

## APPENDIX 1

### Results of chemical analyses of rare earth elements in the deposit

Sample REE	sun 1	sun 2	sun 3	sun 4	sun 5	sun 6	sona1	sona2	sona3	sona4	sona5	sona6
La	117.30	118.57	63.71	66.24	70.46	71.31	101.69	107.17	87.34	94.51	86.08	91.14
Ce	84.64	85.95	47.22	47.55	51.80	52.61	69.93	72.88	59.64	66.01	62.42	65.52
Pr	63.26	63.89	36.42	36.74	38.53	38.84	42.74	44.28	36.84	40.70	39.02	40.21
Nd	46.25	46.68	28.91	28.48	29.12	29.76	38.76	39.61	34.26	37.69	37.26	36.83
Sm	19.93	19.80	14.84	14.44	12.29	12.48	21.63	21.96	18.89	20.85	21.90	21.05
Eu	18.28	18.45	11.38	11.90	11.03	12.24	15.17	15.00	13.97	16.03	17.59	15.69
Gd	11.48	11.73	9.49	9.39	6.91	7.10	13.63	14.70	12.55	13.67	16.35	13.53
Tb	8.82	9.36	6.68	7.22	5.61	5.88	10.16	10.70	9.09	10.16	12.83	10.96
Dy	6.02	6.18	5.35	5.28	3.78	3.70	7.68	8.39	7.36	7.17	10.28	8.78
Ho	6.18	6.54	5.12	5.48	3.18	3.00	6.71	7.60	6.54	6.36	9.01	8.13
Er	5.26	5.32	4.65	4.71	2.90	2.66	5.26	2.90	2.78	6.22	6.40	5.32
Tm	5.49	7.06	8.63	9.02	7.06	9.02	6.27	7.45	6.27	6.67	8.24	7.45
Yb	5.00	5.12	3.76	3.88	2.41	2.59	6.12	7.29	5.76	5.53	8.12	7.41
Lu	25.59	25.98	4.72	4.72	3.94	4.33	7.09	8.27	5.91	5.51	8.66	7.48
Y	7.26	7.39	5.06	5.08	2.57	2.61	6.69	7.77	6.50	6.24	8.79	7.64
Sample REE	sona7	sona8	sona9	sona10	mz 1	mz 2	mz 3	mz 4	nb 1	nb 2	nb 3	nb 4
La	105.06	93.67	77.64	83.54	101.27	88.61	92.83	75.95	147.68	101.27	109.70	54.85
Ce	75.82	67.65	54.90	60.95	89.87	60.46	62.09	52.29	71.90	71.90	73.53	37.58
Pr	47.72	43.37	34.53	38.39	73.68	40.00	44.21	36.84	78.95	46.32	78.95	26.32
Nd	46.25	43.68	33.40	37.26	47.11	33.19	31.05	25.70	32.12	38.54	49.25	21.41
Sm	29.93	27.84	20.65	23.53	26.14	15.03	13.07	18.30	32.68	19.61	25.49	9.80
Eu	23.79	22.41	16.55	17.59	17.24	13.79	6.90	12.07	15.52	18.97	17.24	8.62
Gd	21.36	19.32	15.09	15.62	11.19	9.25	9.73	8.76	13.63	9.73	12.17	9.25
Tb	16.58	16.04	12.57	13.37	5.35	13.37	10.70	5.35	8.02	5.35	5.35	8.02
Dy	12.91	12.65	10.12	10.94	5.91	6.69	3.94	5.12	7.87	6.30	8.27	3.54
Ho	11.84	11.31	9.19	9.89	3.53	3.53	7.07	3.53	5.30	5.30	3.53	3.53
Er	3.99	4.05	4.65	4.71	4.23	5.44	3.02	4.83	6.04	4.83	6.04	3.63
Tm	10.59	10.20	8.63	9.02	7.84	3.92	7.84	3.92	3.92	7.84	3.92	3.92
Yb	10.59	10.18	8.71	9.41	4.71	4.12	2.35	3.53	4.71	5.88	2.35	5.88
Lu	11.02	10.63	8.66	9.06	3.94	7.87	7.87	7.87	3.94	3.94	7.87	7.87
Y	10.70	10.57	8.85	9.11	7.01	5.10	2.87	4.65	0.76	0.57	0.83	0.32
Sample REE	ms 1	ms 2	ms 3	ms 4	ms 5	ms 6	zag 1	zag 2	zag 3	saf 1	saf 2	saf 3
La	257.38	261.60	308.02	367.09	417.72	278.48	143.46	227.85	147.68	181.43	202.53	232.07
Ce	138.89	155.23	113.07	88.24	101.31	37.58	99.67	169.93	106.21	138.89	155.23	163.40
Pr	107.37	114.74	84.74	57.89	73.68	26.32	70.53	121.05	74.74	107.37	114.74	114.74
Nd	79.44	86.08	62.31	42.83	47.11	21.41	47.75	80.30	52.89	79.44	86.08	75.37
Sm	43.79	48.37	27.91	27.45	26.14	9.80	25.49	39.87	28.10	43.79	48.37	36.60
Eu	36.38	37.93	23.45	18.97	17.24	8.62	21.38	29.31	23.10	36.38	37.93	21.21
Gd	29.20	32.60	15.86	10.71	11.19	9.25	18.49	26.76	20.92	29.20	32.60	22.87
Tb	19.52	20.05	11.76	5.35	5.35	8.02	12.83	16.58	15.24	19.52	20.05	14.97
Dy	15.75	15.75	7.64	7.48	5.91	3.54	11.81	14.57	13.78	15.75	15.75	12.60
Ho	12.90	13.43	7.24	7.07	3.53	3.53	10.25	12.19	12.37	12.90	13.43	9.89
Er	12.51	13.05	6.22	6.04	4.23	3.63	11.18	12.57	12.51	12.51	13.05	9.85
Tm	10.59	10.20	9.41	7.84	7.84	3.92	10.98	10.98	11.37	10.59	10.20	8.24
Yb	10.29	9.82	5.06	5.29	4.71	5.88	10.82	11.65	12.41	10.29	9.82	7.71
Lu	9.06	8.27	8.66	3.94	3.94	7.87	11.02	9.45	11.02	9.06	8.27	6.69
Y	12.74	12.74	7.20	5.73	7.01	7.64	10.83	12.10	12.10	12.74	12.74	10.19

Mz – Mazraeh, nb – Nabijan, ms – Mazraeh-e-Shadi, zag – Zaglic, saf – Safikhanlo, sun – Sungun, sona – Sonajil