

## 7.4 水質試驗結果

## Water Quality Test Result

### Chemical Water Quality

### Debarwa

No.	BH No.	Locality	Remark	Ec	PH	T-Alk	HCO3	Cl	T-Hardness	Ca++	Mg++	F-	SO4--	Fe(Total)	Mn++	NO3-	NO2-	NH3+	Na+	K+
			Permissible Level	2000	6.5-9.2		600mg/l	500mg/l	200mg/l	150mg/l	1.5mg/l	400mg/l	0.3mg/l	0.5mg/l	50mg/l	3mg/l	1.5mg/l	200mg/l	12mg/l	
1	6	Geza Katolic	New BH	520	8.2	240	292.8	24	276	40	42.24	0.73	28	0.2	0	19.049	0.0799	0.593	73.304	0.468
2	7	Debarwa	New BH	413	7.8	72	87.84	48	200	35.2	26.88	0.19	78	0	0.1	8.4	0.006	0.133	3.344	0.68
3	10	Debarwa	New BH	637	7.54	220	268.4	60	344	56.8	48.48	0.45	59	0.01	0.4	18.6	0.023	0.63	3.941	0.512
4	11.1	Debarwa	New BH	663	7.79	316	385.52	36	340	28.8	64.32	0.02	56	0.02	0.4	16.834	0.045	0.9317	57.596	0.468
5	11.2	Debarwa	New BH	487	8.34	200	244	72	104	9.6	19.2	0	72	0.04	0.4	11.075	0.0999	0.278	133.518	0.585
6	7	Debarwa	EBH	704	7.6	316	385.52	40	304	46.4	45.12	0.13	48	0.03	0.3	29.2	0.01	0.86	78.826	0.854
7	12	Debarwa	EBH	540	7.89	168	204.96	44	272	56	31.68	0	24	0	0.2	41.1	0.003	0.51	2.38	0.512
8	17	Debarwa	EBH	705	8.02	400	488	32	324	49.6	24	0.46	38	0.02	0.3	19.04	0	0.774	114.39	0.683
9	18	Debarwa	EBH	626	7.46	300	366	40	316	33.6	55.68	0.06	75	0.08	0	11.52	0.17	0.75	81.16	0.351
10	Deb1	Debarwa	EBH	712	7.5	320	390.4	40	396	62.4	57.6	0	30	0	0.2	13.29	0.006	0.774	2.2692	0.68
11	Private well	Near Mobil	EBH	626	7.2	300	366	36	316	33.6	55.68	0.06	75	0.08	0	11.51	11.52	0.47	81.16	0.351
12	H Pamp	Adi Logo	EBH	788	7.55	244	297.68	40	176	32	23.04	0.21	65	0.02	0.2	16.3	0.019	0.895	108.6	1.36
13	H Pamp	Adi Gered	EBH	780	7.84	324	395.28	60	340	51.2	50.88	0.34	60	0.01	0.1	43.414	0.366	0.218	89.012	0.117
14	H Pamp	Geza Katolic	EBH	1086	8.47	360	439.2	56	164	28.8	22.08	1.78	250	0.5	0.3	8.86	0.0199	0.692	340.34	1.521
15	HDW	Adi Logo		660	8.2	324	395.28	24	312	92.8	19.2	0.44	100	0.06	0.2	14.17	0.037	0.436	65.45	0.585
16	HDW	Adi Geda		710	7.9	284	346.48	32	308	38.4	50.88	0.11	62	0.01	0.2	11.961	0.1332	1.113	99.484	0.585
17	Spring	near No18		769	7.91	368	448.28	72	388	43.2	67.2	0.35	82	0.02	0.4	19.049	0.0366		83.776	0.117
18	HC	Debarwa 1	HCI	728	7.9	292	439.2	44	332	44.8	52.8	0	42	0.02	0.4	16.391	0.009	1.065	60.214	0.468
19	HC	Debarwa 2	HC-II	674	8.1	352	429.44	52	296	40	47.04	0	31	0	0.2	16.39	0.013	1.33	62.83	0.35
20	HC	Debarwa 3	HC-III	726	8.05	388	473.36	32	284	40	44.16	0	32	0.01	0.1	17.28	0.033	0.4	60.21	0.47
21	Fountain	Debarwa 2	PF-II	584	7.85	320	390.4	28	244	35.2	37.44	0	30	0.09	0	19.049	0.013	0.86	70.68	0.47
22	Fountain	Debarwa 3	PF-III	690	8.02	380	463.6	28	276	51.2	35.52	0	31	0.06	0	16.83	0.02	0.145	75.92	0.468
23	Fountain	Debarwa 4	PF-I	646	7.9	376	458.72	36	312	88	22.08	0	32	0.01	0	18.16	0.02	0.92	60.21	0.47
24	Fountain	Geza Lamza		560	8.47	260	317.2	56	280	51.2	36.48	0	27	0.1	0.1	22.15	0.0299	0.484	41.888	0.351

New BH : Borehole developed by JICA Study Team, EBH : Existing Borehole. HC : House Connection

## Water Quality Test Result

### Chemical Water Quality

### Dekemhare

No.	BH No.	Locality	Remark	Ec	PH	T-Alk	HCO3	Cl	T-Hardness	Ca++	Mg++	F-	SO4--	Fe(Total)	Mn++	NO3-	NO2-	NH3+	Na+	K+
			Permissible Level	2000	6.5-9.2		600mg/l	500mg/l	200mg/l	150mg/l	1.5mg/l	400mg/l	0.3mg/l	0.5mg/l	50mg/l	3mg/l	1.5mg/l	200mg/l	12mg/l	
1	1	Dekemhare	New BH	1110	7.29	212	258.64	268	468	68.8	71.04	0.27	85	0.04	0.7	49.15	0.1032	0.6292	96.14	0.936
2	2	Adi golgol	New BH	645	7.55	252	307.44	116	224	76.8	7.68	0.44	28	0.12	0.5	11.51	0.0167	0.1815	44.506	0
3	3	Adi golgol	New BH	653	8.22	256	312.32	36	196	20.8	34.56	1.12	47	0.03	0.1	13.29	0.4	0.339	117.81	0.357
4	4	Adi golgol	New BH	455	8.2	220	268.4	48	196	41.6	22.08	0.25	32	0.01	0	14.619	0.009	0.278	73.304	0.234
5	5	Graea	New BH	477	7.62	184	224.48	32	228	64	16.32	0.69	20	0.02	0.3	38.52	0.006	0.29	34.51	0.117
6	1	Endasale	EBH	1251	7.85	292	356.24	188	408	78.4	50.88	0.25	102.5	0.04	0.1	42.971	0.0167	0.799	140.9	0.234
7	2	Endasale	EBH	1226	7.7	280	341.6	195	388	140.8	8.64	0.38	95	0.02	0.1	51.83	0.013	0.69	209.44	0.35
8	14	Adi golgol	EBH	573	8.28	184	224.48	64	224	35.2	32.64	0.28	45	0.04	0	15.948	0.0167	0.194	94.248	0.234
9	19	Adi golgol	EBH	1075	7.3	368	448.96	176	308	76.8	3.84	0.74	58	0.16	0.2	24.37	0.02	2.06	170.17	0.585
10	Dek 1	Adi golgol	EBH	1212	7.56	332	405.04	156	268	91.2	9.6	0.01	80	0.1	0.1	10.19	0.0266	0.48	205.63	0.35
11	Dek2	Adi golgol	EBH	925	7.35	284	346.48	72	268	97.6	5.76	0.57	90	0.14	0.1	56.7	0.04	1	183.26	0.351
12	Bloko well	Dekemhare	EBH	833	7.9	300	366	44	120	48	19.2	0	69	0.01	0.1	28.795	0.01	0.93	167.55	0.468
13	Bus Terminal	Dekemhare	EBH	783	7.48	212	258.69	68	332	10	73.68	0.08	52	0.01	0.1	76.64	0.073	0.133	70.68	1.404
14	May Edaga well	May Edaga	EBH	1396	7.5	286	307.44	296	332	92.8	24	0.7	110	0.03	0.1	39.43	0.04	0.86	266.56	1.404
15	Metsalu well	Dekemhare	EBH	595	7.74	212	258.64	64	252	52.8	28.8	1.01	34	0.12	0.1	41.2	0.03	0.32	102.1	0.351
16	Gurae well	Graea	EBH	510	7.85	268	326.96	28	232	56	22.08	0.94	25	0.22	0.1	27.02	0.017	0.5	83.776	0.351
17	HDW	Near BH No. 4		1320	7.84	160	195.2	44	312	76.8	28.8	0.74	25	0.13	0.4	18.16	0.05	0.22	76.16	0.351
18	HDW	Graea		304	7.5	144	175.68	12	204	54.4	16.32	0.64	14	0.13	0.2	25.69	0.05	0.13	21.18	0.585
19	HDW	May Suhul		1322	7.64	256	312.32	208	376	49.6	60.48	1.09	140	0.01	0.1	85.94	0.06	1.19	213.25	1.287
20	HDW	Amhur		932	7.54	216	263.52	48	168	57.6	5.76	0.63	80	0.03	0.1	110.75	0.043	0.424	154.46	0.46
21	HC	Near Hadamu HDW	HCI	1139	7.6	292	356.24	148	296	64	32.64	0.18	90	0	0.2	45.69	0.009	0.338	186.59	0.35
22	HC	Dekemhare	HC-II	1126	7.42	348	424.56	220	312	81.6	25.96	0.29	75	0.02	0.2	47.84	0.033	0.61	201.82	0.351
23	HC	Dekemhare	HC-III	1105	7.6	332	405.04	164	272	8	60.48	1.28	80	0	0.2	48.73	0.013	0.83	220.86	0.234
24	Fountain	Dekemhare		769	7.84	236	287.92	64	368	97.6	29.76	1.42	51	0.02	0.1	64.24	0.026	0.58	70.68	0.23

New BH : Borehole developed by JICA Study Team, EBH : Existing Borehole. HC : House Connection

## Water Quality Test Result Chemical Water Quality May-dima

No.	BH No.	Locality	Remark	Ec	PH	T-Alk	HCO3	Cl	T-Hardness	Ca++	Mg++	F-	SO4--	Fe(Total)	Mn++	NO3-	NO2-	NH3+	Na+	K+
			Permissible Level	2000	6.5-9.2		600mg/l	500mg/l	200mg/l	150mg/l	1.5mg/l	400mg/l	0.3mg/l	0.5mg/l	50mg/l	3mg/l	1.5mg/l	200mg/l	12mg/l	
1	1	May dima	New BH	487	7.76	340	414.8	12	160	20.8	25.96	0	25	0.03	0.1	8.42	0.05	0.242	162.31	1.404
2	7	May dima	New BH	494	7.63	192	234.24	16	220	44.8	25.92	0.5	40	0	0.2	7.53	0.0233	0.58	9.99	1.404
3	8	May dima	New BH	297	7.34	188	229.36	8	136	40	8.64	0.15	8	0.04	0.2	9.303	0.0166	0.11	25.23	2.57
4	9	May dima	New BH	424	7.81	252	307.44	64	96	24	8.64	0.01	13	0.12	0.4	12.84	0.0133	0.169	175.41	1.75
5	PW 1	May dima	EBH	508	8.4	212	258.76	48	152	22.4	23.04	1.47	55	0	0.2	10.18	0.026	0.18	66.98	1.7
6	PW 1	up-steam	River	1035	8.2	608	741.76	56	180	36.8	21.12	2.07	53	0.01	0.4	7.52	0.016	0.5	195.69	2.38
7	PW 2	May dima	EBH	364	8.3	152	185.44	44	92	14.4	13.44	1.19	58	0	0.1	11.51	0.147	0.97	49.9	2.55
8	PW 3	May dima	EBH	480	8.4	228	278.16	24	168	28.8	23.04	1.37	40	0	0.1	8.85	0.092	0.43	61.73	4.59
9	PW 3	up-steam	River	327	8.2	168	204.64	16	132	35.2	10.56	0.26	28	0.03	0.1	9.3	0.217	0.4	22.61	1.87
10	BH 1	Eye clinic	EBH	1503	8.45	508	619.76	72	248	27.2	43.2	1.85	390	0	0.1	7.79	0.016	0.5	270.3	1.87
11	HDW 3	May dima	EDW	616	9.35	120	146.4	60	160	22.4	24.96	0.85	77	0.02	0.1	41.624	0.1099	0.206	123.046	1.872
12	HDW 4	May dima	EDW	506	8.8	264	322.08	20	156	24	23.04	1.08	27	0.03	0.2	8.86	0.226	0.363	115.192	1.755
13	Admi office	May dima	Roof Harvesting	275	8.05	124	151.28	20	132	17.6	21.12	0.24	25	0	0.2	11.95	0.023	0.18	20.7	3.76

New BH : Borehole developed by JICA Study Team, EBH : Existing Borehole. HDW : Hand Dugwell

# Water Quality Test Result

## Chemical Water Quality

### Adi Keyih

No.	BH No.	Locality	Remark	Ec	PH	T-Alk	HCO3	Cl	T-Hardness	Ca++	Mg++	F-	SO4--	Fe(Total)	Mn++	NO3-	NO2-	NH3+	Na+	K+
			Permissible Level	2000	6.5-9.2		600mg/l	500mg/l	200mg/l	150mg/l	1.5mg/l	400mg/l	0.3mg/l	0.5mg/l	50mg/l	3mg/l	1.5mg/l	200mg/l	12mg/l	
1	6	Tekonda	New BH	692	6.96	316	385.52	44	272	43.2	39.36	0.26	65	0.01	0.2	32.782	0.239	1.318	70.686	0.351
2	7	Tekonda	New BH	608	7.24	304	370	24	324	46.6	49.92	0.36	50	0.03	0	12.84	0.009	0.83	133.52	0.351
3	9	Adi Keyih	New BH	577	7.01	284	346.48	40	276	51.2	35.52	0	51	0.66	0.6	13.29	0.0299	0.907	60.214	0.936
4	13	Adi Wegera	New BH	744	7.41	752	917.44	44	336	80	32.64	0.46	90	0	0	9.75	0.016	0.92	138.75	0.234
5	14	Maarda	New BH	378	6.98	200	244	48	232	59.2	20.16	0.12	20	0.07	0	11.07	0.003	0.41	2.86	0.351
6	15	Mendefera	New BH	458	8	228	278.16	16	208	48	21.12	0.69	34	0.04	0.1	7.974	0.003	0.303	15.946	0.117
7	16	Mendefera	New BH	427	7.5	232	283.04	20	256	83.2	11.52	0.31	43	0.03	0	11.96	0.016	0.326	4.28	0.234
8	17	Mendefera	New BH	438	7.44	124	151.28	48	260	60.8	25.92	0.26	19	0.08	0.6	47.4	0.03	0.58	26.18	0.351
9	18	Ahwne	New BH	960	7.4	416	507.52	52	296	52.8	39.36	0.44	135	0.1	0.2	29.24	0.02	0.97	102.1	1.17
10	19	Ahwne	New BH	845	7.29	392	478.24	32	304	59.2	37.44	0.44	135	0.18	0.2	31.01	0.28	1.35	94.24	0.351
11	20	Ahwne	New BH	982	7.18	396	483.12	44	328	59.2	43.2	1.08	190	0.07	0	12.84	0.11	1.58	164.93	0.351
12	3	Adi Keyih	EBH	686	7.29	240	292.8	60	324	81.6	28.8	0.59	68	0.03	0	33.22	0.006	0.83	94.25	0.351
13	7	Adi Keyih	EBH	692	6.96	316	385.52	44	372	43.2	63.36	0.26	65	0.01	0.2	32.78	0.24	1.32	70.68	0.35
14	Adi 2	Adi Wegera	EBH	682	7.33	352	429.44	24	292	59.2	34.56	0.46	58	0.02	0	9.75	0.006	0.92	89.01	0.351
15	Private well	Adi Keyih	EBH	313	6.74	140	17.08	16	200	51.2	17.28	0.08	8	0.02	0	16.39	0.0199	0.133	14.76	0.468
16	Adi Hawatsu	Hawatsu	EBH	974	7.58	448	546.56	16	398	102.4	34.08	0	155	0.08	0.5	1019	0.0266	2.044	80.88	0.585
17	Hawatsu KatolicWell	Hawatsu	EBH	820	7.34	340	414.3	40	276	102.4	4.8	0.27	155	0.11	0.1	7.97	0.013	0.94	96.86	0.702
18	Hawatsu	Hawatsu	EBH	667	7.66	352	429.44	12	308	75.2	28.8	0	150	0.04	0.1	9.76	0.0266	1.19	94.25	0.702
19	H Pump	Tekonda	EBH	620	7.36	312	380.64	36	256	72	17.28	0	43	0.01	0	31.01	0.076	0.738	54.978	0.351
20	H Pump	Adi Keyih Canbo	EBH	320	6.56	68	82.96	72	144	35.2	13.44	0	9	0.01	0	22.59	0.0499	0.387	17.34	0.351
21	HDW	Mendefera	HDW	671	7.13	276	336.72	24	200	35.2	26.88	0	40	0.02	0	8.42	0.0133	0.88	78.55	0.468
22	HDW	Maarda	HDW	324	7.06	152	185.44	16	180	48	14.4	0	11	0	0	9.75	0.017	0.46	12.61	1.52
23	HDW	Ahwne	HDW	504	7.35	228	278.16	100	288	62.4	32	0	35	0	0	13.73	0.026	0.484	30.94	0.234
24	HDW	Infiltration galary 1	Endagalo 1	1931	6.95	484	590.48	212	892	107.2	149.76	0	200	0.06	0.1	6.64	0.046	1.63	284.88	2.11
25	HDW	Infiltration galary 2	Endagalo 2	1483	7	400	488	80	512	80	74.88	0	210	0.25	0.2	8.42	0.0299	2.67	198.9	1.05
26	DW1	Adi Keyih	HDW	959	7.06	236	287.92	112	516	88	71.04	0	195	0.03	0	12.84	0.09	1.2	149.23	0.936
27	DW2	Adi Keyih	HDW	542	7.13	260	317.2	12	208	41.6	24.96	0	54	0.02	0	8.86	0.0099	0.789	54.98	0.351
28	HC-II	Adi Keyih		638	7.3	264	322.08	32	200	38.4	24.96	0.02	48	0	0	26.58	0.0133	0.532	62.83	0.23
29	HC-II	Adi Keyih		607	7.4	276	333.72	24	232	46.4	27.84	0	60	0.05	0	18.16	0.011	0.726	54.78	0.23

New BH : Borehole developed by JICA Study Team, EBH : Existing Borehole. HDW : Hand Dugwell

# Water Quality Test Result

## Bacteriological Water Quality

### Debarwa

No	Bh No	Date of analysed	Locality	Remark	Total coliforms /100ml	faecal coliforms /100ml	Turbidity, NTU
1	6	13th / Oct	Geza Katolic	New BH	Many	Many	<5
2	7	13th / Oct	Debarwa	New BH	-	-	<5
3	10	13th / Oct	Debarwa	New BH	-	-	<5
4	11.1	13th / Oct	Debarwa	New BH	-	-	<5
5	11.2	13th / Oct	Debarwa	New BH	5	7	<5
6	7	13th / Oct	Debarwa	EBH	-	-	<5
7	12	13th / Oct	Debarwa	EBH	-	-	<5
8	17	13th / Oct	Debarwa	EBH	-	-	<5
9	18	13th / Oct	Debarwa	EBH	16	12	<5
10	Deb 1	10th / Nov	Debarwa	EBH	-	-	<5
11	Private well	2005/11/12	Near Mobil	EBH	-	-	<5
12	H Pump	10th / Nov	Adi Logo	EBH	-	-	<5
13	H Pump	10th / Nov	Adi Gered	EBH	-	-	<5
14	H Pump	10th / Nov	Geza Katolic	EBH	4	1	<5
15	HDW	10th / Nov	Adi Logo		Many	Many	<200
16	HDW	10th / Nov	Adi Geda		Many	Many	<200
17	Spring	10th / Nov	Near BH No. 18		Many	Many	<100
18	House Connection	10th / Nov	Debarwa No. 1		30	3	<5
19	House Connection	11th / Dec	Debarwa No. 2		4	4	<5
20	House Connection	11th / Dec	Debarwa No. 3		16	20	<5
21	Fountain	11th / Dec	Debarwa No. 2		4	8	<5
22	Fountain	11th / Dec	Debarwa No. 3		6	8	<5
23	Fountain	11th / Dec	Debarwa No. 4		10	8	<5
24	Fountain	10th / Nov	Geza Lamza		-	-	<5

New BH: Borehole developed by JICA Study Team

EBH: Existing Borehole

**Water Quality Test Result**  
**Bacteriological Water Quality**  
**Dekemhare**

<b>No</b>	<b>Bh No</b>	<b>Date of analysed</b>	<b>Locality</b>	<b>Remark</b>	<b>Total coliforms /100ml</b>	<b>faecal coliforms /100ml</b>	<b>Turbidity, NTU</b>
1	1	27th / Nov	Dekemhare	New BH	-	-	<5
2	2	27th / Nov	Adi Golgol	New BH	7	5	<5
3	3	27th / Nov	Adi Golgol	New BH	3	20	<5
4	4	27th / Nov	Adi Golgol	New BH	2	-	<5
5	5	27th / Nov	Graea	New BH	-	-	<5
6	1	12th / Nov	Endasale	EBH	30	-	<5
7	2	12th / Nov	Endasale	EBH	-	-	<5
8	14	27th / Nov	Adi Golgol	EBH	1	-	<5
9	19	27th / Nov	Adi Golgol	EBH	Many	Many	<5
10	Dek 1	12th / Nov	Adi Golgol	EBH	8	Many	<5
11	Dek 2	27th / Nov	Adi Golgol	EBH	-	-	<5
12	Bloko well	12th / Nov	Dekemhare	EBH	60	50	<5
13	Bus Terminal	12th / Nov	Dekemhare	EBH	10	10	<5
14	May Edaga well	27th / Nov	May Edaga	EBH	-	-	<5
15	Metsalu well	27th / Nov	Dekemhare	EBH	1	8	<5
16	Gurae well	27th / Nov	Gurae	EBH	-	-	<5
17	HDW	28th / Nov	Near BH No. 4		20	10	<200
18	HDW	28th / Nov	Gurae		Many	Many	<200
19	HDW	28th / Nov	May Suhul		Many	Many	<100
20	HDW	12th / Nov	Amhur		Many	Many	<80
21	House Connection 1	27th / Nov	Near Hadamu HDW		16	14	<5
22	House Connection 2	12th / Nov	Dekemhare		-	-	<5
23	House Connection 3	12th / Nov	Dekemhare		-	-	<5
24	Fountain	12th / Nov	Dekemhare		-	-	<5

New BH: Borehole developed by JICA Study Team  
 EBH: Existing Borehole

## Water Quality Test Result

### Bacteriological Water Quality

### May-dima

No	Bh No	Date of analysed	Locality	Remark	Total coliforms /100ml	faecal coliforms /100ml	Turbidity, NTU
1	1	13th / Dec	May-dima	New BH	Many	26	<5
2	7	13th / Dec	May-dima	New BH	Many	40	<5
3	8	13th / Dec	May-dima	New BH	-	-	<5
4	9	13th / Dec	May-dima	New BH	6	8	<5
5	PW 1	13th / Dec	May-dima	EBH	-	-	<5
6	PW 1	13th / Dec	Up stream	River	Many	Many	<100
7	PW 2	13th / Dec	May-dima	EBH	50	60	<5
8	PW 3	13th / Dec	May-dima	EBH	50	28	<5
9	PW 3	13th / Dec	Up stream	River	Many	Many	<100
10	BH 1	13th / Dec	Eye clinic	EBH	48	18	<5
11	HDW 3	13th / Dec	May-dima	EDW	Many	Many	<150
12	HDW 4	13th / Dec	May-dima	EDW	40	Many	<150
13	Adim. Office	13th / Dec	May-dima	Roof Harvesting	Many	18	<25

New BH: Borehole developed by JICA Study Team  
 EBH: Existing Borehole



**Water Quality Test Result**  
**Bacteriological Water Quality**  
**Adi Keyih**

No	Bh No	Date of analysed	Locality	Remark	Total coliforms /100ml	faecal coliforms /100ml	Turbidity, NTU
1	6	30th / Nov	Tekonda	New BH	-	-	<5
2	7	30th / Nov	Tekonda	New BH	-	-	<5
3	9	30th / Nov	Adi Keyih	New BH	-	-	<5
4	13	30th / Nov	Adi Wegera	New BH	15	10	<5
5	14	30th / Nov	Maarda	New BH	-	-	<5
6	15	30th / Nov	Mendefera	New BH	-	-	<5
7	16	30th / Nov	Mendefera	New BH	10	12	<5
8	17	1st / Dec	Mendefera	New BH	-	-	<5
9	18	1st / Dec	Ahwne	New BH	-	-	<5
10	19	1st / Dec	Ahwne	New BH	-	-	<5
11	20	1st / Dec	Ahwne	New BH	-	-	<5
12	3	1st / Dec	Adi Keyih	EBH	-	-	<5
13	7	1st / Dec	Adi Keyih	EBH	-	-	<5
14	Adi 2	1st / Dec	Adi Wegera	EBH	-	-	<5
15	Private well	1st / Dec	Adi Keyih	EBH	-	-	<5
16	Adi Hawatsu	1st / Dec	Hawatsu	EBH	-	-	<5
17	Hawatsu Katolic well	30th / Nov	Hawatsu	EBH	-	-	<5
18	Hawatsu	30th / Nov	Hawatsu	EBH	-	-	<5
19	H Pump	30th / Nov	Tekonda	EBH	10	25	<5
20	H Pump	30th / Nov	Adi Keyih Canbo	EBH	-	-	<5
21	HDW	1st / Dec	Mendefera	HDW	Many	Many	<100
22	HDW	1st / Dec	Maarda	HDW	30	20	<25
23	HDW	1st / Dec	Ahwne	HDW	Many	Many	<20
24	HDW	26th / Nov	Infiltration galary 1	Endagalo 1	-	-	<10
25	HDW	26th / Nov	infiltration galary 2	endagalo 2	-	-	<10
26	DW 1	26th / Nov	Adi keyih	HDW	-	-	<10
27	DW 2	26th / Nov	Adi Keyih	HDW	-	-	<10
28	House Connection No 1	26th / Nov	Adi Keyih		-	-	<5
29	House Connection No 2	26th / Nov	Adi keyih		-	-	<5

New BH: Borehole developed by JICA Study Team  
EBH: Existing Borehole  
HDW: Hand Dugwell

## 砒素に関する水質試験結果

### 計量の方法

計量の対象	計量の方法	報告下限値
pH	JIS K 0102 12.1 (ガラス電極法)	-
* 電気伝導率	JIS K 0102 13 (電極法)	0.1mS/m
砒素	JIS K 0102 61.3 (水素化物発生ICP発光分光分析法)	0.005mg/l

### 計量の結果

計量の対象 試料	Adi Keyih No. 18	Debarwa No. 11-2	Dekemhare No. 5	May-dima No. 1
pH	7.3	7.5	7.4	7.7
* 電気伝導率 (mS/m)	99.6	85.3	54.2	150
砒素 (mg/l)	<0.005	<0.005	<0.005	<0.005

\*印の対象は、計量法第107条の計量対象外である。

## 7.5 社会状況調査結果

## Basic Data from the Result of the Household Interview

### 1. Population

Town	Zone	Area	Population	Share of entire town population	Population (zone)	Ratio of Male/Female	Share of Population under 15 years old	Residents whose HH head arrived since 2000 (new borns excluded)
Debarwa	Entire Town		17,315	100.0%	-	0.94	42.5%	29.8%
	Core	01	5,110	29.5%	13,815 (79.8%)	0.92	42.0%	29.7%
		02	3,050	17.6%		0.95	42.4%	17.4%
		03	5,655	32.7%		0.90	45.6%	53.9%
	Periphery	Adi Geda	2,046	11.8%	3,500 (20.2%)	1.09	42.5%	2.4%
		Adi Logo	1,388	8.0%		1.01	39.9%	0.6%
Halhale		66	0.4%	1.06		48.5%	3.0%	
Dekemhare	Entire Town		28,413	100.0%	-	0.88	42.2%	17.5%
	Core	Dekemhare	521	1.8%	6,069 (21.4%)	0.96	39.7%	11.9%
		Mai Werki	5,548	19.5%		0.85	41.3%	11.8%
	Periphery	Amhur	7,532	26.5%	22,340 (78.6%)	0.89	40.9%	19.6%
		Hadamu	5,922	20.8%		0.92	45.9%	16.3%
Metsalu		8,886	31.3%	0.87		41.7%	20.3%	
May-dima	Entire Town		17,145	100.0%	-	0.99	48.0%	6.8%
	Core	Adi Ghaba	13,583	79.2%	14,697 (85.7%)	1.02	48.0%	8.4%
		Hadish Adi	1,114	6.5%		1.03	47.6%	1.9%
	Periphery	Milad Manta	1,551	9.0%	2,197 (12.8%)	0.91	48.4%	0.3%
Mai Chew		646	3.8%	1.01		48.1%	0.0%	
Adi-Keyih	Entire Town		29,831	-	-	0.92	46.4%	13.5%
	Core	Hadamu	4,486	15.0%	24,871 (83.4%)	0.86	40.0%	5.0%
		Haineba	6,268	21.0%		0.91	47.5%	20.1%
		Heshemele	5,633	18.9%		0.96	44.2%	16.6%
		Unabur	8,484	28.4%		0.99	47.6%	18.8%
	Periphery	Ma'alewya	2,613	8.8%	4,960 (16.6%)	0.82	52.6%	0.0%
Tekendae		2,347	7.9%	0.85		50.9%	0.0%	

### 2. Household

Town	Zone	Area	Number of Households	Share of entire town HH	Number of Households (zone)	Average members of household	Arrival since 2000 (HH)
Debarwa	Entire Town		3,925	100.0%	-	4.41	41.7%
	Core	01	1,187	30.2%	3,215 (81.9%)	4.30	41.2%
		02	676	17.2%		4.51	26.8%
		03	1,352	34.4%		4.18	68.0%
	Periphery	Adi Geda	426	10.9%	710 (18.1%)	4.80	3.5%
		Adi Logo	270	6.9%		5.14	0.4%
Halhale		14	0.4%	4.71		7.1%	
Dekemhare	Entire Town		6,561	100.0%	-	4.33	28.2%
	Core	Dekemhare	115	1.8%	1,381 (21.1%)	4.53	15.0%
		Mai Werki	1,266	19.3%		4.38	20.4%
	Periphery	Amhur	1,672	25.5%	5,179 (78.9%)	4.51	28.6%
Hadamu		1,311	20.0%	4.52		29.3%	
May-dima	Entire Town		3,895	100.0%	-	4.40	22.4%
	Core	Adi Ghaba	3,122	81.3%	3,373 (87.8%)	4.35	22.8%
		Hadish Adi	251	6.5%		4.44	12.7%
	Periphery	Milad Manta	332	8.6%	467 (12.2%)	4.67	8.7%
Mai Chew		135	3.5%	4.79		0.0%	
Adi-Keyih	Entire Town		6,455	100%	-	4.62	18.8%
	Core	Hadamu	1,017	15.8%	5,227 (81.0%)	4.41	8.9%
		Haineba	1,324	20.5%		4.73	26.5%
		Heshemele	1,179	18.3%		4.78	26.6%
		Unabur	1,707	26.4%		4.97	26.7%
	Periphery	Ma'alewya	639	9.9%	1,228 (19.0%)	4.09	0.0%
Tekendae		589	9.1%	3.98		0.0%	

### 3. Main household income sources

Unit: number of household

Town	Zone	Area	Agriculture	Livestock	Public services	Employment	Temporary worker	Private management	Pension	Other
Debarwa	Entire Town		1,171	4	1,460	83	333	529	13	314
	Core	01	228	2	444	42	149	196	6	118
		02	253	0	230	3	32	97	2	52
		03	50	0	745	37	150	220	5	137
	Periphery	Adi Geda	375	2	31	0	1	12	0	4
		Adi Logo	254	0	8	1	0	4	0	3
Halhale		11	0	2	0	1	0	0	0	
Dekemhare	Entire Town		329	24	1,836	363	154	1,015	130	1,097
	Core	Dekemhare	1	1	25	9	3	44	3	26
		Mai Werki	29	3	324	61	23	247	56	308
		Amhur	82	13	409	165	69	232	50	149
	Periphery	Hadamu	32	2	508	51	22	166	10	307
		Metsalu	185	5	570	77	37	326	11	307
May-dima	Entire Town		1,755	3	1,350	0	210	254	0	0
	Core	Adi Ghaba	1,225	3	1,186	0	201	253	0	0
		Hadish Adi	170	0	66	0	8	1	0	0
	Periphery	Mai Chew	108	0	24	0	0	0	0	0
		Milad Manta	252	0	74	0	1	0	0	0
Adi Keyih	Entire Town		1,715	2	1,883	22	84	798	1,419	497
	Core	Hadamu	20	0	312	1	4	127	545	4
		Haineba	323	0	416	1	4	92	186	287
		Heshemele	54	2	496	15	76	160	236	132
		Unabur	180	0	659	5	0	419	362	74
	Periphery	Ma'alewya	630	0	0	0	0	0	10	0
		Tekendae	508	0	0	0	0	0	80	0

\* Multiple answers

### 4. Annual Income (2004)

(1) Average, Median and Mode

Town	Zone	Area	Average	Median	Mode
Debrwa	Entire Town		6,552	4,800	3,600
	Core	01	6,823	4,800	3,600
		02	7,183	4,600	3,600
		03	6,380	4,800	3,600
	Periphery	Adi Geda	6,089	5,750	6,000
		Adi Logo	5,486	5,600	6,000
Halhale		4,421	4,800	4,800	
Dekemhare	Entire Town		4,878	4,800	0
	Core	Dekemhare	8,449	8,400	6,000
		Mai Werki	4,949	4,800	0
	Periphery	Amhur	5,630	5,400	0
		Hadamu	4,576	4,800	0
May-dima	Entire Town		2,020	1,000	0
			2,151	1,000	0
	Core	Adi Ghaba	2,151	1,000	1,000
		Hadish Adi	1,643	1,000	1,000
Periphery	Milad Manta	922	0	0	
	Mai Chew	1,622	1,000	0	
Adi Keyih	Entire Town		5,655	3,800	6,000
	Core	Hadamu	5,002	4,000	3,600
		Haineba	5,046	4,200	6,000
		Heshemele	4,324	3,600	3,600
		Unabur	10,707	6,000	6,000
	Periphery	Ma'alewya	1,102	1,200	1,200
		Tekendae	1,281	1,000	1,000

## (2) Income distribution

Unit: Number of household

Town	Zone	Area	0 < <=2000	02000 < <=4000	04000 < <=6000	06000 < <=8000	08000 < <=10000	10000 < <=20000	20000 <	N.A.
Debrwa	Entire Town		210	1,250	1,201	468	349	381	46	20
	Core	01	42	378	420	118	106	107	14	2
		02	95	222	155	65	43	80	12	4
		03	60	457	406	92	131	177	18	11
	Periphery	Adi Geda	4	108	136	109	52	13	2	2
		Adi Logo	9	81	76	83	17	4	0	0
	Halhale	0	4	8	1	0	0	0	1	
Dekemhare	Entire Town		52	360	1,277	384	717	973	71	2,706
	Core	Dekemhare	1	14	20	9	24	35	3	9
		Mai Werki	9	96	236	63	143	191	21	507
	Periphery	Amhur	19	66	302	98	165	312	30	665
		Hadamu	9	56	344	63	164	156	5	512
		Metsalu	14	128	375	151	221	279	12	1,013
May-dima	Entire Town		882	1,049	540	24	12	8	5	1,372
	Core	Adi Ghaba	562	858	508	24	11	8	4	1,144
		Hadish Adi	118	55	21	0	0	0	0	57
	Periphery	Milad Manta	28	23	3	0	0	0	0	81
		Mai Chew	136	103	7	0	1	0	1	84
Adi Keyih	Entire Town		1,873	1,316	1,367	476	365	489	250	222
	Core	Hadamu	64	464	120	230	92	4	1	30
		Haineba	143	335	440	36	57	85	10	147
		Heshemele	382	238	301	58	53	104	1	33
		Unabur	93	247	496	149	160	293	238	5
	Periphery	Ma'alewya	623	2	0	0	1	1	0	6
		Tekendae	560	19	4	1	1	2	0	1

## 5. Water Sources

Unit: Number of households

Town	Zone	Area	House connection	Public fountain	Public well	Private well	Water truck (town)	Water truck (private)	Water truck (both)	Water vendor by donkey	Roof collection	River	Other, N.d.
Debarwa	Entire Town		142	839	510	436	591	2,296	-	36	122	477	3
	%		3.6%	21.4%	13.0%	11.1%	15.1%	58.5%	-	0.9%	3.1%	12.2%	0.1%
	Core	01	73	215	0	62	150	942	-	0	19	330	0
		02	57	287	5	0	4	450	-	0	3	77	0
		03	12	115	2	272	437	907	-	0	98	50	0
	Periphery	Adi geda	0	0	311	102	0	0	-	36	1	0	1
Adi Logo		0	220	186	1	0	0	-	0	0	23	0	
	HalHale	0	8	9	0	0	0	-	0	1	0	0	
Dekemhare	Entire Town		737	1,419	131	31	2,122	494	2,531	2	112	0	89
	%		11.2%	21.6%	2.0%	0.5%	32.3%	7.5%	38.6%	0.0%	1.7%	0.0%	1.4%
	Core	Dekemhare	24	3	0	1	22	67	15	0	4	0	0
		Mai Werki	194	19	8	7	478	149	486	0	22	0	1
	Periphery	Amhur	405	103	123	6	1,170	148	230	2	18	0	4
		Hadamu	21	18	0	4	239	85	876	0	4	0	84
	Metsalu	93	1,276	0	13	213	45	924	0	64	0	0	
May-dima	Entire Town		0	577	5	3,317	0	0	-	400	283	0	15
	%		0.0%	14.8%	0.1%	85.2%	0.0%	0.0%	-	10.3%	7.3%	0.0%	0.4%
	Core	Adi Ghaba	0	574	5	2,605	0	0	-	397	281	0	15
		Hadish Adi	0	3	0	248	0	0	-	3	2	0	0
	Periphery	Mai Chew	0	0	0	134	0	0	-	0	0	0	0
Milad Manta		0	0	0	330	0	0	-	0	0	0	0	
Adi Keyih	Entire Town		919	3	202	2	3,735	2,971	-	4	4	1,088	93
	%		14.2%	0.0%	3.1%	0.0%	57.9%	46.0%	-	0.1%	0.1%	16.9%	1.4%
	Core	Hadamu	12	0	2	0	981	612	-	0	0	1	3
		Haineba	283	0	93	0	943	892	-	0	0	203	2
		Heshemele	212	2	0	2	1,131	757	-	2	2	2	2
		Unabur	412	1	107	0	680	710	-	2	2	1	86
	Periphery	Ma'alewya	0	0	0	0	0	0	-	0	0	539	0
Tekendae		0	0	0	0	0	0	-	0	0	342	0	

\* Multiple answers

## 6. Daily Water Consumption Volume

Town	Zone	Area	Cosumption liter/day	Average Zone liter/day	Per capita liter/day/person	Average Zone liter/day
Debarwa	Entire Town		98.8	-	22.4	-
	Core	01	106.7		24.8	
		02	88.6		19.6	
		03	97.0	98.8	23.2	23.0
	Periphery	Adi Geda	85.7		17.8	
		Adi Logo	118.8		23.1	
	Halhale	100.0	98.5	21.2	20.0	
Dekemhare	Entire Town		79.4	-	18.3	-
	Core	Dekemhare	78.7		17.4	
		Mai Werki	68.8	69.9	15.7	15.9
	Periphery	Amhur	105.3		23.4	
		Hadamu	62.8		13.9	
	Metsalu	75.3	81.9	18.6	19.0	
May-dima	Entire Town		95.1	-	21.6	-
	Core	Adi Ghaba	100.7		23.2	
		Hadish Adi	72.7	98.6	16.4	22.6
	Periphery	Mai Chew	70.1		14.7	
Milad Manta		73.1	72.3	15.6	15.4	
Adi Keyih	Entire Town		80.2	-	16.8	-
	Core	Hadamu	57.8		13.1	
		Haineba	88.6		18.7	
		Heshemele	89.7		18.8	
		Unabur	81.6	80.2	16.4	16.8
	Periphery	Ma'alewya	N.d.		N.d.	
		Tekendae	N.d.	N.d.	N.d.	N.d.

## 7. Water rate

Unit: Nakfa/ month

Town	Zone	Area	(1) Actual Water Rate			(2) Affordable Water Rate		
			Average	Median	Mode	Average	Median	Mode
Debarwa	Entire Town		59.5	42	0	48.5	30	30
	Core	01	68.6	63	42	42.3	30	30
		02	62.1	45	72	57.3	30	30
		03	78.6	72	36	57.3	30	30
	Periphery	Adi Geda	8.8	0	0	34.9	30	30
		Adi Logo	0.0	0	0	31.9	30	20
Halhale		0.0	0	0	32.9	30	30	
Dekemhare	Entire Town		54.6	56	56	32.2	25	20
	Core	Dekemhare	66.7	56	56	60.1	50	0
		Mai Werki	61.5	56	56	31.3	30	0
	Periphery	Amhur	66.3	56	56	35.9	30	20
		Hadamu	57.7	56	56	34.3	30	40
		Metsalu	39.5	28	56	27.3	21	20
May-dima	Entire Town		17.9	0	0	18.2	10	10
	Core	Adi Ghaba	22.2	0	0	19.5	11	10
		Hadish Adi	2.2	0	0	14.2	10	10
	Periphery	Mai Chew	0.2	0	0	9.2	10	5
		Milad Manta	0.0	0	0	13.5	10	10
Adi Keyih	Entire Town		33.8	28	0	50.7	50	0
	Core	Hadamu	19.2	22	22	50.5	50	50
		Haineba	41.9	44	44	59.0	60	50
		Heshemele	44.3	44	55	66.5	70	70
		Unabur	53.5	48	48	70.3	60	50
	Periphery	Ma'alewya	0.0	0	0	0.0	0	0
		Tekendae	0.0	0	0	0.0	0	0

## 8. Consideration of Affordability of water rate

Town	Zone	Area	Number of Household	Average Monthly Income	Average water rate	Present water rate/ Monthly income	Affordable water rate Nakfa/month	Affordable/ Actual water rate = 1
Debarwa	Entire Town		3,925	546	59.5	10.9%	48.5	0.82
	Core	01	1,187	569	68.6	12.1%	42.3	0.62
		02	676	599	62.1	10.4%	57.3	0.92
		03	1,352	532	78.6	14.8%	57.3	0.73
	Periphery	Adi Geda	426	507	8.8	1.7%	34.9	3.96
		Adi Logo	270	457	0.0	0.0%	31.9	-
Halhale	14	368	0.0	0.0%	32.9	-		
Dekemhare	Entire Town		6,561	407	54.6	13.4%	32.2	0.59
	Core	Dekemhare	115	704	66.7	9.5%	60.1	0.90
		Mai Werki	1,266	412	61.5	14.9%	31.3	0.51
	Periphery	Amhur	1,672	469	66.3	14.1%	35.9	0.54
		Hadamu	1,311	381	57.7	15.1%	34.3	0.60
		Metsalu	2,196	356	39.5	11.1%	27.3	0.69
May-dima	Entire Town		3,895	168	17.9	10.7%	18.2	1.01
	Core	Adi Ghaba	3,122	179	22.2	12.4%	19.5	0.88
		Hadish Adi	251	137	2.2	1.6%	14.2	6.37
	Periphery	Mai Chew	135	77	0.2	0.3%	9.2	41.33
		Milad Manta	332	135	0.0	0.0%	13.5	-
Adi Keyih	Entire Town		6,455	471	33.8	7.2%	50.7	1.50
	Core	Hadamu	1,017	417	19.2	4.6%	50.5	2.63
		Haineba	1,324	420	41.9	10.0%	59.0	1.41
		Heshemele	1,179	360	44.3	12.3%	66.5	1.50
		Unabur	1,707	892	53.5	6.0%	70.3	1.31
	Periphery	Ma'alewya	639	92	N.d.	N.d.	0.0	-
		Tekendae	589	107	N.d.	N.d.	0.0	-



## 9. Evaluation of quantity of present water supply by consumer

Unit: number of households

Town	Water source	(1) Evaluation of quantity				(2) Evaluation of quality				
		Rich	Fair	Short	Respondents	Good	Fair	Bad	Respondents	
Debarwa	House connection	35	62	42	139	123	15	0	138	
	Private well	200	167	52	419	17	174	225	416	
	Public fountain	38	336	452	826	711	103	13	827	
	Public well	149	292	65	506	206	127	174	507	
	River	158	94	210	462	97	187	177	461	
	Roof collection	37	23	23	83	8	38	37	83	
	Water truck (private)	23	800	1,435	2,258	679	1,109	462	2,250	
	private)	-	-	-	-	-	-	-	-	
	Water truck (town)	4	125	444	573	260	264	47	571	
	Water vendor by donkey	3	20	13	36	7	21	8	36	
Other	1	0	1	2	0	2	0	2		
Dekemhare	House connection	161	311	258	730	214	470	46	730	
	Private well	20	6	0	26	1	9	16	26	
	Public fountain	254	952	194	1,400	885	499	17	1,401	
	Public well	20	9	0	29	13	9	7	29	
	River	0	0	0	0	0	0	0	0	
	Roof collection	13	25	26	64	8	28	28	64	
	Water truck (private)	20	176	286	482	18	299	166	483	
	private)	158	931	1,422	2,511	264	1,710	537	2,511	
	Water truck (town)	320	1,454	333	2,107	257	1,700	150	2,107	
	Water vendor by donkey	1	0	0	1	1	0	0	1	
Other	1	0	80	81	1	30	50	81		
May-dima	House connection	0	1		1	-	-	-	-	
	Private well	0	43	3,307	3,350	40	262	3,047	3,349	
	Public fountain	0	274	285	559	209	303	47	559	
	Public well	0	1	4	5	0	1	4	5	
	River	0	0	0	0	0	0	0	0	
	Roof collection	0	145	103	248	104	116	30	250	
	Water truck (private)	0	0	0	0	-	-	-	-	
	private)	0	0	0	0	-	-	-	-	
	Water truck (town)	0	1	13	14	-	-	-	-	
	Water vendor by donkey	0	84	313	397	53	125	219	397	
Other	0	0	0	0	0	0	0	0		
Adi Keyih	House connection	4	7	944	955	428	416	78	922	
	Private well	0	0	2	2	0	1	1	2	
	Public fountain	0	0	3	3	0	0	3	3	
	Public well		2	189	191	8	76	109	193	
	River	0	0	1,455	1,455	0	58	1,397	1,455	
	Roof collection	0	0	3	3	1		2	3	
	Water truck (private)	1	4	2,819	2,824	10	483	2,329	2,822	
	private)	0	0	0	0	-	-	-	-	
	Water truck (town)	3	7	3,670	3,680	33	384	3,268	3,685	
	Water vendor by donkey	0	0	4	4	2		2	4	
Other	0	2	84	86	63	17	6	86		

## 10. Water affected diseases

(1) Outbreak of water affected diseases in June - August 2005

Unit: number of households

Town	Diarrhea	Dysentery	Hepatitis	Bilharziasis	Skin diseases	Trachoma	Interviewed households
Debarwa	653	6	0	10	114	14	3,925
Dekemhare	577	131	18	99	93	88	6,561
May-dima	1,457	0	1	5	388	60	3,895
Adi Keyih	204	30	1	9	15	6	6,456

\* Multiple answers

(2) Frequency of diarrhea June to August

Town	Times/ 3Month	Number of households	%
Debarwa	0	3,068	78.2%
	1	331	8.4%
	2	282	7.2%
	3-	244	6.2%
dekemhare	0	5,840	89.0%
	1	417	6.4%
	2	177	2.7%
	3-	126	1.9%
May-dima	0	2,364	60.7%
	1	232	6.0%
	2	711	18.3%
	3-	588	15.1%
Adi Keyih	0	6,170	95.6%
	1	79	1.2%
	2	100	1.5%
	3-	106	1.6%

(3) Medical expenses in recent three months

Unit: Nakfa/three months

Town	Amount
Debarwa	14.5
Dekemhare	13.9
May-dima	25.2
Adi Keyih	5.3