

Table 3. Major-, and minor- and trace-element composition of 18 lignite samples from the San Sebastian Formation (Oligocene) in northwestern Puerto Rico, reported on a whole basis (PAGE 1 OF 4 PAGES).

[Concentration in percent or partspermillion (ppm). L, less than the value shown. Sample number is USGS field number. Lab number is USGS laboratory number].

Sample Number	Sb (ppm)	Sc (ppm)	Se (ppm)	Sm (ppm)	Sn (ppm)	Sr (ppm)	Te (ppm)	Tb (ppm)	Th (ppm)	Tl (ppm)	Lab Number
MOCA-1	0.88	34	0.90	4.4	6.1	160	0.44L	0.61	7.0	0.44	W253180
L1A	.77	24	2.1	1.8	1.8	32	.30L	.30L	4.8L	.30L	W253196
L1B	.46	21	1.6	1.3	2.0	34	.33L	.33L	5.3L	.33	W253197
L2A	1.1	39	5.6	5.8	2.2	49	.22L	1.3	3.6L	.27	W253192
L2B	.54L	27	1.0	.91	2.7L	46	.45L	.45L	7.3L	.49L	W253193
[2C1+L2C2	.44	23	2.1	1.5	1.1	25	.33	.36	2.9L	.18L	W253194
L2D	.54L	26	.90	1.8	2.7L	54	.45L	.45L	7.1L	.45L	W253195
L3A	.83	37	29	2.3	2.3	650	.38L	.45	6.0	.38	W253189
L3B	.65	19	2.4	1.6	2.4	770	.32	.36	3.2L	.20L	W253190
L3C	.78	12	1.5	1.3	2.0	91	.33L	.33L	5.2L	.33L	W253191
L4A	.35	9.3	.60	.77	1.6	38	.19L	.19L	3.1L	.19L	W253181
L4B	.78	6.8	2.3	.46	2.3	39	.55	.23L	3.6L	.23L	W253182
L4A+L4B	2.6	21	.90	2.3	4.5	120	.38	.38L	6.0L	.38L	W253183
L4C	.38L	19	8.1	2.5	1.9L	94	.31L	.44	5.0L	.31L	W253184
L4D	.43	6.3	3.2	.65	1.3	120	.11L	.11L	1.7L	.11L	W253185
L4C+L4D	.62	19	3.3	3.4	3.4	150	.34L	.41	5.5L	.34L	W253186
L4F	.54	4.3	3.1	.64	1.5	110	.11L	.11L	1.7L	.11L	W253187
L4G	.73	25	1.6	1.6	2.4	230	.40L	.40L	6.5L	.73	W253188

Sample Number	Tm (ppm)	U (ppm)	V (ppm)	W (ppm)	Y (ppm)	Yb (ppm)	Zn (ppm)	Zr (ppm)	Lab Number
MOCA-1	0.44	11	230	0.88	23	2.6	45	18	W253180
L1A	.30L	3.9	180	.60L	6.0	1.2	31	4.8L	W253196
L1B	.33L	3.4	170	.66	6.6	1.3	40	5.3L	W253197
L2A	.89	17	580	.44L	53	4.4	85	9.3	W253192
L2B	.49L	2.1	230	.91L	13	1.8	59	7.3L	W253193
L2C1+L2C2	.36	9.8	140	.36	21	2.5	51	3.6	W253194
L2D	.45L	2.8	170	.89L	14	1.8	55	7.1	W253195
L3A	.38L	3.0	260	.75	17	2.3	64	7.5	W253189
L3B	.32	2.7	110	69	15	2.0	29	4.0	W253190
L3C	.33L	4.4	180	4.6	10	1.3	57	5.2L	W253191
L4A	.19L	3.3	70	.77	3.9	.39	27	3.1	W253181
L4B	.23L	3.6	42	3.2	2.3	.46	16	3.6L	W253182
L4A+L4B	.38L	15	670	1.5	14	2.3	66	6.8	W253183
L4C	.31	1.2	140	.63L	24	1.9	120	6.3	W253184
L4D	.11L	5.6	37	.22	2.6	.43	7.4	2.2	W253185
L4C+L4D	.34L	3.1	160	.68	12	1.4	32	14	W253186
L4F	.11L	3.9	32	.22	2.4	.22	5.8	2.2	W253187
L4G	.40L	2.8	140	1.6	12	1.6	42	8.1	W253188

Sample Number	Er (ppm)	Eu (ppm)	F (ppm)	Ga (ppm)	Gd (ppm)	Ge (ppm)	Hf (ppm)	Hg (ppm)	Ho (ppm)	La (ppm)	Lab Number
HOCA-1	2.6	1.8	200	25	3.5	4.2	5.2	0.040	0.88	18	W253180
L1A	1.2	.48	130	18	1.2	23	6.0	.11	.36	2.4	W253196
L1B	1.3	.46	200	18	1.3	13	4.6	.070	.33	4.0	W253197
L2A	4.0	2.2	100	12	4.4	18	4.4	.050	1.8	8.9	W253192
L2B	.91	.54	200	24	.91	2.9	2.7	.070	.45	4.5	W253193
L2C1+L2C2	1.8	.73	50	6.6	2.2	9.5	3.6	.070	.73	3.6	W253194
L2D	1.8	.62	200	20	1.8	3.3	2.7	.040	.54	8.0	W253195
L3A	1.5	.68	200	21	2.3	2.3	3.8	.52	.60	7.5	W253189
L3B	1.6	.40	130	6.5	1.6	13	4.0	.060	.40	4.0	W253190
L3C	1.3	.52	110	13	1.3	8.5	4.6	.040	.39	5.2	W253191
L4A	.39	.23	40	7.7	.77	3.7	1.9	.030	.19L	3.1	W253181
L4B	.36	.18	60	5.5	.46	7.3	4.1	.11	.23L	2.3	W253182
L4A+L4B	1.5	.68	140	18	2.3	76	15	.090	.53	6.8	W253183
L4C	1.3	.63	70	13	2.5	7.5	1.9	.18	.63	13	W253184
L4D	.22	.22	20L	2.4	.65	5.9	4.3	.090	.11	1.7	W253185
L4C+L4D	1.4	.68	200	15	2.7	4.9	3.4	.070	.48	6.8	W253186
L4F	.19	.19	20L	2.0	.64	13	6.4	.070	.11	1.5	W253187
L4G	1.6	.57	200	22	1.6	6.7	4.0	.070	.49	8.1	W253188

Sample Number	Li (ppm)	Mn (ppm)	Mo (ppm)	Nb (ppm)	Nd (ppm)	Ni (ppm)	P (ppm)	Pb (ppm)	Pr (ppm)	Rb (ppm)	Lab Number
HOCA-1	180	96	4.9	7.9	18	55	110	6.1	3.5	60	W253180
L1A	44	57	8.9	8.3	4.8	25	4.7	4.8	1.2	51	W253196
L1B	62	60	7.3	6.0	5.3	28	57	4.6	1.3	62	W253197
L2A	67	27	5.3	2.7	22	140	46	2.7	4.9	29	W253192
L2B	120	50	.91	6.3	5.4	24	25	5.4	1.8	68	W253193
L2C1+L2C2	32	40	4.7	1.8	3.6	76	4.7	1.5	1.5	16	W253194
L2D	79	60	1.7	5.4	8.0	33	33	6.2	1.8	66	W253195
L3A	140	71	5.6	6.0	7.5	68	20	11	2.3	53	W253189
L3B	34	65	6.1	1.6	4.0	61	25	1.6	1.2	18	W253190
L3C	65	180	17	2.6	5.2	34	16	3.9	1.3	33	W253191
L4A	38	100	7.7	1.9	3.1	14	16	2.7	.77	20	W253181
L4B	31	42	16	1.4	2.3	12	20	1.8	.46	14	W253182
L4A+L4B	66	260	70	4.5	7.6	37	9.7	3.8	1.5	33	W253183
L4C	40	270	.63	3.8	13	94	36	3.8	2.5	23	W253184
L4D	16	20	8.0	1.1	2.2	10	6.4	.87	.65	9.5	W253185
L4C+L4D	89	82	3.2	4.8	14	26	35	4.8	3.4	42	W253186
L4F	12	17	9.0	1.1	2.2	8.2	26	.86	.64	8.8	W253187
L4G	120	140	7.2	7.3	8.1	35	8.8	5.7	1.6	55	W253188



Sample Number	Si (percent)	Al (percent)	Ca (percent)	Mg (percent)	Na (percent)	K (percent)	Fe (percent)	Ti (percent)	Ag (ppm)	As (ppm)	Lab Number
MOCA-1	23	12	1.6	0.53	0.14	1.8	3.5	0.63	1.3	96	W253180
L1A	15	6.9	.05	.35	.22	1.3	3.7	.43	2.0	1100	W253196
L1B	17	8.0	.22	.40	.20	1.4	4.1	.44	1.2	2100	W253197
L2A	9.4	5.9	1.2	.35	.01	.59	4.0	.29	.89	670	W253192
L2B	27	12	.52	.71	.05	2.1	3.2	.54	.45L	62	W253193
L2C1+L2C2	5.3	2.7	1.1	.14	.01	.48	7.6	.12	.76	1400	W253194
L2D	25	9.9	.76	.70	.26	2.2	3.9	.50	.45L	220	W253195
L3A	18	9.9	.86	.59	.13	1.3	3.9	.49	1.2	140	W253189
L3B	6.0	2.8	1.3	.18	.07	.64	8.5	.13	.69	690	W253190
L3C	16	6.2	.98	.43	.25	1.2	5.0	.33	.65	290	W253191
L4A	8.9	3.7	.50	.30	.24	.55	3.0	.21	.19	190	W253181
L4B	6.6	2.6	1.1	.20	.08	.46	11	.13	.64	780	W253182
L4A+L4B	16	6.4	2.6	.64	.44	1.1	6.9	.50	2.3	620	W253183
L4C	17	6.3	.44	1.4	.60	.68	3.3	.35	.31	16	W253184
L4D	3.6	1.4	1.9	.12	.04	.36	1.8	.07	.87	200	W253185
L4C+L4D	18	7.6	1.1	.50	.30	1.4	3.0	.39	.75	100	W253186
L4F	3.0	1.2	2.2	.11	.04	.32	1.8	.06	.90	190	W253187
L4G	20	10	.92	.73	.14	1.3	4.7	.53	.65	310	W253188

Sample Number	Au (ppm)	Ba (ppm)	Be (ppm)	Cd (ppm)	Ce (ppm)	Co (ppm)	Cr (ppm)	Cs (ppm)	Cu (ppm)	Dy (ppm)	Lab Number
MOCA-1	6.3	270	1.8	0.18L	26	8.8	150	4.6	170	4.4	W253180
L1A	1.8L	130	1.2L	.12	6.0	6.5	89	12	120	1.8	W253196
L1B	1.9	140	1.3L	.13L	6.6	6.0	86	16	86	2.0	W253197
L2A	1.3L	76	3.6	.13	27	9.8	100	3.0	120	8.9	W253192
L2B	2.7L	270	1.8L	.18L	9.1	5.4	84	8.8	38	1.8	W253193
L2C1+L2C2	1.1L	58	1.8	.073L	7.3	11	36	1.8	51	3.3	W253194
L2D	2.7L	280	1.8L	.18L	18	6.2	81	7.6	37	2.7	W253195
L3A	3.0	170	1.5	.15L	15	20	140	4.7	180	3.0	W253189
L3B	1.2L	77	1.2	.081	8.1	10	32	1.7	73	2.8	W253190
L3C	2.0L	150	1.3	.26	13	16	61	2.9	38	2.0	W253191
L4A	1.2L	89	.77L	.077	7.7	4.6	39	1.7	22	.77	W253181
L4B	8.2	68	.091L	.14	4.6	3.6	42	1.3	50	.91	W253182
L4A+L4B	2.3L	170	1.5L	.53	15	11	160	2.6	72	3.0	W253183
L4C	1.9L	270	1.3	.13L	19	18	75	.94	69	3.8	W253184
L4D	4.3	56	.043L	.065	4.3	2.0	46	1.0	130	.65	W253185
L4C+L4D	2.1L	230	1.4L	.14L	21	6.2	82	3.8	82	2.7	W253186
L4F	3.2	58	.43L	.086	4.3	1.7	39	.80	130	.43	W253187
L4G	2.4L	170	1.6L	.16L	16	7.3	89	7.4	52	2.4	W253188