APPENDIX—IV

DEMAND FORECAST DATA

CONTENTS

Table A.IV-1 Energy Demand Forecast in South West Region by ELECTROPERU

Unit:GWh

Year	Arequipa-Cerro Verde System			SPCC-Aricota System				Puno-Juliaca System	Total
	Arequipa	Mollendo	Subtotal	Ilo	Toquepala	Tacna	Subtotal	Juliaca	
1983	393.2	9.8	403.0	191.3	578.9	70.8	841.0	21.8	1255.8
1984	412.1	10.2	422.3	192.8	579.5	75.1	847.4	25.0	1294.7
1985	430.7	10.7	441.4	194.4	580.2	80.5	855.1	28.8	1325.3
1986	456.7	13.4	470.1	196.0	727.8	85.2	1009.0	33.0	1512.1
1987	507.2	13.9	521.1	197.7	728.5	90.3	1016.5	37.7	1575.3
1988	527.8	14.6	542.4	205.1	729.9	94.4	1029.4	54.2	1626.0
1989	563.9	17.2	581.1	211.9	730.8	98.4	1041.1	59.4	1681.6
1990	633.8	17.9	651.7	219.4	731.6	102.7	1053.7	90.3	1795.7
1991	655.2	18.9	674.1	221.0	732.6	107.4	1061.0	96.3	1831.4
1992	677.7	19.7	697.4	222.6	733.5	112.1	1068.2	102.7	1868.3
1993	733.2	22.3	755.5	233.9	767.2	122.1	1123.2	117.0	1995.7
1994	781.6	24.5	806.1	242.9	792.8	131.4	1167.1	129.9	2103.1
1995	832.4	26.8	859.2	252.3	819.7	141.0	1213.0	143.6	2215.8
1996	885.1	29.2	914.3	262.0	847.3	151.0	1260.3	158.1	2332.7
1997	940.7	31.8	972.5	272.1	876.8	161.5	1310.4	173.6	2456.5
1998	998.5	34.3	1032.8	282.7	907.1	172.3	1362.1	190.6	2584.9
1999	1059.3	37.1	1096.4	349.7	939.4	183.8	1472.9	207.5	2776.8
2000	1122.6	40.0	1162.6	361.3	976.5	195.6	1533.4	226.0	2922.0
2001	1188.9	42.8	1231.7	373.4	1008.8	208.4	1590.6	245.7	3058.0
2002	1258.0	46.0	1304.0	386.1	1222.0	221.4	1829.5	266.5	3400.0
2003	1330.7	49.5	1380.2	399.4	1261.1	235.2	1895.7	288.4	3564.3
2004	1407.5	52.9	1460.4	413.3	1301.9	249.6	1964.8	311.4	3736.6
2005	1487.1	56.5	1543.6	428.0	1345.2	264.6	2037.8	335.8	3917.3
2006	1570.8	60.3	1631.1	443.4	1391.0	280.2	2114.6	361.7	4107.4
2007	1653.1	64.1	1717.2	458.8	1436.9	296.6	2192.3	388.4	4297.9

Table A.IV-2 Power Demand Forecast in South West Region by ELECTROPERU

Unit:MW

Year	Arequipa-Cerro Verde Systen			SPCC-Aricota System				Puno-Juliaca System	Total
	Arequipa	Mollendo	Subtotal	Ilo	Toquepala	Tacna	Subtotal	Juliaca	
1983	78.6	2.6	81.2	29.6	97.5	16.2	143.3	7.4	231.9
1984	83.8	2.7	86.5	30.0	97.7	17.1	144.8	8.4	239.7
1985	87.7	2.9	90.6	30.5	97.9	18.5	146.9	9.7	247.2
1986	94.6	3.9	98.5	31.0	122.5	19.5	173.0	11.1	282.6
1987	119.3	4.1	123.4	31.5	122.7	20.6	174.8	12.7	310.9
1988	111.3	4.3	115.6	32.7	123.2	21.7	177.6	20.2	313.4
1989	118.2	6.4	124.6	33.8	123.5	22.6	179.9	21.9	326.4
1990	131.2	6.6	137.8	35.0	123.8	23.5	182.3	28.4	348.5
1991	135.8	6.8	142.6	35.5	124.0	24.5	184.0	30.4	357.0
1992	140.6	7.2	147.8	35.9	124.2	25.6	185.7	32.7	366.0
1993	150.5	7.8	158.3	37.7	129.3	27.4	194.4	36.1	388.8
1994	159.4	8.2	167.6	39.3	133.3	29.4	202.0	39.4	409.0
1995	168.5	8.7	177.2	40.8	137.4	31.1	209.3	43.0	429.5
1996	178.1	9.3	187.4	42.5	141.8	33.0	217.3	46.6	451.3
1997	188.4	9.9	198.3	44.4	146.6	35.1	226.1	50.9	475.3
1998	199.2	10.4	209.6	46.2	151.4	37.2	234.8	55.3	493.7
1999	211.5	11.1	222.6	56.4	158.0	39.6	254.0	60.2	536.8
2000	223.4	11.9	235.3	58.6	164.0	42.0	264.6	65.1	565.0
2001	235.6	12.5	248.1	60.8	169.5	44.4	274.7	70.3	593.1
2002	251.4	13.3	264.7	64.0	205.0	47.3	316.3	76.5	657.5
2003	264.8	14.2	279.0	66.4	211.4	50.2	328.0	82.1	689.1
2004	279.1	14.9	294.0	68.9	217.9	52.9	339.7	88.2	721.9
2005	294.0	15.7	309.7	71.6	225.4	55.7	352.7	94.9	757.3
2006	309.4	16.5	325.9	74.3	233.1	58.9	366.3	101.7	793.9
2007	325.2	17.2	342.4	76.9	241.0	62.0	379.9	108.9	831.2

Table A.IV-3 Energy Demand Forecast in SPCC-Aricota System by ELECTROPERU (1-3)

Unit:GWh

Year	Aricota System								
	Tacna								
	Ciudad de Tacna	Peq. Centros(I)	Peq. Centros(II)	Mina Locumba	S.E La Yarada	Rual Magollo	Rual La Yarada	Otros	Subtotal
1983	36.6	2.1		7.1	23.4	0.9	0.7		70.8
1984	39.8	2.2		7.1	24.4	0.9	0.7		75.1
1985	43.2	2.3	0.8	7.1	25.5	0.9	0.7		80.5
1986	46.7	2.4	0.8	7.1	26.5	1.0	0.7		85.2
1987	50.5	2.6	0.8	7.1	27.6	1.0	0.7		90.3
1988	54.2	2.7	0.9	7.1	27.6	1.1	0.8		94.4
1989	58.1	2.8	0.9	7.1	27.6	1.1	0.8		98.4
1990	62.2	2.9	0.9	7.1	27.6	1.1	0.9		102.7
1991	66.5	3.1	1.0	7.1	27.6	1.2	0.9		107.4
1992	70.9	3.3	1.1	7.1	27.6	1.2	0.9		112.1
1993	75.5	3.4	1.1	7.1	27.6	1.2	0.9	5.3	122.1
1994	80.4	3.6	1.2	7.1	27.6	1.3	0.9	9.3	131.4
1995	85.5	3.8	1.2	7.1	27.6	1.3	1.0	13.5	141.0
1996	90.8	4.0	1.3	7.1	27.6	1.4	1.0	17.8	151.0
1997	96.4	4.2	1.4	7.1	27.6	1.4	1.0	22.4	161.5
1998	102.2	4.4	1.4	7.1	27.6	1.4	1.1	27.1	172.3
1999	108.3	4.6	1.5	7.1	27.6	1.5	1.1	32.1	183.8
2000	114.6	4.8	1.5	7.1	27.6	1.5	1.1	37.4	195.6
2001	121.3	5.1	1.6	7.1	27.6	1.6	1.2	42.9	208.4
2002	128.2	5.3	1.7	7.1	27.6	1.6	1.2	48.7	221.4
2003	135.4	5.6	1.7	7.1	27.6	1.7	1.2	54.9	235.2
2004	142.9	5.9	1.8	7.1	27.6	1.7	1.3	61.3	249.6
2005	150.8	6.2	1.8	7.1	27.6	1.7	1.3	68.1	264.6
2006	158.9	6.5	1.8	7.1	27.6	1.7	1.3	75.3	280.2
2007	167.5	6.8	1.9	7.1	27.6	1,8	1.4	82.5	296.6

Table A.IV-3 Energy Demand Forecast in SPCC-Aricota System by ELECTROPERU (2-3)

Unit:GWh

Year	Aricota System							Total
	Ilo							
	Ciudad de Ilo	Ref de Cobre I	Ref de Cobre II	Otros	Ciudad de Moquequa	Peq. Centros	Subtotal	
1983	23.3	56.0			8.9		88.2	159.0
1984	24.8	56.0			9.5		90.3	165.4
1985	26.4	56.0			10.2		92.6	173.1
1986	28.0	56.0			10.8		94.8	180.0
1987	29.7	56.0			11.5		97.2	187.5
1988	31.1	62.0			12.3	0.6	106.0	200.4
1989	32.7	67.2			13.1	0.7	113.7	212.1
1990	34.2	72.2			13.9	0.7	121.0	223.7
1991	35.8	73.2			14.8	0.8	124.6	232.0
1992	37.4	73.2			15.6	0.9	127.1	239.2
1993	39.0	73.2		9.7	16.6	0.9	139.4	261.5
1994	40.7	73.2		17.0	17.5	1.0	149.4	280.8
1995	42.4	73.2		24.7	18.5	1.1	159.9	300.9
1996	44.2	73.2		32.6	19.6	1.2	170.8	321.8
1997	45.9	73.2		41.0	20.6	1.3	182.0	343.5
1998	47.8	73.2		49.7	21.7	1.4	193.8	366.1
1999	49.6	73.2		58.9	22.9	1.5	262.1	445.9
2000	51.6	73.2	56.0	68.5	24.1	1.6	275.0	470.6
2001	53.5	73.2	56.0	78.7	25.3	1.7	288.4	496.8
2002	55.5	73.2	56.0	89.4	26.5	1.8	302.4	523.8
2003	57.6	73.2	56.0	100.6	27.7	1.9	317.0	552.2
2004	59.7	73.2	56.0	112.4	28.9	2.0	332.2	581.8
2005	61.9	73.2	56.0	124.9	30.1	2.1	348.2	612.8
2006	64.1	73.2	56.0	138.1	31.4	2.2	365.0	645.2
2007	66.3	73.2	56.0	151.3	32.8	2.3	381.9	678.5

Table A.IV-3 Energy Demand Forecast in SPCC-Aricota System by ELECTROPERU (3-3)

Unit:GWh

Year	SPCC System							Aricota + SPCC Systeme Total
	SPCC Fundicion	Toquepala Cuajone	SPCC AMP Cuajone	SPCC AMP Toquepala	Quellaveco	Otros	Total	
1983	112.0	570.0					682.0	841.0
1984	112.0	570.0					682.0	847.4
1985	112.0	570.0					682.0	855.1
1986	112.0	570.0	81.0	66.0			829.0	1009.0
1987	112.0	570.0	81.0	66.0			829.0	1016.5
1988	112.0	570.0	81.0	66.0			829.0	1029.4
1989	112.0	570.0	81.0	66.0			829.0	1041.1
1990	112.0	570.0	81.0	66.0			829.0	1052.7
1991	112.0	570.0	81.0	66.0			829.0	1061.0
1992	112,0	570.0	81.0	66.0			829.0	1068.2
1993	112.0	570.0	81.0	66.0		32.7	861.7	1123.2
1994	112.0	570.0	81.0	66.0		57.3	886.3	1167.1
1995	112.0	570.0	81.0	66.0		83.1	912.1	1213.0
1996	112.0	570.0	81.0	66.0		109.5	938.5	1109.3
1997	112.0	570.0	81.0	66.0		137.5	966.9	1148.9
1998	112.0	570.0	81.0	66.0		167.0	996.0	1189.8
1999	112.0	570.0	81.0	66.0		198.0	1027.0	1289.1
2000	112.0	570.0	81.0	66.0		233.8	1062.8	1337.8
2001	112.0	570.0	81.0	66.0		264.8	1093.8	1382.2
2002	112.0	570.0	81.0	66.0	176.0	300.7	1305.7	1608.1
2003	112.0	570.0	81.0	66.0	176.0	338.5	1343.5	1660.5
2004	112.0	570.0	81.0	66.0	176.0	378.0	1383.0	1715.2
2005	112.0	570.0	81.0	66.0	176.0	420.0	1425.0	1773.2
2006	112.0	570.0	81.0	66.0	176.0	464.4	1469.4	1834.4
2007	112.0	570.0	81.0	66.0	176.0	508.8	1513.8	1895.7

Table A.IV-4 Power Demand Forecast in SPCC-Aricota System by ELECTROPERU (1-3)

Unit:MW

Year	Aricota System								
	Tacna								
	Ciudad de Tacna	Peq. Centros(1)	Peq. Centros(II)	Mina Locumba	S.E La Yarada	Rual Magollo	Rual La Yarada	Otros	Subtotal
1983	8.0	1.2		1.5	5.0	0.3	0.2		16.2
1984	8.7	1.2		1.5	5.2	0.3	0.2		17.1
1985	9.4	1.3	0.4	1.5	5.4	0.3	0.2		18.5
1986	10.2	1.3	0.4	1.5	5.6	0.3	0.2		19.5
1987	11.2	1.4	0.4	1.5	5.8	0.3	0.2		20.6
1988	11.8	1.5	0.4	1.5	5.8	0.4	0.3		21.7
1989	12.6	1.5	0.5	1.5	5.8	0.4	0.3		22.6
1990	13.4	1.6	0.5	1.5	5.8	0.4	0.3		23.5
1991	14.3	1.7	0.5	1.5	5.8	0.4	0.3		24.5
1992	15.3	1.8	0.5	1.5	5.8	0.4	0.3		25.6
1993	16.2	1.9	0.5	1.5	5.8	0.4	0.3	0.8	27.4
1994	17.3	2.1	0.6	1.5	5.8	0.4	0.3	1.4	29.4
1995	18.3	2.2	0.6	1.5	5.8	0.4	0.3	2.0	31.1
1996	19.4	2.3	0.6	1.5	5.8	0.4	0.3	2.7	33.0
1997	20.6	2.4	0.6	1.5	5.8	0.5	0.4	3.3	35.1
1998	21.8	2.5	0.6	1.5	5.8	0.5	0.4	4.1	37.2
1999	23.0	2.6	0.7	1.5	5.8	0.5	0.4	5.1	39.6
2000	24.3	2.8	0.7	1.5	5.8	0.5	0.4	6.0	42.0
2001	25.7	2.9	0.7	1.5	5.8	0.5	0.4	6.9	44.4
2002	27.1	3.1	0.7	1.5	5.8	0.5	0.4	8.2	47.3
2003	28.6	3.2	0.8	1.5	5.8	0.6	0.4	9.3	50.2
2004	30.1	3.4	0.8	1.5	5.8	0.6	0.4	10.3	52.9
2005	31.7	3.5	0.8	1.5	5.8	0.6	0.4	11.4	55.7
2006	33.4	3.7	0.8	1.5	5.8	0.6	0.4	12.7	58.9
2007	35.1	3.9	0.8	1.5	5.8	0.6	0.4	13.9	62.0

Table A.IV-4 Power Demand Forecast in SPCC-Aricota System by ELECTROPERU (2-3)

Unit:MW

Year	Aricota System							Total
	Ilo							
	Ciudad de Ilo	Ref. de Cobre I	Ref. de Cobre II	Otros	Ciudad de Moquequa	Peq. Centros	Subtotal	
1983	7.6	7.5			2.5		17.6	33.8
1984	8.0	7.5			2.7		18.2	35.3
1985	8.5	7.5			2.9		18.9	37.4
1986	9.0	7.5			3.0		19.5	39.0
1987	9.5	7.5			3.2		20.2	40.8
1988	9.9	8.3			3.4	0.3	21.9	43.6
1989	10.3	9.0			3.6	0.4	23.3	45.9
1990	10.7	9.8			3.9	0.4	24.8	48.3
1991	11.2	9.8			4.1	0.4	25.5	50.0
1992	11.6	9.8			4.3	0.4	26.1	51.7
1993	12.0	9.8		1.4	4.6	0.4	28.2	55.6
1994	12.5	9.8		2.5	4.8	0.5	30.1	59.5
1995	12.9	9.8		3.6	5.1	0.5	31.9	63.0
1996	13.4	9.8		4.8	5.4	0.6	34.0	67.0
1997	13.9	9.8		6.2	5.7	0.6	36.2	71.3
1998	14.4	9.8		7.5	5.9	0.6	38.2	75.4
1999	15.3	9.8	7.5	9.3	6.2	0.7	48.8	88.4
2000	15.9	9.8	7.5	10.9	6.5	0.7	51.3	93.3
2001	16.4	9.8	7.5	12.6	6.9	0.8	54.0	98.4
2002	17.0	9.8	7.5	15.2	7.2	0.8	57.5	104.8
2003	17.6	9.8	7.5	17.0	7.5	0.9	60.3	110.5
2004	18.2	9.8	7.5	18.9	7.8	0.9	63.1	116.0
2005	18.8	9.8	7.5	21.0	8.1	1.0	66.2	121.9
2006	19.4	9.8	7.5	23.1	8.4	1.0	69.2	128.1
2007	20.0	9.8	7.5	25.1	8.8	1.0	72.2	134.2

Table A.IV-4 Power Demand Forecast in SPCC-Aricota System by ELECTROPERU (3-3)

Unit:MW

Year	SPCC System							Aricota + SPCCSysteme Total
	SPCC Fundicion	Toquepala Cuajone	SPCC AMP Cuajone	SPCC AMP Toquepala	quellaveco	Otros	Total	
1983	14.5	95.0					109.5	143.3
1984	14.5	95.0					109.5	144.8
1985	14.5	95.0					109.5	146.9
1986	14.5	95.0	13.5	11.0			134.0	173.0
1987	14.5	95.0	13.5	11.0			134.0	174.8
1988	14.5	95.0	13.5	11.0			134.0	177.6
1989	14.5	95.0	13.5	11.0			134.0	179.9
1990	14.5	95.0	13.5	11.0			134.0	182.3
1991	14.5	95.0	13.5	11.0			134.0	184.0
1992	14.5	95.0	13.5	11.0			134.0	185.7
1993	14.5	95.0	13.5	11.0		4.8	138.8	194.4
1994	14.5	95.0	13.5	11.0		8.5	142.5	202.0
1995	14.5	95.0	13.5	11.0		12.3	146.3	209.3
1996	14.5	95.0	13.5	11.0		16.3	150.3	217.3
1997	14.5	95.0	13.5	11.0		20.8	154.8	226.1
1998	14.5	95.0	13.5	11.0		25.4	159.4	234.8
1999	14.5	95.0	13.5	11.0		31.6	165.6	254.0
2000	14.5	95.0	13.5	11.0		37.3	171.3	264.6
2001	14.5	95.0	13.5	11.0		42.3	176.3	274.7
2002	14.5	95.0	13.5	11.0	26.4	51.1	211.5	316.3
2003	14.5	95.0	13.5	11.0	26.4	57.1	217.5	328.0
2004	14.5	95.0	13.5	11.0	26.4	63.3	223.7	339.7
2005	14.5	95.0	13.5	11.0	26.4	70.4	230.8	352.7
2006	14.5	95.5	13.5	11.0	26.4	77.8	238.2	366.3
2007	14.5	95.0	13.5	11.0	26.4	85.3	245.7	379.9

Table A.IV-5 Monthly Power and Energy Demand in Aricota System

Month	1978			1979			1980			1981			1982				
	Maximum Demand (MW)	Energy (GWh)	Monthly L.F. (%)	Maximum Demand (MW)	Energy (GWh)	Monthly L.F. (%)	Maximum Demand (MW)	Energy (GWh)	Monthly L.F. (%)	Maximum Demand (MW)	Enegy (GWh)	Monthly L.F. (%)	Maximum Demand (MW)	Energy (GWh)	Monthly L.F. (%)	Maximum Demand *(%)	Energy *(%)
1	21.75	9.67	59.8	21.83	9.95	61.3	23.08	11.36	66.2	25.21	12.93	68.9	28.84	13.60	63.4	101.4	105.8
2	20.24	8.37	61.5	21.13	9.45	66.4	22.75	11.04	72.2	24.91	11.20	66.9	28.10	11.26	59.6	98.4	94.4
3	18.55	9.19	66.6	20.27	8.68	57.6	23.19	11.69	67.8	25.19	12.00	64.0	28.89	12.87	59.9	97.6	100.2
4	18.93	8.25	60.5	19.95	8.65	60.2	23.55	11.91	70.2	25.66	12.25	66.3	28.56	11.54	56.1	98.0	96.8
5	19.43	9.04	62.5	20.11	10.05	67.2	23.23	11.52	66.7	27.05	11.81	58.7	27.07	11.03	54.8	98.2	98.4
6	19.94	9.21	64.2	22.34	10.13	63.0	23.25	10.81	64.6	27.91	11.90	59.2	27.93	12.06	60.0	102.0	99.6
7	19.67	9.24	63.1	21.16	10.26	65.2	21.85	10.57	65.0	27.75	12.80	62.0	27.71	12.50	60.6	99.3	101.9
8	18.36	8.26	60.5	21.27	10.56	66.7	22.37	11.13	66.9	27.87	12.32	59.4	26.31	12.46	63.7	97.6	100.7
9	19.91	7.82	54.6	22.03	10.61	66.9	23.82	10.83	63.1	24.87	9.43	52.7	25.87	12.02	64.5	97.9	93.3
10	21.53	10.69	66.7	23.17	11.45	66.4	21.73	10.03	62.0	29.28	10.97	50.4	28.40	12.45	58.9	104.3	102.3
11	21.78	9.6	61.2	21.95	10.13	64.1	22.89	10.77	65.3	26.86	10.92	56.5	28.55	12.55	61.0	102.6	99.3
12	20.08	9.31	62.3	22.42	10.88	65.2	24.67	12.26	66.8	28.51	13.13	61.9	26.43	12.71	64.6	102.6	107.3

Note; 1.Maximum demand and Energy show total values of monthly maximum for each substation in Aricota System .

2. *mark shows the ratio of monthly maximum demand(energy) to annual average of maximum demand(energy).

Table A.IV-6 Typical Daily Load in Aricota System (June,1982)

Hour	Aricota System					
	Tacna (MW)	Ilo (MW)	Moquequa (MW)	Ref. Cu (MW)	Total Demand (MW)	Rate (%)
01	5.4	3.5	0.8	5.8	15.5	85.4
02	5.4	3.5	0.8	6.0	15.7	86.5
03	5.4	3.5	0.8	6.0	15.7	86.5
04	6.3	3.2	0.8	6.0	16.3	89.8
05	5.7	3.2	0.8	6.0	15.7	86.5
06	6.6	3.5	0.8	6.0	16.9	93.1
07	7.6	3.5	0.8	5.7	17.6	96.9
08	8.8	3.5	0.8	5.9	19.0	104.7
09	8.5	3.5	0.8	6.0	18.8	103.6
10	8.4	3.6	0.8	6.0	18.8	103.6
11	8.3	3.6	0.8	6.0	18.7	103.0
12	8.3	3.5	0.8	5.8	18.5	101.9
13	7.9	3.0	0.8	5.9	17.6	96.9
14	7.9	2.9	0.8	5.9	17.5	96.4
15	7.7	3.4	0.8	5.8	17.7	97.5
16	7.2	3.4	0.8	5.8	17.2	94.7
17	7.4	3.4	0.8	5.8	17.4	95.8
18	9.6	4.4	0.8	5.8	20.6	113.5
19	11.1	4.4	0.8	5.8	22.1	121.7
20	10.7	4.4	0.8	5.8	21.7	119.5
21	10.0	4.4	0.8	5.8	21.0	115.7
22	9.0	4.4	0.8	5.8	20.0	110.2
23	8.0	3.8	0.8	5.8	18.4	101.4
24	6.9	3.8	0.8	5.8	17.3	95.3

Table A.IV-7 Typical Daily Load in Aricota System
(peak Load Day in 1978-1982)

Hour	Demand (MW)					Rate (%)
	1978	1979	1980	1981	1982	
01	13.21	11.99	15.76	16.22	15.14	70.2
02	11.89	11.75	15.66	15.11	16.04	86.4
03	11.86	11.65	15.66	14.92	16.12	86.1
04	11.83	11.65	15.66	14.94	16.17	86.2
05	11.64	11.65	14.64	15.65	16.61	86.1
06	11.49	11.39	14.64	14.70	17.88	86.0
07	11.69	11.08	14.42	18.13	17.93	89.9
08	15.04	14.01	17.79	18.26	19.52	103.8
09	15.04	14.11	18.07	18.71	19.95	105.4
10	15.42	14.23	18.05	21.10	20.03	109.0
11	15.61	14.20	17.95	18.46	18.76	104.3
12	15.14	14.20	18.09	19.05	19.38	105.3
13	15.15	14.28	17.54	18.13	19.84	104.2
14	15.20	14.24	17.37	18.39	19.26	103.6
15	15.59	14.39	17.29	19.17	19.69	105.7
16	16.17	14.38	17.38	19.22	20.80	107.9
17	16.39	14.66	17.66	19.49	19.43	107.5
18	13.93	13.77	17.61	21.25	21.41	107.9
19	16.95	14.17	19.03	22.17	23.64	117.7
20	16.64	12.96	18.65	22.88	23.13	116.9
21	16.27	13.51	18.44	21.18	23.11	113.5
22	15.69	13.04	17.72	19.39	19.91	105.2
23	15.10	12.47	16.63	17.79	17.44	97.5
24	14.59	12.02	15.87	16.41	17.19	93.3

Fig. A Ⅳ－1 Typical Daily Load Curve of Aricota System

(Jun. 1982)

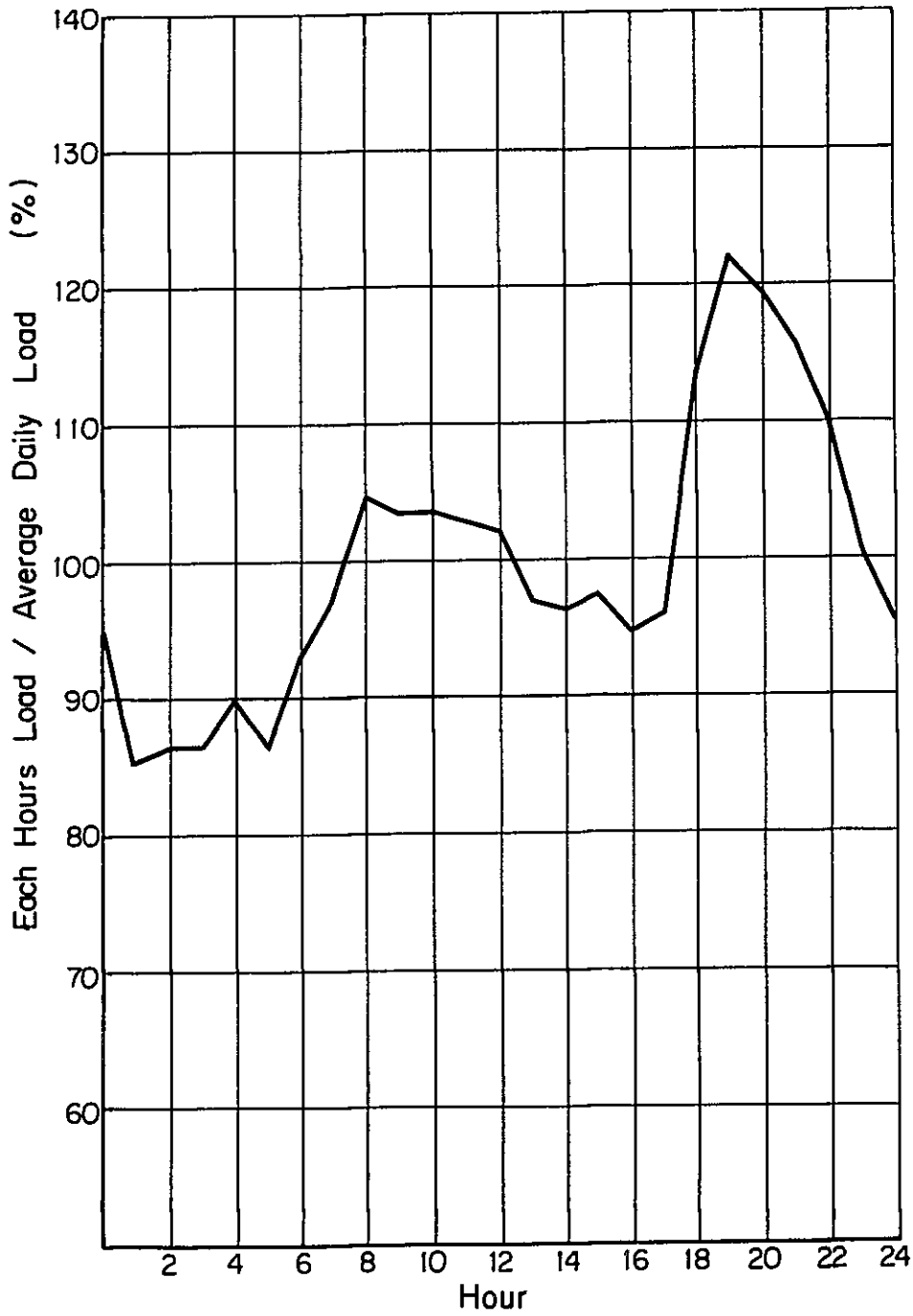
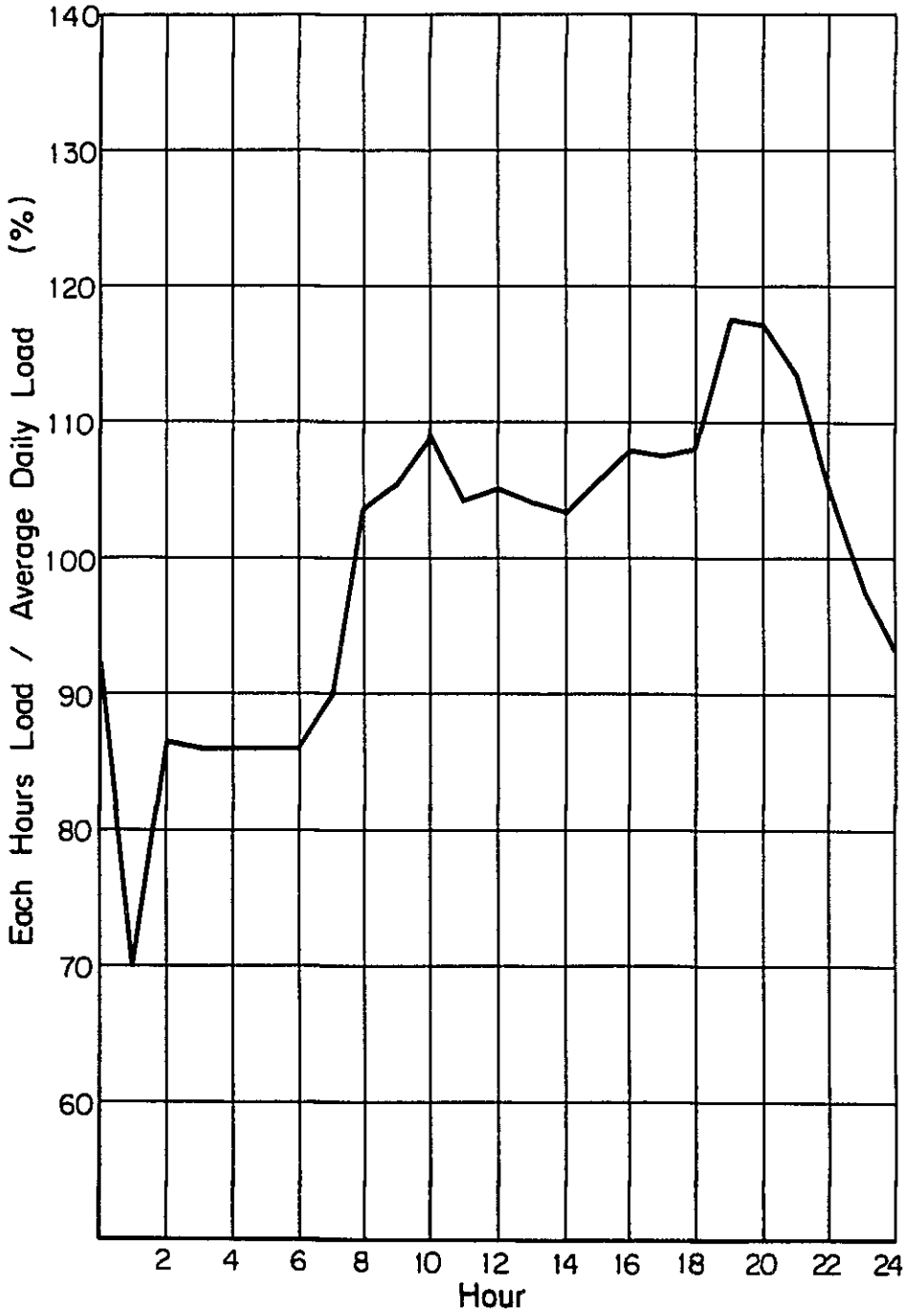


Fig. A Ⅳ-2 Typical Daily Load Curve of Aricota System
(Peak Load Day in 1978 ~ 1982)



APPENDIX–V

METEOROLOGICAL AND HYDROLOGICAL DATA

APPENDIX – V

METEOROLOGICAL AND HYDROLOGICAL DATA

TABLE LIST

FIGURE LIST

Table A.V-1 Evaporation Data at Suches Meteorological Gauging Station

(Unit: mm)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
56	----	----	5.10	[illegible]	3.73	3.30	3.20	2.60	4.80	5.70	6.20	5.00	1351.30
57	3.50	4.00	3.00	[illegible]	4.00	2.90	3.90	4.00	5.00	4.50	5.60	4.90	1529.80
58	3.80	3.80	4.50	[illegible]	3.73	3.40	4.00	4.70	5.60	5.50	6.10	----	1498.00
59	----	----	----	----	----	----	----	4.50	4.90	5.20	5.80	7.00	680.73
60	2.80	3.90	4.80	[illegible]	3.43	2.50	2.90	3.50	3.20	5.10	4.10	3.40	1296.90
61	3.70	3.60	3.50	[illegible]	2.50	3.00	4.50	3.00	3.00	4.30	2.00	3.50	1199.80
62	3.50	3.50	1.20	[illegible]	2.83	2.70	3.10	3.70	4.00	[illegible]	4.90	3.00	1237.00
63	0.70	----	----	[illegible]	3.00	3.20	2.50	3.20	3.40	4.40	4.00	1.70	843.67
64	2.40	0.60	1.70	[illegible]	2.93	3.30	4.10	3.50	4.30	5.10	4.30	1.80	1130.90
65	3.40	4.30	3.50	[illegible]	3.43	2.70	3.70	3.50	3.40	[illegible]	5.80	3.40	1619.10
66	5.00	1.60	4.40	[illegible]	2.80	2.80	3.00	3.80	4.20	[illegible]	4.00	2.50	1278.90
67	2.00	3.20	2.50	[illegible]	3.43	3.10	2.60	3.40	4.10	5.20	7.30	3.00	1290.30
68	5.00	2.60	4.40	[illegible]	4.60	4.50	3.60	[illegible]	4.90	3.30	3.70	5.70	1578.90
69	3.30	4.00	4.10	[illegible]	5.40	4.60	4.10	4.30	5.40	[illegible]	6.20	5.30	1782.60
70	4.50	3.70	2.10	[illegible]	6.90	4.50	4.10	4.80	5.60	6.00	6.50	1.80	1717.80
71	3.40	3.45	1.80	[illegible]	5.43	3.80	3.50	4.20	5.20	7.20	5.10	[illegible]	1632.50
72	3.40	3.45	3.03	[illegible]	5.40	3.40	3.60	3.80	4.50	4.80	6.30	3.90	1529.88
73	----	----	1.40	[illegible]	6.13	4.60	3.30	4.00	4.60	6.10	6.10	4.30	1330.70
74	----	----	4.50	[illegible]	5.10	4.10	3.60	1.40	4.70	6.20	6.50	4.20	1329.80
75	----	----	----	[illegible]	4.33	4.10	3.50	4.10	5.70	6.50	7.00	2.00	1268.40
76	----	----	2.50	[illegible]	2.13	----	3.70	5.80	3.70	6.00	6.70	2.00	1093.10
77	0.60	2.00	1.70	[illegible]	4.40	3.50	5.10	4.40	5.00	[illegible]	3.60	4.00	1362.40
78	----	4.60	3.00	[illegible]	5.50	3.50	5.10	5.00	5.60	6.40	1.20	6.00	1521.80
79	3.40	5.40	2.70	[illegible]	5.40	5.20	4.70	4.40	----	----	----	3.40	1284.70
80	5.70	4.70	0.90	[illegible]	5.20	5.00	4.10	4.20	5.10	[illegible]	6.70	4.50	1707.40
81	1.60	----	3.40	[illegible]	----	3.60	3.20	2.10	2.40	6.70	5.90	3.00	1076.00
TO	1912.70	1756.85	2161.63	[illegible]	[illegible]	2619.00	2848.90	3096.90	3384.00	4184.00	3948.00	2793.10	34972.49
AV	100.67	97.60	93.98	[illegible]	[illegible]	109.13	113.96	119.11	135.36	167.40	157.92	111.72	1402.75
AD	3.25	3.45	3.03	[illegible]	4.23	3.64	3.68	3.84	4.51	5.40	5.26	3.60	4.04
MA	5.70	5.40	5.10	[illegible]	[illegible]	5.20	5.10	5.80	5.80	7.20	7.30	6.00	8.30
MI	0.60	0.60	0.90	[illegible]	2.13	2.50	2.50	1.40	2.80	3.20	1.20	1.70	0.60

Table A.V-2 Evaporation Data at Pasto Grande Meteorological Gauging Station

(Unit: mm)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
52	----	----	----	----	----	0.0	3.20	4.00	4.50	7.00	6.20	2.80	882.00
53	----	----	----	[illegible]	4.71	5.00	4.40	----	----	----	5.30	6.50	891.60
54	6.80	2.80	6.00	[illegible]	5.23	3.40	3.00	2.90	6.30	[illegible]	7.70	7.50	1894.30
55	8.23	2.20	4.10	[illegible]	2.53	3.20	3.70	3.40	3.60	[illegible]	4.80	----	1430.43
56	5.40	3.30	4.40	[illegible]	2.93	3.00	3.20	3.10	4.30	[illegible]	5.60	6.60	1546.00
57	4.50	3.50	2.50	[illegible]	3.30	2.50	2.10	3.50	4.50	[illegible]	[illegible]	[illegible]	1486.90
58	4.10	4.10	4.70	[illegible]	3.43	3.40	3.30	3.70	5.00	[illegible]	4.60	----	1382.70
59	----	----	----	----	----	----	----	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	604.10
60	2.60	3.40	3.40	[illegible]	4.73	3.33	3.40	4.30	2.70	[illegible]	4.20	2.40	1264.40
61	2.50	3.10	2.70	[illegible]	3.03	4.33	4.70	3.50	3.70	[illegible]	[illegible]	3.40	1229.10
62	3.70	2.00	1.10	[illegible]	3.03	3.13	3.40	4.00	3.80	[illegible]	4.30	1.00	1091.30
63	1.00	----	2.20	[illegible]	4.33	4.00	2.90	4.20	3.70	[illegible]	[illegible]	1.60	1115.30
64	3.10	----	1.60	[illegible]	2.73	4.50	4.60	4.70	4.30	[illegible]	[illegible]	2.10	1226.60
65	4.30	4.50	4.70	[illegible]	[illegible]	4.40	4.30	4.00	[illegible]	[illegible]	[illegible]	1.00	1549.60
66	5.00	3.00	4.60	[illegible]	2.73	4.80	2.70	[illegible]	3.70	[illegible]	[illegible]	[illegible]	1463.60
67	3.00	6.20	[illegible]	[illegible]	[illegible]	4.30	4.10	5.00	3.60	[illegible]	7.00	5.00	1752.40
68	4.00	4.50	[illegible]	[illegible]	3.63	3.70	4.10	4.00	[illegible]	[illegible]	[illegible]	3.70	1474.70
69	4.70	4.30	2.50	[illegible]	4.43	3.90	4.00	[illegible]	6.00	[illegible]	[illegible]	[illegible]	1531.90
70	4.20	3.70	3.50	[illegible]	6.13	3.40	3.60	3.60	[illegible]	[illegible]	[illegible]	[illegible]	1631.50
71	4.80	----	1.30	[illegible]	4.73	3.70	3.50	[illegible]	4.20	[illegible]	4.20	2.40	1382.10
72	----	----	----	[illegible]	4.27	3.20	4.70	5.20	5.30	4.40	4.70	[illegible]	1203.50
73	----	----	1.40	[illegible]	[illegible]	4.83	3.90	3.60	[illegible]	[illegible]	[illegible]	[illegible]	1311.20
74	----	----	2.10	[illegible]	4.43	3.30	4.70	----	4.20	[illegible]	[illegible]	[illegible]	1204.20
75	----	----	----	[illegible]	[illegible]	3.73	3.70	[illegible]	[illegible]	[illegible]	[illegible]	----	1190.70
76	----	----	1.90	[illegible]	[illegible]	----	3.70	[illegible]	[illegible]	[illegible]	[illegible]	----	1033.90
77	----	2.60	----	[illegible]	[illegible]	[illegible]	4.30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1257.60
78	----	3.50	1.80	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1248.80
79	----	3.20	3.20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	----	----	----	[illegible]	1016.60
80	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1489.00
81	----	----	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1078.10
TO	2353.83	1798.60	2349.90	[illegible]	[illegible]	3094.00	3366.60	3543.30	3768.00	4296.60	4392.00	2817.90	38865.13
AV	130.77	99.92	97.91	[illegible]	[illegible]	110.57	116.09	126.55	134.57	153.45	151.45	108.38	1482.61
AD	4.22	3.54	3.16	[illegible]	4.05	3.69	3.74	4.08	4.49	[illegible]	5.05	3.50	4.09
MA	8.23	6.20	6.00	[illegible]	6.10	5.69	5.10	5.20	[illegible]	8.00	7.70	7.50	8.23
MI	1.00	2.00	1.10	[illegible]	[illegible]	0.0	2.10	2.50	2.20	2.10	1.70	1.00	0.0

Table A.V-3 Evaporation Data at Candarave Meteorological Gauging Station

(Unit: mm)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
72	----	----	1.60	4.20	----	6.00	5.80	5.60	5.60	5.50	5.50	4.50	1352.00
73	2.20	2.10	2.30	4.20	4.70	6.00	5.90	6.00	5.60	5.90	6.00	4.00	1673.80
74	1.20	1.00	1.90	3.80	6.10	4.90	5.80	4.20	5.10	5.00	5.10	5.00	1500.20
75	2.90	1.60	1.50	4.30	4.80	4.60	4.60	5.40	5.90	6.10	----	2.50	1356.60
76	1.90	1.40	2.20	4.90	4.60	5.70	6.30	5.80	5.00	7.70	6.00	3.30	1676.40
77	3.70	1.70	2.50	3.60	4.20	4.90	4.40	6.20	5.10	5.70	4.50	4.40	1612.10
78	1.90	4.60	4.10	4.30	5.13	5.90	5.00	5.20	5.50	5.90	4.80	4.60	1738.60
79	2.60	3.90	2.00	3.30	6.20	6.10	5.10	5.50	6.00	5.80	6.50	4.00	1808.40
80	4.60	3.90	2.60	4.30	6.03	5.80	5.40	6.80	7.00	6.50	6.60	5.90	2013.90
81	3.00	1.10	4.20	4.80	6.40	6.30	6.40	4.80	6.00	6.40	5.60	5.50	1849.50
TO	744.00	601.70	771.90	1404.30	1491.10	1686.00	1708.10	1720.50	1704.00	1879.50	1518.00	1354.70	16579.50
AV	82.67	66.86	77.19	140.43	165.69	164.60	170.81	172.05	170.40	187.55	168.67	135.47	1706.35
AD	2.67	2.37	2.49	4.68	5.34	5.62	5.51	5.55	5.68	6.05	5.62	4.37	4.69
MA	4.60	4.60	4.20	5.30	6.43	6.30	6.40	6.80	7.00	7.70	6.60	5.90	7.70
MI	1.20	1.00	1.50	3.30	4.20	4.60	4.60	4.20	5.00	5.00	4.50	2.50	1.00

Table A.V-4 Precipitation Data at Tacalaya Meteorological Gauging Station

(Unit: mm)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
52	159.20	163.40	106.40	43.90	0.0	0.0	0.0	0.0	0.0	1.00	57.30	38.20	539.40
54	117.70	189.70	105.70	37.70	1.90	0.0	0.0	0.0	54.00	0.0	44.60	52.40	603.70
55	177.80	198.10	110.50	2.20	8.20	8.70	2.80	0.0	4.10	8.00	6.80	90.10	617.30
56	52.90	123.20	7.50	0.30	0.0	0.0	0.0	7.20	1.30	0.0	26.70	6.00	225.30
57	34.50	91.20	92.60	3.70	0.0	8.80	0.0	0.0	1.40	9.00	3.50	109.30	354.00
58	98.00	89.50	94.00	0.0	0.0	0.0	0.0	0.0	5.10	7.70	5.70	10.20	310.20
59	23.50	162.10	69.80	30.30	1.40	1.80	0.0	0.0	2.50	0.60	3.10	156.80	462.50
60	178.60	45.20	10.50	16.30	0.0	0.0	0.0	5.50	14.90	7.40	21.70	40.20	340.50
61	172.30	163.00	84.70	4.70	19.50	0.0	0.0	2.50	15.70	15.00	89.40	99.10	665.90
62	130.10	133.80	76.50	47.20	0.0	0.0	0.0	0.0	2.50	0.0	69.00	43.80	503.20
63	140.20	188.60	152.20	31.70	13.70	0.0	3.50	0.0	34.10	7.50	26.10	64.70	682.30
64	88.30	87.40	68.90	25.40	9.40	0.0	0.0	7.50	0.0	2.60	23.10	106.70	407.90
65	48.80	107.00	48.30	14.30	0.0	0.0	0.0	3.10	31.30	0.0	2.50	31.50	284.80
66	2.10	114.00	56.10	0.0	11.00	0.0	0.0	0.0	0.0	6.00	36.50	38.80	294.90
67	100.20	125.90	153.90	58.10	1.50	0.0	6.70	2.50	2.50	21.30	3.50	71.40	547.50
68	136.00	63.40	201.00	43.70	6.50	6.10	0.0	0.0	0.0	23.40	40.80	26.70	514.60
69	138.00	92.50	137.90	8.60	0.0	0.0	0.0	2.10	22.90	0.0	6.60	98.90	507.70
70	115.40	87.40	137.00	0.0	7.30	0.0	0.0	0.0	0.0	14.20	0.0	61.80	423.10
71	133.70	167.00	39.70	10.10	0.0	0.0	0.0	0.0	0.0	0.0	39.70	97.50	494.10
72	241.80	176.80	131.70	8.10	0.0	0.0	0.0	0.0	7.60	31.80	1.50	100.00	699.30
73	246.70	225.30	86.00	28.20	0.0	0.0	0.0	4.80	12.70	4.00	0.0	14.20	629.90
74	236.00	157.20	33.40	23.30	0.0	2.60	0.0	50.70	9.90	0.0	7.40	45.90	562.90
75	155.90	160.30	108.80	3.30	0.0	3.30	0.0	0.0	0.0	0.0	0.0	109.50	540.80
76	185.10	110.80	46.10	3.30	6.20	0.0	0.0	3.50	27.50	0.0	0.0	63.50	443.10
77	59.20	128.40	77.10	0.30	0.0	0.0	0.0	0.0	2.30	11.00	29.70	52.90	366.60
78	193.80	23.50	44.30	43.30	0.0	0.0	2.50	4.00	0.0	7.00	24.00	23.40	361.40
79	92.50	23.90	146.70	3.30	0.0	0.0	0.0	0.90	0.0	0.0	0.0	74.30	338.30
80	49.40	53.10	123.60	11.30	0.0	0.0	1.50	0.0	2.00	56.00	3.40	20.40	310.90
81	96.30	192.70	44.50	03.40	0.0	0.0	0.0	26.30	2.50	0.0	13.40	65.30	504.10
TO	3600.00	3644.40	2595.30	539.00	109.60	31.30	17.00	120.60	252.40	228.50	586.40	1812.70	13537.80
AV	124.14	125.67	89.49	18.60	3.78	1.08	0.49	4.16	8.70	7.88	20.22	62.51	466.83
AD	4.00	4.45	2.89	3.04	0.12	0.04	0.02	0.13	0.29	0.25	0.67	2.02	1.28
MA	244.70	225.30	201.90	43.40	11.00	8.90	6.70	50.70	54.00	56.00	89.40	156.80	244.71
MI	2.10	23.50	7.50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.00	0.0

Table A.V-5 Precipitation Data at Suches Meteorological Gauging Station

(Unit: mm)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
57	34.70	51.00	103.90	[illegible]	0.40	10.40	0.0	0.0	1.10	5.50	4.30	83.90	303.90
58	83.60	73.70	53.90	[illegible]	0.50	0.0	0.0	0.0	0.50	6.20	18.70	15.20	253.40
59	45.10	91.40	86.10	[illegible]	4.30	2.60	0.0	4.50	2.90	1.30	4.30	122.90	444.40
60	137.90	48.00	11.40	[illegible]	0.0	0.0	0.0	3.30	10.80	4.20	32.30	48.30	314.40
61	116.00	106.00	74.70	[illegible]	42.00	4.20	0.0	7.00	17.20	12.60	69.10	107.00	532.80
62	79.70	100.00	73.50	[illegible]	0.0	0.0	0.0	0.0	0.0	0.0	97.00	47.80	414.10
63	86.50	142.00	111.50	[illegible]	8.20	0.0	3.00	2.50	17.00	9.00	17.00	54.50	502.80
64	64.30	96.00	51.40	[illegible]	6.00	0.0	0.0	4.50	0.0	0.0	18.70	76.30	338.40
65	38.30	102.50	30.50	[illegible]	1.00	0.0	0.0	2.00	11.10	0.0	1.30	33.40	226.60
66	10.70	75.40	45.80	[illegible]	[illegible]	0.0	0.0	0.0	0.0	74.40	23.50	64.50	281.80
67	63.30	119.40	80.00	[illegible]	1.80	0.0	5.60	0.0	12.70	16.50	2.00	48.20	370.50
68	144.00	69.80	151.90	[illegible]	[illegible]	14.20	1.00	0.0	0.0	21.60	65.10	31.40	515.00
69	104.00	96.60	64.50	[illegible]	0.0	0.0	0.0	3.00	13.00	1.00	17.20	25.30	329.10
70	150.40	51.90	56.60	[illegible]	6.10	0.0	0.0	0.0	0.0	[illegible]	0.0	42.60	319.80
71	96.30	115.40	62.10	[illegible]	0.0	0.0	0.0	0.0	0.0	0.0	20.00	64.80	369.10
72	176.00	102.00	121.80	[illegible]	0.0	0.0	0.0	0.0	10.70	27.80	1.20	62.00	516.50
73	138.00	125.50	87.40	[illegible]	0.0	0.0	0.0	7.50	7.20	2.00	3.20	22.70	435.90
74	236.00	128.20	25.90	[illegible]	0.0	0.0	0.0	45.00	4.50	0.0	11.30	41.50	525.00
75	97.70	138.70	67.10	[illegible]	3.00	1.00	0.0	0.0	0.0	1.50	0.0	115.80	433.30
76	154.00	69.50	79.50	[illegible]	3.00	0.0	0.0	1.00	18.50	0.0	0.0	57.50	396.50
77	71.60	158.00	97.00	[illegible]	0.0	0.0	0.0	0.0	2.30	7.50	49.10	40.80	435.70
78	206.60	19.50	58.70	[illegible]	0.0	0.0	1.50	0.50	0.0	3.50	55.50	20.10	392.40
79	63.40	28.00	82.50	[illegible]	0.0	0.0	0.0	9.50	0.0	0.0	0.0	74.30	257.70
80	17.50	46.00	93.50	[illegible]	0.0	0.0	0.0	0.60	0.40	66.00	5.00	39.60	276.80
81	83.00	148.50	41.50	[illegible]	0.0	0.0	0.0	15.00	----	----	----	----	326.00
TO	2498.60	2303.00	1812.70	[illegible]	75.23	32.80	11.10	105.90	130.10	217.50	509.80	1332.40	9512.30
AV	99.94	92.12	72.51	[illegible]	3.81	1.31	0.44	4.24	5.42	9.06	21.24	55.52	384.14
AD	3.22	3.26	2.34	[illegible]	0.12	0.04	0.01	0.14	0.18	0.29	0.71	1.79	1.06
MA	236.00	158.00	151.90	[illegible]	37.50	14.20	5.60	45.00	18.50	66.00	92.00	122.90	236.00
MI	10.70	19.50	11.40	[illegible]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.20	0.0

Table A.V-6 Precipitation Data at Pasto Grande Meteorological Gauging Station

(Unit: mm)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
53	115.50	191.00	113.00	[illegible]	0.0	0.0	0.0	0.0	0.0	10.00	98.50	110.00	675.00
54	181.00	248.50	175.50	[illegible]	20.50	0.0	0.0	0.0	60.00	0.0	109.50	78.00	931.00
55	205.00	140.00	128.00	[illegible]	14.00	41.00	0.0	0.0	87.00	2.40	28.00	190.00	771.40
56	98.50	106.10	11.50	[illegible]	0.0	0.0	0.0	5.00	5.00	6.00	19.00	71.00	322.10
57	38.50	99.30	93.70	[illegible]	2.00	36.00	0.0	0.0	0.0	7.00	3.00	74.50	358.00
58	113.50	112.00	84.00	[illegible]	1.00	0.0	0.0	0.0	5.00	24.50	23.30	10.50	376.30
59	47.50	123.50	133.10	[illegible]	3.20	1.50	0.0	0.0	11.50	2.00	27.00	189.80	613.10
60	126.00	80.00	27.50	[illegible]	0.0	0.0	0.0	17.00	33.50	9.50	44.30	49.70	416.00
61	107.00	129.00	92.50	[illegible]	15.40	8.50	0.0	13.40	32.50	11.00	82.00	135.00	639.90
62	145.00	95.00	99.50	[illegible]	0.0	0.0	0.0	0.0	17.20	0.0	63.00	86.70	599.90
63	218.50	224.50	79.00	[illegible]	4.50	0.0	16.00	0.0	18.00	25.00	19.00	87.00	751.00
64	61.00	172.00	62.50	[illegible]	16.00	0.0	0.0	7.50	2.00	0.0	11.70	51.00	395.70
65	74.50	153.50	71.00	[illegible]	0.0	3.00	1.30	5.00	16.00	0.0	13.00	56.00	417.80
66	42.50	99.50	42.00	[illegible]	[illegible]	0.0	0.0	0.0	5.10	30.50	32.00	75.50	429.60
67	113.50	182.50	185.30	[illegible]	10.20	0.0	1.50	0.0	23.00	10.50	1.00	107.50	660.90
68	139.00	134.50	180.00	[illegible]	13.50	9.50	1.50	0.0	2.50	47.00	97.20	33.20	684.40
69	147.00	110.40	71.80	[illegible]	0.0	3.90	1.90	1.90	19.00	5.30	20.80	89.00	482.90
70	132.50	100.70	110.00	[illegible]	8.90	0.0	0.0	0.0	0.0	0.0	0.0	40.80	398.90
71	146.80	243.50	30.00	[illegible]	0.0	0.50	0.0	0.0	0.0	0.0	38.00	85.50	556.30
72	198.80	110.50	87.50	[illegible]	0.0	0.0	0.0	0.0	21.00	31.00	13.50	87.50	558.30
73	168.00	176.50	61.00	[illegible]	3.00	0.0	1.50	32.50	25.50	5.50	8.50	40.50	574.00
74	245.50	169.50	22.50	[illegible]	0.0	10.00	0.0	75.50	8.00	0.0	2.00	29.50	592.50
75	115.50	144.00	105.50	[illegible]	8.00	0.0	0.0	0.0	10.50	0.0	0.0	139.50	542.50
76	161.50	94.50	52.50	[illegible]	3.00	0.0	9.50	8.00	15.00	0.0	0.0	60.50	404.50
77	86.50	170.00	87.80	[illegible]	0.0	0.0	0.0	0.0	0.0	28.00	0.0	81.00	453.30
78	239.50	47.50	49.00	[illegible]	0.0	0.0	2.50	1.50	0.0	5.00	86.00	34.00	514.50
79	172.80	37.00	114.00	[illegible]	0.0	0.0	0.0	3.00	0.0	0.0	0.0	80.50	407.30
80	61.00	55.00	116.90	[illegible]	0.0	0.0	0.0	5.80	5.00	58.80	12.00	48.50	374.00
81	152.50	207.60	66.60	[illegible]	0.0	0.0	0.0	28.50	12.00	0.0	16.80	19.50	569.50
TO	3854.40	3957.60	2553.70	[illegible]	[illegible]	113.90	35.60	204.70	384.30	314.00	869.10	2250.70	15474.20
AV	132.91	136.47	88.04	[illegible]	7.61	3.93	1.23	7.06	12.56	10.83	29.97	77.61	533.60
AD	4.29	4.83	2.84	[illegible]	0.25	0.13	0.04	0.23	0.42	0.35	1.00	2.50	1.46
MA	245.50	248.50	185.30	[illegible]	42.50	41.00	16.00	75.50	60.00	58.80	109.50	190.00	248.50
MI	38.50	37.00	11.50	[illegible]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.50	0.0

Table A.V-7 Precipitation Data at Vilacota Meteorological Gauging Station

(Unit: mm)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	SOUKEI
64	2.60	85.30	55.20	[illegible]	0.0	0.0	0.0	15.60	0.0	2.60	42.00	81.00	320.20
65	59.30	116.30	73.70	[illegible]	0.0	0.0	0.0	1.60	13.30	0.0	1.70	32.00	294.40
66	5.30	76.00	36.70	[illegible]	20.30	0.0	0.0	0.0	0.0	0.0	26.70	2.70	167.70
67	58.10	117.30	101.90	[illegible]	0.20	0.0	0.60	0.0	0.0	0.30	0.0	81.10	383.70
68	97.80	81.80	0.0	[illegible]	[illegible]	42.50	0.0	0.0	0.40	23.60	41.60	60.90	367.60
69	38.70	107.70	29.30	[illegible]	0.0	0.0	0.0	0.0	17.30	0.0	17.50	66.70	298.00
70	182.90	75.10	149.60	[illegible]	1.00	0.0	0.0	0.0	0.0	0.30	0.0	15.50	436.30
71	201.30	154.50	40.20	[illegible]	0.0	1.00	0.0	0.0	0.0	0.0	0.0	0.0	397.70
72	302.00	84.10	194.90	[illegible]	0.0	0.0	0.0	0.0	2.00	6.50	5.60	172.00	793.10
73	455.80	316.50	179.70	[illegible]	0.0	0.0	0.90	20.50	0.90	0.0	0.50	0.0	990.00
74	179.70	108.10	45.20	[illegible]	0.0	1.00	0.0	81.00	0.0	0.0	3.70	61.20	494.80
75	253.50	263.70	174.00	[illegible]	2.00	0.0	0.0	0.0	0.0	0.80	0.0	138.50	835.40
76	278.60	113.30	70.80	[illegible]	0.0	0.0	0.0	0.0	15.10	0.0	0.0	70.50	572.70
77	61.60	266.90	272.40	[illegible]	8.70	0.0	0.0	0.0	0.0	0.0	2.50	30.30	642.80
78	214.20	47.00	15.10	[illegible]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.30	317.70
79	127.10	0.0	189.50	[illegible]	0.0	0.0	0.0	0.0	0.0	3.20	0.0	51.40	171.20
80	0.0	1.50	203.10	[illegible]	0.0	0.0	0.0	0.50	0.0	81.50	0.0	0.0	286.60
81	154.50	315.40	135.80	[illegible]	0.0	0.0	0.0	21.20	0.0	0.0	0.0	64.70	691.60
82	189.00	----	----	----	----	----	----	----	----	----	----	----	189.00
TO	2862.00	2330.50	1917.10	[illegible]	31.50	44.50	0.90	139.80	49.00	118.20	142.20	943.20	8768.30
AV	150.63	129.47	106.51	[illegible]	2.86	2.47	0.05	7.77	2.72	6.57	7.90	52.40	480.43
AD	4.86	4.58	3.44	[illegible]	0.09	0.08	0.0	0.25	0.09	0.21	0.26	1.69	1.33
MA	455.80	316.50	272.40	[illegible]	20.30	42.50	0.60	81.00	17.30	81.50	42.00	172.00	455.80
MI	0.0	0.0	0.0	[illegible]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table A.V-8 Precipitation Data at Puno Meteorological Gauging Station

(Unit: mm)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	SOUKEI
40	83.00	28.90	17.20	[illegible]	4.50	0.0	0.0	4.60	0.0	45.50	10.30	58.60	285.60
41	70.60	72.60	66.60	[illegible]	1.60	4.50	0.0	0.50	11.10	75.10	4.10	98.10	428.40
42	75.00	72.50	79.80	[illegible]	15.50	3.80	0.0	6.60	11.50	37.40	29.10	23.90	390.20
43	99.20	115.40	96.30	[illegible]	16.80	15.30	4.30	0.0	21.90	21.50	33.90	48.80	495.30
44	113.70	141.30	123.60	[illegible]	10.40	0.0	3.40	0.60	31.00	20.70	26.30	64.70	575.10
45	82.60	75.00	88.70	[illegible]	0.0	0.0	0.30	6.20	25.90	40.70	15.90	106.40	483.30
46	9.00	1.80	5.00	[illegible]	[illegible]	174.50	92.00	48.50	26.70	56.70	43.60	210.50	798.10
47	105.70	76.70	44.90	[illegible]	11.90	1.30	0.60	7.10	35.80	32.00	17.00	84.30	477.40
48	161.10	159.00	147.80	[illegible]	[illegible]	19.10	8.10	17.80	30.20	117.60	22.40	105.20	855.90
49	213.10	185.20	206.30	[illegible]	0.0	11.90	15.20	7.60	69.40	9.70	22.10	135.10	936.10
50	95.30	119.30	99.40	[illegible]	[illegible]	0.0	9.70	0.0	1.50	47.00	43.70	29.20	506.60
51	171.60	174.30	46.70	[illegible]	[illegible]	0.20	0.0	13.30	2.50	22.40	24.50	101.90	611.50
52	158.40	124.10	41.90	[illegible]	0.0	6.40	7.40	11.90	55.00	7.40	18.00	28.20	464.60
53	127.10	187.20	197.20	[illegible]	0.30	0.0	0.0	6.60	18.50	51.60	77.10	116.60	823.90
54	211.90	172.20	209.90	[illegible]	[illegible]	2.30	0.50	0.0	24.20	39.00	44.50	90.90	866.30
55	142.50	219.00	185.70	[illegible]	6.90	3.60	0.0	3.00	29.60	64.00	12.70	139.70	895.70
56	159.30	55.80	11.40	[illegible]	0.0	0.0	0.30	4.10	5.40	15.50	29.20	74.90	355.90
57	86.10	147.70	85.60	[illegible]	3.60	3.10	0.0	1.00	25.90	22.40	24.20	95.30	517.20
58	130.70	140.10	128.00	[illegible]	[illegible]	0.0	1.00	8.00	26.70	50.50	40.20	73.40	626.80
59	46.50	42.20	111.60	[illegible]	8.00	6.80	0.0	0.0	46.20	8.70	13.80	167.90	501.20
60	139.50	126.80	60.60	[illegible]	6.00	0.0	0.0	4.70	99.00	58.20	146.60	49.50	758.40
61	84.30	148.60	141.00	[illegible]	20.70	0.0	0.0	10.10	30.70	50.80	66.30	144.90	749.40
62	121.40	152.40	108.20	[illegible]	0.0	0.0	0.0	0.0	33.10	15.50	45.60	217.50	726.50
63	195.50	253.40	143.20	[illegible]	[illegible]	0.0	0.20	3.30	65.60	67.30	28.30	134.00	983.30
64	77.00	95.40	113.50	[illegible]	[illegible]	0.0	0.0	6.60	22.20	21.70	36.20	54.40	492.40
65	118.10	174.30	61.70	[illegible]	0.80	0.0	0.60	7.10	32.20	14.00	57.70	166.90	659.60
66	32.60	77.10	145.00	[illegible]	[illegible]	0.0	0.50	0.0	1.00	42.90	61.00	27.80	441.20
67	75.30	110.80	213.20	[illegible]	12.90	0.0	16.90	27.80	63.50	43.70	4.00	121.50	702.40
68	120.70	117.40	111.40	[illegible]	[illegible]	12.30	3.70	2.80	15.50	59.40	59.10	50.00	625.50
69	164.50	98.60	68.40	[illegible]	0.0	0.20	3.20	0.50	4.50	25.70	52.60	51.50	503.80
70	142.40	55.50	189.50	[illegible]	7.50	0.0	0.0	0.90	10.40	18.00	14.60	97.20	568.00
71	101.00	268.20	28.40	[illegible]	0.0	2.90	0.0	9.10	1.20	19.50	93.50	103.60	652.63
72	210.80	130.90	164.00	[illegible]	6.60	0.0	0.0	0.0	27.30	32.60	46.10	132.60	788.10
73	238.20	131.70	159.10	[illegible]	[illegible]	0.0	1.80	6.10	32.50	16.40	25.80	70.80	797.30
74	253.00	206.80	54.90	[illegible]	0.20	2.50	0.20	51.20	36.50	12.50	27.30	48.10	750.80
75	157.20	177.60	158.60	[illegible]	43.70	0.70	0.10	6.50	46.70	53.30	24.70	235.20	943.80
76	200.20	149.50	169.20	[illegible]	9.90	0.40	1.40	16.90	44.40	9.10	11.60	119.80	758.00
77	49.10	206.10	209.80	[illegible]	8.80	0.0	2.30	0.0	48.10	53.90	49.70	108.80	742.40
78	224.50	95.30	136.30	[illegible]	0.40	0.0	3.20	0.40	17.50	24.90	143.70	155.00	829.50
79	131.20	35.20	143.10	[illegible]	1.40	0.0	0.90	1.80	8.50	45.50	31.70	83.90	527.30
80	60.80	57.30	258.40	[illegible]	1.30	0.10	4.90	13.50	66.10	12.80	25.80	34.90	556.40
81	133.90	207.30	111.30	[illegible]	4.10	0.0	0.0	37.60	21.10	25.60	49.00	129.00	788.00
82	232.10	83.50	99.70	[illegible]	----	----	----	----	----	----	----	----	490.30
TO	5655.70	5470.00	5037.60	[illegible]	[illegible]	271.90	182.70	354.90	1234.60	1508.40	1661.60	4190.50	27726.10
AV	131.53	127.21	117.15	[illegible]	11.79	6.47	4.35	8.45	29.40	34.93	39.56	99.77	650.32
AD	4.24	4.50	3.78	[illegible]	0.34	0.22	0.14	0.27	0.98	1.16	1.32	3.22	1.79
MA	253.00	268.20	258.40	[illegible]	[illegible]	174.50	92.00	51.20	99.00	117.60	146.60	235.20	268.20
MI	9.00	1.80	5.00	[illegible]	0.0	0.0	0.0	0.0	0.0	7.40	4.00	23.90	0.0

Table A.V-9 Estimated Precipitation at Loriscota Basin

(Unit: mm)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
64	46.75	150.85	60.72	[illegible]	[illegible]2.10	0.0	0.0	9.33	1.51	0.49	19.09	58.32	377.28
65	70.79	144.42	59.46	20.11	0.0	2.27	0.99	4.17	15.34	0.0	10.24	50.14	377.92
66	33.42	93.77	40.71	0.0	[illegible]2.46	0.0	0.0	0.0	3.86	23.06	30.71	57.74	365.71
67	99.98	166.59	164.95	25.30	7.76	0.0	1.98	0.0	17.39	8.01	0.76	101.06	592.84
68	128.95	121.64	136.08	[illegible]0.25	[illegible]8.73	17.55	1.13	0.0	1.99	41.25	83.63	39.56	607.17
69	120.57	109.74	61.43	11.22	0.0	2.95	1.36	1.44	18.59	4.01	19.99	83.56	436.86
70	144.80	94.45	119.66	7.34	6.97	0.0	0.0	0.0	0.0	0.07	0.0	34.72	408.01
71	160.10	221.78	32.49	9.24	0.0	0.62	0.0	0.0	0.0	0.0	28.73	64.64	517.60
72	223.98	104.06	113.71	12.77	0.0	0.0	0.0	0.0	16.36	25.02	11.57	108.12	615.59
73	238.22	210.66	89.96	42.74	2.27	0.0	1.21	29.57	19.50	4.16	6.55	30.62	675.51
74	229.44	154.52	28.04	26.32	0.0	7.80	0.0	76.84	6.05	0.0	2.41	37.23	568.65
75	149.17	173.21	122.21	[illegible]3.93	6.54	0.0	0.0	0.0	7.94	0.20	0.0	139.26	613.98
76	190.07	99.09	56.97	9.93	2.27	0.0	7.18	6.05	15.02	0.0	0.0	62.54	445.54
77	80.42	193.64	132.84	0.0	2.12	0.0	0.0	0.0	0.0	21.17	0.71	68.63	499.53
78	233.33	47.38	40.73	44.03	0.0	0.0	1.89	1.13	0.0	3.78	65.02	29.19	466.48
79	161.65	27.97	132.42	0.0	0.0	0.0	0.0	2.27	0.0	0.78	0.0	73.40	399.49
80	46.12	41.95	137.93	11.34	0.0	0.0	0.0	4.51	3.78	64.34	9.07	36.67	355.71
81	152.99	233.90	83.48	49.90	0.0	0.0	0.0	26.72	9.07	0.0	12.70	30.53	599.29
TO	2510.75	2389.62	1613.79	[illegible]15.49	[illegible]1.17	31.19	15.03	162.03	138.40	196.38	301.18	1106.73	8920.16
AV	139.49	132.76	89.66	[illegible]7.25	1.84	1.73	0.84	9.00	7.98	10.91	16.73	61.49	495.56
AD	4.50	4.69	2.89	0.78	0.25	0.06	0.03	0.29	0.25	0.35	0.56	1.98	1.36
MA	238.22	233.90	164.95	49.90	[illegible]2.46	17.55	7.18	76.84	15.50	64.34	83.63	139.26	238.22
MI	33.42	27.97	28.04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.19	0.0

Table A.V-10 Estimated Normal Precipitation (Tacalaya +Suches + Pasto Grande) /3

(Unit: mm)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
57	35.90	80.50	96.73	7.33	0.93	18.53	0.0	0.0	0.83	5.50	3.60	89.23	339.28
58	98.37	91.73	77.27	[illegible]2.23	0.53	0.0	0.0	0.0	3.53	17.80	15.50	11.97	313.30
59	38.70	125.67	96.33	[illegible]4.30	3.63	1.97	0.0	1.50	5.63	1.30	11.47	196.17	506.67
60	147.50	57.73	16.47	23.73	0.0	0.0	0.0	8.60	15.73	7.03	32.77	43.40	356.96
61	131.77	132.67	83.97	8.90	[illegible]5.63	4.23	0.0	7.67	21.60	12.87	80.17	111.70	612.88
62	118.27	109.60	83.17	53.70	0.0	0.0	0.0	0.0	6.57	0.0	74.67	62.77	505.75
63	148.40	185.03	114.23	54.27	8.80	0.0	7.50	0.83	23.03	13.83	20.70	68.73	645.35
64	71.20	118.47	60.90	[illegible]9.43	7.47	0.0	0.0	6.50	0.67	0.87	17.83	77.33	380.67
65	53.20	121.00	49.93	[illegible]3.10	0.33	1.00	0.43	3.37	19.47	0.0	9.60	40.30	309.73
66	18.43	96.30	47.97	0.0	[illegible]0.33	0.0	0.0	0.0	1.70	20.30	30.80	99.60	335.43
67	92.33	142.60	139.73	34.67	4.53	0.0	4.60	0.83	12.73	16.10	2.17	75.70	526.16
68	139.67	89.23	177.63	12.40	[illegible]2.03	9.93	0.83	0.0	0.83	30.67	67.70	30.43	571.32
69	129.67	99.83	91.40	[illegible]0.10	0.0	1.30	0.60	2.33	18.30	2.10	13.20	71.07	439.50
70	132.77	80.00	101.20	3.77	7.43	0.0	0.0	0.0	0.0	7.03	0.0	48.40	380.60
71	125.60	175.30	44.00	[illegible]2.80	0.0	0.17	0.0	0.0	0.0	0.0	32.57	82.73	473.17
72	205.53	129.77	113.67	[illegible]0.67	0.0	0.0	0.0	0.0	13.10	30.20	5.40	83.17	591.51
73	183.57	175.77	78.13	44.33	1.00	0.0	0.50	14.93	15.13	3.83	3.40	25.80	546.59
74	239.17	151.63	27.23	28.03	0.0	4.20	0.0	57.07	6.00	0.0	6.50	38.97	560.00
75	123.03	147.67	93.80	[illegible]0.53	3.67	1.43	0.0	0.0	3.50	0.50	0.0	121.60	505.53
76	166.87	91.60	59.37	4.30	4.07	0.0	3.17	4.17	20.33	0.0	0.0	60.63	414.71
77	72.43	152.13	87.30	5.13	0.0	0.0	0.0	0.0	1.53	15.50	26.27	58.23	418.52
78	213.30	30.17	50.67	39.03	0.0	0.0	2.17	2.00	0.0	3.50	55.17	25.97	422.78
79	109.57	29.63	114.40	0.0	0.0	0.0	0.0	4.47	0.0	0.0	0.0	76.37	334.44
80	42.63	51.37	111.33	6.83	0.0	0.0	0.50	2.13	2.53	60.27	8.13	36.17	321.89
TO	2837.88	2665.40	2016.83	408.78	[illegible]30.29	42.76	20.30	116.40	196.94	244.20	514.92	1558.44	10813.14
AV	118.25	111.06	84.03	19.53	5.43	1.78	0.85	4.85	8.21	10.18	21.46	64.94	450.57
AD	3.81	3.93	2.71	0.65	0.18	0.06	0.03	0.16	0.27	0.33	0.72	2.09	1.23
MA	239.17	185.03	177.63	64.30	60.33	18.53	7.50	57.07	23.03	60.27	80.17	196.17	239.17
MI	18.43	29.63	16.47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.97	0.0

Table A.V-11 Run-off at Candarave Gauging Station

(Unit: $m^3/s \cdot d$)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
63	0.84	1.03	0.35	[illegible]	0.65	0.66	0.61	0.56	0.75	0.69	0.66	0.77	250.51
64	0.80	1.06	1.20	[illegible]	0.68	0.71	0.73	0.63	0.59	0.58	0.54	0.53	271.09
65	0.53	0.87	0.57	[illegible]	0.57	0.62	0.63	0.54	0.55	0.50	0.51	0.49	210.01
66	0.43	0.49	0.48	[illegible]	0.41	0.50	0.50	0.55	0.44	0.43	0.41	0.40	169.99
67	0.45	1.13	2.44	[illegible]	0.67	0.60	0.58	0.52	0.58	0.54	0.50	0.47	280.61
68	0.47	0.87	5.38	[illegible]	0.64	0.56	0.56	0.58	0.43	0.40	0.49	0.41	381.59
69	0.47	1.46	1.18	[illegible]	0.44	0.42	0.45	0.63	0.36	0.34	0.37	0.38	209.77
70	2.09	1.16	1.77	[illegible]	0.43	0.46	0.44	0.51	0.45	0.42	0.42	0.45	272.85
71	0.96	3.44	1.99	[illegible]	0.54	0.57	0.47	0.46	0.56	0.37	0.40	0.40	321.15
72	4.80	3.16	6.19	[illegible]	0.80	0.66	0.66	0.56	0.57	0.55	0.50	1.00	715.46
73	2.68	1.23	1.11	[illegible]	0.83	0.52	0.62	0.60	0.55	0.55	0.42	0.41	372.71
TO	464.38	450.29	702.46	[illegible]	411.42	386.40	393.75	390.34	374.90	366.47	356.60	377.01	3456.17
AV	42.22	40.94	63.96	[illegible]	39.22	37.13	37.61	37.30	35.90	35.13	34.24	36.09	314.19
AD	1.36	1.45	2.06	[illegible]	0.62	0.57	0.57	0.56	0.53	0.45	0.47	0.52	0.86
MA	4.80	3.44	6.19	[illegible]	0.84	0.71	0.73	0.63	0.75	0.69	0.66	1.00	6.19
MI	0.43	0.49	0.35	[illegible]	0.43	0.42	0.44	0.46	0.36	0.34	0.37	0.38	0.34

Table A.V-12(1) Run-off at Coranchay Gauging Station (Original)

(Unit: $m^3/s \cdot d$)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
56	2.85	3.00	7.60	[illegible]	1.96	1.89	1.82	1.81	1.75	1.62	1.57	1.62	745.98
57	1.62	1.81	2.23	[illegible]	1.67	1.65	1.63	1.67	1.65	1.64	1.67	1.86	633.60
58	2.38	2.53	3.09	[illegible]	1.63	1.60	1.60	1.60	1.58	1.59	1.60	1.56	680.06
59	1.57	1.85	2.62	[illegible]	1.59	1.52	1.56	1.53	1.56	1.51	1.55	1.74	616.41
60	3.91	2.53	1.66	[illegible]	1.63	1.63	1.59	1.57	1.59	1.54	1.55	1.65	686.32
61	2.69	3.45	2.84	[illegible]	1.67	1.57	1.60	1.59	1.59	1.58	1.60	2.10	734.67
62	2.51	5.56	4.15	[illegible]	2.11	1.66	1.49	1.44	1.55	1.36	1.40	1.58	864.02
63	1.90	5.00	11.10	[illegible]	3.09	2.33	2.35	2.25	2.18	2.09	2.11	2.64	1238.43
64	2.02	2.79	2.58	[illegible]	1.79	1.67	1.69	1.59	1.53	1.35	1.36	1.48	665.25
65	1.62	2.02	1.77	[illegible]	1.41	1.57	1.52	1.55	1.61	1.58	1.42	1.42	576.49
66	1.41	1.73	1.52	[illegible]	1.36	1.35	1.40	1.43	1.40	1.43	1.41	1.49	535.78
67	1.63	2.51	2.98	[illegible]	1.43	1.43	1.45	1.43	1.50	1.31	1.37	1.34	611.95
68	1.65	1.86	2.83	[illegible]	1.53	1.47	1.39	1.39	1.34	1.34	1.43	1.35	589.85
69	1.49	1.85	1.73	[illegible]	1.35	1.38	1.41	1.29	1.42	1.38	1.32	1.35	529.90
70	2.26	2.12	1.91	[illegible]	1.30	1.36	1.38	1.38	1.38	1.38	1.38	1.36	564.73
71	1.72	3.00	2.24	[illegible]	1.39	1.37	1.32	1.36	1.36	1.32	1.33	1.40	582.84
72	3.04	2.47	4.84	[illegible]	1.87	1.46	1.42	1.39	1.38	1.42	1.38	2.36	810.96
73	2.54	5.37	7.06	[illegible]	2.41	1.55	1.40	1.43	1.37	1.48	1.39	1.50	947.08
74	3.46	7.40	5.88	[illegible]	2.25	2.22	2.14	2.35	4.22	2.04	1.97	2.00	1164.25
75	2.68	5.37	7.56	[illegible]	2.84	2.23	2.07	1.95	1.96	1.92	1.87	2.16	1089.54
76	3.68	4.16	4.24	[illegible]	2.17	1.44	1.36	1.40	1.44	1.39	1.22	1.31	810.89
77	1.49	3.20	6.44	[illegible]	1.45	1.47	1.41	1.38	1.40	1.32	1.42	1.42	756.42
78	2.81	2.19	1.57	[illegible]	1.43	1.43	1.38	1.43	1.38	1.34	1.33	1.40	582.65
79	1.82	1.51	2.23	[illegible]	1.33	1.50	1.45	1.38	1.41	1.41	1.41	1.44	563.39
80	1.49	1.65	1.79	[illegible]	1.41	1.32	1.25	1.32	1.31	1.29	1.30	1.30	519.30
81	1.57	3.56	2.29	[illegible]	1.50	1.38	1.36	1.38	1.34	1.36	1.76	1.54	611.69
TO	1793.35	2283.38	2844.75	[illegible]	1245.46	1243.50	1254.26	1251.47	1266.00	1210.24	1161.00	1313.47	18709.78
AV	68.98	87.82	109.39	[illegible]	54.46	47.83	48.24	48.19	48.69	46.55	44.65	50.52	719.60
AD	2.23	3.11	3.53	[illegible]	1.76	1.59	1.56	1.55	1.62	1.50	1.49	1.63	1.97
MA	3.91	7.40	11.10	[illegible]	3.09	2.33	2.35	2.35	4.22	2.09	2.11	2.64	11.10
MI	1.41	1.51	1.52	[illegible]	1.30	1.32	1.25	1.32	1.31	1.29	1.22	1.30	1.22

Table A.V-12 (2)Run-off at Coranchay Gauging Station (Corrected)

(Unit: $m^3/s \cdot d$)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOURE
56	2.85	3.00	2.60	2.30	1.95	1.89	1.92	1.81	1.75	1.82	1.57	1.62	745.98
57	1.62	1.81	2.23	1.75	1.67	1.65	1.63	1.67	1.65	1.64	1.67	1.86	633.60
58	2.38	2.53	3.09	2.00	1.69	1.60	1.60	1.60	1.58	1.55	1.60	1.56	680.06
59	1.57	1.85	2.62	1.89	1.53	1.52	1.56	1.53	1.56	1.51	1.55	1.74	616.81
60	3.91	2.53	1.66	1.66	1.63	1.63	1.59	1.57	1.59	1.54	1.55	1.65	686.32
61	2.69	3.45	2.86	2.97	1.67	1.57	1.60	1.59	1.59	1.58	1.60	2.10	734.67
62	2.41	5.96	4.15	3.50	2.11	1.86	1.69	1.64	1.55	1.36	1.40	1.58	864.02
63	1.90	5.00	11.10	3.82	3.03	2.33	2.35	2.25	2.18	2.09	2.11	2.64	1238.43
64	2.02	2.79	2.58	1.78	1.79	1.67	1.69	1.59	1.53	1.35	1.34	1.48	665.25
65	1.62	2.02	1.77	1.69	1.61	1.57	1.62	1.55	1.61	1.58	1.62	1.62	574.43
66	1.41	1.73	1.52	1.71	1.35	1.35	1.40	1.43	1.40	1.43	1.90	2.01	566.80
67	2.20	3.39	4.02	2.93	1.93	1.43	1.65	1.43	1.50	1.31	1.85	1.81	749.97
68	2.28	2.51	3.82	2.34	2.07	1.47	1.39	1.38	1.34	1.34	1.93	1.82	722.29
69	2.01	2.50	2.34	1.88	1.82	1.38	1.41	1.39	1.42	1.38	1.78	1.82	640.47
70	3.05	2.86	2.58	1.88	1.75	1.36	1.38	1.38	1.38	1.38	1.86	1.84	688.95
71	2.32	4.05	3.02	1.78	1.86	1.37	1.32	1.36	1.36	1.32	1.80	1.89	714.49
72	4.10	3.33	6.93	4.79	2.52	1.46	1.42	1.38	1.38	1.42	1.86	3.19	1018.61
73	1.83	3.87	5.88	2.89	1.81	1.55	1.40	1.43	1.37	1.68	1.00	1.08	744.07
74	2.49	5.33	4.23	2.76	1.83	2.22	2.18	2.23	4.22	2.04	1.42	1.44	949.14
75	1.93	3.87	5.44	2.96	2.04	2.23	2.07	1.95	1.96	1.92	1.35	1.56	871.37
76	2.65	3.00	3.05	2.00	1.55	1.44	1.36	1.40	1.44	1.39	0.88	0.94	643.85
77	1.49	3.20	6.44	2.32	1.45	1.47	1.41	1.38	1.40	1.33	1.42	1.42	756.42
78	2.81	2.19	1.57	1.32	1.43	1.43	1.38	1.43	1.38	1.34	1.33	1.40	582.65
79	1.82	1.51	2.23	1.37	1.39	1.50	1.45	1.38	1.41	1.41	1.41	1.44	563.19
80	1.49	1.65	1.79	1.47	1.51	1.32	1.25	1.32	1.31	1.29	1.30	1.30	518.30
81	1.57	3.56	2.29	1.82	1.53	1.38	1.36	1.38	1.34	1.36	1.36	1.54	611.69
TO	1814.12	2244.53	2808.29	1088.30	1426.62	1243.50	1254.26	1251.47	1266.00	1210.24	1207.80	1368.65	18781.78
AV	69.77	86.33	108.01	84.88	54.87	47.83	48.24	48.13	48.69	46.55	46.45	52.64	722.37
AD	2.25	3.05	3.48	2.10	1.77	1.59	1.56	1.55	1.62	1.50	1.55	1.70	1.98
MA	4.10	5.96	11.10	4.79	3.03	2.33	2.35	2.35	4.22	2.09	2.11	3.19	11.10
MI	1.41	1.51	1.52	1.69	1.35	1.32	1.25	1.32	1.31	1.29	0.88	0.94	0.88

Table A.V-13 Run-off at Aricota Gauging Station

(Unit: $m^3/s \cdot d$)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOURE
63	0.76	1.50	0.73	0.92	0.63	0.58	0.45	0.61	0.62	0.45	0.49	0.61	242.19
64	0.78	1.08	0.59	0.87	0.57	0.49	0.48	0.57	0.62	0.44	0.48	0.61	220.75
65	0.47	1.19	0.48	0.67	0.46	0.57	0.46	0.46	0.57	0.54	0.57	0.50	203.19
66	0.44	0.46	0.48	0.49	0.46	0.44	0.47	0.41	0.40	0.40	0.40	0.42	157.21
67	0.34	1.37	2.03	0.79	0.47	0.47	0.45	0.40	0.40	0.37	0.36	0.37	234.75
68	1.54	1.36	4.14	0.59	0.43	0.45	0.45	0.38	0.34	0.35	0.35	0.37	330.32
69	0.56	1.56	1.47	0.91	0.36	0.36	0.36	0.35	0.37	0.35	0.31	0.30	202.81
70	1.50	0.81	1.99	0.50	0.47	0.42	0.42	0.39	0.41	0.35	0.41	0.50	250.34
71	0.78	1.86	1.20	0.99	0.44	0.47	0.47	0.46	0.43	0.41	0.38	0.35	230.49
72	0.38	3.90	2.58	0.70	0.52	0.52	0.52	0.53	0.46	0.35	0.45	0.84	355.56
73	3.43	8.31	4.29	0.80	0.56	0.59	0.59	0.47	0.45	0.50	0.29	0.30	610.92
TO	340.38	661.54	619.07	281.30	304.92	160.50	158.41	155.53	152.10	143.53	134.10	160.27	3039.55
AV	30.94	60.14	56.28	17.31	14.99	14.59	14.40	14.14	13.83	13.05	12.19	14.57	276.23
AD	1.00	2.13	1.62	0.37	0.48	0.49	0.46	0.46	0.46	0.42	0.41	0.47	0.76
MA	3.43	8.31	4.29	0.80	0.60	0.59	0.59	0.61	0.62	0.54	0.57	0.84	8.31
MI	0.34	0.46	0.48	0.44	0.36	0.36	0.36	0.35	0.34	0.35	0.29	0.30	0.29

Table A.V-14 (1)Run-off at Pasto Grande Gauging Station (Original)

(Unit: $m^3/s \cdot d$)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
56	----	----	----	[illegible]	0.74	0.62	0.64	0.59	0.49	0.37	0.28	0.35	148.79
57	0.41	5.76	5.34	[illegible]	0.68	1.41	0.72	0.70	0.54	0.46	0.41	0.92	606.71
58	3.31	4.82	5.76	[illegible]	0.57	0.55	0.59	0.57	0.47	0.47	0.41	0.40	559.73
59	0.42	2.90	6.86	[illegible]	0.84	0.74	0.69	0.65	0.59	0.52	0.49	3.30	615.59
60	12.95	7.94	2.30	[illegible]	1.13	0.76	0.82	1.13	0.92	1.34	0.81	2.03	1026.86
61	5.80	9.50	6.84	[illegible]	1.75	0.85	0.82	0.81	0.82	0.68	2.94	6.10	1239.20
62	10.39	9.24	8.69	[illegible]	3.92	1.39	1.20	0.84	0.84	0.62	0.55	1.91	1412.19
63	7.56	15.50	10.90	[illegible]	1.98	0.83	1.35	0.85	1.56	0.74	0.67	0.49	1428.70
64	2.63	7.54	5.48	[illegible]	0.95	0.80	0.79	0.77	0.74	0.67	0.99	1.31	785.36
65	3.42	6.75	5.31	[illegible]	0.85	0.84	0.88	0.82	1.08	0.53	0.48	1.49	789.70
66	0.62	2.53	3.95	[illegible]	1.03	0.60	0.66	0.64	0.51	0.64	0.57	1.25	412.30
67	1.27	7.04	9.28	[illegible]	0.78	0.64	0.61	0.55	0.57	0.46	0.33	1.44	789.31
68	5.56	9.54	7.73	[illegible]	2.84	1.69	0.85	0.70	0.63	0.65	4.79	3.93	1319.22
69	5.59	7.67	5.49	[illegible]	0.81	0.76	0.75	0.70	0.66	0.54	0.59	2.28	875.92
70	8.00	10.69	8.25	[illegible]	1.91	0.78	0.80	0.73	0.61	0.54	0.47	0.63	1126.88
71	3.61	10.54	7.43	[illegible]	0.81	0.76	0.80	0.74	0.58	0.50	0.78	1.91	945.12
72	7.62	7.24	7.61	[illegible]	1.73	0.96	0.96	0.78	0.82	0.64	0.60	3.04	1138.04
73	7.82	9.34	7.90	[illegible]	2.55	0.87	1.21	1.13	0.75	0.68	0.38	0.47	1146.08
74	8.15	8.88	6.00	[illegible]	1.89	1.15	0.90	1.32	1.67	0.24	1.63	1.81	1039.34
75	5.12	7.14	4.84	[illegible]	2.78	0.99	1.06	0.54	0.23	0.13	0.41	2.17	849.86
76	6.66	6.62	5.94	[illegible]	3.47	1.14	1.14	1.13	1.34	0.25	0.46	0.65	1016.42
77	3.02	5.68	7.62	[illegible]	3.11	1.22	0.61	0.28	0.32	0.28	1.82	1.46	879.52
78	7.90	6.12	4.25	[illegible]	3.09	1.31	1.34	0.42	0.21	0.19	1.46	3.83	1033.88
79	6.63	3.95	6.22	[illegible]	0.64	0.86	0.62	0.65	0.57	1.04	0.59	1.64	777.84
80	1.77	1.69	6.12	[illegible]	0.75	0.67	0.70	0.73	0.68	1.33	0.74	0.55	523.86
81	3.98	10.76	7.99	[illegible]	2.00	0.89	0.87	1.71	0.71	0.52	0.51	1.32	1091.27
TO	4357.36	5647.04	5468.09	[illegible]	[illegible]	1123.50	1048.11	903.96	831.30	544.98	785.40	1546.90	26707.34
AV	174.29	225.88	218.72	[illegible]	[illegible]	43.21	40.31	34.77	31.97	20.96	30.21	59.50	1051.00
AD	5.62	8.00	7.06	[illegible]	1.91	1.44	1.30	1.12	1.07	0.68	1.01	1.92	2.84
MA	12.95	15.50	10.90	[illegible]	4.96	4.39	4.45	4.39	5.57	1.34	4.79	6.10	15.50
MI	0.41	1.69	2.30	[illegible]	0.57	0.55	0.59	0.55	0.47	0.37	0.28	0.35	0.24

Table A.V-14 (2)Run-off at Pasto Grande Gauging Station (Corrected)

(Unit: $m^3/s \cdot d$)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
56	----	----	----	[illegible]	0.74	0.62	0.64	0.59	0.49	0.37	0.28	0.35	148.79
57	0.41	5.76	5.34	[illegible]	0.68	1.41	0.72	0.70	0.54	0.46	0.41	0.92	606.71
58	3.31	4.82	5.76	[illegible]	0.57	0.55	0.59	0.57	0.47	0.47	0.41	0.40	559.73
59	0.42	2.90	6.86	[illegible]	0.84	0.74	0.69	0.65	0.59	0.52	0.49	3.30	615.59
60	12.95	7.94	2.30	[illegible]	1.13	0.76	0.82	1.13	0.92	1.34	0.81	2.03	1026.86
61	5.80	9.50	6.84	[illegible]	1.75	0.85	0.82	0.81	0.82	0.68	2.94	6.10	1239.20
62	10.39	9.24	8.69	[illegible]	3.92	1.39	1.20	0.84	0.84	0.62	0.55	1.91	1412.19
63	7.56	15.50	10.90	[illegible]	1.98	0.83	1.35	0.85	1.56	0.74	0.67	0.49	1428.70
64	2.63	7.54	5.48	[illegible]	0.95	0.80	0.79	0.77	0.74	0.67	0.99	1.31	785.36
65	3.42	6.75	5.31	[illegible]	0.85	0.84	0.88	0.82	1.08	0.53	0.48	1.49	789.70
66	0.62	2.53	3.95	[illegible]	1.03	0.60	0.66	0.64	0.51	0.64	0.57	1.25	412.30
67	1.27	7.04	9.28	[illegible]	0.78	0.64	0.61	0.55	0.57	0.46	0.33	1.44	789.31
68	5.56	9.54	7.73	[illegible]	2.84	1.69	0.85	0.70	0.63	0.65	4.79	3.93	1319.22
69	5.59	7.67	5.49	[illegible]	0.81	0.76	0.75	0.70	0.66	0.54	0.59	2.28	875.92
70	8.00	10.69	8.25	[illegible]	1.91	0.78	0.80	0.73	0.61	0.54	0.47	0.63	1126.88
71	3.61	10.54	7.43	[illegible]	0.81	0.76	0.80	0.74	0.58	0.50	0.78	1.91	945.12
72	7.62	7.24	7.61	[illegible]	1.73	0.96	0.96	0.78	0.82	0.64	0.60	3.04	1138.04
73	7.82	9.34	7.90	[illegible]	2.55	0.87	1.21	1.13	0.75	0.68	0.38	0.47	1146.08
74	8.15	8.88	6.00	[illegible]	1.89	1.15	0.90	1.32	1.67	0.24	1.63	1.81	1039.34
75	5.12	7.14	4.84	[illegible]	2.78	0.99	1.06	0.54	0.23	0.13	0.41	2.17	849.86
76	6.66	6.62	5.94	[illegible]	3.47	1.14	1.14	1.13	1.34	0.25	0.46	0.65	1016.42
77	3.02	5.68	7.62	[illegible]	3.11	1.22	0.61	0.28	0.32	0.28	1.82	1.46	879.52
78	7.90	6.12	4.25	[illegible]	3.09	1.31	1.34	0.42	0.21	0.19	1.46	3.83	1033.88
79	6.63	3.95	6.22	[illegible]	0.64	0.86	0.62	0.65	0.57	1.04	0.59	1.64	777.84
80	1.77	1.69	6.12	[illegible]	0.75	0.67	0.70	0.73	0.68	1.33	0.74	0.55	523.86
81	3.98	10.76	7.99	[illegible]	2.00	0.89	0.87	1.71	0.71	0.52	0.51	1.32	1091.27
TO	3974.51	5231.21	5087.10	[illegible]	[illegible]	716.40	690.68	636.12	567.30	465.93	724.80	1456.07	23577.63
AV	158.98	209.25	203.48	[illegible]	[illegible]	27.55	26.56	24.47	21.82	17.92	27.88	56.00	928.82
AD	5.13	7.41	6.56	[illegible]	1.64	0.92	0.96	0.79	0.73	0.58	0.93	1.81	2.51
MA	12.95	15.50	10.90	[illegible]	3.92	1.69	1.35	1.71	1.67	1.34	4.79	6.10	15.50
MI	0.41	1.69	2.30	[illegible]	0.57	0.55	0.59	0.28	0.21	0.13	0.28	0.35	0.13

Table A.V-15 Run-off at Tocco Gauging Station

(Unit: $m^3/s{\cdot}d$)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
70	0.74	0.73	0.69	0.[illegible]	0.38	0.38	0.43	0.35	0.33	0.30	0.30	0.32	163.44
71	0.49	0.92	0.71	0.[illegible]	0.33	0.45	0.42	0.38	0.32	0.27	0.29	0.40	165.01
72	0.78	0.63	1.03	0.[illegible]	0.47	0.47	0.45	0.39	0.39	0.35	0.28	0.45	193.49
73	0.85	0.98	1.02	0.[illegible]	0.49	0.48	0.35	0.34	0.39	0.36	0.34	0.34	197.59
74	0.81	1.06	0.94	0.[illegible]	0.44	0.42	0.49	0.88	0.49	0.34	0.33	0.34	224.14
75	0.62	1.35	1.08	0.[illegible]	0.56	0.56	0.54	0.49	0.40	0.35	0.29	0.41	223.85
76	1.35	0.72	0.68	0.[illegible]	0.49	0.51	0.51	0.46	0.48	0.29	0.29	0.39	202.05
77	0.16	0.76	0.98	0.[illegible]	0.44	0.54	0.46	0.38	0.36	0.32	0.46	0.42	175.64
78	1.21	0.60	0.51	0.[illegible]	0.45	0.41	0.44	0.46	0.39	0.34	0.42	0.45	197.86
79	0.74	0.60	0.60	0.[illegible]	0.34	0.36	0.40	0.34	0.30	0.34	0.30	0.29	147.19
80	0.78	0.78	0.72	0.[illegible]	0.35	0.37	0.39	0.35	0.35	0.37	0.25	0.28	162.36
81	0.59	1.15	0.77	0.[illegible]	0.41	0.41	0.39	0.42	0.36	0.27	0.26	0.39	180.44
82	0.81	0.46	0.46	0.[illegible]	0.39	0.39	0.39	0.33	----	----	----	----	111.25
TO	307.83	297.25	315.58	172.[illegible]	176.39	184.50	175.46	172.61	136.80	120.90	114.30	145.39	2339.67
AV	23.68	22.87	24.28	19.[illegible]	13.57	14.19	13.50	13.28	11.40	10.08	9.53	12.12	183.34
AD	0.76	0.81	0.78	0.[illegible]	0.44	0.47	0.44	0.41	0.38	0.33	0.32	0.39	0.51
MA	1.35	1.35	1.08	0.[illegible]	0.56	0.62	0.54	0.88	0.49	0.37	0.46	0.61	1.35
MI	0.16	0.40	0.46	0.[illegible]	0.35	0.36	0.35	0.33	0.30	0.27	0.25	0.28	0.16

Table A.V-16 Run-off at Vilacota Gauging Station

(Unit: $m^3/s{\cdot}d$)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
63	----	----	----	----	----	----	----	----	----	----	0.23	0.51	27.71
64	0.42	0.62	0.40	0.[illegible]	0.41	0.41	0.41	0.33	0.28	0.25	0.25	0.26	134.76
65	0.29	0.33	0.39	0.[illegible]	0.28	0.27	0.27	0.27	0.23	0.19	0.19	0.21	100.24
66	0.14	0.23	0.27	0.[illegible]	0.31	0.22	0.20	0.18	0.16	0.16	0.20	0.21	73.56
67	0.25	0.48	0.49	0.[illegible]	0.19	0.22	0.21	0.16	0.17	0.17	0.11	0.20	91.31
68	0.88	0.39	0.32	0.[illegible]	0.27	0.26	0.18	0.22	0.25	0.18	0.27	0.27	116.23
69	0.24	0.43	0.38	0.[illegible]	0.33	0.23	0.19	0.17	0.21	0.15	0.17	0.18	88.08
70	0.31	0.30	0.39	0.[illegible]	0.23	0.19	0.17	0.16	0.13	0.13	0.13	0.18	76.86
71	0.52	1.31	0.96	0.[illegible]	0.29	0.24	0.30	0.28	0.20	0.18	0.23	0.40	157.79
72	0.86	0.86	1.33	0.[illegible]	0.17	0.12	0.13	0.15	0.15	0.14	0.28	0.42	161.04
73	1.14	0.76	0.66	0.[illegible]	0.47	0.41	0.41	0.39	0.38	0.38	0.37	0.35	147.67
74	----	----	----	0.[illegible]	0.27	0.31	0.76	0.73	0.19	0.09	0.08	0.16	76.41
75	1.11	1.50	1.00	0.[illegible]	0.59	0.42	0.38	0.28	0.21	0.15	0.25	0.49	201.61
76	1.11	0.61	0.60	0.[illegible]	0.31	0.24	0.19	0.22	0.35	0.16	0.12	0.16	134.14
77	0.33	0.69	0.87	0.[illegible]	0.32	0.50	0.49	0.28	0.21	0.15	0.25	0.40	147.67
78	1.00	0.62	0.32	0.[illegible]	0.32	0.31	0.33	0.24	0.19	0.15	0.21	0.21	133.33
79	0.27	0.21	0.32	0.[illegible]	0.21	0.19	0.20	0.30	0.15	0.15	0.14	0.16	75.89
80	----	----	0.46	0.[illegible]	0.25	0.21	0.20	0.21	0.19	0.26	0.22	0.12	73.18
81	0.50	----	----	----	----	----	----	----	----	----	----	----	15.50
TO	290.47	264.00	281.17	186.[illegible]	161.51	142.50	137.33	141.36	109.50	94.24	111.00	148.80	2063.38
AV	18.15	17.60	17.57	10.[illegible]	9.53	8.38	8.08	8.32	6.44	5.54	6.17	8.27	124.70
AD	0.59	0.62	0.47	0.[illegible]	0.31	0.28	0.26	0.27	0.21	0.18	0.21	0.27	0.34
MA	1.14	1.50	1.33	0.[illegible]	0.59	0.50	0.41	0.73	0.38	0.38	0.37	0.51	1.50
MI	0.14	0.21	0.22	0.[illegible]	0.17	0.12	0.13	0.15	0.13	0.09	0.08	0.12	0.08

Table A.V-17 Run-off at Chucarapi Gauging Station

(Unit: $m^3/s{\cdot}d$)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
52	65.23	50.70	30.52	[illegible]	[illegible]	25.16	24.68	21.50	22.06	14.49	12.08	14.67	9983.19
53	31.77	39.11	47.59	[illegible]	[illegible]	34.18	28.69	32.61	24.35	24.58	25.20	24.10	12341.35
54	36.13	140.18	157.37	50.70	27.73	27.67	24.52	20.09	20.52	21.42	20.60	23.60	17327.07
55	81.58	204.32	310.52	[illegible]	[illegible]	36.07	36.60	32.34	27.58	33.92	22.42	47.65	27483.03
56	37.52	62.28	26.71	[illegible]	[illegible]	19.57	17.77	15.49	12.63	9.53	8.16	9.79	7751.56
57	11.66	41.63	48.65	[illegible]	[illegible]	17.47	12.68	12.19	11.47	7.64	6.56	15.18	7001.23
58	38.01	49.56	96.19	[illegible]	[illegible]	14.79	15.58	13.14	10.56	9.59	8.51	9.83	9044.12
59	11.71	94.25	143.50	[illegible]	[illegible]	16.97	15.02	13.29	9.68	8.43	7.23	52.84	13096.48
60	161.26	74.21	31.67	[illegible]	[illegible]	21.13	18.56	15.99	11.18	11.52	9.04	16.61	13003.93
61	75.44	83.96	41.47	[illegible]	[illegible]	19.03	16.48	14.33	12.55	9.63	17.55	52.05	12181.94
62	167.94	136.18	144.13	[illegible]	[illegible]	20.02	19.05	16.73	14.06	9.41	7.71	24.76	19283.13
63	121.10	291.79	91.31	[illegible]	[illegible]	27.71	24.24	20.02	24.01	13.35	8.61	42.39	22053.27
64	54.65	55.62	56.50	[illegible]	[illegible]	21.45	19.41	17.93	15.11	9.22	11.59	12.13	10350.06
65	14.74	38.13	25.35	[illegible]	[illegible]	19.90	18.48	17.35	15.38	9.56	6.57	9.75	6662.39
66	7.42	16.64	50.59	[illegible]	[illegible]	9.23	8.73	7.21	6.73	6.44	7.50	14.76	4877.21
67	8.15	51.57	79.19	[illegible]	[illegible]	20.11	16.89	12.29	10.43	7.84	6.29	8.86	8716.80
68	96.32	70.17	131.63	[illegible]	[illegible]	24.00	18.29	12.06	9.50	7.42	37.54	15.24	14647.35
69	43.56	109.50	69.20	[illegible]	[illegible]	9.64	9.40	8.70	6.00	5.70	5.72	10.62	9215.73
70	30.21	106.39	43.20	[illegible]	[illegible]	9.77	10.34	9.30	6.50	5.86	5.30	10.07	8979.40
71	38.38	131.36	73.13	[illegible]	[illegible]	10.40	10.79	8.92	7.33	6.15	7.45	11.58	10166.50
72	148.92	94.75	131.53	[illegible]	[illegible]	12.43	9.75	10.98	9.85	8.02	7.97	12.52	16092.89
73	291.33	372.02	113.66	[illegible]	[illegible]	13.26	17.41	11.30	9.49	8.84	6.20	7.05	26763.78
74	182.44	292.75	162.13	[illegible]	[illegible]	20.93	14.95	15.19	16.52	6.96	12.84	7.21	24178.71
75	82.37	279.63	205.17	[illegible]	[illegible]	23.10	18.23	12.57	8.76	8.25	6.09	13.89	21919.16
TO	56973.04	91239.33	71855.21	[illegible]	[illegible]	14189.70	13515.41	11533.55	9667.50	8252.82	8379.60	14606.27	331720.67
AV	2373.88	3384.81	2993.97	[illegible]	[illegible]	591.24	563.31	480.56	402.81	343.87	349.15	608.59	13821.70
AD	76.58	119.82	96.58	[illegible]	[illegible]	19.71	18.17	15.50	13.43	11.09	11.64	19.63	37.84
MA	291.33	372.02	310.52	[illegible]	[illegible]	36.07	28.69	32.61	27.58	33.92	37.54	52.86	372.02
MI	7.42	16.64	26.71	[illegible]	[illegible]	9.23	8.40	7.21	6.00	5.70	5.30	7.05	5.30

Table A.V-18 Pumping Water at Aricota Pamping Station

(Unit: 10^3m^3)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
67	----	516.60	19.20	[illegible]	[illegible]	537.30	739.62	158.85	187.20	115.20	550.80	748.80	5944.07
68	282.60	70.20	57.96	[illegible]	0.0	11.48	4.86	0.0	502.20	651.45	931.50	980.10	3520.25
69	264.60	0.0	0.0	[illegible]	4.15	0.0	43.20	45.50	453.60	5.40	0.0	0.0	816.85
70	234.90	595.49	604.80	[illegible]	[illegible]	706.78	348.97	41.31	807.30	791.24	532.79	926.40	6675.78
71	1281.22	1933.60	1996.35	[illegible]	[illegible]	1524.11	1576.11	1455.53	1888.38	2138.10	1854.15	2252.92	21446.59
72	1631.12	2258.50	1513.61	[illegible]	[illegible]	339.73	427.35	505.00	771.81	541.40	754.20	957.38	11322.94
73	599.63	1289.97	594.72	[illegible]	[illegible]	209.93	157.28	133.65	171.45	269.75	398.25	456.93	5174.96
74	894.96	382.05	395.37	[illegible]	[illegible]	32.98	314.69	1545.48	1713.11	705.33	1248.52	429.98	8489.17
75	3939.96	3751.11	3531.60	[illegible]	[illegible]	51.30	143.10	1949.54	0.0	1497.60	2569.50	2528.18	24570.19
76	2582.72	2563.96	2658.60	[illegible]	[illegible]	2239.02	2732.04	4967.40	6061.23	9209.61	8281.17	5478.36	51274.07
77	6728.40	5944.68	2224.26	[illegible]	[illegible]	6608.88	6660.99	7056.03	6748.83	6535.75	6931.08	6987.23	64393.77
78	5915.34	3488.03	4434.57	[illegible]	[illegible]	3566.97	3786.30	3159.19	3819.15	4936.13	4842.54	4268.89	48618.18
79	5024.04	4681.08	4084.51	[illegible]	[illegible]	6680.16	7326.71	9274.18	10184.40	7384.38	6458.47	8239.35	75915.06
80	5375.20	4815.09	5119.07	[illegible]	[illegible]	4589.36	3204.44	9836.96	7428.24	7458.38	6045.76	3061.38	62788.64
81	3359.08	3254.19	4230.02	[illegible]	[illegible]	7008.21	7441.74	6085.45	3872.24	8131.40	7288.70	8789.40	70965.17
82	6070.80	8690.80	7683.80	[illegible]	[illegible]	9946.70	10248.84	5837.30	5917.00	7530.80	6024.90	-33.33	86469.94
TO	44184.57	44234.95	39149.44	[illegible]	[illegible]	44052.91	45165.84	44081.17	50526.14	57882.32	54712.33	46071.97	548185.62
AV	2945.64	2764.68	2446.78	[illegible]	[illegible]	2753.31	2822.87	2755.07	3157.88	3617.65	3419.52	2879.50	34445.71
AD	95.02	97.86	78.93	[illegible]	[illegible]	91.78	91.06	88.87	105.26	116.70	113.98	92.89	94.30
MA	6728.40	8690.80	7683.80	[illegible]	[illegible]	9946.70	10248.84	7086.03	10184.40	9209.61	8281.17	8789.40	10330.13
MI	234.90	0.0	0.0	[illegible]	0.0	0.0	4.86	0.0	0.0	5.40	0.0	-33.33	-33.33

Table A.V-19 Water level Data at Lake Aricota

(Unit: E.L m)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
67	----	----	----	----	----	----	2833.92	2833.74	2833.55	2833.32	2833.05	2833.75	17001.33
68	2832.96	2833.11	2834.17	2834.10	2833.88	2833.77	2833.63	2833.46	2833.25	2833.01	2832.75	2832.44	34000.54
69	2832.29	2832.51	2832.54	2832.54	2832.15	2831.98	2831.86	2831.72	2831.54	2831.34	2831.16	2830.94	33982.43
70	2831.19	2831.32	2831.45	2831.43	2831.03	2830.76	2830.65	2830.59	2830.31	2830.04	2829.82	2829.57	33967.93
71	2829.51	2830.04	2830.09	2829.75	2829.42	2829.14	2828.76	2828.54	2828.24	2827.78	2827.42	2827.11	33945.78
72	2828.33	2829.14	2831.19	2831.19	2831.03	2831.74	2831.45	2831.35	2831.14	2830.92	2830.64	2830.41	33970.43
73	2830.43	2833.16	2835.84	2835.10	2835.73	2835.47	2835.21	2834.96	2834.67	2834.40	2834.07	2833.72	34014.28
74	2834.88	2837.41	2838.97	2838.75	2838.36	2837.95	2837.61	2837.21	2836.74	2836.31	2835.89	2835.55	34045.61
75	2835.32	2836.86	2839.70	2839.32	2839.08	2838.78	2838.50	2837.95	2837.68	2837.22	2836.66	2836.39	34053.70
76	2837.35	2838.67	2839.73	2839.39	2838.91	2838.44	2837.86	2837.12	2836.31	2835.11	2833.67	2833.24	34046.19
77	2832.62	2833.50	2836.09	2836.15	2835.75	2834.80	2834.10	2833.21	2832.34	2831.44	2830.63	2829.69	34000.37
78	2829.89	2830.11	2829.54	2829.17	2828.72	2828.32	2827.99	2828.23	2828.39	2827.82	2827.30	2826.84	33942.92
79	2826.56	2826.08	2826.20	2825.89	2825.53	2825.13	2824.58	2822.18	2821.61	2821.08	2820.48	2820.07	33879.42
80	2819.61	2819.08	2818.79	2818.46	2817.79	2817.23	2816.97	2816.40	2815.78	2815.13	2814.56	2814.09	33803.54
81	2813.67	2814.83	2815.09	2814.89	2813.54	2812.89	2812.03	2811.32	2810.85	2809.95	2809.08	2808.16	33745.76
82	2807.70	2807.06	2806.35	2805.97	2804.75	2803.99	2803.29	2802.67	2802.24	2801.38	2800.71	2800.04	33645.75
TO	42422.71	42432.88	42445.79	42442.02	42434.73	42428.30	45256.41	45251.29	45244.64	45236.26	45228.29	45222.04	526045.89
AV	2828.18	2828.86	2829.72	2829.47	2828.98	2828.55	2828.53	2828.21	2827.79	2827.27	2826.77	2826.38	33938.75
AD	91.23	100.08	91.29	99.32	91.24	94.29	91.24	91.23	94.26	91.20	94.23	91.17	92.89
MA	2837.35	2838.67	2839.73	2839.39	2838.91	2838.44	2837.86	2837.12	2836.31	2835.11	2833.67	2833.24	34046.19
MI	2807.70	2807.06	2806.35	2805.97	2804.75	2803.99	2803.29	2802.67	2802.24	2801.38	2800.71	2800.04	2800.04

Table A.V-20 Energy Producution at Aricota No.1 Power Station (Performance)

(Unit: MWh)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
67	----	280.00	33.00	918.00	816.00	254.00	774.00	436.00	487.00	250.00	73.00	688.00	4609.00
68	487.30	198.10	121.80	84.00	47.20	27.30	18.80	7.30	637.60	690.90	1102.80	1146.20	4520.10
69	254.30	----	----	25.00	19.40	17.80	70.20	94.50	565.50	----	----	----	1046.70
70	6.70	30.40	467.70	439.00	249.70	981.60	440.60	53.50	1095.70	1046.40	702.60	1230.80	7464.30
71	2038.10	3361.80	3323.90	2793.00	2221.93	2078.50	2105.70	2001.40	3065.90	3392.20	2908.60	3418.20	32809.80
72	2252.70	4076.00	2719.00	1436.00	1224.83	234.30	201.30	348.70	816.60	446.40	942.70	1412.10	16110.90
73	638.80	246.80	797.40	802.00	447.83	458.50	295.00	344.80	410.40	521.60	784.60	914.70	7162.70
74	1534.90	741.10	943.10	1145.00	714.03	291.10	564.00	2886.40	3097.20	1085.60	1079.30	1012.40	15984.10
75	6691.30	6468.20	6439.90	5934.00	4628.29	460.50	579.40	3452.70	334.90	1930.10	3098.30	2527.30	41265.60
76	3472.30	3684.60	2930.70	3379.00	2826.90	3275.00	4707.80	7361.80	9194.60	14051.40	13173.70	8917.40	76565.80
77	10236.20	8488.60	3261.40	0.0	3643.33	10678.10	10527.70	11459.10	11318.00	10852.70	11987.80	11688.20	103541.10
78	8687.60	5346.80	6931.40	3653.00	5548.10	5541.10	5674.10	4742.60	5927.30	7127.50	6990.00	6024.20	72434.50
79	7137.60	6327.50	5393.40	7213.20	6570.53	8041.00	7577.20	5814.10	6387.10	6666.40	6289.20	6472.60	81889.80
80	5874.50	6426.70	7035.90	6557.00	6752.10	5522.70	3936.20	7094.60	8669.90	7633.10	6558.40	6171.20	78232.70
81	6369.80	6169.00	7044.90	9826.00	10344.63	11076.00	11219.40	8997.70	9210.90	11475.50	10792.30	11737.40	110164.30
82	8861.30	10902.90	10311.90	8993.00	10544.53	10494.10	9567.20	8938.00	6514.10	10748.70	8711.10	9882.80	114479.90
TO	64543.40	62748.50	57775.40	52362.00	59629.03	59431.60	58439.00	64073.30	66726.90	78018.50	75094.40	73243.90	768266.30
AV	4302.89	4183.23	3851.69	3241.00	3969.31	3714.48	3652.44	4004.54	4170.43	5201.23	5006.29	4882.93	49730.90
AD	138.80	147.99	124.25	109.00	112.56	123.82	117.82	129.18	139.01	167.78	166.88	157.51	135.69
MA	10236.20	10902.90	10311.90	9826.00	10544.53	11076.00	11219.80	11459.10	11318.00	14051.40	13173.70	11737.80	14051.40
MI	6.70	30.40	33.00	0.0	47.20	17.80	18.80	7.30	334.90	250.00	73.00	688.00	0.0

Table A.V-21 Energy Production at Aricota NO.2 Power Station (Performance)

(Unit: MWh)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
67	604.20	386.00	700.00	[illegible]	[illegible]	534.00	70.00	326.00	270.00	535.00	785.00	281.00	4992.20
68	414.00	605.10	718.60	740.90	[illegible]	799.30	859.50	906.20	398.20	415.80	0.30	3.10	6681.10
69	732.50	868.90	985.10	923.30	[illegible]	914.30	916.40	942.00	443.70	1050.40	1053.10	1115.20	10911.00
70	1049.80	1288.70	1632.20	[illegible]	[illegible]	1639.70	1454.30	1331.00	1766.20	1479.00	1620.80	1899.00	18552.60
71	1174.30	----	----	----	----	----	----	----	----	----	----	----	1174.30
72	----	----	1008.90	[illegible]	[illegible]	2057.10	2035.10	2100.40	1562.30	1911.60	2113.60	2216.80	19709.70
73	1934.70	2047.10	2195.10	[illegible]	[illegible]	2300.00	2364.70	2353.30	2297.90	2300.10	2279.30	2234.50	26045.30
74	2533.00	2292.60	2843.10	[illegible]	[illegible]	2108.50	2573.50	684.30	3441.10	2301.00	1956.20	2359.10	28217.00
75	4648.40	4422.40	5062.30	[illegible]	[illegible]	2301.10	3796.40	730.40	2877.40	3295.20	3458.60	3246.10	43466.90
76	3323.10	3908.90	3790.10	[illegible]	[illegible]	3852.10	4961.20	4804.00	6566.70	7808.60	6841.30	5462.20	62296.80
77	6447.90	5300.40	7126.90	[illegible]	[illegible]	7271.60	6949.80	7577.40	7204.40	6584.60	7263.60	6558.80	84562.20
78	4589.70	2991.30	4337.90	[illegible]	[illegible]	3560.20	3912.20	3247.00	3798.60	4267.70	4069.90	3627.10	44485.90
79	3986.80	3929.60	3329.80	[illegible]	[illegible]	4826.00	4444.20	3466.50	5409.60	3770.80	2783.00	3300.50	47837.90
80	3295.70	3563.90	3778.10	[illegible]	[illegible]	3256.40	2527.50	4124.70	4557.80	4150.60	3459.10	3497.10	43699.90
81	3581.20	3354.70	3906.20	[illegible]	[illegible]	5942.50	5535.90	4929.60	2881.70	6269.60	4350.20	6115.00	57550.60
82	5052.60	5363.10	5496.20	[illegible]	[illegible]	5944.00	5302.40	5757.60	3633.20	6078.40	5067.90	5481.50	63144.67
TO	43367.90	40302.70	41914.80	43226.90	[illegible]	47186.90	47705.60	44826.80	47528.80	52416.40	47101.90	47357.80	547327.90
AV	2891.19	2878.76	2794.32	2884.76	[illegible]	3145.79	3180.37	2988.45	3168.59	3494.43	3140.13	3157.19	36680.45
AD	93.26	102.03	90.14	[illegible]	[illegible]	104.86	102.59	96.40	105.62	112.72	104.67	101.84	100.43
MA	6447.90	5363.10	5496.20	[illegible]	[illegible]	7271.60	6949.80	7577.40	7204.40	7808.60	7263.60	6558.80	7808.60
MI	414.00	386.00	700.00	[illegible]	[illegible]	534.00	70.00	326.00	270.00	415.80	0.30	3.10	0.30

Table A.V-22(1)Estimated In-flow Data to Lake Loriscota (Total In-flow)

(Unit. $m^3/s \cdot d$)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
65	1.24	1.37	1.62	[illegible]	1.17	1.12	1.12	1.12	0.96	0.79	0.79	0.87	417.69
66	0.78	1.25	1.22	[illegible]	1.72	1.22	1.11	1.00	0.89	0.89	1.11	1.16	408.22
67	1.60	3.07	3.14	2.37	1.22	1.41	1.34	1.02	1.09	1.05	0.70	1.28	584.45
68	4.53	2.01	1.64	[illegible]	1.37	1.34	0.93	1.13	1.29	0.93	1.39	1.39	598.93
69	1.26	2.25	1.99	1.20	1.73	1.20	1.00	0.89	1.10	0.79	0.89	0.96	461.30
70	1.78	1.73	2.24	[illegible]	1.26	1.09	0.98	0.92	0.75	0.74	0.75	1.03	461.70
71	1.74	4.37	3.14	[illegible]	0.97	0.80	1.00	0.93	0.66	0.60	0.77	1.34	526.59
72	3.23	3.23	4.99	2.55	0.61	0.45	0.47	0.49	0.50	0.52	1.05	1.57	509.38
73	3.94	2.63	2.28	[illegible]	1.69	1.42	1.47	1.31	1.31	1.31	1.28	1.21	648.33
74	2.56	2.69	2.48	1.84	1.17	1.35	1.13	3.17	0.83	0.35	0.35	0.69	565.11
75	3.31	4.47	2.98	[illegible]	1.76	1.25	1.13	0.84	0.63	0.45	0.75	1.19	601.22
76	3.90	2.27	2.11	[illegible]	1.09	0.84	0.67	0.77	1.23	0.58	0.42	0.56	474.79
77	1.18	2.48	3.12	[illegible]	1.15	1.79	1.44	1.00	0.75	0.54	1.38	1.44	526.31
78	3.66	2.26	1.17	[illegible]	1.17	1.13	1.20	0.88	0.69	0.55	0.77	0.77	486.98
79	1.56	1.20	1.83	[illegible]	1.21	1.09	1.14	1.71	0.86	0.86	0.80	0.91	433.69
80	2.16	2.27	1.61	[illegible]	0.92	0.77	0.73	0.77	0.70	0.95	0.81	0.44	401.01
TO	1190.71	1118.02	1164.36	[illegible]	625.54	568.10	521.11	556.45	427.20	371.07	420.30	520.49	8175.29
AV	74.42	69.88	72.77	[illegible]	39.13	34.26	32.57	34.78	26.70	23.19	26.27	32.53	510.96
AD	2.40	2.47	2.35	[illegible]	1.25	1.14	1.05	1.12	0.89	0.75	0.98	1.05	1.40
MA	4.53	4.47	4.99	2.55	1.76	1.79	1.44	3.17	1.31	1.31	1.39	1.57	4.99
MI	0.78	1.20	1.17	[illegible]	0.61	0.45	0.47	0.49	0.50	0.39	0.35	0.44	0.39

Table A.V-22 (2)Estimated In-flow Data to Lake Loriscota (Surface In-flow)

(Unit: $m^3/s \cdot d$)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
65	0.39	0.46	0.66	0.37	0.13	0.18	0.21	0.25	0.13	0.0	0.0	0.05	93.53
66	0.0	0.45	0.35	0.19	0.82	0.35	0.25	0.16	0.07	0.07	0.26	0.27	96.72
67	0.68	2.12	2.15	1.33	0.25	0.48	0.46	0.18	0.29	0.35	0.0	0.39	261.72
68	3.45	0.75	0.46	0.30	0.39	0.39	0.10	0.29	0.45	0.05	0.51	0.48	240.01
69	0.32	1.26	0.97	0.61	0.73	0.29	0.12	0.05	0.28	0.0	0.05	0.07	131.79
70	0.86	0.78	1.26	0.24	0.24	0.16	0.11	0.11	0.0	0.0	0.0	0.25	123.12
71	0.65	3.56	2.31	0.70	0.23	0.07	0.30	0.26	0.03	0.0	0.16	0.72	266.42
72	2.60	2.58	4.34	1.69	0.03	0.0	0.0	0.0	0.0	0.0	0.41	0.79	385.63
73	3.04	1.60	1.27	0.53	0.65	0.47	0.47	0.42	0.42	0.42	0.41	0.78	308.85
74	1.69	1.78	1.52	0.95	0.37	0.64	0.49	2.72	0.35	0.0	0.0	0.21	325.04
75	2.71	3.74	2.13	0.59	1.03	0.57	0.51	0.28	0.12	0.0	0.17	0.48	363.56
76	3.07	1.31	1.23	0.50	0.38	0.21	0.12	0.25	0.75	0.11	0.0	0.06	239.41
77	0.61	1.84	2.40	0.54	0.39	1.07	0.77	0.37	0.16	0.0	0.77	0.77	285.73
78	2.87	1.36	0.31	0.04	0.33	0.40	0.51	0.24	0.09	0.0	0.13	0.03	221.83
79	0.71	0.28	0.93	0.20	0.33	0.24	0.30	0.88	0.05	0.05	0.0	0.10	124.84
80	1.35	1.45	0.78	0.20	0.13	0.07	0.07	0.16	0.13	0.42	0.32	0.0	157.81
TO	784.30	715.05	719.17	285.30	198.37	165.60	148.49	205.27	99.60	46.81	95.70	156.55	9625.81
AV	49.02	44.69	44.70	17.84	13.02	10.35	9.28	12.83	6.23	2.93	5.98	9.78	226.62
AD	1.58	1.58	1.44	0.59	0.42	0.35	0.30	0.41	0.21	0.09	0.20	0.32	0.62
MA	3.45	3.74	4.34	1.69	1.04	1.07	0.77	2.72	0.75	0.42	0.77	0.79	4.34
MI	0.0	0.28	0.31	0.04	0.03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table A.V-22 (3)Estimated In-flow Data to Lake Loriscota (Sub-surface In-flow)

(Unit: $m^3/s \cdot d$)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
65	0.85	0.91	0.96	1.01	0.99	0.94	0.91	0.87	0.83	0.79	0.79	0.82	324.16
66	0.78	0.83	0.87	0.91	0.93	0.87	0.86	0.84	0.82	0.82	0.85	0.89	311.50
67	0.92	0.95	0.99	1.02	0.97	0.93	0.88	0.84	0.80	0.74	0.70	0.80	323.23
68	1.08	1.26	1.18	1.04	1.03	1.02	0.93	0.84	0.84	0.84	0.88	0.91	358.52
69	0.94	0.99	1.02	1.04	0.95	0.91	0.88	0.84	0.82	0.79	0.84	0.87	329.51
70	0.92	0.95	0.98	1.02	0.97	0.93	0.87	0.81	0.75	0.75	0.75	0.78	318.58
71	0.79	0.81	0.83	0.80	0.77	0.73	0.70	0.67	0.63	0.60	0.61	0.62	260.16
72	0.63	0.65	0.65	0.60	0.55	0.49	0.47	0.45	0.50	0.52	0.64	0.78	213.45
73	0.90	1.03	1.01	0.94	0.97	0.95	0.95	0.89	0.89	0.85	0.87	0.83	339.48
74	0.87	0.91	0.96	0.98	0.93	0.71	0.64	0.49	0.48	0.39	0.35	0.48	240.07
75	0.80	0.73	0.85	0.80	0.73	0.68	0.62	0.56	0.51	0.42	0.58	0.71	237.66
76	0.83	0.96	0.88	0.80	0.71	0.63	0.55	0.52	0.48	0.45	0.42	0.50	235.38
77	0.57	0.64	0.72	0.76	0.75	0.72	0.67	0.63	0.59	0.54	0.61	0.67	240.58
78	0.79	0.90	0.86	0.81	0.78	0.73	0.69	0.64	0.60	0.55	0.64	0.74	265.15
79	0.83	0.92	0.90	0.89	0.87	0.85	0.84	0.83	0.81	0.81	0.80	0.81	308.85
80	0.81	0.82	0.93	0.78	0.74	0.70	0.66	0.61	0.57	0.53	0.49	0.44	263.20
TO	406.41	402.97	449.19	425.90	412.25	382.50	372.62	351.23	327.60	324.26	324.60	363.94	4549.48
AV	25.40	25.19	28.07	26.62	26.39	23.91	23.29	21.95	20.48	20.27	20.29	22.75	284.36
AD	0.82	0.89	0.91	0.89	0.84	0.80	0.75	0.71	0.68	0.65	0.68	0.73	0.78
MA	1.08	1.26	1.18	1.04	1.03	1.02	0.95	0.89	0.89	0.85	0.88	0.91	1.26
MI	0.57	0.64	0.65	0.60	0.54	0.45	0.47	0.45	0.48	0.39	0.35	0.44	0.35

Table A.V-23 Estimated Run-off Data at Chila Site

(Unit: $m^3/s \cdot d$)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
63	----	----	----	----	----	----	----	----	----	----	0.27	0.61	27.01
64	0.50	0.74	0.48	0.40	0.43	0.49	0.49	0.39	0.33	0.30	0.30	0.31	160.62
65	0.35	0.39	0.46	0.43	0.33	0.32	0.32	0.32	0.27	0.23	0.23	0.25	119.08
66	0.17	0.27	0.26	0.23	0.37	0.26	0.24	0.21	0.19	0.19	0.24	0.25	87.55
67	0.30	0.57	0.58	0.44	0.23	0.25	0.25	0.19	0.20	0.20	0.13	0.24	108.55
68	1.05	0.46	0.38	0.30	0.32	0.31	0.21	0.26	0.30	0.21	0.32	0.32	137.89
69	0.29	0.51	0.45	0.27	0.33	0.27	0.23	0.20	0.25	0.18	0.20	0.21	104.43
70	0.37	0.36	0.46	0.26	0.26	0.23	0.20	0.19	0.15	0.15	0.15	0.21	90.82
71	0.62	1.56	1.12	0.43	0.35	0.29	0.36	0.33	0.24	0.21	0.27	0.48	188.15
72	1.02	1.02	1.58	0.61	0.23	0.14	0.19	0.18	0.18	0.17	0.33	0.50	191.18
73	1.36	0.90	0.79	0.50	0.56	0.49	0.49	0.45	0.45	0.45	0.44	0.42	223.52
74	0.70	0.74	0.67	0.50	0.32	0.37	0.31	0.87	0.23	0.11	0.10	0.19	154.59
75	1.32	1.79	1.19	0.98	0.73	0.50	0.45	0.33	0.25	0.18	0.20	0.48	240.17
76	1.32	0.73	0.71	0.39	0.37	0.29	0.23	0.26	0.42	0.19	0.14	0.19	159.74
77	0.39	0.82	1.04	0.57	0.31	0.60	0.48	0.33	0.25	0.18	0.30	0.48	170.24
78	1.19	0.74	0.38	0.60	0.34	0.37	0.39	0.29	0.23	0.18	0.25	0.25	159.08
79	0.32	0.25	0.38	0.23	0.25	0.23	0.24	0.36	0.18	0.18	0.17	0.19	90.82
80	0.70	0.74	0.42	0.33	0.33	0.25	0.24	0.25	0.23	0.31	0.26	0.14	130.42
81	0.60	----	----	----	----	----	----	----	----	----	----	----	18.60
TO	389.67	356.21	354.95	218.30	192.23	170.10	163.68	167.71	130.50	117.22	132.00	177.32	2562.86
AV	21.65	20.95	20.88	12.72	11.31	10.01	9.63	9.87	7.68	6.60	7.33	9.85	148.49
AD	0.70	0.74	0.67	0.50	0.34	0.33	0.31	0.32	0.26	0.21	0.24	0.32	0.41
MA	1.36	1.79	1.58	0.61	0.73	0.60	0.49	0.87	0.45	0.45	0.44	0.61	1.79
MI	0.17	0.25	0.26	0.23	0.21	0.14	0.19	0.18	0.15	0.11	0.10	0.14	0.10

Table A.V-24 Estimated Run-off Data at Coypacoypa Site

(Unit: $m^3/s \cdot d$)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
63	----	----	----	----	----	----	----	----	----	----	0.29	0.63	28.23
64	0.52	0.77	0.50	0.40	0.51	0.51	0.51	0.41	0.35	0.31	0.31	0.32	167.31
65	0.36	0.41	0.48	0.47	0.33	0.33	0.33	0.33	0.29	0.24	0.24	0.26	124.23
66	0.17	0.29	0.27	0.24	0.34	0.27	0.25	0.22	0.20	0.20	0.25	0.26	91.17
67	0.31	0.60	0.61	0.40	0.24	0.27	0.26	0.20	0.21	0.21	0.14	0.25	113.68
68	1.09	0.48	0.60	0.40	0.33	0.32	0.32	0.27	0.31	0.22	0.33	0.33	143.38
69	0.30	0.53	0.47	0.29	0.41	0.29	0.24	0.21	0.26	0.19	0.21	0.22	109.59
70	0.38	0.37	0.48	0.27	0.27	0.24	0.21	0.20	0.16	0.16	0.16	0.22	94.78
71	0.64	1.62	1.17	0.49	0.35	0.30	0.37	0.35	0.25	0.22	0.29	0.50	195.67
72	1.07	1.07	1.65	0.64	0.21	0.15	0.16	0.19	0.19	0.17	0.35	0.52	200.00
73	1.41	0.94	0.82	0.58	0.53	0.51	0.51	0.47	0.47	0.47	0.46	0.43	232.31
74	0.73	0.77	0.70	0.52	0.33	0.39	0.32	0.91	0.24	0.11	0.10	0.20	161.06
75	1.38	1.86	1.24	0.50	0.73	0.92	0.47	0.35	0.26	0.15	0.31	0.50	250.44
76	1.39	0.76	0.74	0.41	0.39	0.33	0.24	0.27	0.43	0.20	0.15	0.20	166.45
77	0.41	0.86	1.08	0.56	0.63	0.62	0.50	0.39	0.26	0.15	0.31	0.50	177.51
78	1.24	0.77	0.40	0.52	0.43	0.38	0.41	0.30	0.24	0.15	0.26	0.26	165.76
79	0.33	0.26	0.60	0.24	0.26	0.24	0.25	0.37	0.19	0.19	0.17	0.20	94.48
80	0.73	0.77	0.45	0.50	0.31	0.26	0.25	0.26	0.24	0.32	0.27	0.15	135.90
81	0.62	----	----	----	----	----	----	----	----	----	----	----	19.22
TO	405.17	371.49	370.76	225.30	199.93	176.70	170.50	175.46	136.50	117.18	138.00	184.45	2671.46
AV	22.51	21.85	21.81	13.25	11.76	10.39	10.03	10.32	8.03	6.89	7.67	10.25	154.76
AD	0.73	0.77	0.70	0.54	0.33	0.35	0.32	0.33	0.27	0.22	0.26	0.33	0.42
MA	1.41	1.86	1.65	0.64	0.73	0.62	0.51	0.91	0.47	0.47	0.46	0.63	1.86
MI	0.17	0.26	0.27	0.24	0.21	0.15	0.16	0.19	0.16	0.11	0.10	0.15	0.10

Table A.V-25 Estimated In-flow Data to Lake Aricota

(Unit: $m^3/s \cdot d$)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
63	1.60	2.53	1.08	[illegible]	1.25	1.24	1.10	1.17	1.37	1.18	1.15	1.38	492.79
64	1.58	2.14	1.78	[illegible]	1.23	1.19	1.21	1.20	1.21	1.02	1.02	1.14	491.86
65	1.00	2.06	1.05	[illegible]	1.05	1.19	1.09	1.00	1.12	1.04	1.08	0.99	413.20
66	0.87	0.95	0.96	[illegible]	0.94	0.94	0.97	0.96	0.94	0.87	0.91	0.82	327.20
67	0.79	2.50	4.47	[illegible]	1.14	1.07	1.03	0.92	0.98	0.91	0.96	0.84	515.60
68	2.51	2.23	9.52	[illegible]	1.29	1.01	1.01	0.96	0.77	0.74	0.84	0.78	711.89
69	1.03	3.02	2.65	[illegible]	0.79	0.78	0.81	0.98	0.73	0.69	0.68	0.68	412.99
70	3.55	1.97	3.76	[illegible]	0.93	0.98	0.86	0.89	0.86	0.81	0.83	0.95	523.19
71	1.74	5.30	3.19	[illegible]	1.02	1.04	0.94	0.92	0.99	0.78	0.76	0.75	551.64
72	5.18	7.06	8.77	[illegible]	1.36	1.18	1.18	1.09	1.03	0.94	0.95	1.84	1071.40
73	4.71	9.43	8.44	[illegible]	1.75	0.97	1.10	1.18	1.04	1.00	0.94	2.56	1158.57
74	6.05	9.04	6.88	[illegible]	1.21	0.73	0.95	1.11	1.07	0.88	1.03	0.94	947.16
75	4.46	9.02	8.46	[illegible]	1.71	0.92	0.86	1.63	0.80	1.16	0.94	2.91	1171.65
76	5.28	7.33	5.56	[illegible]	1.32	1.20	1.14	1.41	0.83	1.80	1.29	0.81	952.16
77	3.60	7.87	6.91	[illegible]	1.03	1.83	1.24	1.57	1.07	1.07	0.89	2.23	1029.71
78	2.85	2.81	2.27	[illegible]	1.43	1.59	3.08	2.81	2.88	1.58	1.37	1.47	754.74
79	1.55	2.39	1.45	[illegible]	-0.31	0.14	2.22	1.46	3.42	2.14	1.68	2.43	593.96
80	1.32	1.30	1.16	[illegible]	1.31	1.23	0.71	1.73	2.03	1.84	1.46	1.01	494.88
TO	1539.77	2231.78	2432.26	[illegible]	[illegible]	571.20	[illegible]	712.38	[illegible]	626.82	563.40	754.23	12668.27
AV	85.54	123.99	135.13	[illegible]	34.93	31.73	26.94	39.58	38.07	34.82	31.30	41.90	703.80
AD	2.76	4.38	4.36	[illegible]	1.13	1.06	1.19	1.28	1.27	1.12	1.04	1.35	1.93
MA	6.05	9.43	9.52	[illegible]	1.75	1.83	3.08	2.81	3.42	2.14	1.68	2.91	9.52
MI	0.79	0.95	0.96	[illegible]	-0.31	0.14	0.71	0.90	0.60	0.68	0.68	0.81	-0.31

Table A.V-26 Estimated In-flow Data to Lake Aricota (Including Water Supply Scheme)

(Unit: $m^3/s \cdot d$)

YY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GOUKEI
66	1.65	2.50	2.52	2.20	2.69	2.33	2.22	2.22	1.73	1.88	1.54	2.08	789.06
67	2.34	5.20	7.17	[illegible]	2.43	2.65	2.43	2.36	2.13	2.05	1.63	2.22	1106.26
68	5.21	4.46	11.53	[illegible]	2.59	2.53	2.12	2.45	2.12	1.84	2.47	2.32	1318.39
69	2.57	5.59	4.92	[illegible]	2.52	2.16	2.03	2.20	1.95	1.64	1.65	1.81	944.31
70	5.66	4.03	6.19	[illegible]	2.23	2.10	2.04	1.56	1.77	1.65	1.71	2.08	1028.42
71	3.59	8.00	5.89	[illegible]	2.18	2.09	2.13	2.02	1.81	1.51	1.64	2.20	1065.19
72	7.88	9.76	11.47	[illegible]	2.31	1.97	1.96	1.84	1.79	1.68	2.06	3.51	1628.29
73	7.41	12.13	11.14	[illegible]	3.51	2.55	2.57	2.53	2.45	2.39	2.28	3.86	1813.05
74	8.75	11.78	9.58	[illegible]	2.59	2.39	2.31	3.81	2.19	1.30	1.62	1.80	1616.69
75	7.16	11.72	11.16	[illegible]	3.64	2.44	2.26	2.76	1.47	1.84	1.71	4.42	1762.70
76	7.98	9.81	7.88	[illegible]	2.71	2.36	2.14	2.45	2.26	2.51	1.99	1.41	1465.57
77	4.70	10.56	9.61	[illegible]	2.43	3.77	2.82	2.72	2.01	1.80	2.42	3.78	1592.81
78	5.55	5.18	3.67	[illegible]	2.75	2.97	4.45	3.94	3.79	2.34	2.37	2.50	1281.14
79	3.47	3.72	3.58	[illegible]	1.84	1.31	1.35	3.51	3.15	4.38	3.14	2.90	1087.59
80	3.77	3.84	3.11	[illegible]	2.37	2.18	1.66	2.67	2.91	2.95	2.34	1.62	969.81
TO	2408.39	3059.71	3392.02	[illegible]	[illegible]	1074.60	1136.15	1211.48	1042.80	947.36	918.90	1210.24	19469.63
AV	160.56	203.98	226.13	[illegible]	79.11	71.64	75.74	80.77	69.52	63.16	61.26	80.68	1297.97
AD	5.18	7.22	7.29	[illegible]	2.55	2.39	2.44	2.61	2.32	2.04	2.04	2.60	3.55
MA	8.75	12.13	11.53	[illegible]	3.64	3.77	4.45	3.94	4.38	3.14	2.90	4.42	12.13
MI	1.65	2.50	2.52	[illegible]	1.31	1.35	1.66	1.84	1.47	1.30	1.62	1.41	1.30

Fig. A.V-1 Rating Curve at Pasto Grande Gauging Station (Prepared by ONERN)

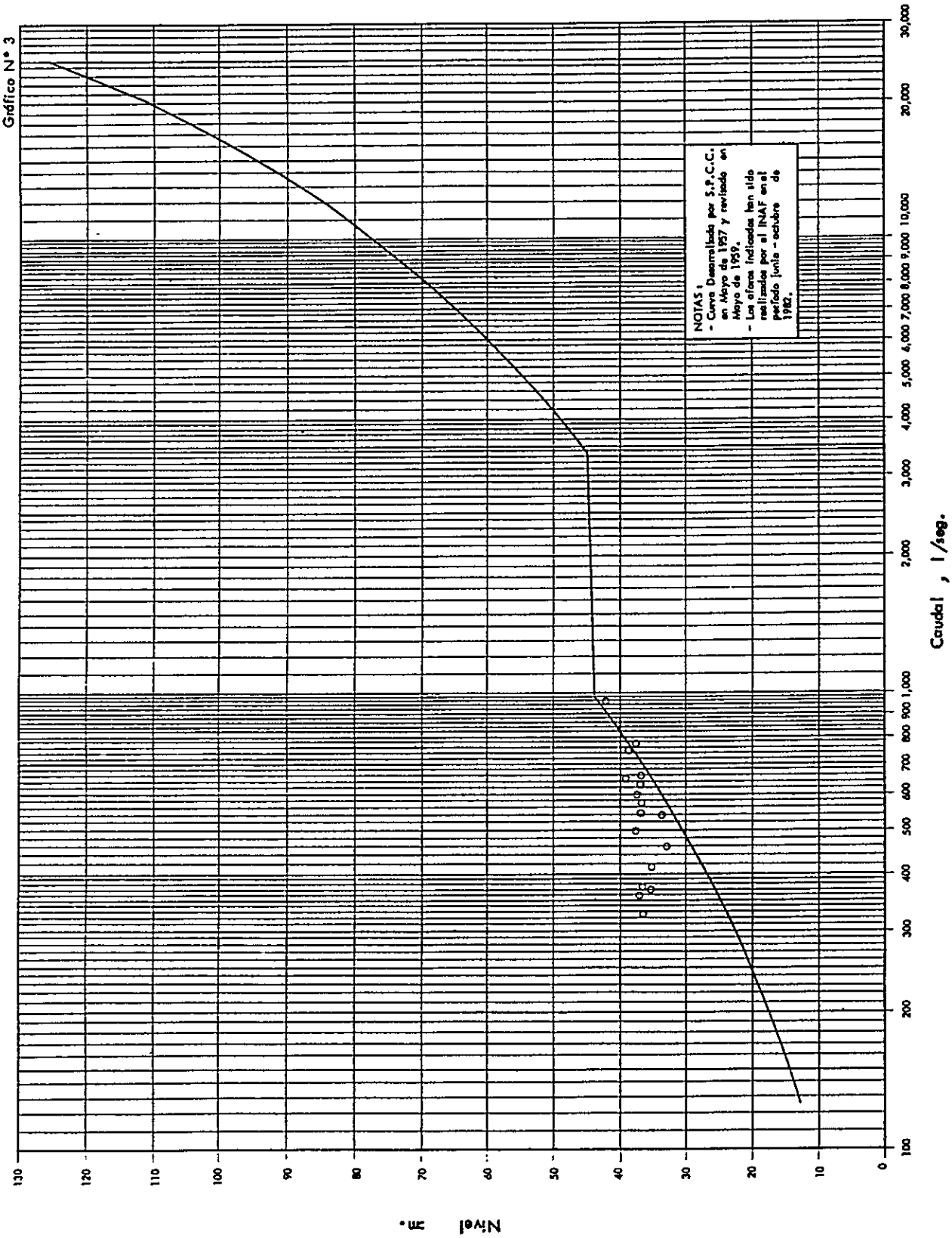
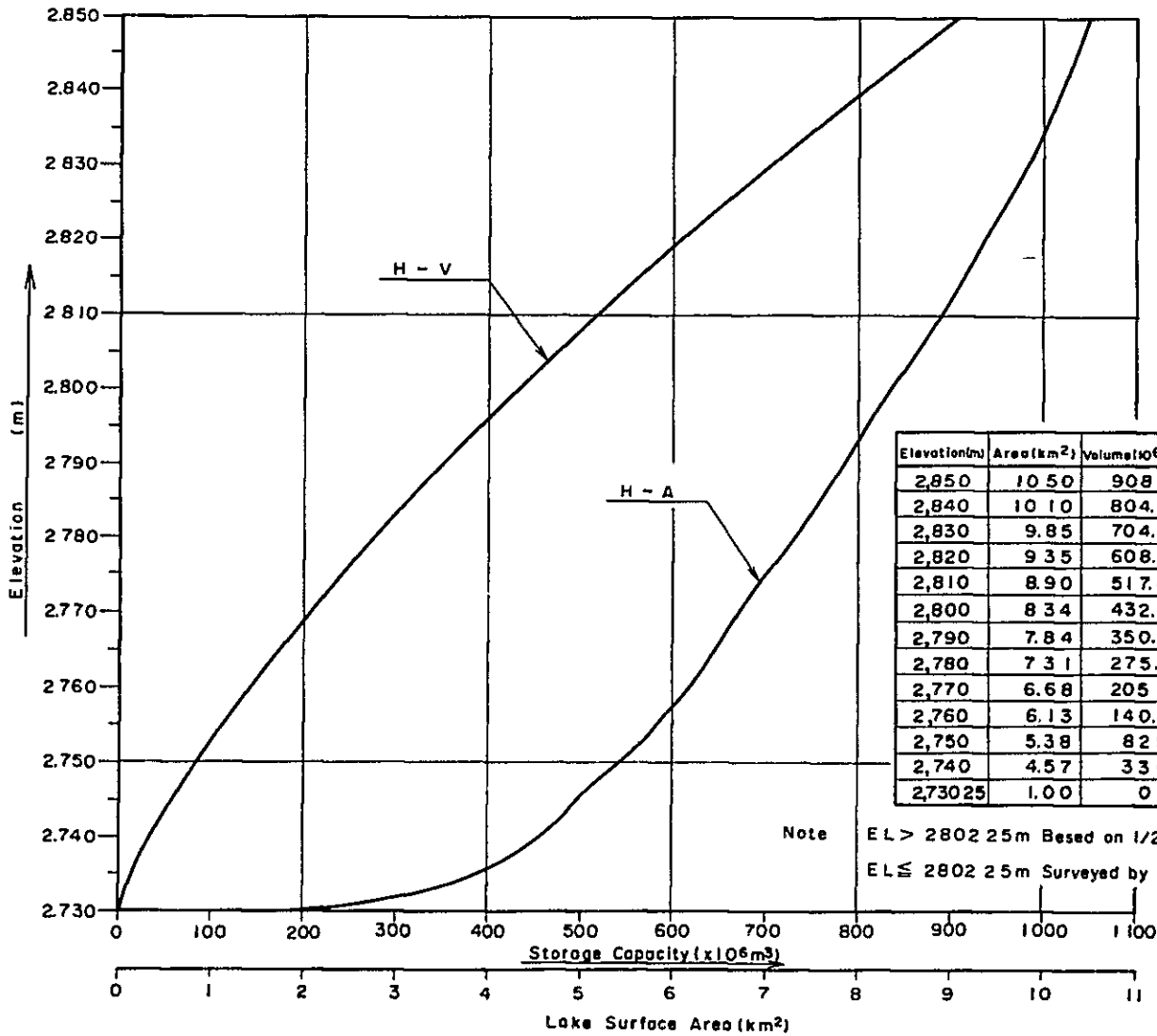


Fig. A.V-2 Lake Surface Area and Storage Capacity Curves of Aricota

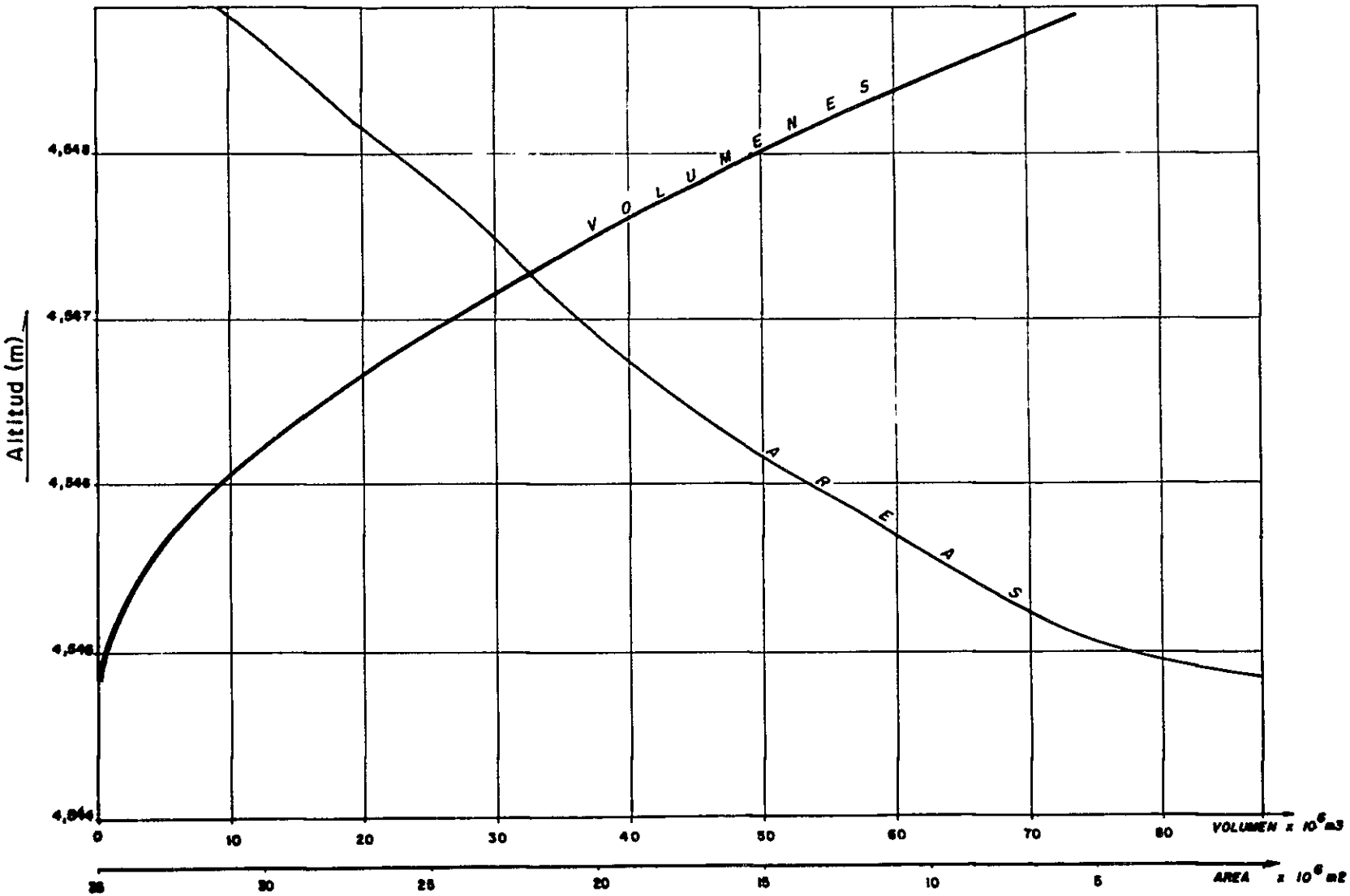


Elevation(m)	Area(km²)	Volume(10⁶m³)
2,850	10 50	908 1
2,840	10 10	804.4
2,830	9.85	704.6
2,820	9 35	608.6
2,810	8.90	517.4
2,800	8 34	432.5
2,790	7.84	350.2
2,780	7 31	275.1
2,770	6.68	205 1
2,760	6.13	140.4
2,750	5.38	825
2,740	4.57	336
2,73025	1.00	0

Note EL > 2802 25m Besed on 1/25,000 map

EL ≦ 2802 25m Surveyed by ELECTROPERU In Sep. 1982

Fig. A.V-3 Lake Surface Area and Storage Capacity Curves of Loriscota



APPENDIX—VI

RESULTS OF GEOLOGICAL INVESTIGATION WORK

CONTENTS

APPENDIX VI RESULTS OF GEOLOGICAL EXPLORATION WORKS

A.VI.1 Exploration Work Quantities

A.VI.1.1 General

(1) In order to obtain basic data necessary for the Feasibility Study of this Project, the Survey Mission, through direct contracts with Peruvian surveying contractors, carried out exploration works such as topographic surveying, exploratory boring, seismic prospecting, etc.

The works consisted of preparations for letting the contracts made in accordance with the investigation plan, the contracts, work supervision, and technical guidance.

Of these, with regard to work supervision, since the nature of boring investigation required continuous supervision and recording at the site, it was carried out with the cooperation of CORDETACNA engineers.

(2) The Survey Mission, for the purposes of contract preparations, work supervision, and geological analyses in the field, dispatched civil and geological engineers to reside in the field from October 15, 1982 to March 4, 1983. In selection of contractors, the important points especially were how to find contractors with abundant experience, and in what manner a continuous supervision arrangement would be set up.

The Survey Mission also carried out investigations by supplementary test pit excavation at the north shore of Laguna Loriscota and the Aricota No. 3 penstock by directly hiring workers in the field.

A.VI.1.2 Exploration Works Schedule

(1) Contracting Preparations (October 15 - November 24, 1982)

Examination of details of exploration works, preparation of works specifications, and preparatory work for contracting.

(2) Work Execution (November 25, 1982 - February 28, 1983)

Work supervision and technical guidance regarding seismic prospecting, boring and surveying in exploration works contracted for between the Survey Mission and Peruvian contractors.

A.VI.1.3 Details of Exploration Works and Work Processes

(1) Seismic Prospecting (Contractor: Dr. José Edgard Arce Helberg)

(a) Contents of work

The contracted work quantities, final work accomplished quantities, and final work accomplished amounts are shown in Table A.VI-1 & -2.

Table A.VI-1 Amount of Work Done of Seismic Prospecting

Item	Unit Price (US$)	Amount of Work Done Quantity	Amount (US$)
Number of explosion point and analysis	60	202	12,120
Overhead	45.545	202	9,200
Total			21,320

Table A.VI-2 Breakdown of Amount of Work Done

Zone	Site	Length (m)	Number of Record		
			Usable	Repeated	Total
Chila	T	480	14	9	23
"	L	480	14	0	14
Coypa Coypa	T	480	14	3	17
"	L	480	14	0	14
Loriscota	T (station)	480	16	6	22
"	L (penstock)	960	30	4	34
Chintari	Intake T	480	14	1	15
"	" L	480	14	6	20
Chulibaya	Plant L-1	480	14	10	24
"	" L-2	480	20	4	24
"	Penstock TP-1	1,080	34	5	39
"	" TP-2	180	4	0	4
Total		6,540	202	48	250

(b) Work process

The crew of the contractor arrived in the field on December 8, 1982 and completed field work on December 17, with a report submitted on January 28, 1983.

(2) Boring Investigations (Contractor: GEOTEC S.A.)

(a) Contents of work

The contracted work quantities, final work accomplished quantities, and final work accomplished amounts are shown in Table A.VI-3.

Table A.VI-3 Breakdown of Quantity of Boring Work

No.	Depth by Contract (m)	Depth in Actual (m)			Number of Permeability Test		
			Rock	Total	Le Franc	Lugeon	Total
P-1	20.0	20.0	0	20.0	3	0	3
2	20.0	9.65	6.35	16.0	1	1	2
3	20.0	27.0	3.0	30.0	6	0	6
4	20.0	4.1	7.9	12.0	1	0	1
B-1	20.0	3.9	11.1	15.0	1	2	3
2	20.0	8.75	6.25	15.0	2	1	3
3	20.0	22.75	2.9	25.65	4	0	4
4	0	17.0	0	17.0	0	0	0
Total	140.0	113.15 (113.2)	37.5	150.65	18	4	22

(b) Work process

Preparatory works such as delivery of materials and equipment were started on December 1, 1982. Drilling work was done from December 6 to 20, resumed on January 5, 1983, and completed on January 22. On January 24, all boring cores were delivered to the office of CORDETACNA, and the return of the crew to Lima was completed at the end of January. In succession, a report was prepared in Lima, and a final report was submitted on February 17, 1983.

(c) Addition of drillhole

Since the geological condition in the vicinity of the headrace tunnel inlet was complex, it was judged necessary for investigations in more detail to be made, and Drillhole B-4 was added.

(3) Topographic Surveying (Contractor: Vera & Moreno S.A.)

(a) Contents of work

The contracted work quantities, final work accomplished quantities, and final work accomplished amounts are shown in Table A.VI-4.

Table A.VI-4 Amount of Work Done of Survey Work

Item	Unit	Unit Price (US$)	Amount of Work Done Quantity	Amount (US$)
Triangular	point	3,470	5	17,350
Leveling	km	264	10	2,640
Topographical Survey				
Intake dam site	ha	137.64	17.8	2,450
Penstock and power-	"	137.64	31.4	4,322
house site	"			
Tailrace site	"	137.64	17.0	2,340
Total			66.2	9,112
T O T A L				29,102

(b) Work process

Preparatory works were started on December 1, 1982. Field works concerning triangulation and levelling were commenced on December 5 and completed on December 21. Calculation work related to the above was done in succession and completed on January 20, 1983. Field work in topographic surveying was commenced on January 10, 1983. Office work such as calculations and preparation of master drawings were carried out in parallel, and completed on January 28. The surveying crew departed from the field at

the end of January, drafting and other work were performed in Lima, and final products were submitted on February 28.

(c) Triangulation

There were 14 points at which the contractor carried out triangulation, but this was in accordance with the contractor's method of surveying and own judgment, with the work accomplished and paid for being the 5 points contracted.

(d) Levelling

The actual quantity of levelling was approximately 11 km, but the work accomplished and paid for was the contracted quantity of 10 km.

(e) Topographic Surveying

The product was submitted by the contractor on February 24, 1983, but defects were found and resurveying was ordered, with the final product submitted on February 28.

(4) Overall Evaluation

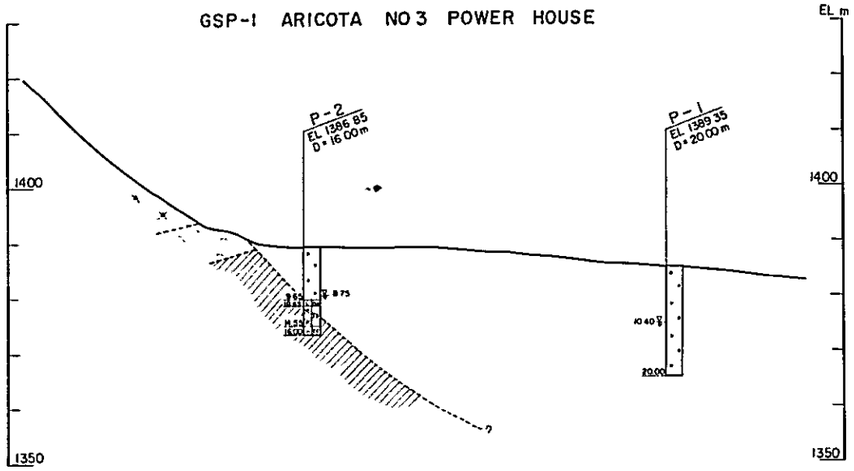
The results of the above investigations have been submitted in the forms of the following reports:

i) Field Investigaton Report on Geophysical Exploratory Work for Water Supply for Aricota No. 3 Hydroelectric Power Development Project, Jan. 1983, Jose E. Arce

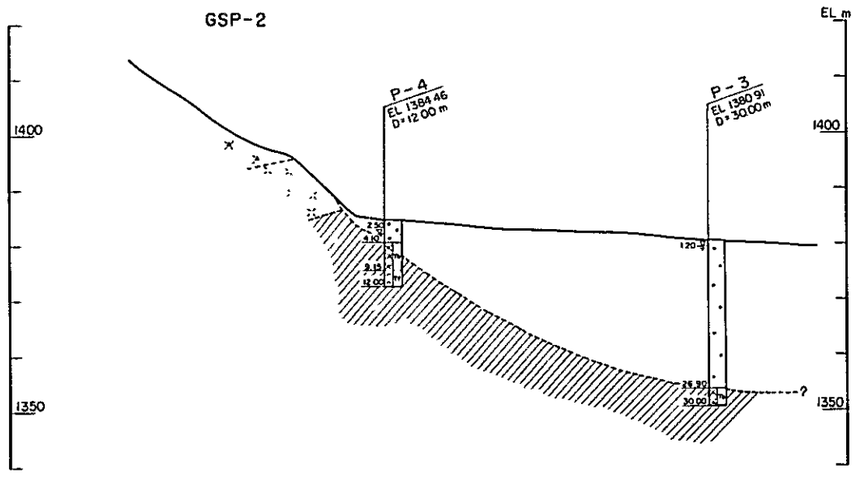
ii) Field Investigation Report on Exploratory Drilling, Lima, Feb. 1983, GEOTEC S.A.

iii) Levantamiento Topografico, Section Chintary-Chulibaya, Feb. 1983, Vera & Moreno S.A.

GSP-1 ARICOTA NO 3 POWER HOUSE



GSP-2



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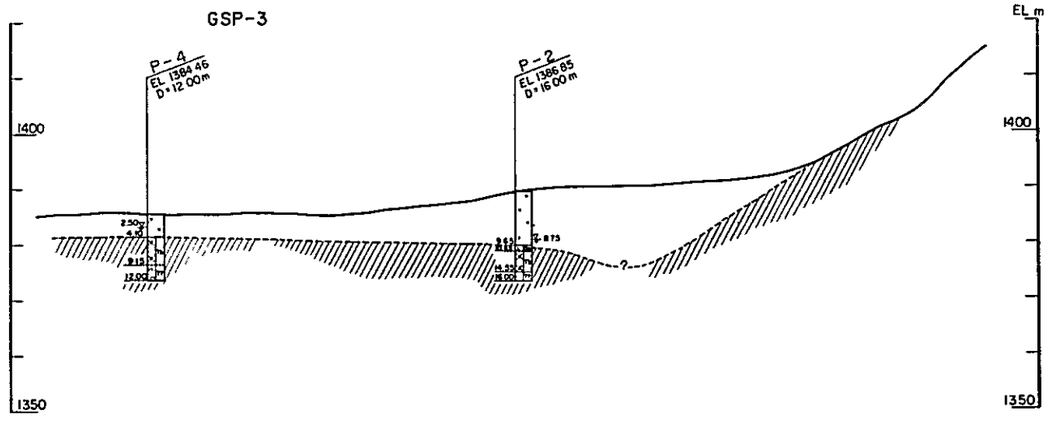
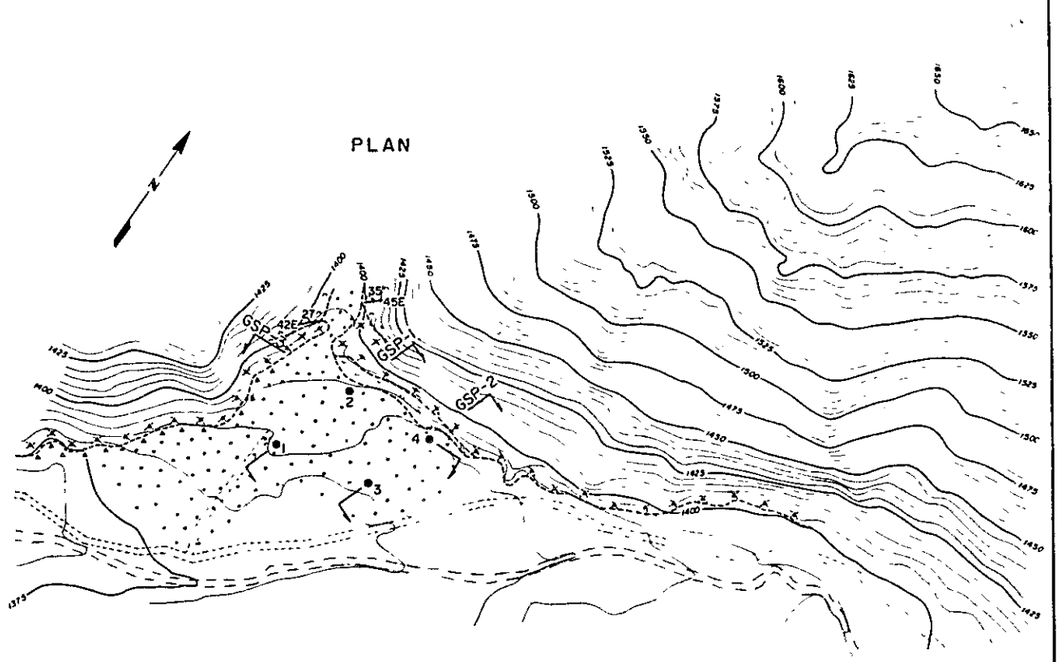


PLAN



LEGEND

- ALLUVIUM AND TALUS DEPOSIT
- ANDESITIC TUFF
- RHYOLITIC TUFF
- TUFF-BRECCIA
- WELDED PYROCLASTIC ROCK
- RHYOLITE OR DACITE
- BED ROCK (TUFF-BRECCIA, DACITE / RHYOLITE, TUFF)
- BORING
- SECTION
- DIP STRIKE OF BEDDING

PLAN 0 200m

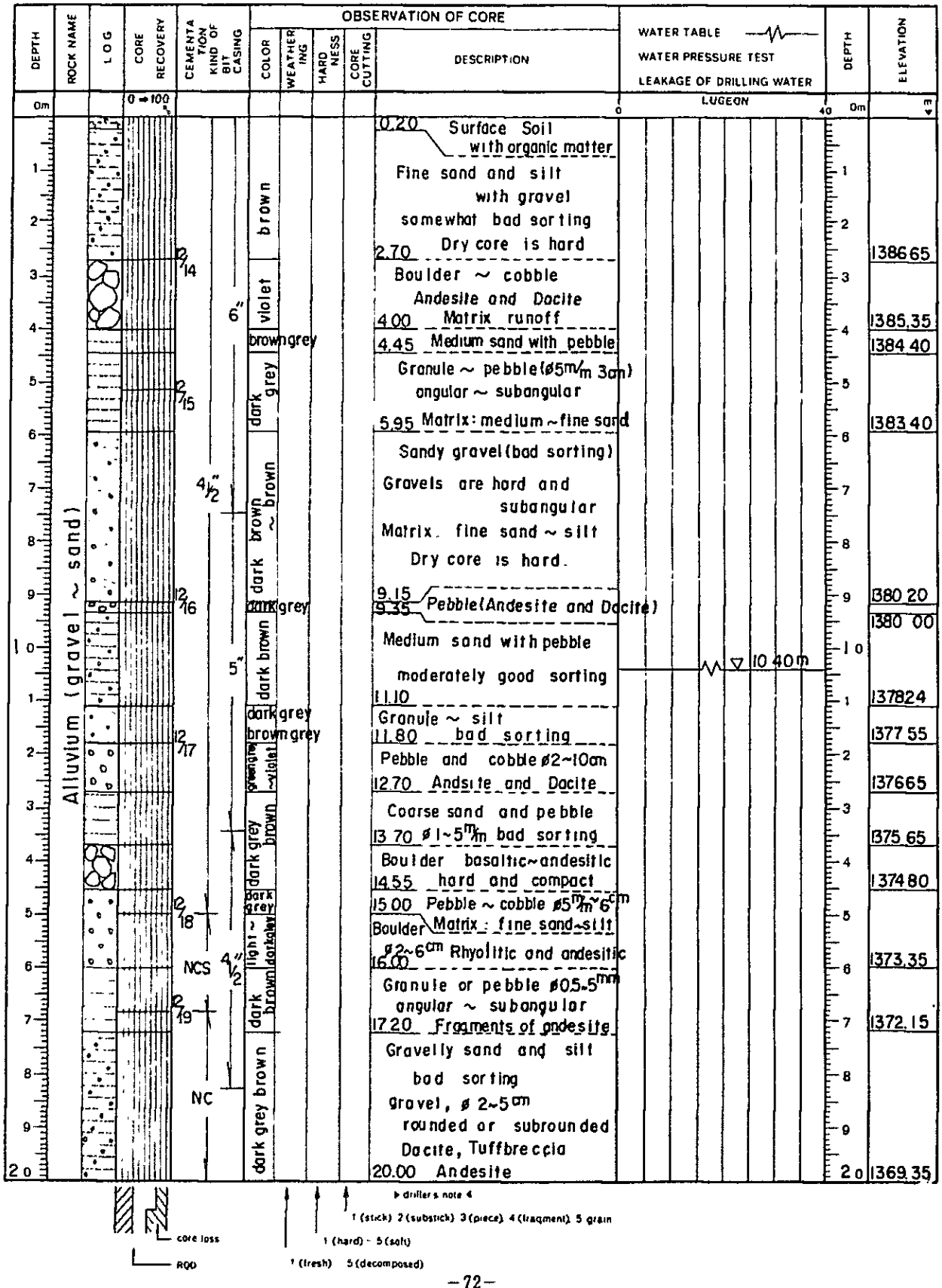
SECTION 0 50m

WATER SUPPLY FOR THE LAKE ARICOTA AND ARICOTA No 3 PROJECT
ARICOTA NO 3 HYDROELECTRIC POWER POWER HOUSE GEOLOGIC PLAN AND SECTION (BORING LOCATION)
Dec. 1983

GEOLOGIC LOG OF DRILL HOLE

PROJECT Aricota No. 3 HOLE No P - 1 (SHEET 1 OF 1)

LOCATION	Powar station	DEPTH OF HOLE	20 m	COMMENCED	14 - 12 - 82
ELEVATION	1389.35 m	DEPTH OF OVERBURDEN	— m	COMPLETED	07 - 1 - 83
COORDINATE	—	LENGTH OF ROCK DRILLING	0 m	DRILLED BY	F.Vilca - V.Chino
ANGLE FROM HORIZONTAL	90°	TOTAL LENGTH OF CORE	20 m	LOGGED BY	T. Murakami
BEARING OF ANGLE HOLE	—	CORE RECOVERY	100 %		



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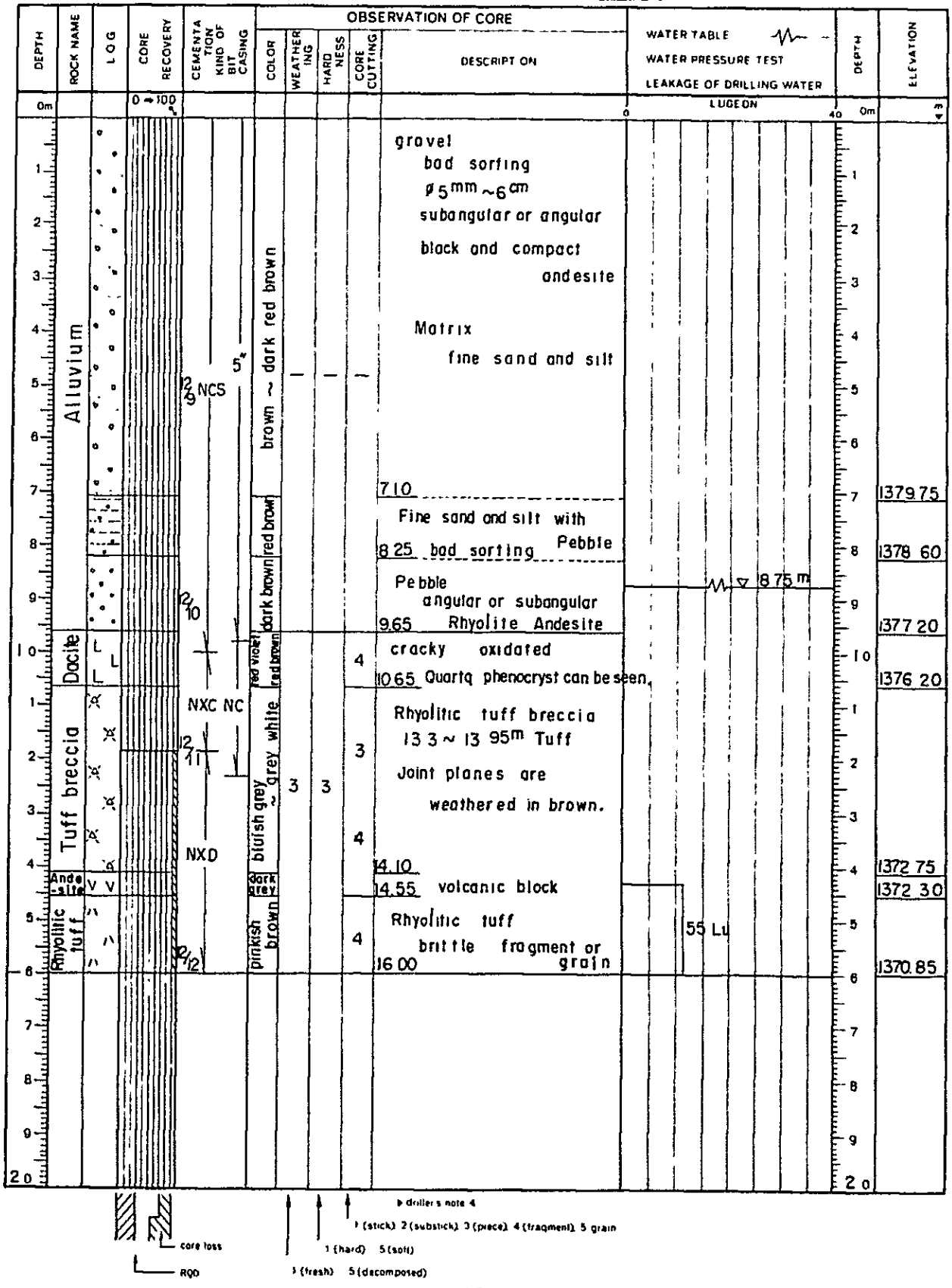
TOKYO JAPAN

GEOLOGIC LOG OF DRILL HOLE

PROJECT Aricota No 3 HOLE No P - 2 (SHEET 1 OF 1)

LOCATION	Power station	DEPTH OF HOLE	16 m	COMMENCED	9 - 12 - 82
ELEVATION	1386 85 m	DEPTH OF OVERBURDEN	___ m	COMPLETED	12 - 12 - 82
COORDINATE	___	LENGTH OF ROCK DRILLING	6.35 m	DRILLED BY	E.Vilca - V.Chino
ANGLE FROM HORIZONTAL	90°	TOTAL LENGTH OF CORE	15.55 m	LOGGED BY	T Murakami
BEARING OF ANGLE HOLE	___	CORE RECOVERY	97.2 %		



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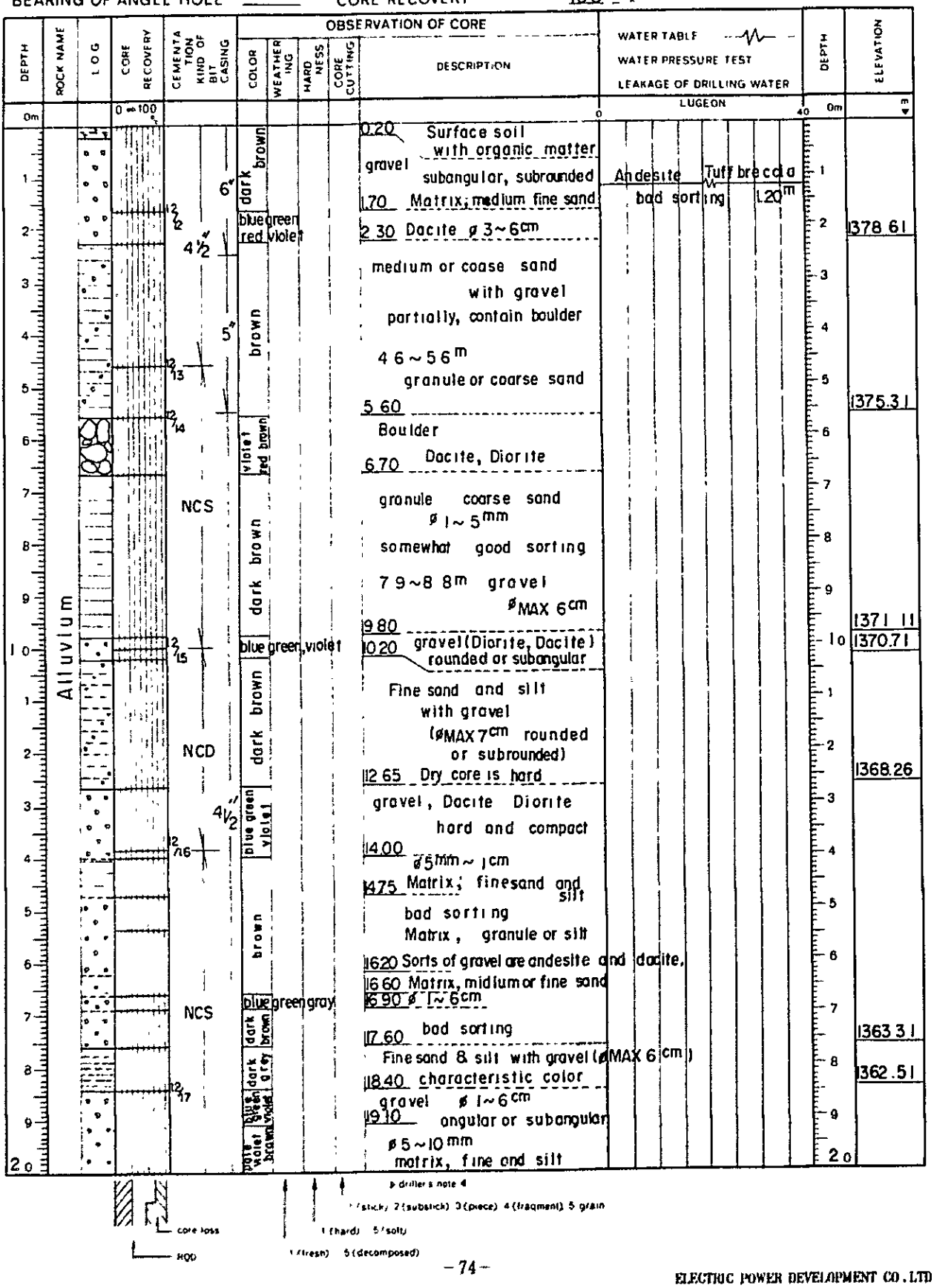
GEOLOGIC LOG OF DRILL HOLE

PROJECT Aricota No 3 HOLE No P-3 (SHEET 1 OF 2)

LOCATION	Power station	DEPTH OF HOLE	30 m	COMMENCED	12-12-82
ELEVATION	1380 91 m	DEPTH OF OVERBURDEN	26 9 m	COMPLETED	7-1-83
COORDINATE		LENGTH OF ROCK DRILLING	3 1 m	DRILLED BY	C.Huayta-G.Cardenas
ANGLE FROM HORIZONTAL	90°	TOTAL LENGTH OF CORE	30 m	LOGGED BY	T.Murakami
BEARING OF ANGLE HOLE		CORE RECOVERY	100 %		



core loss
RQD

ELECTRIC POWER DEVELOPMENT CO. LTD
TOKYO JAPAN

GEOLOGIC LOG OF DRILL HOLE

PROJECT Aricota No 3 HOLE No P-3 (SHEET 2 OF 2)

LOCATION	Power station	DEPTH OF HOLE	30 m	COMMENCED	12-12-82
ELEVATION	1380 91 m	DEPTH OF OVERBURDEN	26 9 m	COMPLETED	7-1-83
COORDINATE		LENGTH OF ROCK DRILLING	3 1 m	DRILLED BY	C Huayta-G Cardenas
ANGLE FROM HORIZONTAL	90 °	TOTAL LENGTH OF CORE	30 m	LOGGED BY	T. Murakami
BEARING OF ANGLE HOLE		CORE RECOVERY	100 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	DEPTH	ELEVATION
2 0m			0 → 100 %							0 40	2 0m	1360 71
1	Alluvium				pale violet / brown				20.20 gravel, bad sorting Silt with granule 21.20 bad sorting		1	1359 71
2			12/15		dark brown				Fine or medium sand 22.00 with granule silt		2	1358 91
					dark grey / brown				Gravel (Andesite Docite) 22.55-65 fine sand, good sorting			1358 36
3				4½"	dark violet	brown			23.15 Granvle ø 1 ~ 5mm small fragment of dacite		3	1357 76
4					dark grey				Sand with gravel fine or medium sand		4	
5			12/19 NCS						25.00 gravel, øMAX 7cm rounded		5	1355 91
6					red violet brown, black				gravel, øMAX 15cm rounded Diorite Andesite Docite etc. 26.90 Matrix, medium sand		6	1354 01
7	Tuff breccia				grey violet	3		3	27.60 Color of matrix is light green		7	1353 31
8					dark violet grey	3 ~ 4	3	4	hard and brittle fragment		8	1352 06
9					violet grey / violet grey red	3		3	28.85 29.25 Brown clay adheres to joint plane		9	1351 21
			6/1		grey violet	4		3~4	29.70 Joint plane is distinguished for brown oxygenation 30.00 Red brown rhyolitic tuff and tuff breccia		30	1350 91

core loss
RQD

※ driller's note 4
1 (stick) 2 (substick) 3 (piece) 4 (fragment) 5 grain
1 (hard) ~ 5 (soft)
1 (fresh) 5 (decomposed)

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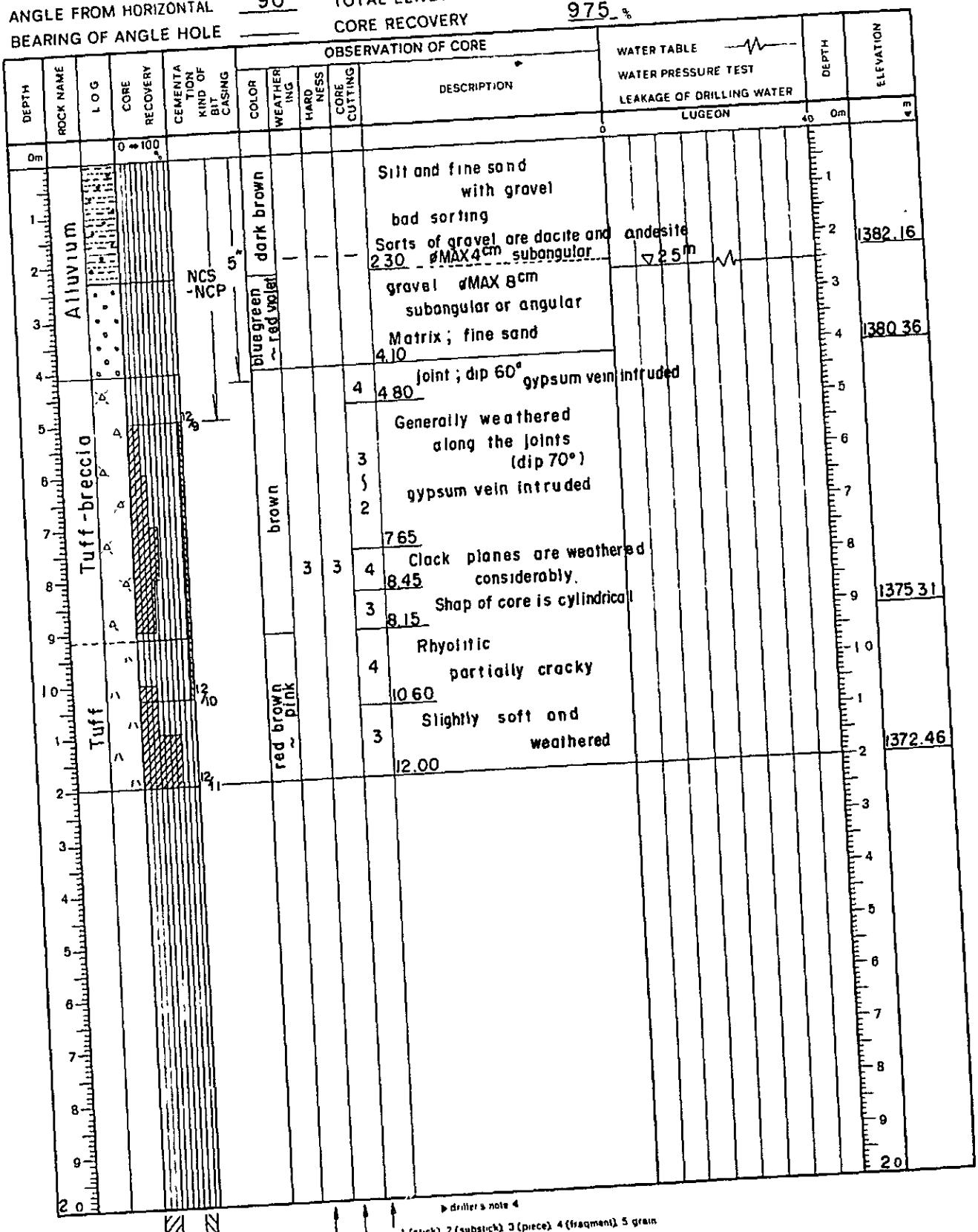
GEOLOGIC LOG OF DRILL HOLE

PROJECT Aricota No 3 HOLE No P-4 (SHEET 1 OF 1)

LOCATION Power station
ELEVATION 1384.46 m
COORDINATE
ANGLE FROM HORIZONTAL 90°
BEARING OF ANGLE HOLE

DEPTH OF HOLE 12 m
DEPTH OF OVERBURDEN 4.1 m
LENGTH OF ROCK DRILLING 7.9 m
TOTAL LENGTH OF CORE 11.7 m
CORE RECOVERY 97.5 %

COMMENCED 9-12-82
COMPLETED 11-12-82
DRILLED BY C Huayta-G Cardenas
LOGGED BY T Murakami



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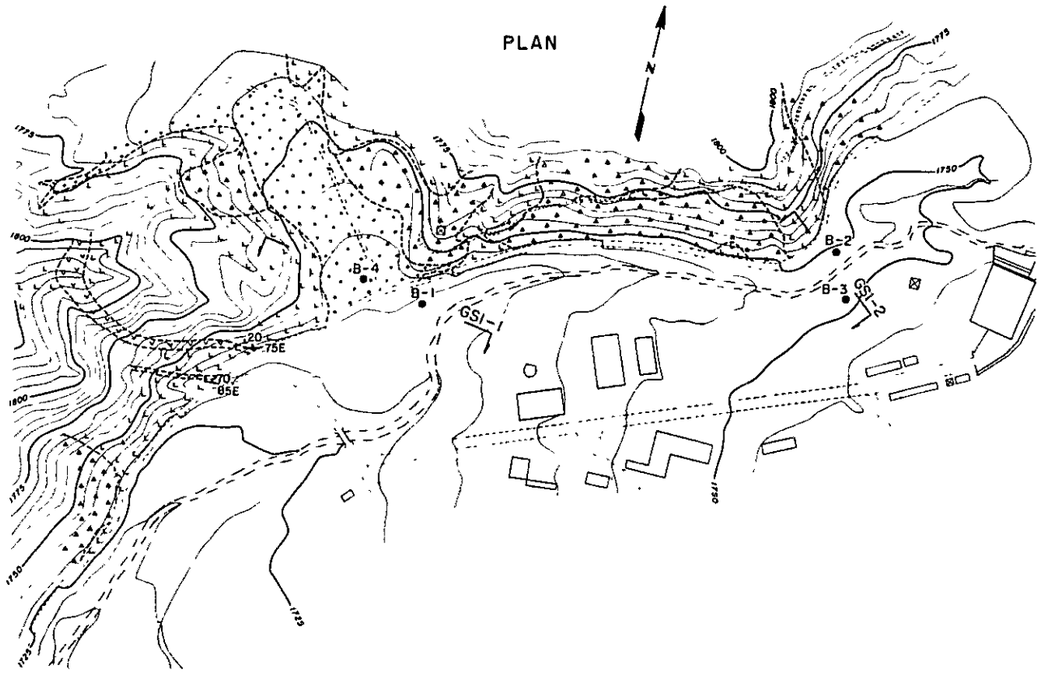
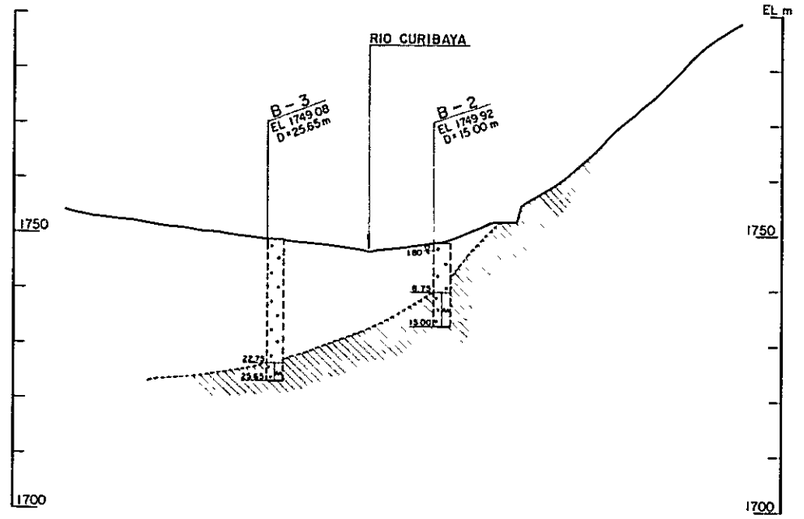
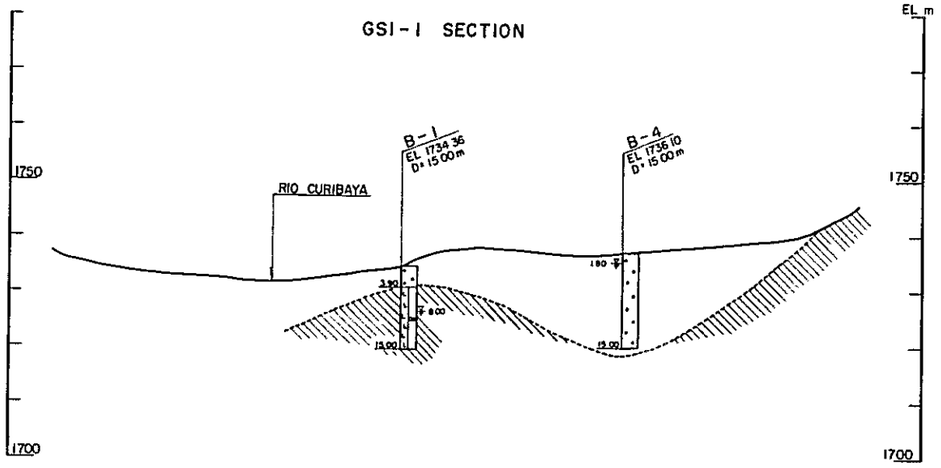
PLAN



GSI-2 SECTION



GSI-1 SECTION



LEGEND

- TALUS DEPOSIT
- ALLUVIUM
- ANDESITE
- RHYOLITE, RHYOLITIC TUFF
- BED ROCK (ANDESITE, RHYOLITE, PYROCLASTIC ROCK)
- GROUND WATER LEVEL
- BORING LOCATION
- SECTION
- DIP STRIKE OF BEDDING

PLAN 0 200m

SECTION 0 50m

WATER SUPPLY FOR THE LAKE ARICOTA AND ARICOTA No 3 PROJECT

ARICOTA NO3 HYDROELECTRIC POWER INTAKE DAM

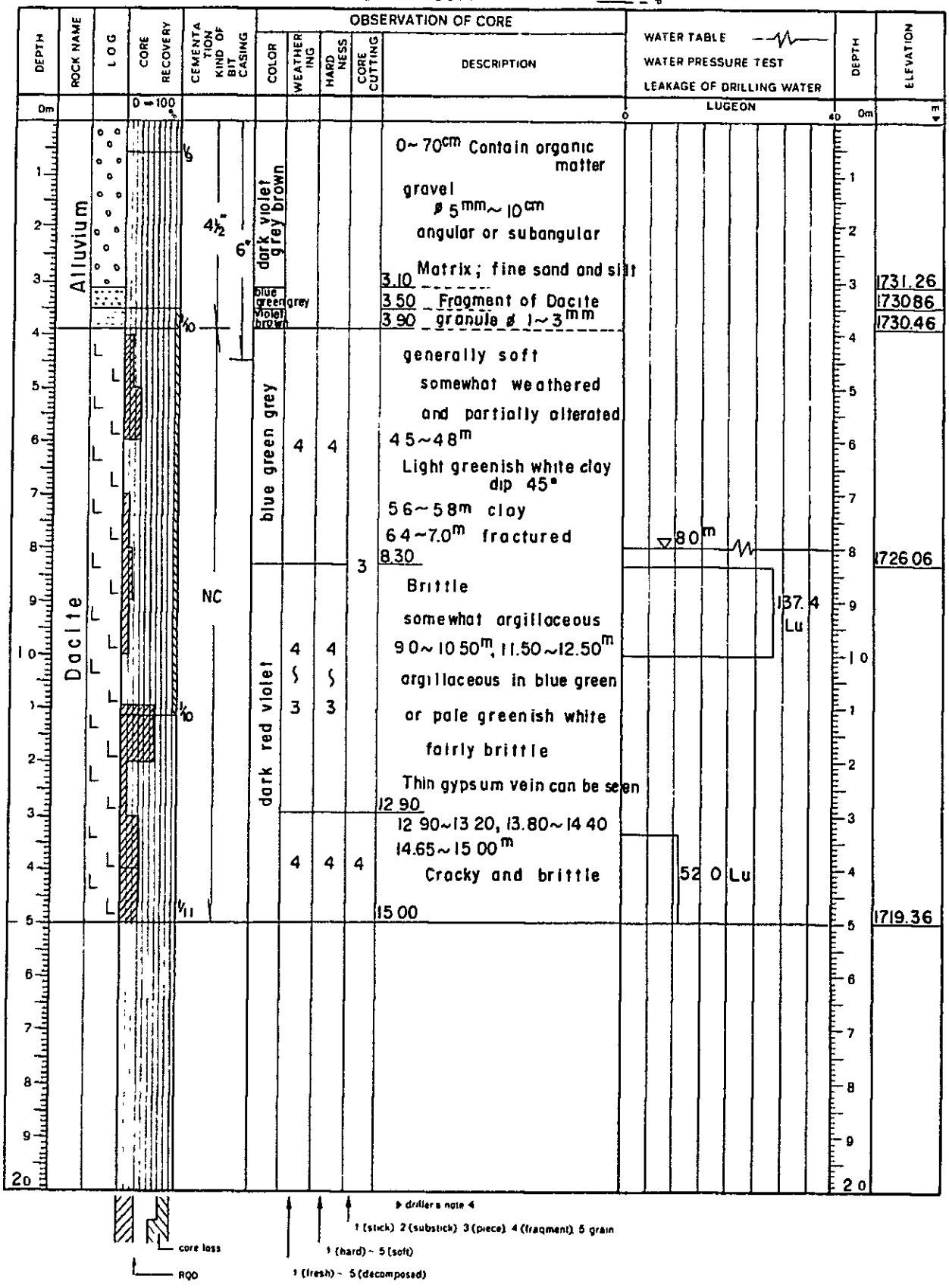
GEOLOGIC PLAN AND SECTIONS (BOLING LOCATION)

Dec. 1983

GEOLOGIC LOG OF DRILL HOLE

PROJECT Aricota No.3 HOLE No B-1 (SHEET 1 OF 1)

LOCATION	Intake Dam	DEPTH OF HOLE	15 m	COMMENCED	9-1-83
ELEVATION	1734.36 m	DEPTH OF OVERBURDEN	3.9 m	COMPLETED	11-1-83
COORDINATE		LENGTH OF ROCK DRILLING	11.1 m	DRILLED BY	C.Huayta-G.Cardenas
ANGLE FROM HORIZONTAL	90°	TOTAL LENGTH OF CORE	14.7 m	LOGGED BY	T.Murakami
BEARING OF ANGLE HOLE		CORE RECOVERY	98 %		



ELECTRIC POWER DEVELOPMENT CO., LTD.
TOKYO JAPAN

GEOLOGIC LOG OF DRILL HOLE

PROJECT Aricota No 3 HOLE No B-2 (SHEET 1 OF 1)

LOCATION	Intake Dam	DEPTH OF HOLE	15 m	COMMENCED	10 - 1 - 83
ELEVATION	1749 92 m	DEPTH OF OVERBURDEN	8.75 m	COMPLETED	14 - 1 - 83
COORDINATE		LENGTH OF ROCK DRILLING	625 m	DRILLED BY	F.Vilca-V.Chine
ANGLE FROM HORIZONTAL	90°	TOTAL LENGTH OF CORE	15 m	LOGGED BY	T. Murakami
BEARING OF ANGLE HOLE		CORE RECOVERY	100 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY 0 ➡ 100 %	CEMENTATION KIND OF BIT CASING	COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	DEPTH	ELEVATION
0m									WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON 0 – 40	0m	▼3
	Alluvium		1/10		dark violet				Gravel talus deposite angular fragment φ1~10cm		
									▽1.8m		
									2.35 hard and fresh		1384.50
					dark brown violet				2.75 granule or coarse sand		
					dark violet blue green grey				3.40 Boulder, Andesite		
					blue green grey				Pebble		
				6"	thin yellow white				4.30 Andesite, Tuffbreccia		1382.50
			1/11						Granule and coarse sand		
				4"					5.20 φMAX 9cm bad sorting		1381.65
					brown				Granule and coarse sand good sorting 6.15~6.25m		
									Diorite boulder 2.50		1379.35
			1/12		dark brown				Andesite boulder φ5mm~2cm 8.05 Lower; granule or sand		
					blue green violet				Boulder 8.75 Rhyolite Andesite Tuffbreccia		1378.10
	Andesite			4½"		2 3		4	Somewhat craky and brittle 10.10 Quartz phenocryst, φ2mm		1376.75
			1/13		violet			3	Shape of core is short or cylindrical. 11.60 slightly weathered		1375.25
						3	3	4	12.30 partially cracky		1374.55
				NX				3	13.40 13.80 cracky		1373.45 1373.05
			1/14						Gypsum vein can be seen. thickness 8mm 15.00 dip 80°~90°		1371.85
									Lu = 2.40		

core loss

RQD

▶ driller's note ◀

1 (stick) 2 (substick) 3 (piece) 4 (fragment) 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)

ELECTRIC POWER DEVELOPMENT CO. LTD
TOKYO JAPAN

GEOLOGIC LOG OF DRILL HOLE

PROJECT Aricota No.3 HOLE No B-3 (SHEET 1 OF 2)

LOCATION	Intake Dam	DEPTH OF HOLE	25.65 m	COMMENCED	13 - 1 - 83
ELEVATION	1749.08 m	DEPTH OF OVERBURDEN	22.75 m	COMPLETED	18 - 1 - 83
COORDINATE		LENGTH OF ROCK DRILLING	2.9 m	DRILLED BY	G. Cardenas
ANGLE FROM HORIZONTAL	90°	TOTAL LENGTH OF CORE	25.65 m	LOGGED BY	T. Murakami
BEARING OF ANGLE HOLE		CORE RECOVERY	100 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER	DEPTH	ELEVATION
0m			0 → 100 %							0 ▽ 0.0m LUGEON 40	0m	m
	Alluvium			4½"	blue green grey ~ blue green				Gravel with organic matter ø 2~9cm angular or subangular Andesite			
									2.90			1378.01
					brown grey				Granule good sorting			
									4.00 Dacite & Andesite			1376.91
					dark grey				4.50 medium sand			1376.41
			1/3	6"	bluish dark grey				Granule or pebble ø2mm~2cm			
									5.50 matrix ; fine sand			1375.41
					dark blue green grey				Gravel badsorting ø 1~8cm			
									6.90 matrix , granule or fine sand			1374.01
				4"	blue green brown grey				Granule ø 3mm~1cm			
									7.70			1373.71
					dark grey				8.10 Gravel ø 2~7cm			1372.81
					dark blue grey				Gravel granule medium sand			
									9.00 ØMAX 2cm			1371.91
					black				Gravel ø 1~7cm subrounded or subangular			
			1/3						10.00 matrix ; fine sand or silt			1370.91
					blue grey red brown				Granule ø 3~5mm			
									10.70 Andesite and Dacite			1370.21
					bluish green violet grey				Gravel ø 1~5cm subangular			
				5"					11.70 matrix ; granule ø 3~18cm			
									12.30 cobble or boulder			1368.61
					brown				Granule or coarse sand good sorting			
				NC					13.80			1367.11
					dark violet ~ blue grey				Gravel Andesite , Dacite			
			1/4						15.00 granule or pebble			1365.91
				4½	violet grey				15.70 ø 1~5cm Boulder Andesite and Tuff			1365.21
									17.00 matrix ; cryptocrystalline			1363.91
					dark grey, red violet, blue green				Gravel ø 3~20cm rounded or subangular Dacite . Andesite			
			1/5	NC								
				NX								
20			1/6								20	

core loss
RQD
driller's note 4
1 (stick) 2 (substick) 3 (piece) 4 (fragment) 5 grain
1 (hard) - 5 (soft)
1 (fresh) 5 (decomposed)

ELECTRIC POWER DEVELOPMENT CO., LTD.
TOKYO JAPAN

GEOLOGIC LOG OF DRILL HOLE

PROJECT Aricota No.3 HOLE No B - 3 (SHEET 2 OF 2)

LOCATION	Intake Dam	DEPTH OF HOLE	25.65 m	COMMENCED	13 - 1 - 83
ELEVATION	1749.08 m	DEPTH OF OVERBURDEN	22.75 m	COMPLETED	18 - 1 - 83
COORDINATE		LENGTH OF ROCK DRILLING	2.9 m	DRILLED BY	G. Cardenas
ANGLE FROM HORIZONTAL	90°	TOTAL LENGTH OF CORE	25.65 m	LOGGED BY	T Murakami
BEARING OF ANGLE HOLE		CORE RECOVERY	100 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	DEPTH	ELEVATION
2.0m			0 → 100 %							0 40	2.0m	43
1	Alluvium			NC	dark grey, red violet, blue green	—	—	—	Gravel ø 3 ~ 20 cm rounded or subangular Dacite predominant			
22.75												1358.16
3	Andesite			NX	violet	3	3	4	cracky dip 20°, 40°			
23.45												
								3	23.95 Quartz phenocryst is coarse.			
								4	hard but cracky			
25.10									several thin veins(gypsum?) dip 80°			
								3	25.65 Crack planes are weathered, dip 70°, 10 ~ 20°			1355.26
9.0												
30												
1												
2												
3												
4												
5												
6												
7												
8												
9												
0												

core loss

RQD

▷ driller's note 4

1 (stick) 2 (substick) 3 (piece) 4 (fragment) 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)

ELECTRIC POWER DEVELOPMENT CO., LTD.
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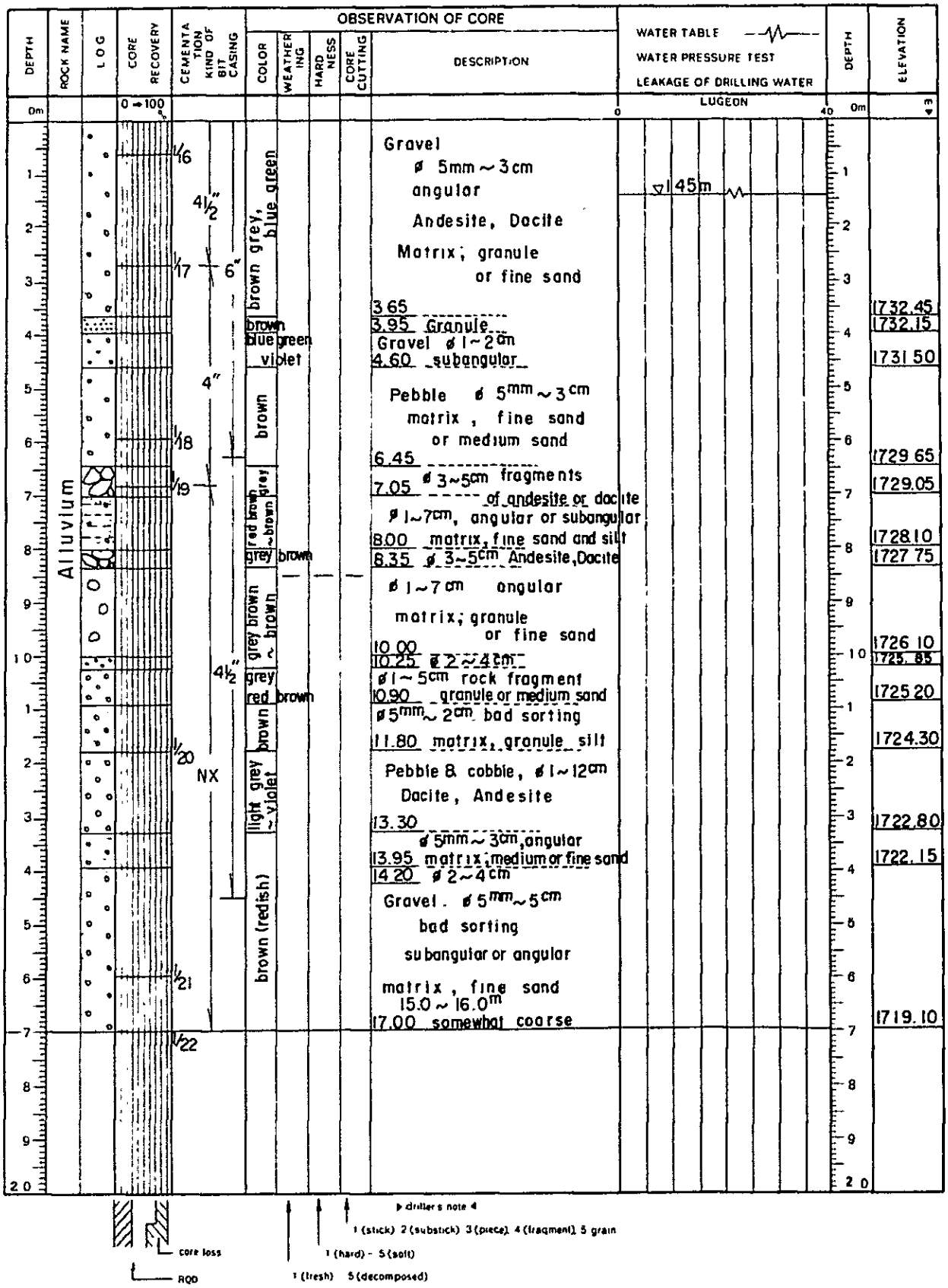
GEOLOGIC LOG OF DRILL HOLE

PROJECT Aricota No 3 HOLE No B – 4 (SHEET 1 OF 1)

LOCATION	Channel	DEPTH OF HOLE	17 m	COMMENCED	16 - 1 - 83
ELEVATION	1736.10 m	DEPTH OF OVERBURDEN	m	COMPLETED	22 - 1 - 83
COORDINATE		LENGTH OF ROCK DRILLING	0 m	DRILLED BY	Chino, Vilca
ANGLE FROM HORIZONTAL	90°	TOTAL LENGTH OF CORE	17 m	LOGGED BY	T Murakami
BEARING OF ANGLE HOLE		CORE RECOVERY	100 %		



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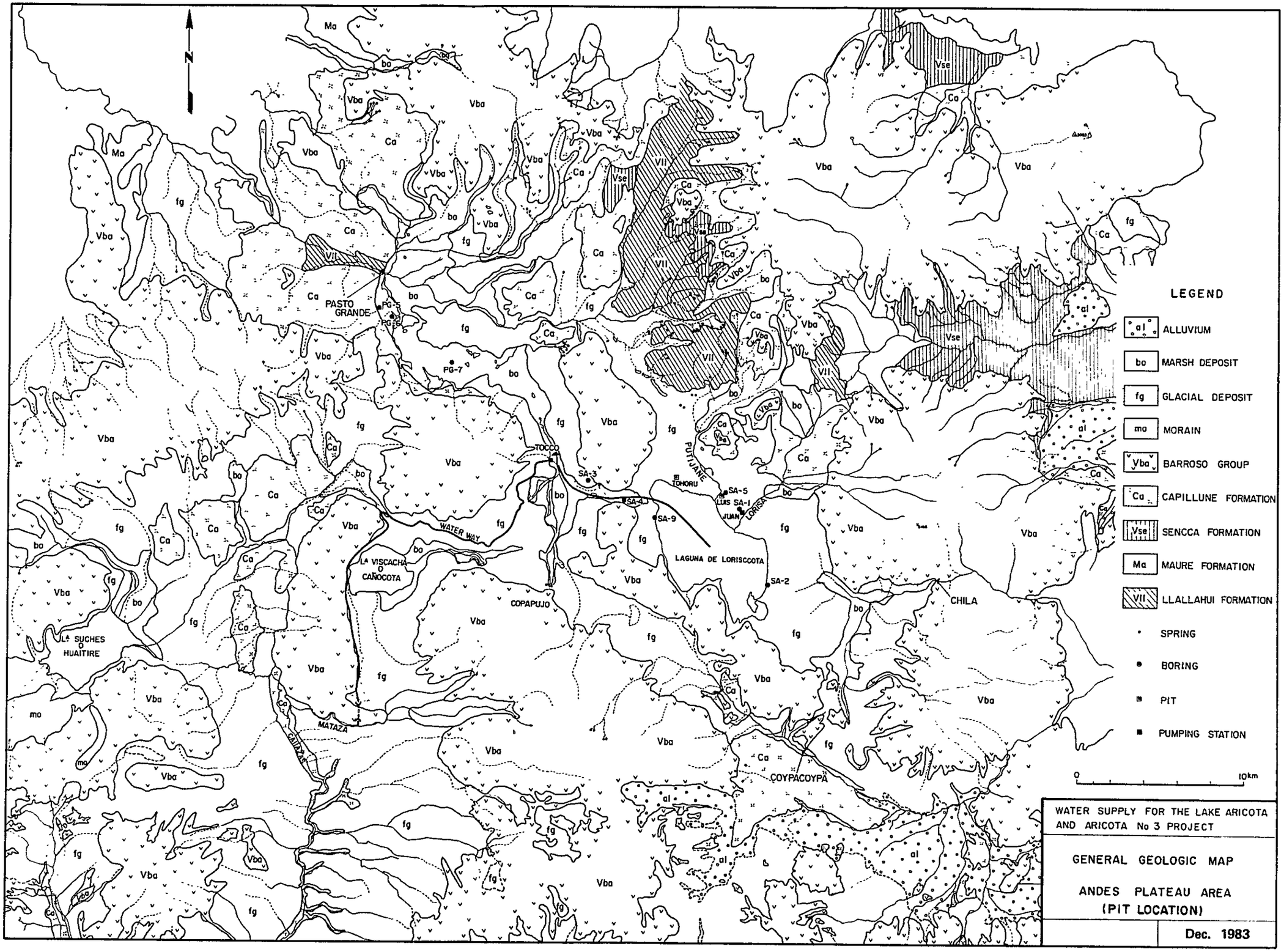
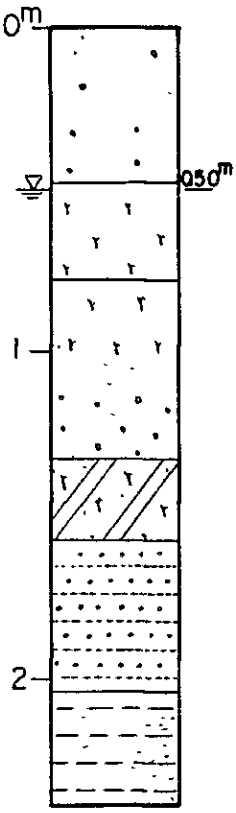

N
PASTO GRANDE
PG-5
PG-6
PG-7
TOCCO
SA-3
SA-4
SA-9
SA-5
SA-1
SA-2
TOHORU
LUIS JUAN
LORISEA
PUTIJANE
WATER WAY
LA VISCACHA O CAÑOCOTA
LAGUNA DE LORISCCOTA
COPAPUJO
CHILA
LA SUCHES O HUAITIRE
MATAZA
CAMIRAN
COYPACOYPA
LEGEND
al ALLUVIUM
bo MARSH DEPOSIT
fg GLACIAL DEPOSIT
mo MORAIN
Vba BARROSO GROUP
Ca CAPILLUNE FORMATION
Vse SENCCA FORMATION
Ma MAURE FORMATION
VII LLALLAHUI FORMATION
SPRING
BORING
PIT
PUMPING STATION
0
10km
WATER SUPPLY FOR THE LAKE ARICOTA AND ARICOTA No 3 PROJECT
GENERAL GEOLOGIC MAP
ANDES PLATEAU AREA
(PIT LOCATION)
Dec. 1983

Geologic log of pit "Luis"



0.48m

medium to coarse sand. grey brown
Sorts of particle are angular quartz and mica
ø2 5mm. contains fine rock fragment and pebble

0.78m

Black fine sand with organic matter (organic soil)
Particles of mica and quartz are predominant.

Coarse sand with organic matter
Black rock fragments are predominant.

1.33m

medium to coarse sand with clay. dark blue green

1.58m

The majority of this is rock fragment. Permiability is rather little.

Alternation of coarse sand and gravel
dark grey green (about 3cm width)
Angular andesite fragment with organic matter

2.04m

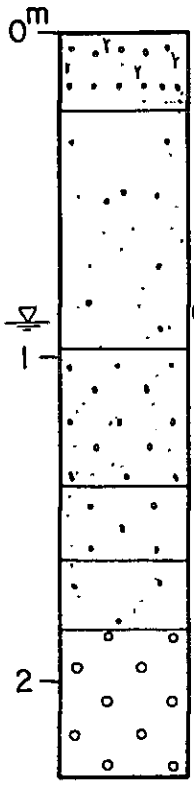
Fine sand and silt. brown grey
Particle of mica is much. partially contains pebble (ø1cm)

2.39m

The location of this pit is at a distance 30m apart from the river putijane to east, and is distant 9m from boring (SA-5) site. The water (3.75ℓ/min) well up from this boring hole (ø 30 cm).

WATER SUPPLY FOR THE LAKE ARICOTA AND ARICOTA No.3 PROJECT	
EXPLORATORY PIT LORISCCOTA NORTH SHORE LUIS	

Geologic log of pit "Juan"



0.24m — Fine sand with organic matter. dark brown grey Particles are mainly quartz and mica. contains two thin granule layers

0.90m

0.98m — medium sand with pebble grey brown good sorting Sorts of particles are quartz, mica and fine rock -fragment angular or subangular

1.40m — Pebble ø 1~4cm, red brown or brown oval or subangular matrix ; glanule & coarse sand loose and permeable

1.63m — Gravel with sand. ø 5mm~3cm. subangular light grey, red brown, dark red brown, brown

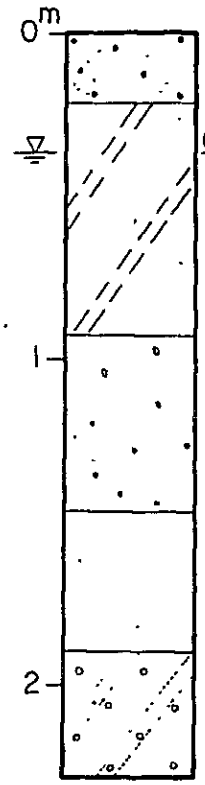
1.84m — Sand with gravel ø 5mm~4cm, subrounded andesite light grey brown or red brown

2.29m — Gravel with yellow brown silt and clay rather compact, oval andesite

The location of this pit is at a distance 60m apart from the river Lorisa, and is distant to east 6m from boring (SA-1).

WATER SUPPLY FOR THE LAKE ARICOTA AND ARICOTA No.3 PROJECT	
EXPLORATORY PIT LORISCCOTA NORTH SHORE JUAN	

Geologic log of pit "Tohoru"



0.22m — Gravel . brown angular or subangular ø 1cm matrix ; granule and sand

0.37m — Sand with silt (Organic matter is much.) dark grey or dark brown

0.93m

Coarse sand with gravel grey
Quartz grain is conspicuous, Origin of particle is andesite or dacite partially contains rock fragment with organic matter very loose

1.47m

Brown coarse sand, volcanic rock fragments, Oxidation is conspicuous.

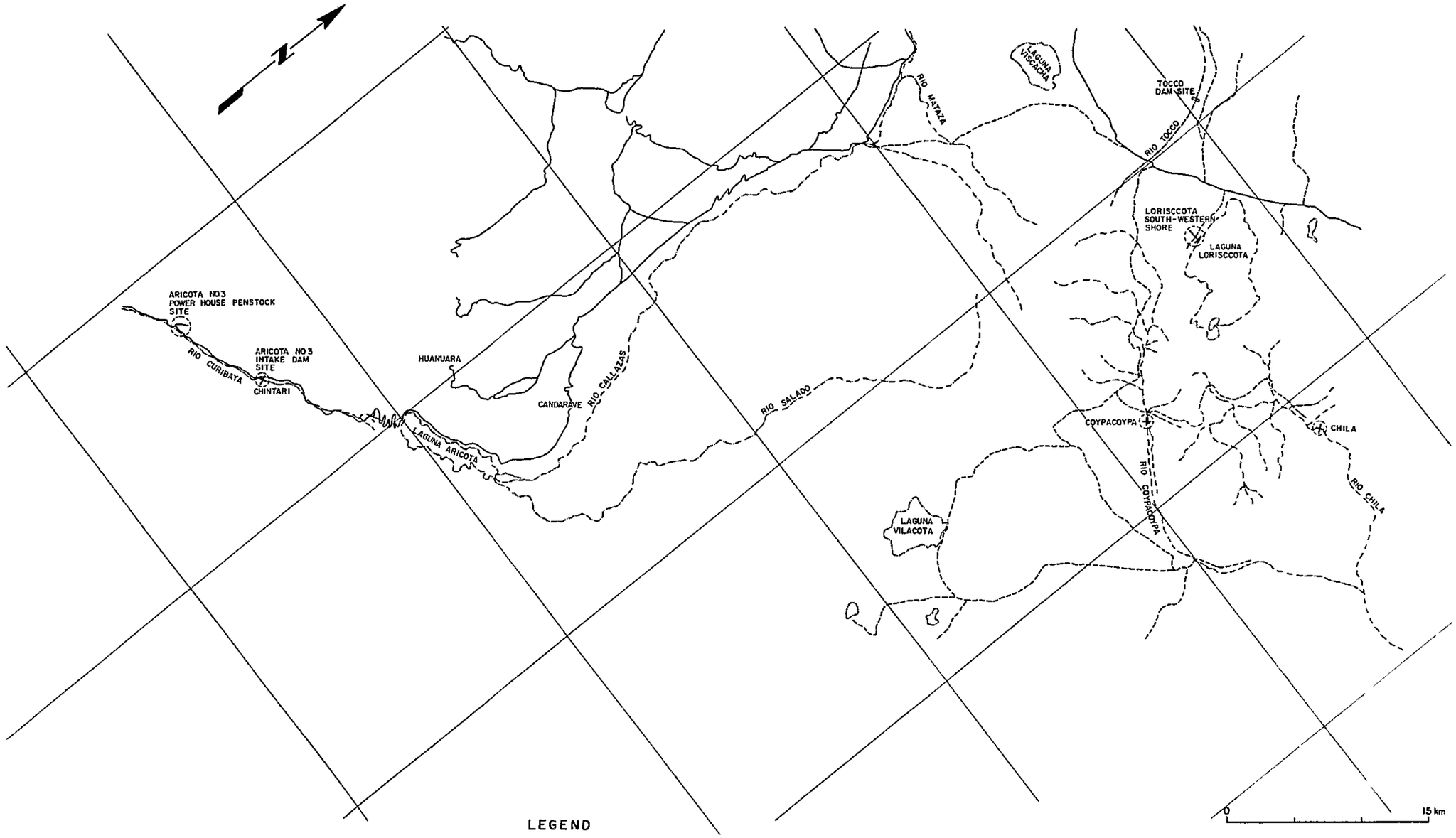
1.90 m

Gravel with sand, dark yellow grey, Lower part is compact .

2.28m

The location of the pit is in pampa near Lunipujo. This pampa is located in the north shore of the lake Lorisccota.

WATER SUPPLY FOR THE LAKE ARICOTA AND ARICOTA No.3 PROJECT	
EXPLORATORY PIT LORISCCOTA NORTH SHORE TOHORU	



LEGEND

- LAKE
- RIVER
- ROAD
- SEISMIC PROSPECTING SITE

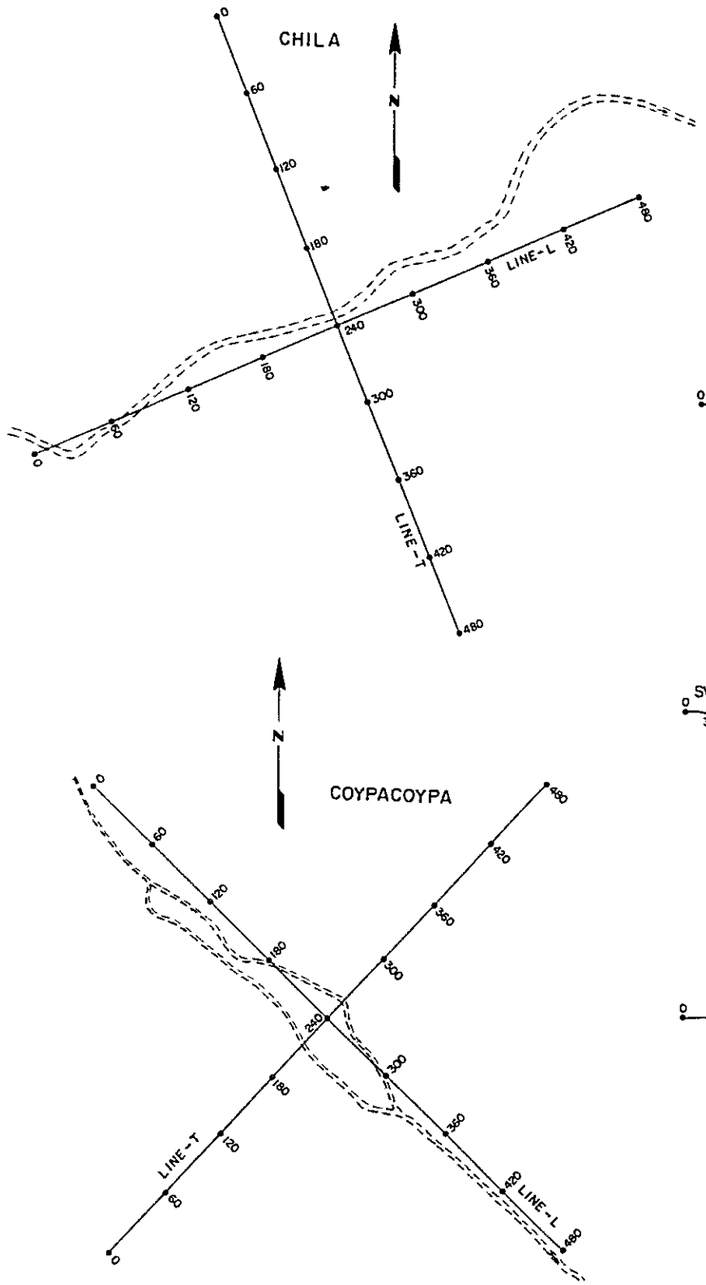
WATER SUPPLY FOR THE LAKE ARICOTA AND ARICOTA No 3 PROJECT

SEISMIC PROSPECTING

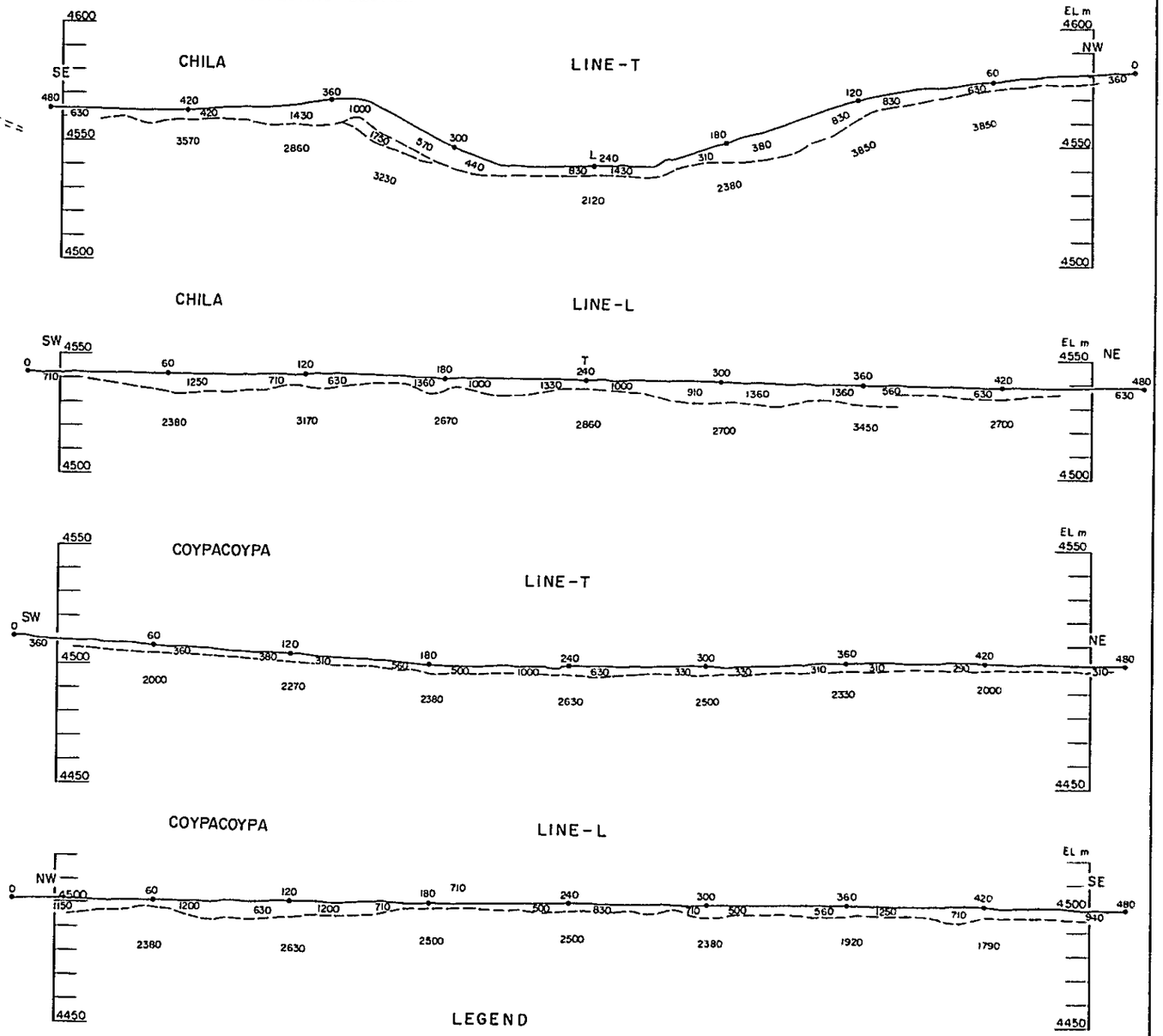
LOCATION MAP

Dec. 1983

LOCATION OF MEASUREMENT LINE



SEISMIC PROSPECTING SECTION



LEGEND

360/470 SEISMIC WAVE VELOCITY m/s

• SHOT POINT

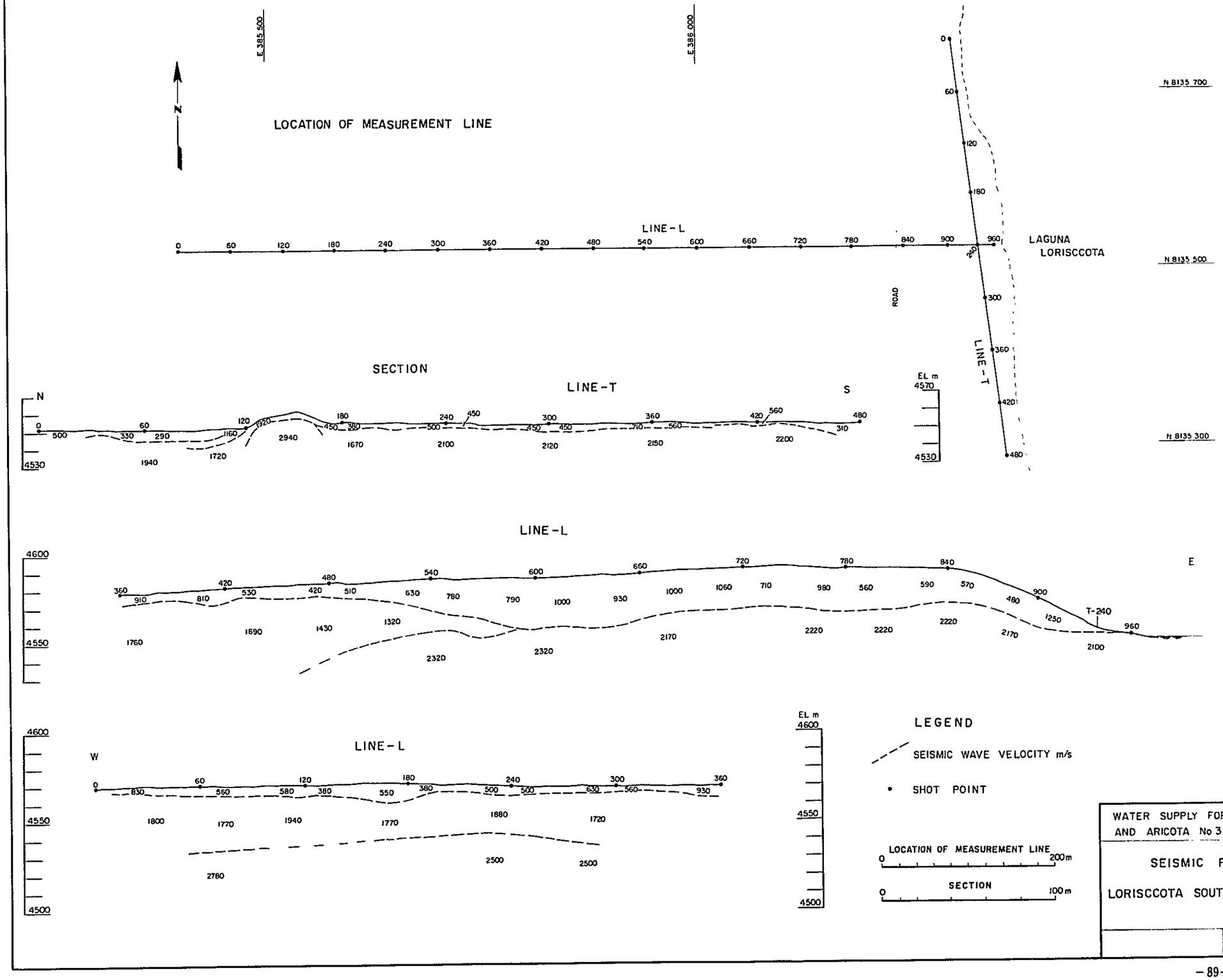
LOCATION OF MEASUREMENT LINE 0 — 200m

SECTION 0 — 100m

WATER SUPPLY FOR THE LAKE ARICOTA AND ARICOTA No 3 PROJECT

SEISMIC PROSPECTING CHILA AND COYPACOYPA SECTIONS

Dec. 1983



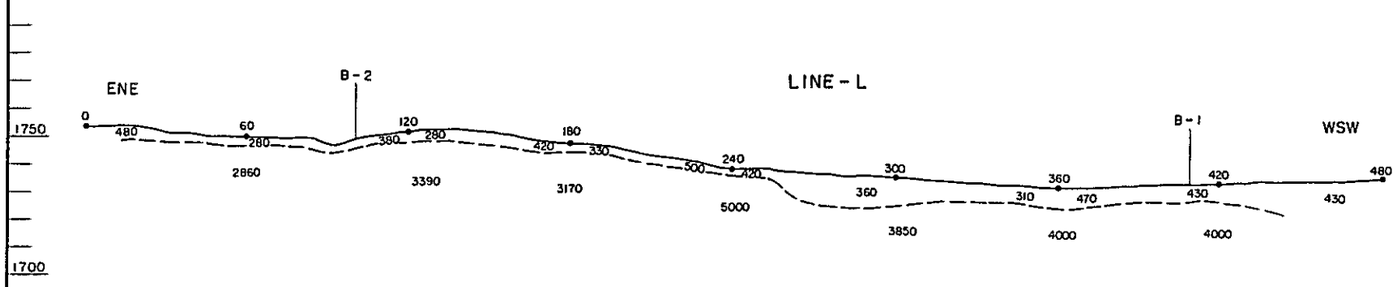
WATER SUPPLY FOR THE LAKE ARICOTA AND ARICOTA No 3 PROJECT

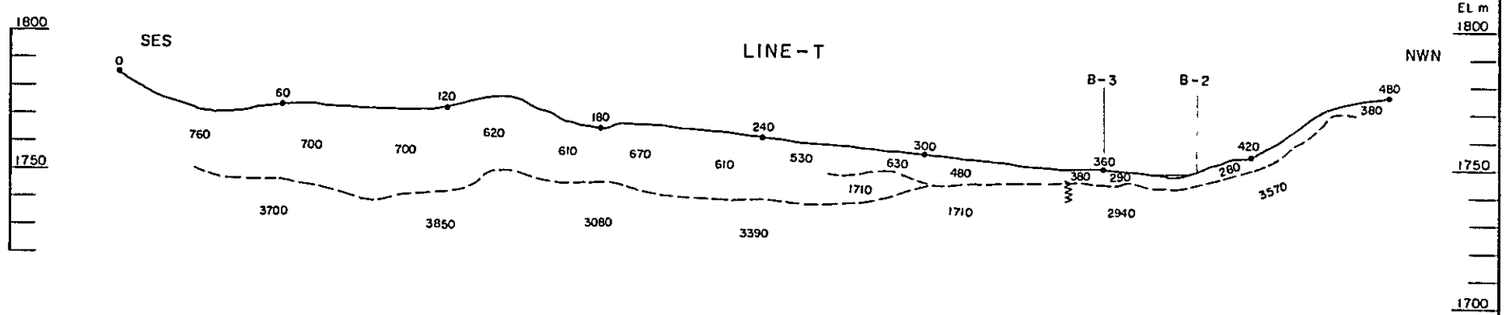
SEISMIC PROSPECTING

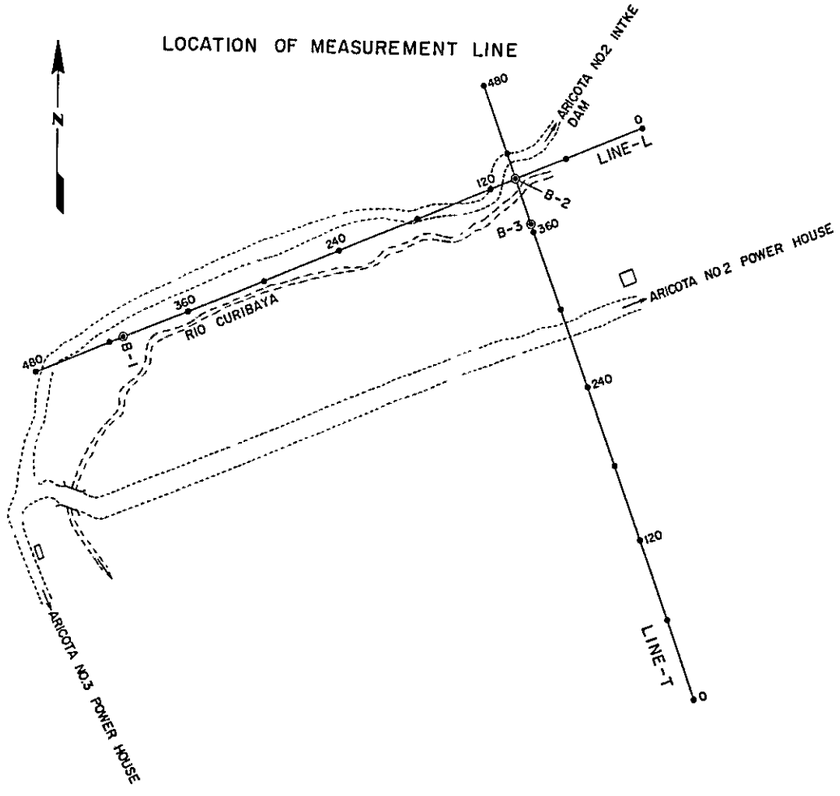
LORISCCOTA SOUTH-WESTERN SHORE

Dec. 1983

SEISMIC PROSPECTING SECTION







LEGEND

- 360/470 SEISMIC WAVE VELOCITY m/s
- SHOT POINT
- ASSUMED FAULT
- BORING

SECTION 0 — 100m

LOCATION OF MEASUREMENT LINE 0 — 200m

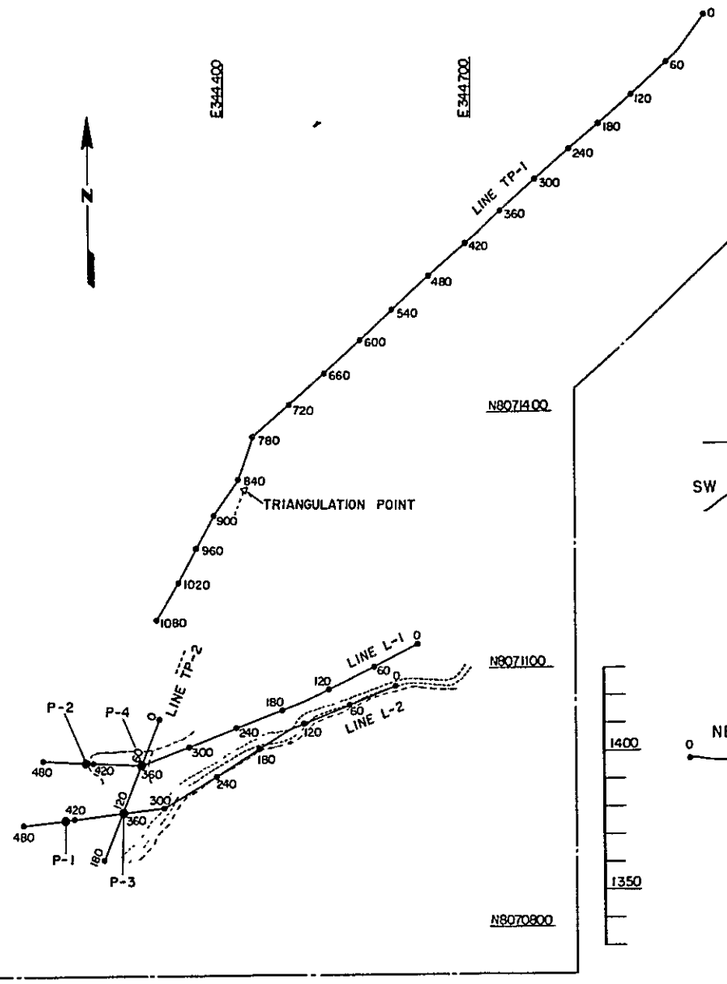
WATER SUPPLY FOR THE LAKE ARICOTA AND ARICOTA No 3 PROJECT

SEISMIC PROSPECTING

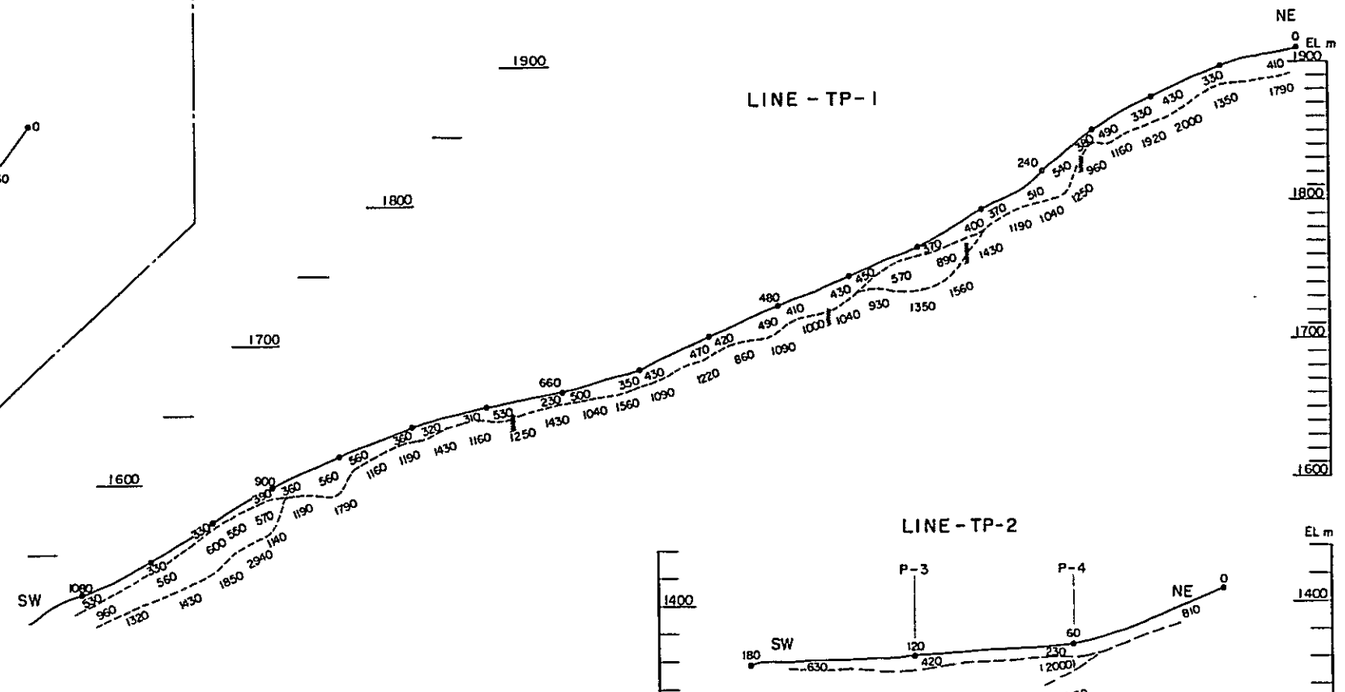
ARICOTA NO 3 INTAKE DAM SITE

Dec. 1983

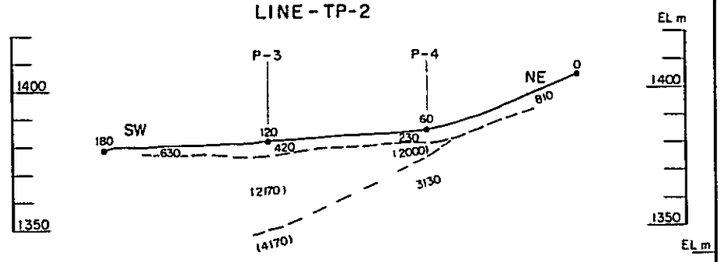
LOCATION OF MEASUREMENT LINE



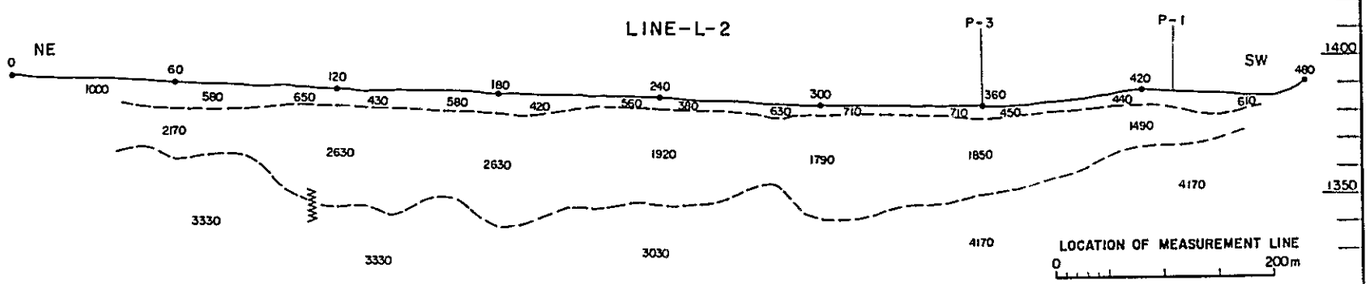
LINE - TP-1



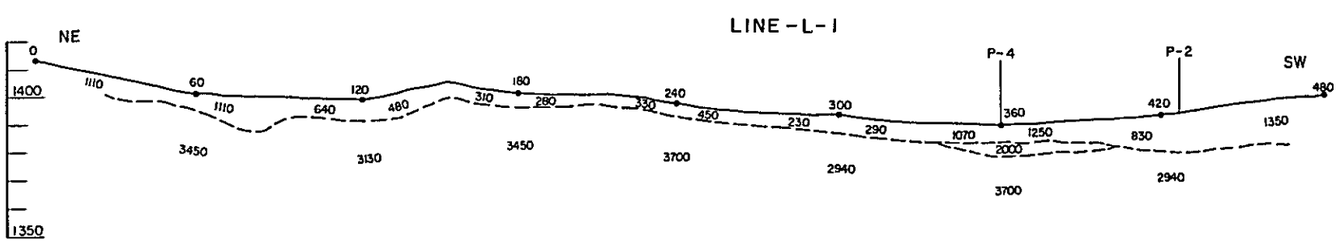
LINE - TP-2



LINE-L-2



LINE-L-1



LOCATION OF MEASUREMENT LINE
0 200m

LINE TP-1
0 200m

LINE TP-2 L-1 L-2
0 100m

LEGEND

360/470 SEISMIC WAVE VELOCITY m/s

• SHOT POINT

P-1 BORING POINT

WATER SUPPLY FOR THE LAKE ARICOTA AND ARICOTA No3 PROJECT

SEISMIC PROSPECTING

ARICOTA NO3 POWER HOUSE SITE

Dec. 1983