	16.7	1.91		1.67					4.2	0.59	14.6	5.1						30.9		9.6			129	1.6	<.046		4.0
6Tspupm	121	216	95																							139				
1Tspupa	82	163	62	11.5	1.47	10.9	1.25					4.2	0.56	10.5	4.8						37.4		10.8			215	4.1	15		5.5
2Tspupa																										225				
3Tspupa																										225				
4Tspupa																										219				
5Tspupa	80	161	65	11.2	1.48	9.5	1.24					4.2	0.64	11.5	4.7						37.3		11.9			220	3.1	1.8		5.1
1Tspupm	74	155	62	12.1	2.79		1.21					3.6	0.51	12.6	3.5						19.8		7.5			376	1.8	<.31		5.8
11Tspupm	50.8	96.2	39.6	7.44	1.42	16.3	0.74	4.02				2.28	0.32	6.0	1	5	2	34	35	0	17	18	9	7						
6Tspupam	64	130	56	10.3	1.91	8.4	1.08					2.3	0.34	6.7	1.4						15.9		9.3			745	10.9	29.2		7.5
7Tspupam																														
1Tsph	52	92	30	5.9	0.29		0.74	4.6				3.3	0.53	6.8	5.1						44.8		14.6			38	0.3		411	1.6
2Tsph																					46.2		17.7			47				
3Tsph																					42.3		13.7			30				
1Trh	51	91	25	3.9	0.23		0.57	3.6				3.5	0.51	6.9	5.9						54.2		14.6		73.6	20	0.5		259	1.7
1Tbg	64	121	47	8.4	0.91		1.02	6.6				3.6	0.56	8.8	4.7						33.3		6.9			107	1.1		692	2.6
2Tbg																										82				
3Tbg																										120				
1Trp	70	140	52	9.4	1.09	8.5	1.17	6.6				3.9	0.55	10.1	4.5						35.0		6.1			95	1.0	0.9	510	3.1
5Trp																					40.7		7.7			96				
2Trh																					55.8		21.8			45				
5Tsph																														
1Tsyd	79	163	67	12.5	1.89	9.0	1.31	7.5				3.8	0.58	11.9	4.3						29.8		8.2		291	268	2.2	1.6	709	4.4
2Tsyd	73	140	58	10.8	2.12	8.1	1.13	6.4				3.4	0.51	12.4	3.7						24.2		7.0		261	378	2.2	0.3	579	5.0
3Tsyd																					28.0		7.9			250				
4Tsyd																					22.2		12.9			321				
5Tsyd																					23.7		9.8			239				
6Tsyd	78	156	65	11.5	2.00	9.3	1.26	6.3				3.9	0.57	14.8	3.6						23.9		6.7		289	307	2.2	2.0	758	4.9
1Tsy	78	155	65	12.5	2.28	8.9	1.29					3.7	0.56	12.3	3.8						22.9		5.3			310	2.4		777	5.3
2Tsy	79	159	63	10.8	2.03	8.5	1.29	7.0				3.9	0.55	11.8	4.0						23.6		5.1			356	3.4		736	5.3
3Tsy	76	154	63	11.4	2.11	9.0	1.30	7.3				3.6	0.53	11.4	3.8						25.2		8.3			363	5.4	3.6	770	6.2
4Tsy	83	170	78	13.6	2.04	10.6	1.52	7.7				4.4	0.62	15.4	4.0						26.4		7.2		287	296	5.7	4.8	856	6.4
5Tsy																					22.8		6.0			327				
6Tsy																					19.1		4.7			441				
11Tsy												16.13						19			29		6							
12Tsy	77.2	150	60.9	11.7	1.99		1.23	6.38				3.52	0.53	12.0	4	2	1	18	24	0	25	28	7	7						
13Tsy																		19			25		7							
14Tsy																		17			27		11							
12Tsypi												12.10						18			23		11							
11Tsyi																		5			10		6							
13Tsypi	72	137	62.7	12.3	2.65		1.31	6.59				3.24	0.47	7.0	3	5	0	41	28	2	15	16	8	7						
1Tqm	61	110	41	7.0	1.43	5.2	0.72	4.0				2.3	0.35	7.4	2.8						14.4		4.2		460	409	5.7	2.0	321	5.1
2Tqm																										462				
3Tqm																					14.3		4.4			567				
4Tqm	65	128	49	9.7	1.70	6.9	1.06	5.9				3.4	0.53	9.3	3.5						17.9		7.3			435	7.4	1.2	610	6.7
11Tqm												12.10						26			25		8							
12Tqm	64.1	123	48.2	9.27	1.77		0.98	5.05			0	2.78	0.43	8.0	3	1	1	17	19	0	23	27	7	6						
11Tqmp												12.10						33			37		11							
12Tqmp	68.8	136	56.5	10.5	2.42		1.01	5.18				2.57	0.39	9.0	2	2	1	16	17	0	10	11	5	3						
1Tdg	70	138	64	10.7	2.06	7.9	1.13	5.8				3.3	0.47	9.6	2.9						21.6		7.5			491	7.3	4.3	694	6.8
2Tdg	64	127	54	9.6	2.14	6.6	1.10	6.6				3.2	0.51	8.6	3.4						23.3		7.6			406	7.9		705	7.4
3Tdg	62	121	54	9.8	2.19	11.1	1.62	8.7				5.1	0.73	7.4	2.8						20.6		5.4			497	5.4	1.6	501	6.8
4Tdg	69	132	58	9.8	2.11	8.0	1.11	6.1				3.1	0.49	9.6	3.6						24.8		8.2			494	7.3	3.0	704	7.0
6Tdg																									886	714				
11Tdg	64.7	120	49.9	9.55	1.88		1.04	5.4			0	2.92	0.44	8.0	3	2	1	22	24	0	22	22	7	6						
1Tdrp	65	126	55	9.6	1.94	8.4	1.06					3.1	0.45	8.3	3.2						22.8		6.7		975	488	9.0	15.9		7.8
2Tdrp																			100.0							607				
3Tdrp*	46	85	33	6.9	1.51		0.96	5.1				3.2	0.47	8.1	3.4				100.0		25.6		7.3			371	6.4	1.9	2040	7.1
1Tdrd																			100.0		20.8		6.3			369				
2Tdrd																			100.0							758				
11Tdgp												12.10						14			25		9							
12Tdgp	61.9	117	54.5	10.8	2.6		1.16	5.89			0	2.86	0.42	8	2	3	1	24	15	< 0.1	8	9	5	2						

All major elements normalised to 100%
All samples where major elements totalled <95% were disgaurded
Analysis highlihted in yellow measured in 2004/5 as part of Kennedy thesis
Trace elements marked with an asterisk (*) and all major elements were analysed using XRF by McGill Geochemical Laboratories, Montreal.
Trace elements and all rare earth elements were analysed using ICP-MS by Activation Laboratories, Ancaster.

Analysis unhighlighted part of Hon thesis
Major elements measured by Wavelngth x-ray flourenscent techniques (see Taggart et al, 1981)
REE analysed using Instrumental Neutron Activation Analysis (INAA). (see Zielinski, 1977) (Bacon et al. 1981)
Rb, Sr, Nb, Y, Zr were measured by Energy dispersive x ray flourescence precision of 5-10% (see Luddington, 1981)
U and Th were analysed by delayed neutron activation (see Millard 1976)
Sr and Rb concentrations and isotopea analysis performed with 60 sector mass spectrometer using triple rhenium filament
Sr isotope analysis has a precision of 0.01% (Hon, 1987)
Sr and Rb analysis has precision of 1%

Pb concentrations and isotopea analysis performed with 60 sector mass spectrometer using single rhenium filament and silica gel phosphate "emitter" technique
Pb isotope analysis has a precision of +0.05% (Hon, 1987)

Isotopic data normalised to NBS 981 standard

Supplementary table 2- Major, Trace, and REE data for bulk ignimbrite samples and their relative stratigraphic position

Magma type	Stratigraphic height (m)	Sample type	Sample	Field No.	SiO2 (wt.%)	Al2O3 (wt.%)	FeO (wt.%)	MgO (wt.%)	CaO (wt.%)	Na2O (wt.%)	K2O (wt.%)	TiO2 (wt.%)	P2O5 (wt.%)	MnO (wt.%)	loi (wt.%)
rhyolite	1500	bulk ig	1Tspo	72L-12	76.5	12.6	1.0	0.1	0.7	3.7	5.1	0.2	0.1	0.1	
rhyolite	1500	bulk ig	2Tspo	3-6-2B	75.7	13.2	1.1	0.4	0.5	3.5	5.2	0.2	0.1	0.1	
rhyolite	1500	bulk ig	3Tspo	BHS-1A	76.0	13.3	1.0	0.2	0.2	3.8	5.2	0.2	0.1	0.1	
rhyolite	1500	bulk ig	4Tspo	3-6-1A	75.5	13.1	1.2	0.4	0.7	3.4	5.2	0.2	0.1	0.1	
rhyolite	1500	bulk ig	5Tspo	SC906	76.0	13.0	1.2	0.0	0.4	3.8	5.2	0.2	0.0	0.0	
rhyolite	1500	bulk ig	6Tspo	BH-2A	76.1	13.0	1.1	0.2	0.3	3.9	5.2	0.2	0.1	0.1	
rhyolite	1500	bulk ig	7Tspo	FM-1	75.5	13.4	1.1	0.2	0.4	4.0	5.2	0.2	0.1	0.0	
rhyolite	1500	bulk ig	11Tspo	LC-34	75.6	13.2	1.2	0.2	0.3	4.0	5.3	0.2	0.0	0.1	0.38
rhyolite	995	bulk ig	2Tspl*	5-2C-127A	76.7	12.8	1.6	0.3	0.4	2.6	5.3	0.2	0.0	0.0	
rhyolite	1402	bulk ig	3Tspl*	RC-3-1A	75.0	13.5	1.6	0.5	1.0	2.8	5.2	0.3	0.1	0.1	
rhyolite	1494	bulk ig	4Tspl*	SC450	75.7	13.0	1.4	0.0	0.6	2.2	6.4	0.5	0.0	0.1	
rhyolite	1500	bulk ig	11Tspl	LC2004-15A	76.2	12.6	1.1	0.1	0.6	3.6	5.5	0.2	0.0	0.1	0.72
rhyolite	680	bulk ig	1Tspm	RC-4-55R	73.2	14.0	1.8	0.5	1.6	4.0	4.4	0.3	0.1	0.1	
rhyolite	607	bulk ig	2Tspm	RC-4-30A	73.3	14.2	2.0	0.5	1.7	2.5	5.2	0.3	0.1	0.2	
rhyolite	674	bulk ig	3Tspm	5-2C-122C	74.2	13.9	1.5	0.5	0.7	2.9	5.8	0.3	0.1	0.0	
rhyolite	675	bulk ig	4Tspm	5-2C-122A	74.9	13.4	1.4	0.4	0.9	3.2	5.5	0.3	0.1	0.1	
rhyolite	512	bulk ig	1TSPM	RC-4-12A	74.5	14.2	1.6	0.5	0.8	2.3	5.6	0.3	0.1	0.1	
rhyolite	576	bulk ig	2TSPM	RC-4-28A	74.9	14.2	1.4	0.5	0.7	2.6	5.3	0.3	0.1	0.0	
rhyolite	537	bulk ig	3TSPM	RC-4-27A	74.5	13.8	2.0	0.4	0.6	2.8	5.4	0.3	0.1	0.0	
rhyolite	778	bulk ig	5TSPM	LCC-1	73.8	13.4	1.7	0.4	0.8	3.2	6.2	0.3	0.1	0.1	
rhyolite	785	bulk ig	11Tspm	LC2004-49A altered	70.3	15.0	2.4	0.7	1.6	2.3	7.1	0.5	0.1	0.1	3.12
rhyolite	784	bulk ig	13Tspm	LC2004-57C	73.7	13.4	1.7	0.3	1.7	3.4	5.4	0.3	0.1	0.1	2.23
trachyte		bulk ig	1Tspu	6-1-13R	71.6	15.3	2.0	0.4	0.3	3.1	6.6	0.5	0.1	0.1	
trachyte	439	bulk ig	2Tspu	RC-4-2A	67.2	17.0	2.7	0.6	1.3	4.1	6.3	0.7	0.1	0.0	
trachyte	366	bulk ig	3Tspu	RC-4-22A	67.0	16.6	2.7	0.6	2.2	3.8	6.1	0.6	0.1	0.1	
trachyte	317	bulk ig	1TSPU	RC-4-7A	69.4	16.5	2.0	0.4	0.8	3.8	6.5	0.5	0.1	0.0	
trachyte	274	bulk ig	2TSPU	RC-6-4A	68.8	15.9	2.2	0.6	1.5	4.4	5.9	0.6	0.1	0.1	
trachyte	290	bulk ig	3TSPU	RC-4-24A	68.3	17.0	2.2	0.4	0.8	4.0	6.7	0.6	0.1	0.0	
trachyte	335	bulk ig	11Tspu	LC2004-30	69.6	15.7	2.1	0.4	1.2	4.0	6.2	0.5	0.1	0.1	1.89
trachyte	375	bulk ig	12Tspu	LC2004-50A	73.3	13.9	1.7	0.4	0.9	3.6	5.8	0.3	0.1	0.0	1.46
trachyte	375	bulk ig	13Tspu	LC2004-50C	73.0	14.1	1.7	0.4	1.0	3.5	5.8	0.3	0.1	0.1	1.74

Sample	V* (ppm)	V (ppm)	Cr2O3* (ppm)	Cr (ppm)	Co (ppm)	Ni* (ppm)	Ni (ppm)	Cu (ppm)	Zn (ppm)	Ga (ppm)	Ga (ppm)	Ge (ppm)	As (ppm)	Rb (ppm)	Rb* (ppm)	Rb (ppm)	Y (ppm)	Zr* (ppm)	Zr (ppm)	Nb (ppm)	Nb (ppm)	Mo (ppm)	Ag (ppm)	In (ppm)	Sn (ppm)
1Tspo															274		23	161		58					
2Tspo															267		19	169		58					
3Tspo															294		25	175		67					
4Tspo														145	263		27	174		57					
5Tspo																									
6Tspo														132	301		29	180		70					
7Tspo															307		28	189		71					
11Tspo	3	5	130	20	1	15	20	10	30	20	1	1	5		297	1	1	202	1	81	0	2	1	<d/l	1.0
2Tspl*															287		18	172		64					
3Tspl*															270		24	167		52					
4Tspl*																									
11Tspl	1	< 5	59	< 20	< 1	9	< 20	20	60	18	18	2	< 5		264	250	28	176	176	66	64	5	< 0.5	< 0.1	3.0
1Tspm															221		23	239		50					
2Tspm															214		26	228		54					
3Tspm															236		22	257		53					
4Tspm															229		21	250		53					
1TSPM															250		23	216		51					
2TSPM															244		17	235		58					
3TSPM															261		27	211		58					
5TSPM															303		24	218		60					
11Tspm	29	19	32	30	2	5	20	10	90	18	17	1	< 5		312	298	26	351	408	48	49	< 2	1	< 0.1	3.0
13Tspm	18		31			6				18					237			249		59					
1Tspu															187		31	328		50					
2Tspu														132	151		35	435		41					
3Tspu															149		36	418		42					
1TSPU															168		46	436		50					
2TSPU															188		39	452		53					
3TSPU															171		43	445		51					
11Tspu	17	15	38	< 20	2	8	< 20	20	60	19	18	1	< 5		210	195	38	436	482	61	59	< 2	1	< 0.1	3.0
12Tspu	18		29			6				19					265			261		66					
13Tspu	17		30			8				20					271			274		67					

Sample	Sb (ppm)	Cs (ppm)	Ba (ppm)	BaO (ppm)	La (ppm)	Ce (ppm)	Nd (ppm)	Sm (ppm)	Eu (ppm)	Gd (ppm)	Tb (ppm)	Dy (ppm)	Ho (ppm)	Er (ppm)	Tm (ppm)	Yb (ppm)	Lu (ppm)	Hf (ppm)	Ta (ppm)	W (ppm)	Tl (ppm)	Pb* (ppm)	Pb (ppm)	Bi (ppm)	Th (ppm)	Th (ppm)	U (ppm)	U (ppm)	Sr (ppm)	Sr (ppm)	Co (ppm)	Cr (ppm)	Mn (ppm)	Sc (ppm)
1Tspo	0.19	5.0	75		55	93	32	5.2	0.33		0.67	3.7				3.5	0.51	6.8	4.9						47.9		7.8			29	0.8	1.1	520	2.0
2Tspo	0.19	4.2	70		51	94	33	5.5	0.38	7.3	0.66	4.2				2.9	0.45	6.8	5.5						45.6		8.2			38	0.9		605	2.0
3Tspo	0.36	3.9	28		54	93	27	5.5	0.27		0.71	4.5				3.4	0.57	7.4	6.0						54.3		11.0			6	0.3	0.5	483	1.8
4Tspo	0.18	5.1	138		51	93	31	5.0	0.37		0.74	4.5				3.7	0.53	6.7	4.9						45.0		5.7		41	100	1.1		640	2.2
5Tspo																																		
6Tspo																													53.6	18				
7Tspo																														32				
11Tspo	0	0	3	80	0			0	0	0	0	0	0	0	0	0.00	<d/l	<d/l	0	1	0	23	5	0	55	0	10	0						
2Tspl*																									49.1		12.3			67				
3Tspl*	0.63	8.3	213		48	87	30	5.4	0.47		0.67	4.6				3.2	0.53	6.3	4.6						41.0		16.6			105	2.3	3.0	501	3.2
4Tspl*																																		
11Tspl	1	3	50	41	51.6	94.1	32	5.47	0.276		0.69	4.07			0	3.16	0.507	7.0	5	3	2	26	23	1	45	48	15	16						
1Tspm																														341				
2Tspm																									41.0		11.7			153				
3Tspm			450																						36.7		14.8			144				
4Tspm	0.49	12.8	381		53	98	34	6.0	0.80		0.73	4.3				3.1	0.51	8.2	4.4						37.7		14.3			142	1.4		4	2.6
1TSPM	0.58	3.8	336		56	100	36	6.2	0.85		0.80	4.5				3.4	0.53	7.8	4.7						40.8		10.7			118	1.7	1.0	406	3.5
2TSPM	0.72	3.0	368		47	85	28	4.9	0.71		0.60	3.3				2.8	0.40	7.6	4.4						39.4		8.3			117	1.2	0.6	157	2.9
3TSPM																									44.8		15.2			99				
5TSPM																									42.4		14.9			107				
11Tspm	1	12	822	904	55.4	103	37.8	7.07	1.47		0.76	4.25	1	3	0	2.88	0.462	10.0	4	2	3	19	18	0	31	33	11	11						
13Tspm				395																		21			40		14							
1Tspu																									29.6		10.9			129				
2Tspu	0.24	1.9	728		87	169	70	11.8	2.15	9.0	1.35	7.6				3.6	0.56	12.3	3.5						23.1		6.5		157	260	2.6	0.4	400	5.5
3Tspu																									27.0		7.6			268				
1TSPU	0.98	2.8	471		92	193	80	14.6	1.81	11.3	1.67	10.0				4.3	0.65	12.0	4.3						28.0		8.1			156	1.9	0.9	168	4.2
2TSPU																														216				
3TSPU																									26.9		7.5			163				
11Tspu	1	4	476	524	86.3	167	64.1	12	1.48	9	1.29	6.85				3.87	0.602	12.0	4	2	1	23	21	0	35	38	12	12						
12Tspu				282																		26			45		13							
13Tspu				295												8.06						27			45		16							

All major elements normalised to 100%
ents <96 % totals disguarded
Analysis highlihted in yellow measured in 2004/5 as part of Kennedy thesis
Trace elements marked with an asterisk (*) and all major elements were analysed using XRF by McGill Geochemical Laboratories, Montreal.
Trace elements and all rare earth elements were analysed using ICP-MS by Activation Laboratories, Ancaster.

Analysis unhighlighted part of Hon thesis
Major elements measured by Wavelngth x-ray flourenscent techniques (see Taggart et al, 1981)
REE analysed using Instrumental Neutron Activation Analysis (INAA). (see Zielinski, 1977) (Bacon et al. 1981)
Rb, Sr, Nb, Y, Zr were measured by Energy dispersive x ray flourescence precision of 5-10% (see Luddington, 1981)
U and Th were analysed by delayed neutron activation (see Millard 1976)
Sr and Rb concentrations and isotopea analysis performed with 60 sector mass spectrometer using triple rhenium filament
Sr isotope analysis has a precision of 0.01% (Hon, 1987)
Sr and Rb analysis has precision of 1%

Pb concentrations and isotopea analysis performed with 60 sector mass spectrometer using single rhenium filament and silica gel phosphate "emitter" technique
Pb isotope analysis has a precision of +0.05% (Hon, 1987)

Isotopic data normalised to NBS 981 standard

Supplementary Table 3 Accessory phase crystallization to produce rhyolite from trachyte

Element	D chevkinite	D sphene	D zircon	wt. % frac chevkinite	wt frac sphene	wt frac zircon	Bulk D D'	Trachyte HREE pumice 1 Co	Magma crystallized F	Rhyolite liquid Cl	Rhyolite liquid pumice
La	988	28	17	0.0017	0.015	0.0006	2.1098	106	0.55	55	55
Ce	806	70	17	0.0017	0.015	0.0006	2.4304	225	0.55	96	95
Sm	392	102	14	0.0017	0.015	0.0006	2.2048	16.7	0.55	8.13	4.5
Eu	225	101	16	0.0017	0.015	0.0006	1.9071	1.91	0.55	1.11	0.24
Gd	142	102		0.0017	0.015	0.0006	1.7714		0.55	0	
Dy	72	81	102	0.0017	0.015	0.0006	1.3986		0.55	0	3.7
Y	74	99	224	0.0017	0.015	0.0006	1.7452	38	0.55	24	
Yb	50	37.4	527	0.0017	0.015	0.0006	0.9622	4.20	0.55	4.30	3.5
Lu	20	37.4	642	0.0017	0.015	0.0006	0.9802	0.59	0.55	0.60	0.54
Th	100		76.8	0.0017	0.015	0.0006	0.21608	30.9	0.55	49	53
Rb				0.0017	0.015	0.0006	0	188	0.55	342	294
Hf			10000	0.0017	0.015	0.0006	6	14.6	0.55	1	6.7
Nb	15	45	48	0.0017	0.015	0.0006	0.7293	68	0.55	80	72
Ta	15	45	48	0.0017	0.015	0.0006	0.7293	5.1	0.55	6	5.5

Partition coefficients from Hanson (1980), Mahood and Hildreth (1983), and Troll et al. (2003)
Trachyte liuid 1 correspons to sample 5Tspup Ryolite liquid corresponds to pumice 1Tspmps
D=partition coefficient for a given mineral and element
wt frac=weight fraction of a mineral which is crystallizing
Bulk D (D')=overall bulk distribution coefficient
Co=concentration of parent composition
Cl=concentration of daughter composition
F=amount of crystallization (F=1 means no crystallization, F=0 means 100% crystallization, i.e., all is solidified)
wt frac=weight fraction of a mineral which is crystallizing (i.e., wt frac of 0.01 is 1%, wt frac of 0.001 is 0.1 %, etc.)
Basic equation: Cl=Co*F^(D'-1)

Zr in trachyte - Zr in zircon = Zr in rhyolite

or

Zr in trachyte = Zr in rhyolite + Zr in zircon

Zr in rhyolite	Mass frac rhyolite	Zr in zircon	Mass frac zircon	**Zr in trachyte**
170	0.9994	497644	0.0006	468.4844