

## Northwest Research Obsidian Studies Laboratory

Table A-1. Results of XRF Studies: Big Obsidian Flow Geochemical Source, Newberry National Volcanic Monument, Oregon

Site	Specimen		Trace Element Concentrations											Ratios		Geochemical Source
	No.	Catalog No.	Zn	Pb	Rb	Sr	Y	Zr	Nb	Ti	Mn	Ba	Fe <sub>2</sub> O <sub>3</sub> <sup>T</sup>	Fe:Mn	Fe:Ti	
Big Obsidian Flow	1	BOF-1	58 ± 7	16 3	115 3	52 6	41 2	346 7	19 2	1220 76	457 23	869 14	2.20 0.11	44.5	55.1	Big Obsidian Flow
Big Obsidian Flow	2	BOF-2	61 ± 7	17 3	121 3	54 6	44 2	357 7	24 2	1047 76	381 23	918 14	1.75 0.11	42.8	51.2	Big Obsidian Flow
Big Obsidian Flow	3	BOF-3	74 ± 7	16 3	127 3	56 6	47 2	364 7	22 2	1184 76	424 23	847 14	1.99 0.11	43.6	51.6	Big Obsidian Flow
Big Obsidian Flow	4	BOF-4	63 ± 7	14 3	124 3	56 6	44 2	353 7	22 2	1321 77	468 23	817 14	2.28 0.11	45.0	52.8	Big Obsidian Flow
Big Obsidian Flow	5	BOF-5	58 ± 7	17 3	122 3	55 6	46 2	355 7	24 2	1284 76	441 23	887 13	2.19 0.11	45.8	52.1	Big Obsidian Flow
Big Obsidian Flow	6	BOF-6	69 ± 7	19 3	124 3	56 6	47 2	367 7	20 2	1367 77	490 23	810 13	2.38 0.11	44.7	53.0	Big Obsidian Flow
Big Obsidian Flow	7	BOF-7	61 ± 7	13 3	121 3	53 6	47 2	358 7	20 2	1272 77	464 23	820 14	2.19 0.11	43.6	52.6	Big Obsidian Flow
Big Obsidian Flow	8	BOF-8	64 ± 7	21 3	127 3	54 6	45 1	360 7	22 1	1379 77	507 23	829 13	2.40 0.11	43.7	53.2	Big Obsidian Flow
Big Obsidian Flow	9	BOF-9	63 ± 7	17 3	123 3	54 6	44 1	363 7	23 1	1331 77	506 23	882 14	2.35 0.11	42.7	53.8	Big Obsidian Flow
Big Obsidian Flow	10	BOF-10	70 ± 7	19 3	127 3	56 6	45 2	364 7	20 2	1195 76	452 23	776 14	2.09 0.11	42.8	53.5	Big Obsidian Flow
Big Obsidian Flow	11	BOF-11	63 ± 7	19 3	123 3	58 6	45 2	360 7	21 2	1222 76	425 23	845 14	2.09 0.11	45.5	52.3	Big Obsidian Flow
Big Obsidian Flow	12	BOF-12	63 ± 7	20 3	127 3	60 6	46 1	361 7	22 1	1315 77	496 23	811 13	2.36 0.11	43.8	54.7	Big Obsidian Flow
Big Obsidian Flow	13	BOF-13	64 ± 7	14 3	118 3	54 6	48 2	353 7	22 2	1149 76	429 23	782 14	2.03 0.11	43.8	54.0	Big Obsidian Flow
Big Obsidian Flow	14	BOF-14	64 ± 7	16 3	122 3	57 6	45 1	359 7	21 1	1389 77	514 23	830 13	2.37 0.11	42.5	52.1	Big Obsidian Flow
Big Obsidian Flow	15	BOF-15	57 ± 7	19 3	122 3	54 6	45 2	362 7	23 2	1347 77	488 23	821 14	2.32 0.11	43.9	52.7	Big Obsidian Flow
Big Obsidian Flow	16	BOF-16	60 ± 7	18 3	127 3	54 6	46 1	368 7	25 1	1453 77	504 23	877 14	2.37 0.11	43.4	49.9	Big Obsidian Flow

All trace element values reported in parts per million; ± = analytical uncertainty estimate (in ppm). Iron content reported as weight percent oxide.

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	No.	Catalog No.	Zn	Pb	Rb	Sr	Y	Zr	Nb	Ti	Mn	Ba	Fe <sub>2</sub> O <sub>3</sub> <sup>T</sup>	Fe:Mn	Fe:Ti	
Big Obsidian Flow	17	BOF-17	60 ± 7	19 3	118 3	53 6	44 2	346 7	21 2	1243 76	476 23	804 14	2.22 0.11	43.0	54.4	Big Obsidian Flow
Big Obsidian Flow	18	BOF-18	68 ± 7	21 3	132 3	60 6	46 2	378 7	26 2	1157 76	412 23	796 14	1.97 0.11	44.3	52.2	Big Obsidian Flow
Big Obsidian Flow	19	BOF-19	64 ± 7	16 3	123 3	54 6	45 1	360 7	23 1	1368 77	471 23	827 13	2.32 0.11	45.5	51.9	Big Obsidian Flow
Buried Obsidian Flow	1	BUROF-1	58 ± 7	15 3	137 3	64 6	52 2	348 7	20 2	1181 76	367 23	789 14	1.80 0.11	45.7	47.0	Big Obsidian Flow
Buried Obsidian Flow	2	BUROF-2	59 ± 7	17 3	136 3	58 6	50 2	331 7	16 2	1112 76	328 22	744 14	1.69 0.11	48.2	47.0	Big Obsidian Flow
Buried Obsidian Flow	3	BUROF-3	64 ± 7	20 3	135 3	52 6	46 2	330 7	20 2	1101 76	350 23	744 14	1.74 0.11	46.4	48.7	Big Obsidian Flow
Buried Obsidian Flow	4	BUROF-4	56 ± 7	19 3	135 3	57 6	49 2	334 7	19 1	1419 77	456 23	808 13	2.27 0.11	46.0	49.0	Big Obsidian Flow
Buried Obsidian Flow	5	BUROF-5	51 ± 7	19 3	132 3	57 6	51 2	327 7	17 2	1315 76	375 23	817 14	2.01 0.11	49.7	47.0	Big Obsidian Flow
Buried Obsidian Flow	6	BUROF-6	65 ± 7	22 3	133 3	65 6	51 2	360 7	19 2	1333 76	398 23	790 14	2.08 0.11	48.4	47.9	Big Obsidian Flow
Buried Obsidian Flow	7	BUROF-7	78 ± 7	19 3	130 3	62 6	49 2	341 7	20 2	1229 76	381 23	751 14	1.95 0.11	47.5	48.7	Big Obsidian Flow
Buried Obsidian Flow	8	BUROF-8	53 ± 7	16 3	133 3	59 6	48 2	334 7	20 2	1169 76	364 23	762 13	1.92 0.11	48.8	50.3	Big Obsidian Flow
Buried Obsidian Flow	9	BUROF-9	63 ± 7	19 3	133 3	60 6	51 2	346 7	21 2	1200 76	408 23	761 13	1.98 0.11	44.9	50.5	Big Obsidian Flow
Buried Obsidian Flow	10	BUROF-10	57 ± 6	21 3	126 3	65 6	50 2	354 7	19 1	1497 77	445 23	837 14	2.34 0.11	48.5	47.9	Big Obsidian Flow
Buried Obsidian Flow	11	BUROF-11	57 ± 6	18 3	129 3	61 6	52 2	354 7	20 1	1424 77	446 23	814 13	2.32 0.11	47.8	49.8	Big Obsidian Flow
Buried Obsidian Flow	12	BUROF-12	68 ± 7	17 3	138 3	64 6	50 2	361 7	19 2	1367 77	406 23	808 14	2.10 0.11	47.9	47.2	Big Obsidian Flow
Buried Obsidian Flow	13	BUROF-13	56 ± 6	19 3	126 3	58 6	50 1	341 7	19 1	1449 77	449 23	818 13	2.31 0.11	47.4	48.8	Big Obsidian Flow

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	No.	Catalog No.	Zn	Pb	Rb	Sr	Y	Zr	Nb	Ti	Mn	Ba	Fe <sub>2</sub> O <sub>3</sub> <sup>T</sup>	Fe:Mn	Fe:Ti	
Buried Obsidian Flow	14	BUROF-14	56 ± 7	15 3	133 3	62 6	49 2	351 7	22 2	1107 76	355 23	748 14	1.81 0.11	47.5	50.3	Big Obsidian Flow
Buried Obsidian Flow	15	BUROF-15	59 ± 7	18 3	130 3	67 6	48 2	355 7	20 2	1336 76	398 23	754 13	2.01 0.11	46.8	46.3	Big Obsidian Flow
Buried Obsidian Flow	16	BUROF-16	63 ± 6	17 3	136 3	61 6	54 2	355 7	20 1	1499 77	458 23	832 14	2.30 0.11	46.3	47.0	Big Obsidian Flow
Buried Obsidian Flow	17	BUROF-17	56 ± 7	25 3	139 3	66 6	52 2	364 7	19 2	1514 77	423 23	839 14	2.23 0.11	48.7	45.2	Big Obsidian Flow

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