

Chapter 6

Water Quality Test Data

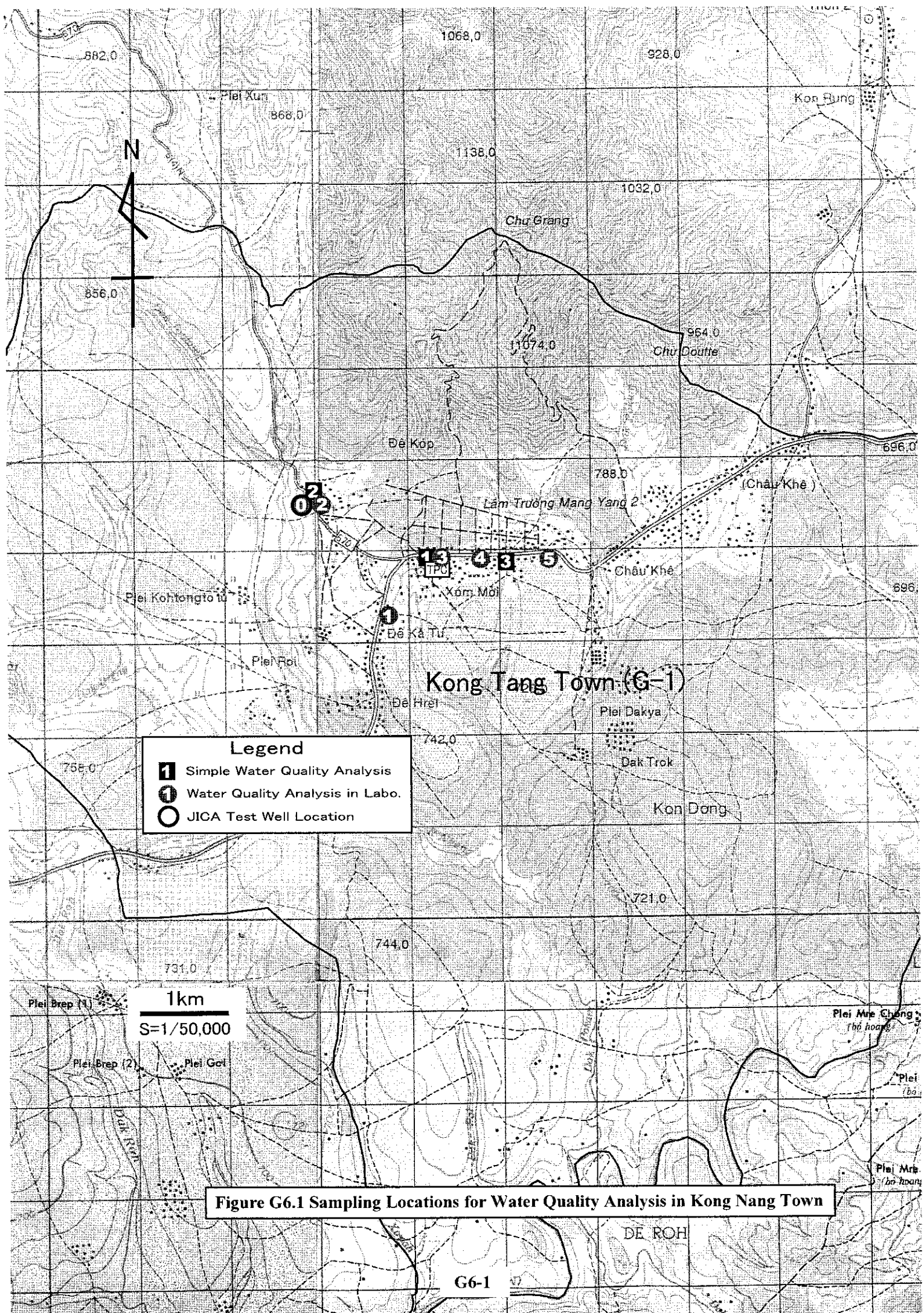


Table G6. 1 Data Sheet : Result of Water Quality Analysis

Location	Kong Tang Commune (G-1)											
	G-1-0		G-1-1		G-1-2		G-1-3		G-1-4		G-1-5	
Sample No.	14		5		15		19		21		24	
Location No.	14		5		15		19		21		24	
Name	JICA G-1		Mr. Hai		Mr. Tuc		Mr. Hong		Mr. Quang		Mr. Bao	
Type	Drilling Well		Dug Well		Dug Well		Dug Well		Dug Well		Dug Well	
Latitude / Longitude	14°02.948 / 108°14.787		14°02.035 / 108°15.096		14°02.964 / 108°14.829		14°02.569 / 108°15.470		14°02.593 / 108°15.730		14°02.613 / 108°16.108	
Elevation	718		725		721		731		735		729	
Date	1-Jun-01		21-May-01		21-May-01		21-May-01		21-May-01		21-May-01	
Time	6:00		10:00		13:30		14:15		14:50		15:30	
Flow Quantity	-		-		-		-		-		-	
Well Depth GL-(m)	150.0		22.29		18.22		19.50		18.88		17.96	
Groundwater Table GL-(m)	-		20.40		17.05		18.35		16.83		16.70	
Water Temperature (°C)	27.5		25.1		25.4		25.5		25.5		26.2	
pH	7.32		5.65		5.30		4.86		5.22		6.24	
Ec (μ S/cm)	198.7		11.33		13.32		24.8		15.80		128.7	
DO (mg/l)	1.16		2.57		3.12		2.83		2.88		1.73	
TDS (mg/l)	170.062		15.506		13.923		10.299		7.983		6.704	
Ca ²⁺ (mg/l)	4.34		0.88		1.38		1.58		1.30		0.72	
Mg ²⁺ (mg/l)	2.807	1	1.932	-	1.543	0.5	0.413	-	0.134	0.5	0.450	-
Na ⁺ (mg/l)	31.97		0.69		0.46		0.69		0.69		0.46	
K ⁺ (mg/l)	2.535		0.273		0.117		0.078		0.078		0.078	
HCO ₃ ⁻ (mg/l)	124.32		3.97		1.40		3.97		1.34		1.53	
Cl ⁻ (mg/l)	0.915		0.710		0.284		0.213		0.071		0.639	
SO ₄ ²⁻ (mg/l)	3.19		7.06		8.74		3.36		4.37		2.83	
Total Fe (mg/l)	0.82	0.2	0.23	-	0.18	0.5	0.11	-	0.07	0.5	0.07	-
NO ₂ -N (mg/l)	0.030	0.05	<0.001	-	<0.001	<0.02	<0.001	-	<0.001	<0.02	<0.001	-
NO ₃ -N (mg/l)	0.06	1	0.11	-	0.52	2	0.30	-	0.25	1	0.02	-
NH ₄ ⁺ (mg/l)	0.052	0.3	0.149	-	0.033	-	0.042	-	0.078	-	0.035	-
PO ₄ ³⁻ (mg/l)	0.03	0.2	<0.01	-	0.04	-	<0.01	-	<0.01	-	<0.01	-
COD/KMnO ₄ (mg/l)	0.157	5	0.236	-	0.315	30	0.157	-	0.630	50	0.236	-
F (mg/l)	0.6600	0.3	0.1077	-	0.0475	-	0.0945	-	0.1800	-	0.0674	-
As (mg/l)	0.0010	<0.2, (0.00)	0.0041	-	0.0039	<0.2, (0.00)	0.0043	-	0.0030	<0.2	0.0029	-
Mn ²⁺ (mg/l)	0.0130	<0.5	0.0987	-	0.0427	<0.5	0.0777	-	0.2000	<0.5	0.1750	-
Coliform (MPN/100ml)	240	-	9,200	-	3,500	-	1,600	-	260	-	5,400	-

*Left Column : by Laboratory Test, Right Column : by Simple Test **As () : by Hironaka Kit

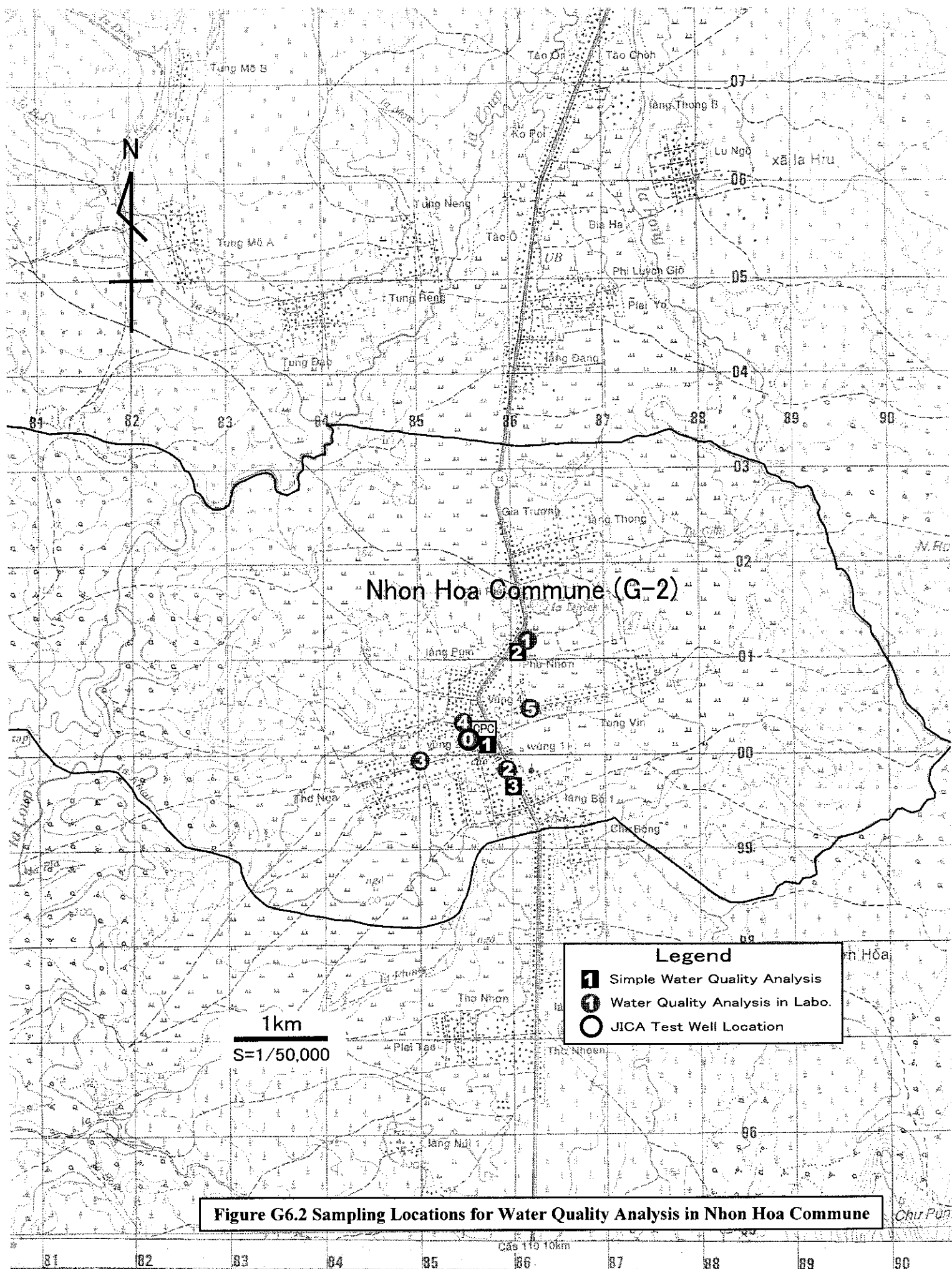


Figure G6.2 Sampling Locations for Water Quality Analysis in Nhon Hoa Commune

Table G6. 2 Data Sheet : Result of Water Quality Analysis

Location	Nhon Hoa Commune (G-2)											
	G-2-0		G-2-1		G-2-2		G-2-3		G-2-4		G-2-5	
Sample No.	25		6		14		21		24		29	
Location No.	25		6		14		21		24		29	
Name	JICA G-2		Mr. Hoa		Mr. Khanh		Mr. Lieu		Mr. Hung		Mr. Hung	
Type	Drilling Well		Dug Well		Dug Well		Dug Well		Dug Well		Dug Well	
Latitude / Longitude	14°02.954 / 108°105.815		13°33.393 / 108°06.069		13°32.630 / 108°06.061		13°32.737 / 108°05.530		13°32.957 / 108°05.820		13°33.082 / 108°06.244	
Elevation	410		400		412		416		410		409	
Date	27-Jun-01		23-May-01		23-May-01		23-May-01		23-May-01		23-May-01	
Time	12:30		10:00		11:10		13:40		14:15		15:25	
Flow Quantity	-		-		-		-		-		-	
Well Depth GL-(m)	170.0		10.73		24.58		20.42		22.69		22.47	
Groundwater Table GL-(m)	-		9.11		19.63		16.25		21.46		18.11	
Water Temperature (°C)	28.1		26.9		26.6		27.0		27.1		26.3	
pH	7.00		5.89		5.04		5.83		5.16		5.46	
Ec (μ S/cm)	338		42.0		26.7		57.2		33.1		23.3	
DO (mg/l)	3.04		3.17		2.86		3.02		2.89		3.13	
TDS (mg/l)	211.444		38.337		14.276		36.842		20.733		13.460	
Ca ²⁺ (mg/l)	24.72		2.84		1.82		3.18		0.58		0.44	
Mg ²⁺ (mg/l)	12.758	4	3.791	1	0.522	0	2.564	-	2.333	0	1.227	-
Na ⁺ (mg/l)	12.65		2.07		1.84		2.76		2.07		1.38	
K ⁺ (mg/l)	4.062		0.780		0.234		0.936		0.273		0.234	
HCO ₃ ⁻ (mg/l)	142.62		20.13		3.17		19.83		6.77		7.44	
Cl ⁻ (mg/l)	0.993		0.710		2.272		2.20		2.130		1.633	
SO ₄ ²⁻ (mg/l)	13.10		8.02		4.42		5.38		6.58		1.10	
Total Fe (mg/l)	0.21	<0.2	0.21	0.2	0.35	0.2	0.20	-	0.17	0.5	0.53	-
NO ₂ -N (mg/l)	0.002	<0.02	<0.001	<0.02	<0.001	<0.02	<0.001	-	<0.001	<0.02	<0.001	-
NO ₃ -N (mg/l)	0.19	<1	0.97	2	0.52	2	1.19	-	1.09	3	0.14	-
NH ₄ ⁺ (mg/l)	0.074	0	0.037	0	0.022	0	0.014	-	0.046	-	0.040	-
PO ₄ ³⁻ (mg/l)	0.10	0.2	0.05	<0.2	0.04	<0.2	0.08	-	0.04	<0.2	0.09	-
COD/KMnO ₄ (mg/l)	0.157	-	0.236	100	0.315	70	0.157	-	0.630	100	0.630	-
F (mg/l)	0.2900	0	0.1800	0	0.0855	0	0.2012	-	0.1875	0	0.0677	-
As (mg/l)	0.0032	<0.2, (0.00)	0.0051	<0.2, (0.00)	0.0034	<0.2	0.0030	-	0.0027	<0.2, (0.00)	0.0031	-
Mn ²⁺ (mg/l)	0.1950	<0.5	0.1100	<0.5	0.0427	<0.5	0.0577	-	0.0672	<0.5	0.0307	-
Coliform (MPN/100ml)	0	0	49	-	140	-	220	-	920	-	240	-

*Left Column : by Laboratory Test, Right Column : by Simple Test **As () : by Hironaka Kit

Table G6. 3 Data Sheet : Result of Water Quality Analysis

Location	Chu Ty Town (G-3)											
	G-3-0		G-3-1		G-3-2		G-3-3		G-3-4		G-3-5	
Sample No.	G-3-0		G-3-1		G-3-2		G-3-3		G-3-4		G-3-5	
Location No.	11		9		10		1		6		29	
Name	JICA G-3		Deep Well - 1		Mr. Sam		Mr. Dong		Mr. Thanh		DW-2 Tank	
Type	Drilling Well		Drilling Well		Dug Well		Dug Well		Dug Well		Tank (Drilling Well)	
Latitude / Longitude	13°48.602 / 107°41.900		13°48.491 / 107°41.912		13°48.503 / 107°41.915		13°48.107 / 107°42.000		13°48.047 / 107°41.363		13°47.989 / 107°41.624	
Elevation	401		395		396		410		427		428	
Date	14-May-01		18-May-01		18-May-01		18-May-01		18-May-01		18-May-01	
Time	21:00		10:30		10:45		9:00		9:45		15:45	
Flow Quantity	-		-		-		-		-		-	
Well Depth GL-(m)	150.0		150		6.79		21.56		6.79		-	
Groundwater Table GL-(m)	-		Pump Depth -		5.33		19.24		5.33		-	
Water Temperature (°C)	27.0		26.3		25.0		25.9		25.0		26.6	
pH	7.20		6.08		5.33		5.80		5.33		6.52	
Ec (μ S/cm)	61.7		54.1		13.60		36.2		13.60		195.0	
DO (mg/l)	2.56		3.91		1.85		3.12		1.85		3.58	
TDS (mg/l)	166.645		50.286		7.545		9.889		23.79		146.753	
Ca ²⁺ (mg/l)	14.38		5.06		0.72		1.38		3.62		16.12	
Mg ²⁺ (mg/l)	11.90	5	3.997	0.5	0.450	-	0.522	0.5	3.548	-	8.128	3
Na ⁺ (mg/l)	7.13		1.15		0.46		0.46		0.92		10.12	
K ⁺ (mg/l)	2.964		0.897		0.546		0.195		1.014		2.652	
HCO ₃ ⁻ (mg/l)	126.88		34.77		0.67		0.55		23.79		89.79	
Cl ⁻ (mg/l)	0.213		0.284		0.426		0.639		0.355		0.213	
SO ₄ ²⁻ (mg/l)	3.89		4.13		4.27		6.14		5.28		19.73	
Total Fe (mg/l)	0.40	0.5	0.25	0.75	0.44	-	0.29	0.2	0.13	-	1.50	<0.2
NO ₂ -N (mg/l)	<0.001	<0.02	<0.001	<0.02	<0.001	-	0.010	<0.02	<0.001	-	<0.001	<0.02
NO ₃ -N (mg/l)	0.05	<1	0.04	<1	0.17	-	0.11	1.5	0.05	-	<0.01	<1
NH ₄ ⁺ (mg/l)	0.029	0	0.023	-	0.032	-	0.022	-	0.021	-	0.033	-
PO ₄ ³⁻ (mg/l)	0.14	<0.2	0.16	-	0.04	-	0.04	-	0.09	-	<0.01	-
COD/KMnO ₄ (mg/l)	0.236	-	0.315	100	0.944	-	0.472	5	0.472	-	0.866	5
F (mg/l)	0.1007	0	0.0860	-	0.0841	-	0.1007	-	0.0601	-	0.1375	-
As (mg/l)	0.0040	<0.2, (0.00)	0.0037	<0.2, (0.00)	0.0039	-	0.0034	<0.2	0.0047	-	0.0029	<0.2, (0.00)
Mn ²⁺ (mg/l)	0.0975	<0.5	0.0355	<0.5	0.0385	-	0.0475	<0.5	0.0975	-	0.1070	<0.5
Coliform (MPN/100ml)	920		170		920		110		27		280	

*Left Column : by Laboratory Test, Right Column : by Simple Test **As () : by Hironaka Kit

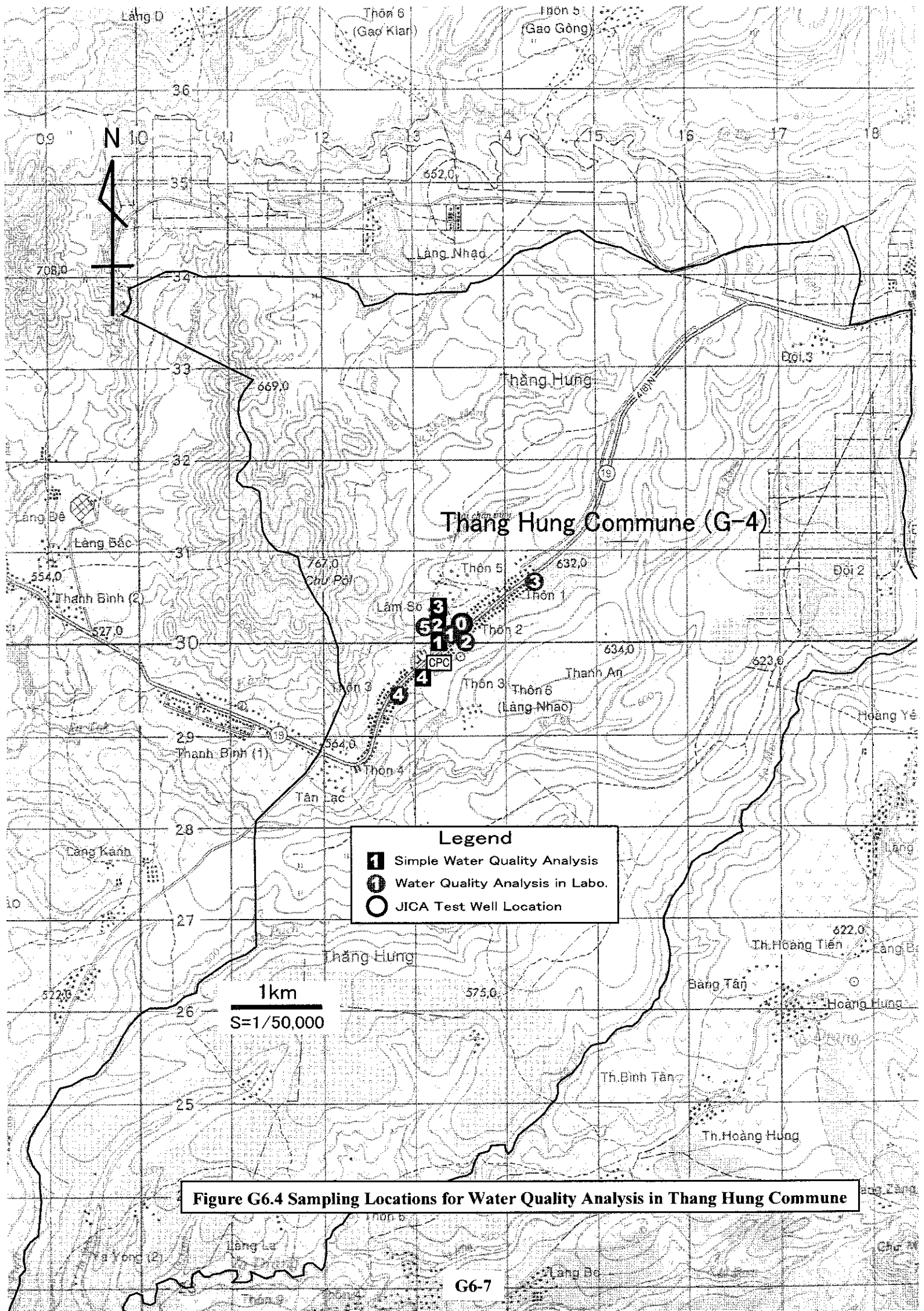


Table G6. 4 Data Sheet : Result of ^{Water} Analysis

Location	Thang Hung Commune (G-4)											
	G-4-0		G-4-1		G-4-2		G-4-3		G-4-4		G-4-5	
Sample No.	G-4-0		G-4-1		G-4-2		G-4-3		G-4-4		G-4-5	
Location No.	92		91		31		5		58		93	
Name	JICA G-4		Church's Well		Mr. Tri		Mr. Van		Mr. Phuong		Spring-1	
Type	Drilling Well		Drilling Well		Dug Well		Dug Well		Dug Well		Spring	
Latitude / Longitude	13°49.576 / 107°53.785		13°49.565 / 107°53.715		13°49.585 / 107°53.779		13°49.886 / 107°54.189		13°49.276 / 107°53.382		13°49.802 / 107°53.674	
Elevation	607		606		608		624		589		577	
Date	4-Jul-01		19-May-01		19-May-01		19-May-01		19-May-01		19-May-01	
Time	9:30		13:30		13:50		14:15		14:35		15:25	
Flow Quantity	-		-		-		-		-		300~400 l/min	
Well Depth GL-(m)	180.0		57.0		29.70		29.52		19.98		-	
Groundwater Table GL-(m)	-		Pump Depth 57m		24.32		27.70		17.32		-	
Water Temperature (°C)	29.2		25.1		24.8		23.9		24.4		26.1	
pH	7.59		5.00		5.16		4.94		4.86		5.29	
Ec (μ S/cm)	273		13.94		17.23		9.38		15.98		7.52	
DO (mg/l)	5.55		3.30		2.15		3.56		1.52		2.07	
TDS (mg/l)	225.997		11.460		11.140		7.742		16.952		17.866	
Ca ²⁺ (mg/l)	10.80		0.30		0.50		0.14		1.58		0.50	
Mg ²⁺ (mg/l)	13.171	2	2.248	0	0.972	0	1.458	-	1.337	-	2.916	-
Na ⁺ (mg/l)	22.43		0.32		1.61		0.16		1.47		0.32	
K ⁺ (mg/l)	4.095		0.078		0.078		0.039		0.039		0.156	
HCO ₃ ⁻ (mg/l)	155.18		0.73		1.77		1.34		3.66		5.00	
Cl ⁻ (mg/l)	0.355		6.532		0.355		0.426		1.136		0.426	
SO ₄ ²⁻ (mg/l)	19.97		1.25		5.86		4.18		7.73		8.54	
Total Fe (mg/l)	0.36	0.2	0.20	<0.2	0.10	2	0.12	-	0.19	-	0.27	-
NO ₂ -N (mg/l)	0.010	<0.02	<0.001	<0.02	<0.001	<0.02	<0.001	-	<0.001	-	<0.001	-
NO ₃ -N (mg/l)	0.01	<1	0.10	<1	0.41	3	0.09	-	0.41	-	0.01	-
NH ₄ ⁺ (mg/l)	0.179	0.3	0.029	-	0.035	-	0.042	-	0.051	-	0.024	-
PO ₄ ³⁻ (mg/l)	0.07	0.2	<0.01	-	<0.01	-	0.04	-	0.04	-	0.04	-
COD/KMnO ₄ (mg/l)	0.079	-	0.315	5	0.315	50	0.236	-	0.236	-	0.315	-
F (mg/l)	0.8000	0.5	0.0707	-	0.0677	-	0.0647	-	0.0608	-	0.0457	-
As (mg/l)	0.0022	<0.2, (0.00)	0.0037	<0.2, (0.00)	0.0032	<0.2	0.0037	-	0.0038	-	0.0035	-
Mn ²⁺ (mg/l)	0.1740	<0.5	0.0770	<0.5	0.0675	<0.5	0.0555	-	0.0570	-	0.0675	-
Coliform (MPN/100ml)	5		170		3,500		16,000		3,500		16,000	

*Left Column : by Laboratory Test, Right Column : by Simple Test **As () : by Hironaka Kit

Table G6. 5 Data Sheet : Result of Water Quality Analysis

Location	Nghia Hoa Commune (G-5)											
	G-5-0		G-5-1		G-5-2		G-5-3		G-5-4		G-5-5	
Sample No.	19		13		1		5		6		18	
Location No.	19		13		1		5		6		18	
Name	JICA G-5		Rubber Company		Mr. Nhi		Ms. Hoa		Monitoring Well - 1		Mr. Tinh	
Type	Drilling Well		Drilling Well		Dug Well		Dug Well		Drilling Well		Dug Well	
Latitude / Longitude	14°06.798 / 107°54.778		14°05.634 / 107°58.253		14°06.246 / 107°55.836		14°06.211 / 107°55.347		14°06.297 / 107°55.434		14°06.764 / 107°54.751	
Elevation	680		730		710		690		670		681	
Date	4-Jul-01		21-May-01		21-May-01		21-May-01		21-May-01		21-May-01	
Time	12:30		11:40		9:30		10:20		10:45		14:35	
Flow Quantity	-		-		-		-		-		-	
Well Depth GL-(m)	160.0		120.0		29.08		19.86		191		20.94	
Groundwater Table GL-(m)	-		Pump Depth 120m		28.04		19.33		Sampling Depth 150m		20.67	
Water Temperature (°C)	28.6		27.5		24.4		24.6		27.0		25.2	
pH	7.29		8.17		5.11		6.26		10.39		5.44	
Ec (μS/cm)	656		238		11.61		58.4		216		11.63	
DO (mg/l)	2.28		1.39		3.49		1.96		1.24		3.37	
TDS (mg/l)	568.373		286.870		64.330		52.763		140.055		7.049	
Ca ²⁺ (mg/l)	24.20		15.60		3.64		3.64		0.22		0.14	
Mg ²⁺ (mg/l)	20.679	4	3.40	-	8.712	-	4.362	-	17.156	0.5	1.057	0.5
Na ⁺ (mg/l)	94.30		41.40		0.16		2.30		1.61		0.16	
K ⁺ (mg/l)	17.550		4.990		0.078		1.053		15.210		0.039	
HCO ₃ ⁻ (mg/l)	410.47		142.92		48.31		39.47		91.01		1.65	
Cl ⁻ (mg/l)	0.071		0.280		0.355		0.213		4.047		0.213	
SO ₄ ²⁻ (mg/l)	1.10		3.69		3.07		1.73		10.80		3.79	
Total Fe (mg/l)	0.47	0.2	0.01	-	3.77	-	0.72	-	1.86	0.5	0.10	0.2
NO ₂ -N (mg/l)	0.001	<0.02	<0.001	-	<0.001	-	<0.001	-	<0.001	<0.02	<0.001	<0.02
NO ₃ -N (mg/l)	0.01	<1	0.03	-	0.11	-	0.11	-	0.02	<1	0.02	<1
NH ₄ ⁺ (mg/l)	0.147	0.3	0.090	-	0.061	-	0.044	-	0.385	-	0.030	-
PO ₄ ³⁻ (mg/l)	0.06	0.2	0.09	-	0.05	-	0.12	-	0.04	-	0.04	-
COD/KMnO ₄ (mg/l)	0.079	-	0.200	-	0.787	-	0.866	-	5.193	50	0.315	100
F (mg/l)	0.2900	0	0.0100	-	0.0868	-	0.0685	-	0.0855	-	0.0757	-
As (mg/l)	0.0026	<0.2, (0.00)	0.0037	-	0.0022	-	0.0032	-	0.0034	<0.2, (0.00)	0.0044	<0.2
Mn ²⁺ (mg/l)	0.0630	<0.5	0.0250	-	0.0755	-	0.0422	-	0.0477	<0.5	0.0670	<0.5
Coliform (MPN/100ml)	23	-	0	-	490	-	140	-	280	-	350	-

*Left Column : by Laboratory Test, Right Column : by Simple Test **As () : by Hironaka Kit