

## Annex 1

Summary of the major ion chemistry of groundwater in the study area (PM = hand-dug well; PT = deep well; S, SAN = spring)

SAMPLE	DATE	LOCATION	pH	EC ( $\mu\text{S}/\text{cm}$ )	Na <sup>+</sup> (mg/l)	K <sup>+</sup> (mg/l)	Ca <sup>2+</sup> (mg/l)	Mg <sup>2+</sup> (mg/l)	Li <sup>+</sup> (mg/l)	NH <sub>4</sub> <sup>+</sup> (mg/l)	Cl <sup>-</sup> (mg/l)	F <sup>-</sup> (mg/l)	Br <sup>-</sup> (mg/l)	HCO <sub>3</sub> <sup>-</sup> (mg/l)	CO <sub>3</sub> <sup>2-</sup> (mg/l)	SO <sub>4</sub> <sup>2-</sup> (mg/l)	NO <sub>3</sub> <sup>-</sup> (mg/l)	T (°C)
PM11/c1	20-11-09	Dawie Buku	6	306	38.5	5.6	24.0	5.6			6.6	1.0	0.1	177.6	0.0		0.3	24.7
PM12/c1	20-11-09	Gubeta Dawie	6.5	225	32.5	12.5	11.0	2.0			5.4	0.7		124.5	0.0		1.8	25.5
PM13/c1	20-11-09	Dawe	6	314	42.8		30.8	4.7			2.0	1.3		205.5	0.0	2.3	0.2	27.8
PM14/c1	20-11-09	Dawe Kurke	6.5	239	34.6	2.3	14.0	3.5			1.7	1.1		141.6	0.0	1.8		26.4
PM15/c1	20-11-09	Totoke	6.5	233	42.2	2.1	13.6	1.6	0.1		1.5	1.8		139.1	0.0	1.7		29
PM16/c1	02-12-09	Tena Kela	6.5	109	9.2	3.4	11.5	1.4			0.5	0.2		63.5	0.0	0.9	0.1	22.3
PM17/c1	02-12-09	Faji Meti	9	801	117.7	30.9	29.7	5.3			14.5	0.7		399.3	4.9	42.3	6.4	19.6
PM17/c4	02-12-09	Faji Meti	9	801	139.2	16.5	15.3	1.6			16.0	1.0	0.1	285.6	12.4	24.4	36.4	19.6
PM18/c1	07-12-09	Wallashe	6	211	11.8	4.1	29.4	2.2			2.0	0.4		119.6	0.0	1.0		19.3
PM19/c1	07-12-09	Molele Dhoka	7	346	26.0	11.9	36.1	3.4	0.1		5.7	0.4		195.3	0.0	5.0		21.5
PM2/c1	17-11-09	Hiro	6.5	1401	27.9	20.2	59.3	6.2		0.9	12.9	0.6		235.8	0.0	9.1	15.5	24
PM3/c1	18-11-09	Farye Wondo	9	996	240.1	23.4	12.3	2.4			13.5	2.0		510.1	45.6	14.7		17.6
PM4/c1	18-11-09	Cherako	6	139	13.1	2.7	14.3	3.1			1.8	0.4		85.4	0.0		0.4	18.8
PM5/c1	18-11-09	Gutu Danissa	6.5	139	9.8	8.7	15.2	0.9	0.0		0.6	0.1		83.0	0.0	1.2	0.2	17.6
PM6/c1	18-11-09	Sotira	7	439	57.2	17.2	40.9	3.7			3.3	0.5		283.4	0.0	3.2		20

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PM7/c1	20-11-09	Boret Barkota	7	692	179.4	5.6	1.8	2.9			9.0	3.7		413.5	0.0	12.9	0.1	23.8
PT10/c1	24-11-09	Ropi	7.5	694	147.1	13.3	32.0	9.1			4.0	2.8		486.8	0.0	4.2		30
PT14/c1	30-11-09	Saio Maja	6.5	262	33.7	3.6	19.4	3.8			2.3	1.8		153.8	0.0	1.4	0.1	21.1
PT15/c1	30-11-09	Adaba Tita 11	6.5	221	27.5	5.0	16.7	3.7			1.0	1.2		131.8	0.0	0.6		23.4
PT15x/c1	01-10-09	Shashamane		1453	302.2	22.1	53.5	44.2	0.8		30.4	13.1		1004.4	0.0	2.7	5.9	24
PT2/c1	10-11-09	Rafu Hargisa	6.5	218	35.2	3.2	14.7	2.2			2.5	1.2		135.2	0.0	1.6		27.2
PT20/c1	30-11-09	Adaba Tita 13	6	188	25.3	3.9	12.1	3.4	0.1		2.0	0.8		107.9	0.0	1.2		24.1
PT22/c1	30-11-09	Mako Oda	6	220	29.5	3.6	15.5	3.5			1.4	0.7		129.4	0.0	0.9		23.6
PT24/c3	02-12-09	Jallo Dida	6.5	238	40.4	3.4	12.1	2.0			2.6	2.4		139.1	0.0	1.7		24.8
PT25/c1	02-12-09	Faji Goba	5.5	144	24.8	2.7	8.7	1.4	0.0		1.2	2.5		87.9	0.0	0.2		24.1
PT26/c1	03-12-09	Gorbi Arba	7	302	38.0	2.5	28.2	4.3			2.9	1.2		181.4	0.0	1.5		25.3
PT27/c1	03-12-09	Basaku Elala	6	194	12.8	5.1	14.0	2.6			7.1	0.2		30.5	0.0	4.3	45.7	22.9
PT3/c1	10-11-09	Woyo Medanalem	6.5	236	38.5	3.2	17.3	2.8			2.3	1.7		148.9	0.0	2.0	0.2	28
PT4/c1	10-11-09	Kersa Korke	6	219	38.7	3.2	10.5	2.7			1.6	1.5		133.3	0.0	2.3		27.8
PT5/c1	10-11-09	Kersaelala	6	216	37.9	2.7	10.2	2.9			1.7	1.5		131.8	0.0	1.4		23.6

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PT6/c1	13-11-09	Ali Woyo	5.5	316	20.0	4.6	14.7	2.2			2.6	0.4		97.6	0.0	2.5	0.2	24.7
PT7/c1	13-11-09	Roge	6.5	235	59.9	2.6	14.0	2.7	0.2		2.2	1.4		197.7	0.0	2.6	0.1	24.1
PT9/c1	24-11-09	Loke Duke	8.5	578	144.3	11.7	2.1	2.9			9.0	5.4	0.1	322.9	20.8		3.3	26.9
S1/c1	14-10-09	Haro	6	156	11.0	1.7	3.1	1.0	0.0		3.2	0.1	0.0	24.4	0.0	0.0	15.4	19.3
S10/c1	19-10-09	Lencho	6	107	6.3	2.6	4.7	1.2	0.0		8.1	0.0	0.0	19.6	0.0	2.0	2.9	18.5
S12/c1	14-11-09	Dagaga	5.5	163	11.8	4.9	11.6	2.9			4.0	0.1		34.2	0.0	3.1	42.1	21.2
S13/c1	01-12-09	Bedesa		113	6.8	3.5	8.0	2.1	0.0		1.9	0.2		51.5	0.0	0.8		22
S15/c1	02-12-09	Wondo Gennet	8	1969	516.6	32.5	22.6	0.0	1.2		76.1	28.6	0.1	1176.5	0.0	96.3	0.0	
S16/c1	02-12-09	Shashamane	5.5	264	38.4	7.9	6.8	1.6			7.0	0.2	0.2	38.1	0.0	9.5	70.1	24
S17/c1	04-12-09	Jighesa	5.5	190	19.6	7.4	14.2	2.8			10.8	0.4	0.1	83.1	0.0		12.2	20.4
S18/c1	04-12-09	Turuze Wetera Elemo	5.5	156	12.7	3.0	38.5	7.0			17.5	0.2		112.8	0.0	37.3	15.7	20
S2/c1	16-10-09	Wolena	5.5	122	9.1	5.1	5.2	2.1			3.8	0.0		22.2	0.0	1.6	33.5	18.5
S3/c1	16-10-09	Wolda Aba Shala	6	287	12.1	5.5	14.1	2.5		0.5	8.6	0.1	0.1	70.5	0.0	4.2	13.8	22.8
S4/c1	16-10-09	Watera Fufa	5.5	146	12.2	1.9	5.3	1.8	0.0		3.3	0.0	0.1	28.1	0.0		32.3	25

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S5/c1	18-10-09	Hadama	6.5	248	21.0	6.6	10.7	2.4		1.2	21.4	0.1	0.1	67.1	0.0			20.6
S6/c1	18-10-09	Abune	5.5	109	19.4	2.8	5.8	1.6	0.0		5.3	0.6		48.8	0.0	3.3	17.9	19.7
S7/c1	18-10-09	Hasu Kumalo	6.5	191	17.5	6.9	11.0	3.2			10.4	0.3		45.4	0.0	13.8	27.8	20.5
S8/c1	18-12-09	Cewbote	6	141	14.3	4.2	6.5	2.0			7.4	0.1		40.3	0.0	2.6	24.3	18.9
S9/c1	19-10-09	Ashu Shifa	6.5	84	6.7	2.9	4.8	1.2			3.4	0.1		36.6	0.0		3.4	18.2
SAN1/c1	07-12-09	Gado Chafe	6	71	32.8	7.1	9.3	1.9	0.0		4.0	0.0	0.1	106.2	0.0		10.6	20
SAN2/c1	07-12-09	Matagola	6	80	7.5	3.6	5.0	1.6			3.7	0.1	0.1	17.1	0.0		24.5	22
SAN4/c1	07-12-09	Gobani	5.5	57	7.4	3.8	6.4	1.5			1.1	0.2		46.4	0.0	0.7		18.6