

CROPPING PATTERN FOR THE RIMAC RIVER VALLEY (5,683 Has)

	LAND AREA (ha)	CROP AREA (ha)	ENE	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1) VEGETABLES (cabbage, lettuce, turnip, celery)	1,200	3,600	VEGETABLES					VEGETABLES				VEGETABLES		
2) YELLOW MAIZE	691	1,382	YELLOW MAIZE						YELLOW MAIZE					
3) CORNCOB	531	531	CORNCOB											
4) STARCHY MAIZE	250	500	STARCHY MAIZE						STARCHY MAIZE					
5) COAST POTATO	750	750					COAST POTATO							
6) SWEET POTATO	449	449	SWEET POTATO											
7) DRY BEAN	170	170				DRY BEAN								
8) ORCHARD (banana, avocado, medlar)	362	362	O R C H A R D											
9) PASTURE (alfalfa and grass)	1,280	1,280	P A S T U R E (ALFALFA , GRASS)											
TOTAL	5,683	9,024												

SUPPLEMENTAL INVESTIGATION
 OF
 THE STUDY ON INTEGRATED WATER RESOURCES DEVELOPMENT
 IN THE CANETE RIVER BASIN IN THE REPUBLIC OF PERU

JAPAN INTERNATIONAL COOPERATION AGENCY

Figure 4.1.3
 Cropping Pattern for the Rimac River Valley

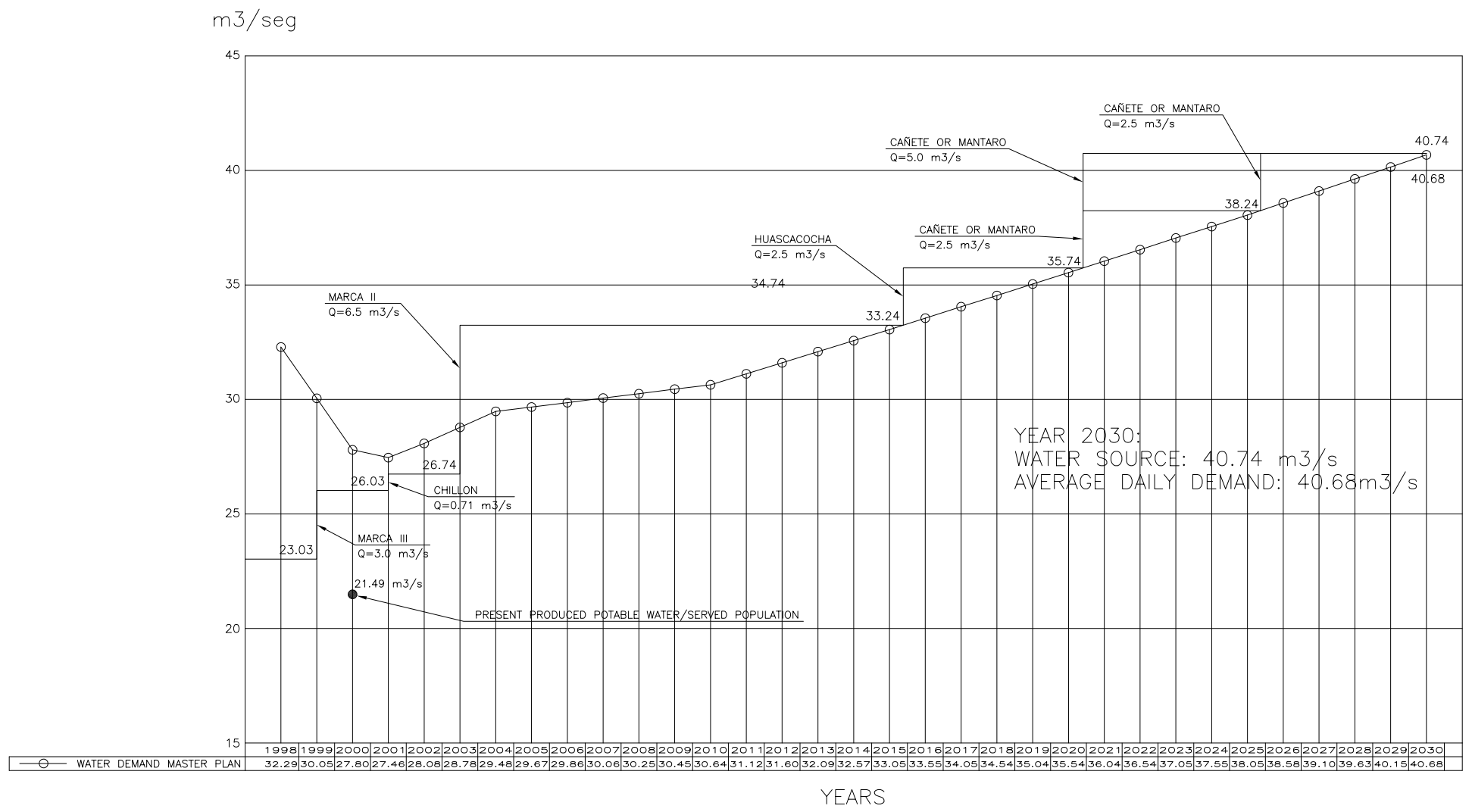


Figure 4.3.2
Rimac River Basin - Water Balance
Monthly Mean Discharge and Water Demand : Case C1

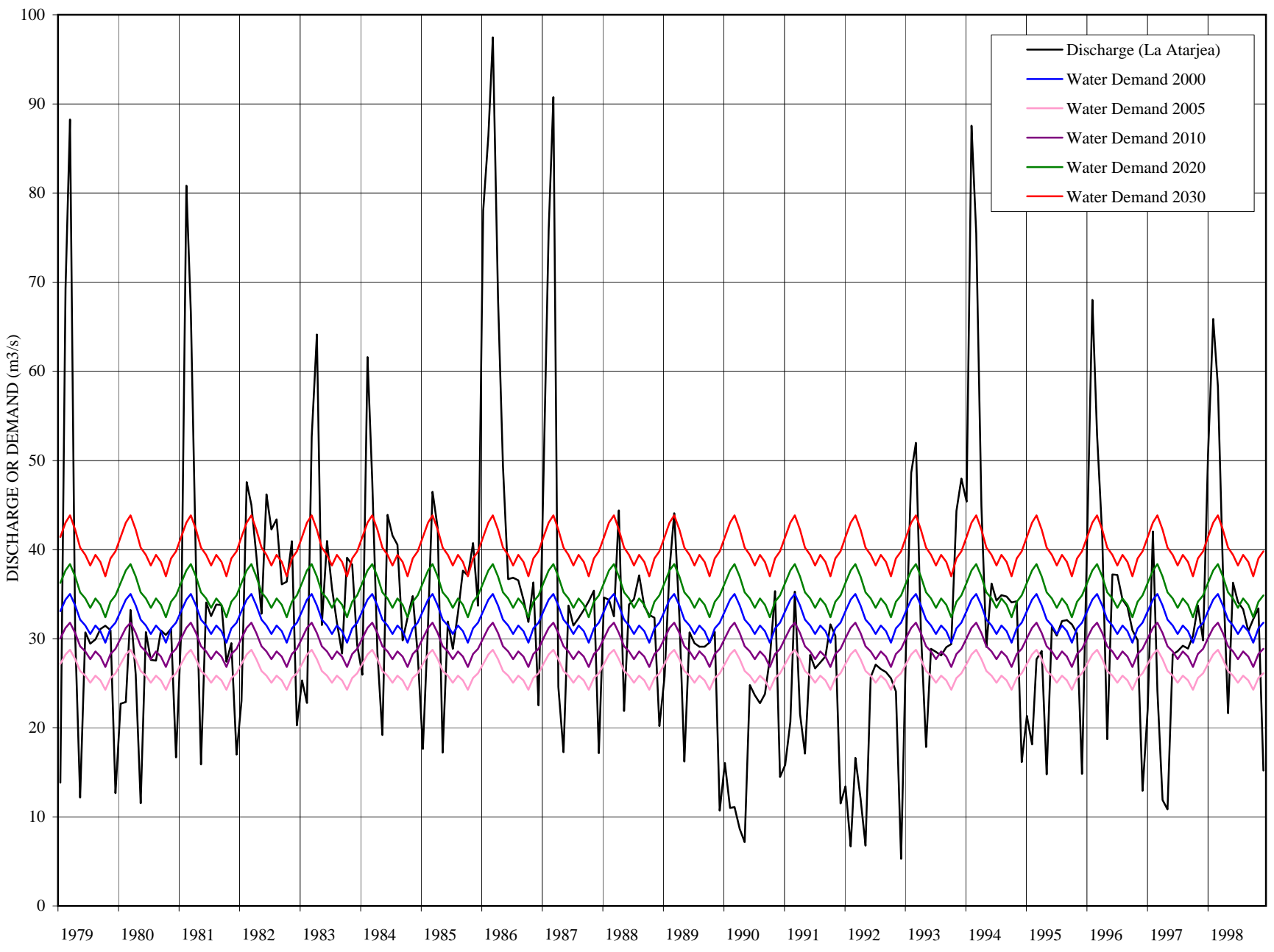


Figure 4.3.3
Rimac River Basin Water Balance Deficit - Case C1

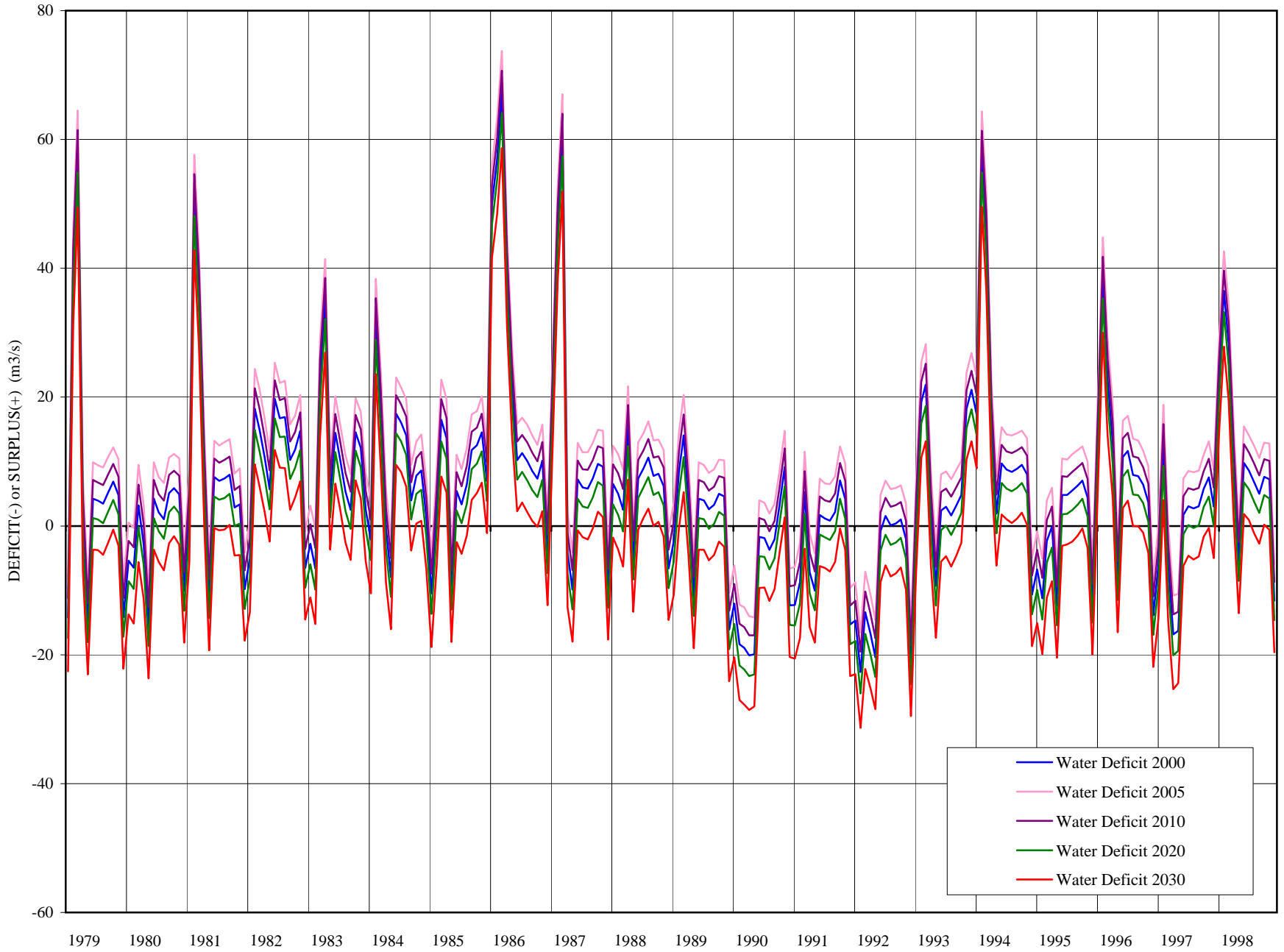
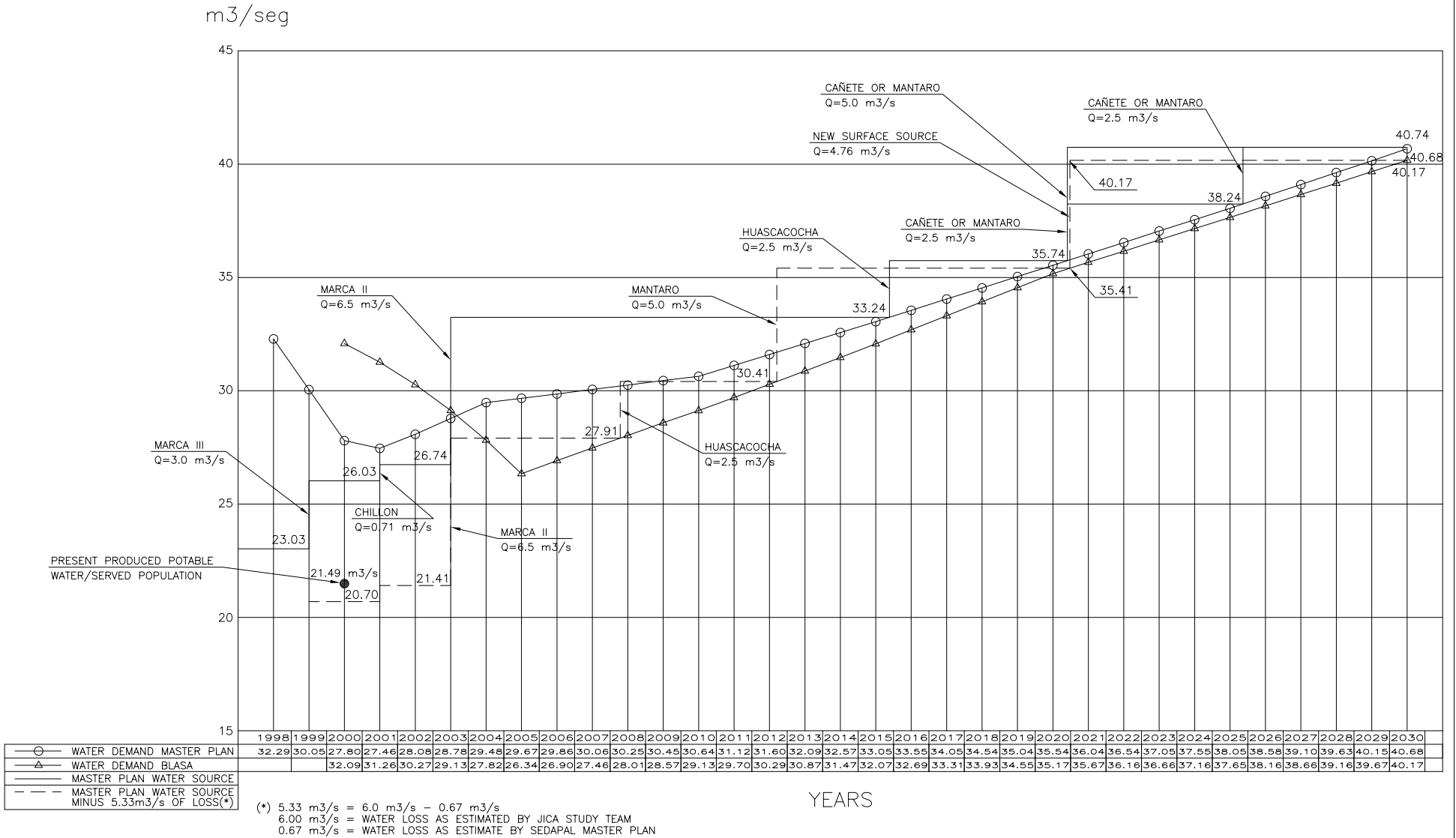
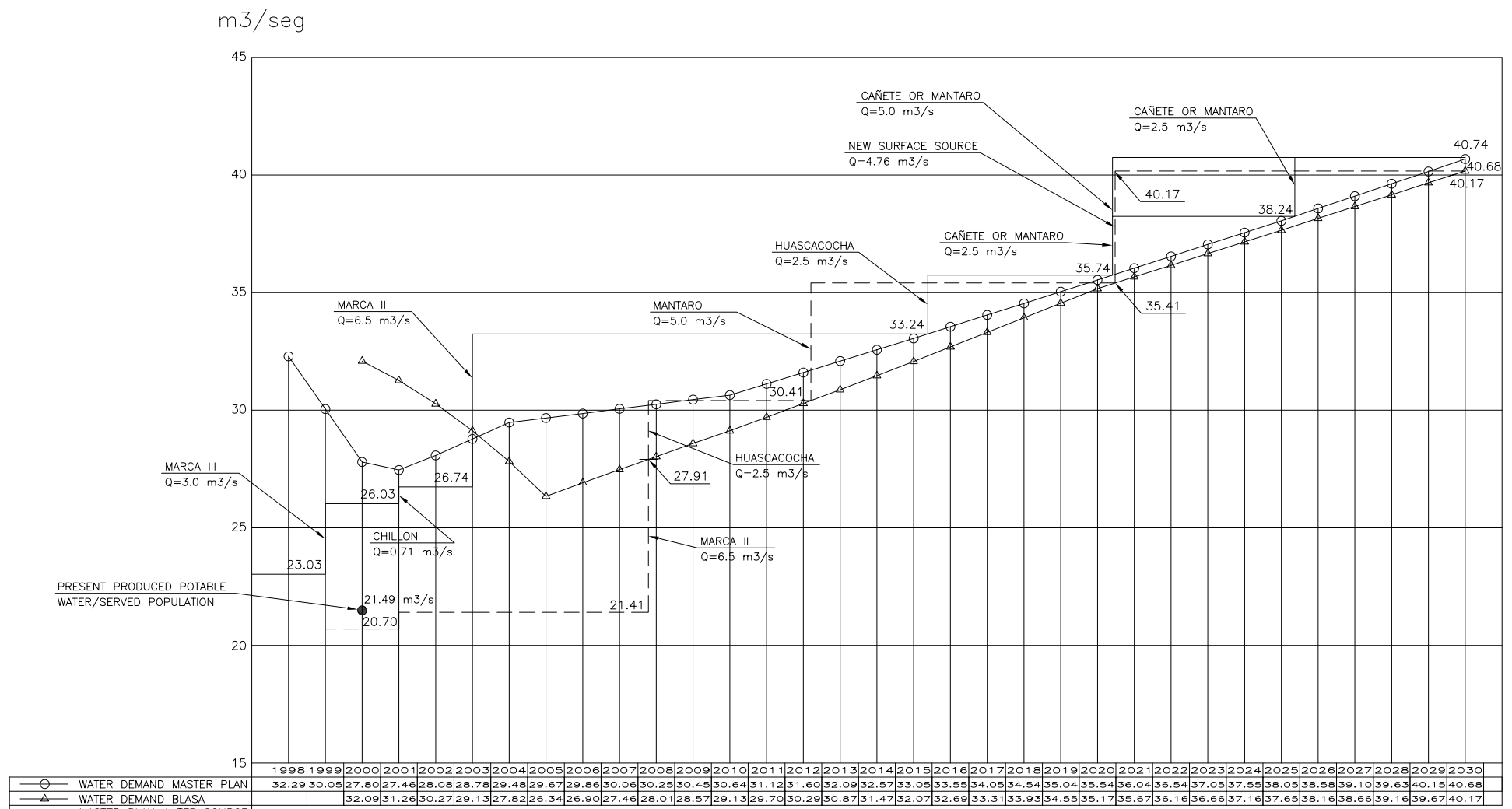


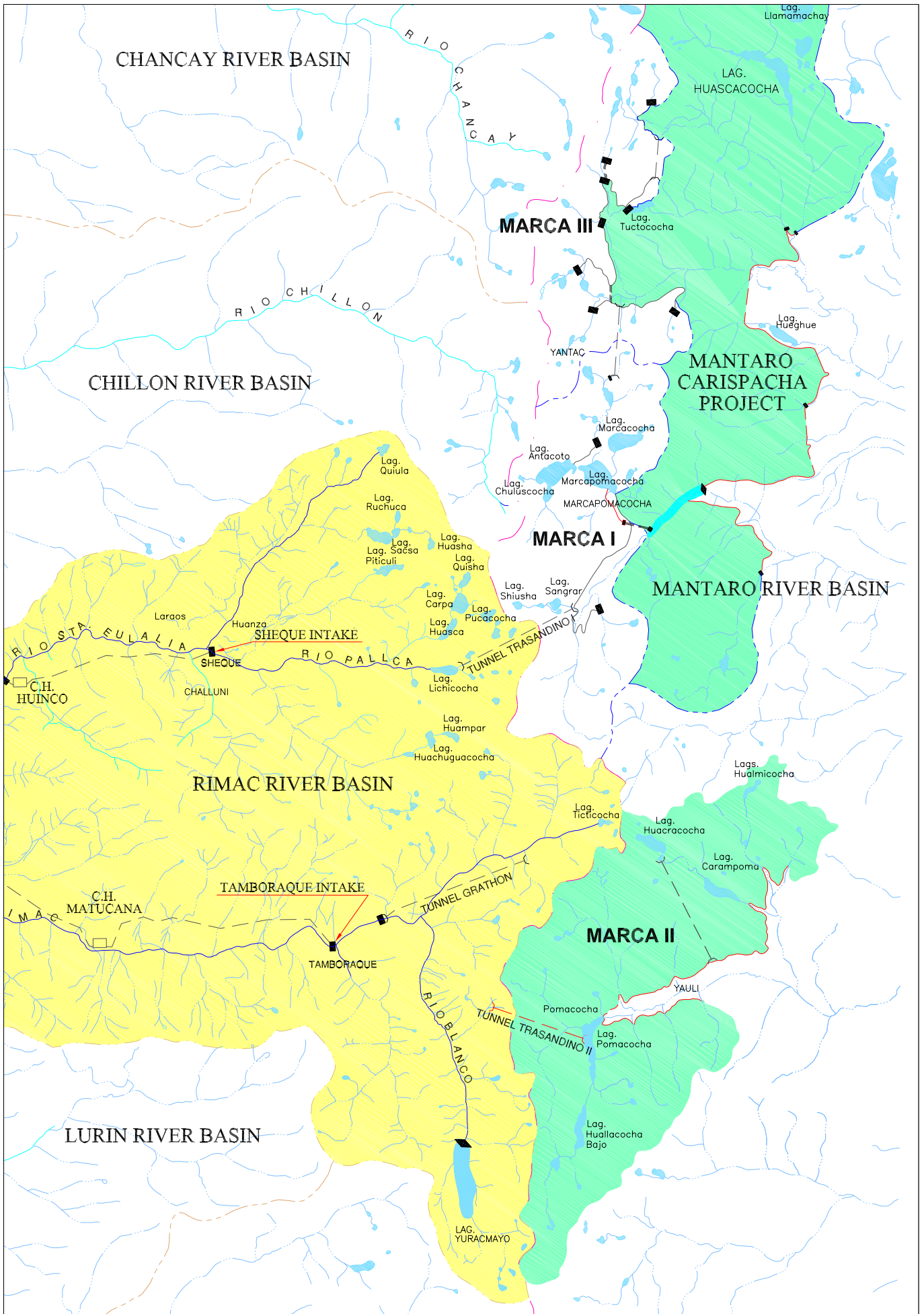
Figure 4.3.4





(*) 5.33 m3/s = 6.0 m3/s - 0.67 m3/s
 6.00 m3/s = WATER LOSS AS ESTIMATED BY JICA STUDY TEAM
 0.67 m3/s = WATER LOSS AS ESTIMATE BY SEDAPAL MASTER PLAN

YEARS



ANNEX

Annex I	Meteorology and Hydrology	A-1
Annex II	SEDAPAL Water Balance in Year 2030.....	A-26
Annex III	Moritz Formula	A-27
Annex IV-1	Discharge and Water Demand.....	A-28
Annex IV-2	Water Demand and Supply Balance Analysis.....	A-49

Table List

Table 1	Rainfall Observation Stations.....	A-2
Table 2	Hydrometric Stations.....	A-3
Table 3	Climatological Stations	A-4
Table 4	Mean Monthly Rainfall (La Quisha).....	A-5
Table 5	Mean Monthly Rainfall (Mina Colque)	A-6
Table 6	Mean Monthly Rainfall (Milloc).....	A-7
Table 7	Mean Monthly Rainfall (Casapalca)	A-8
Table 8	Mean Monthly Rainfall (San José de Parac).....	A-9
Table 9	Mean Monthly Rainfall (Matucana).....	A-10
Table 10	Mean Monthly Rainfall (San Cristóbal).....	A-11
Table 11	Mean Monthly Rainfall (Hueghue).....	A-12
Table 12	Mean Monthly Rainfall (Corpacancha).....	A-13
Table 13	Mean Monthly Rainfall (Marcapomacocha).....	A-14
Table 14	Mean Monthly Rainfall (Morococha)	A-15
Table 15	Mean Monthly Rainfall (Huascacocha)	A-16
Table 16	Mean Monthly Discharge (Tunnel Transandino).....	A-17
Table 17	Mean Monthly Discharge (Tamboraque).....	A-18
Table 18	Mean Monthly Discharge (Chosica, SENAMHI).....	A-19
Table 19	Mean Monthly Discharge (Chosica, EDEHEL).....	A-20
Table 20	Mean Monthly Discharge (Sheque)	A-22

Figure List

Figure 1	Discharge Data Observed at Chosica SENAMHI..... Station (1A)	A-23
Figure 2	Depth - Discharge Curve (1/2).....	A-24
Figure 3	Depth - Discharge Curve (2/2).....	A-25

Table 1

Rainfall Observation Stations

	Station Name	North (Y) (m)	East (X) (m)	Altitude (m)	River Basin
R1	Ticlio	8,717,397	369,170	4,800	Rímac
R2	La Pirhua	8,708,124	356,492	4,750	Rímac
R3	La Quisha	8,726,523	349,135	4,650	Rímac
R4	Mina Colque	8,719,095	338,265	4,600	Rímac
R5	Milloc	8,721,011	352,797	4,400	Rímac
R6	Casapalca	8,711,852	365,560	4,191	Rímac
R7	Bellavista	8,708,149	361,942	3,950	Rímac
R8	San José de Parac	8,695,253	363,816	3,800	Rímac
R9	Carampoma	8,711,702	334,669	3,272	Rímac
R10	Tamboraque	8,697,064	356,543	3,100	Rímac
R11	Matucana	8,691,489	347,490	2,378	Rímac
R12	Santa Eulalia	8,683,955	318,477	1,030	Rímac
R13	La Cantuta	8,678,402	314,880	---	Rímac
M1	San Cristóbal	8,702,716	385,581	4,625	Mantaro
M2	Canchaloc	8,730,253	358,208	4,350	Mantaro
M3	Cazapatos	8,785,665	387,102	4,150	Mantaro
M4	Junin	8,765,409	392,632	4,150	Mantaro
M5	Carguacayan	8,761,597	359,888	4,150	Mantaro
M6	Hueghue	8,757,911	360,086	4,150	Mantaro
M7	Atocsaico	8,750,632	383,586	4,200	Mantaro
M8	Corpacancha	8,743,195	367,244	4,150	Mantaro
M9	Marcapomacocha	8,737,609	354,537	4,600	Mantaro
M10	Yantac	8,730,357	383,661	4,600	Mantaro
M11	Oroya	8,726,733	401,852	3,750	Mantaro
M12	Morococha	8,717,427	376,440	4,522	Mantaro
M13	Huascacocha	8,717,448	381,891	4,500	Mantaro
M14	Yauricocha	8,678,811	402,005	4,350	Mantaro
M15	Upamayo	8,792,948	363,396	4,100	Mantaro
M16	Laguna Huaron	8,783,651	345,223	4,550	Mantaro
M17	Huayllay	8,783,677	350,686	4,325	Mantaro
M18	Carhuamayo	8,793,031	385,255	4,150	Mantaro
M19	San Jose Rio Pallanga	8,767,043	341,661	4,700	Mantaro
M20	San Blas	8,772,702	370,763	4,350	Mantaro
M21	La Cima	8,752,531	399,952	4,200	Mantaro
M22	Malpaso	8,737,743	387,270	3,850	Mantaro
M23	Puna Bamba	8,730,351	381,843	4,400	Mantaro
M24	Casaracra	8,734,088	396,374	3,750	Mantaro
M25	Pucara	8,719,298	383,702	4,250	Mantaro
M26	Pachachaca	8,715,632	389,167	4,000	Mantaro
M27	Pomacocha	8,702,681	376,499	4,300	Mantaro
M28	Huallacocha Baja	8,699,016	381,962	4,350	Mantaro
M29	Mayupampa	8,728,571	400,028	3,750	Mantaro
M30	Curipata	8,719,337	394,606	4,050	Mantaro
C1	Canta	8,731,921	323,650	2,850	Chillón
C2	Huamantanga	8,728,149	309,125	3,400	Chillón
C3	Huaros	8,739,325	329,066	3,600	Chillón
C4	Lachaqui	8,722,703	323,702	3,650	Chillón
C5	Pariacancha	8,741,207	336,332	---	Chillón
L1	Chalilla	8,680,464	354,806	4,050	Lurín
L2	Santiago de Tuna	8,674,821	333,054	2,900	Lurín
L3	San Lazaro de Escomarca	8,652,804	353,127	3,700	Lurín
L4	San Damian	8,671,220	349,407	3,100	Lurín
CY1	Huaral	8,731,499	259,994	200	Chancay
CY2	Pallac	8,742,854	301,758	2,200	Chancay

Table 2

Hydrometric Stations

	Station Name	North (Y) (m)	East (X) (m)	Altitude (m)	Drainage Area (km ²)	River Basin
R1	Túnel Transandino	8,722,863	354,606	4,650	-	Rímac
R2	Yuracmayo	8,691,334	374,002	4,800	101	Rímac
R3	Río Blanco	8,702,719	363,783	3,550	205	Rímac
R4	San Mateo	8,698,924	360,167	3,200	446	Rímac
R5	Tamboraque	8,698,907	356,535	3,200	592	Rímac
R6	Chosica	8,680,257	316,684	870	2,320	Rímac
R7	Mina Camina	8,720,966	343,708	-	20	Rímac
R8	Acobamba	8,722,773	336,428	-	45	Rímac
R9	Putuchaca	8,711,730	340,120	-	138	Rímac
R10	Sheque	8,711,338	335,670	3,100	547	Rímac
R11	Sulchi	8,704,278	325,624	-	794	Rímac
R12	Autisha	8,702,337	324,727	2,100	812	Rímac
R13	Anyahuari (Surco)	8,685,921	340,255	1,990	892	Rímac
R14	Yanacoto	8,678,391	313,064	854	2,320	Rímac
R15	Chacrasana	8,676,524	309,445	850	2,500	Rímac
R16	Pte.Los Angeles	8,674,669	307,642	850	2,550	Rímac
R17	Huachipa	8,670,885	293,145	200	2,337	Rímac
R18	La Atarjea	8,668,963	282,267	-	-	Rímac
R19	Pte.Ñaña	8,674,622	300,381	560	2,460	Rímac
R20	Desembocadura R-1	8,668,868	269,561	20	3,490	Rímac

	Station Name	Northing (Y) (m)	Easting (X) (m)	Altitude (m)	Drainage Area (km ²)	River Basin
M1	San Juan/Rio Blanco	8,800,321	363,366	4,100	918	Mantaro
M2	Colorado Canal	8,792,933	359,753	4,100	261	Mantaro
M3	Colorado Vertedero	8,792,917	356,110	4,100	261	Mantaro
M4	Presa Upamayo	8,792,941	361,575	4,100	2,730	Mantaro
M5	Canchacucho	8,789,239	357,947	4,125	169	Mantaro
M6	Pallanga	8,763,416	354,420	4,250	138	Mantaro
M7	Huaron	8,763,425	356,240	4,250	265	Mantaro
M8	Carhuacayan	8,761,589	358,068	4,150	486	Mantaro
M9	Alpamarca	8,757,826	341,706	4,600	37	Mantaro
M10	Mariac	8,755,974	339,895	4,625	11	Mantaro
M11	Quiulacocha	8,752,314	345,372	4,500	63	Mantaro
M12	Yanacocha	8,748,678	356,306	4,425	12	Mantaro
M13	Chacan	8,745,007	359,960	4,375	11	Mantaro
M14	Baños	8,741,321	359,977	4,200	9	Mantaro
M15	Casha Vertedero	8,739,461	356,347	4,400	147	Mantaro
M16	Yantac Canal	8,739,436	350,891	4,570	64	Mantaro
M17	Malpaso Presa	8,739,580	385,445	3,825	5,631	Mantaro
M18	Marcapomacocha Canal	8,737,618	356,356	4,400	147	Mantaro
M19	Canchayoc	8,733,939	358,191	4,300	135	Mantaro
M20	Antajasha Canal	8,730,253	358,208	4,400	121	Mantaro
M21	Casaracra	8,734,088	396,374	4,000	317	Mantaro
M22	Pte. Chulec	8,726,727	400,034	3,750	6,020	Mantaro
M23	Cut-Off Presa	8,715,638	390,984	4,000	549	Mantaro
M24	Huari	8,713,859	410,977	3,700	487	Mantaro
M25	Rumichaca	8,706,374	378,300	4,400	65	Mantaro
M26	Pomacocha	8,704,531	378,308	4,250	186	Mantaro
M27	Pachacayo	8,697,301	421,920	3,700	720	Mantaro
M28	Pte. Stuart	8,695,475	429,188	3,400	9,210	Mantaro
M29	Piñascocha	8,689,919	418,308	3,800	195	Mantaro
M30	Cochas Tunel	8,689,919	418,308	3,800	481	Mantaro
M31	Yanacocha	8,673,399	449,198	3,500	915	Mantaro

Table 3

Climatological Stations

No.	Station	North (Y) (m)	East (X) (m)	Altitude (m)	River Basin
1	Hipólito Unanue	8,665,221	275,034	70	Rímac
2	Limatambo	8,668,950	280,452	136	Rímac
3	Campo de Marte	8,668,937	278,637	137	Rímac
4	A.Von Humboldt	8,663,431	282,308	238	Rímac
5	La Molina	8,663,496	291,381	255	Rímac
6	Ñaña	8,674,622	300,381	566	Rímac
7	Chosica	8,682,281	349,351	851	Rímac
8	Matucana	8,691,498	349,306	2,350	Rímac
9	Milloc	8,720,643	353,071	4,400	Rímac
10	Aeropuerto Internacional	8,672,556	269,533	13	Rímac
11	Chucuito	8,666,996	265,945	4	Rímac
12	Canta	8,731,911	321,832	2,832	Chillón

Table 5

Mean Monthly Rainfall

Observation Station: Mina Colqui

													(unit : mm)
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1969	54	107	118	68	4	1	T	5	14	76	84	194	NA
1970	186	71	131	93	16	0	1	0	72	74	45	155	844
1971	121	242	180	11	5	0	0	3	1	41	29	198	831
1972	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1973	203	198	182	123	28	0	6	17	45	82	37	164	1,085
1974	170	169	129		10	0	1	7	22	27	33	37	NA
1975	188	104	191	21	65	10	0	10	45	57	65	100	856
1976	176	144	215	17	10	7	3	6	16	9	4	58	665
1977	112	142	62	20	18	2	0	T	24	15	87	50	NA
1978	73	157	130	19	4	12	16	14	32	41	32	46	576
1979	67	180	236	54	T	0	2	NA	NA	NA	NA	NA	NA
1980	159	86	168	55	36	0	3	19	2	76	64	40	708
1981	105	221	167	NA	NA	1	7	43	20	40	151	148	NA
1982	147	247	122	48	0	0	0	52	42	119	155	66	998
1983	35	69	169	186	7	0	0	0	21	46	124	67	724
1984	214	230	157	49	22	14	0	4	3	9	97	154	953
1985	49	124	125	67	18	1	2	17	28	1	5	66	503
1986	84	158	117	39	8	0	31	17	6	6	23	38	527
1987	152	134	86	23	8	0	0	5	5	25	31	65	534
1988	99	124	140	101	T	7	0	13	17	26	31	53	NA
1989	119	237	256	38	0	0	14	22	46	100	17	26	875
1990	49	71	51	2	27	21	0	5	1	68	69	58	422
1991	69	111	103	53	18	0	0	0	9	54	52	67	536
1992	38	72	45	47	0	0	0	4	18	53	6	26	309
1993	73	135	211	33	1	0	7	14	59	67	72	92	764
1994	140	117	176	103	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mean	115	146	147	55	15	3	4	13	24	48	57	86	706
Max.	214	247	256	186	65	21	31	52	72	119	155	198	1,085
Min.	35	69	45	2	0	0	0	0	1	1	4	26	309

Table 6 Mean Monthly Rainfall

Observation Station: Milloc

(unit : mm)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1967	177	229	199	60	45	9	27	25	51	138	55	80	1,095
1968	132	109	112	37	27	14	9	38	36	90	80	59	743
1969	69	122	107	118	6	6	19	15	60	56	75	190	843
1970	175	60	101	86	46	3	16	11	97	78	57	171	901
1971	112	178	183	67	21	0	0	23	15	49	64	183	895
1972	129	125	222	77	5	0	21	23	47	67	34	142	892
1973	162	192	175	126	32	5	24	24	61	105	69	156	1,131
1974	167	107	155	49	8	7	4	21	35	48	67	51	719
1975	131	116	171	54	69	15	0	21	54	40	59	96	826
1976	129	146	95	43	23	48	3	28	28	16	25	69	653
1977	107	166	84	29	45	0	2	4	32	24	126	95	714
1978	119	156	83	29	2	19	17	5	37	59	70	69	665
1979	53	166	156	55	16	8	14	0	25	37	48	71	649
1980	162	77	130	45	7	20	37	5	16	170	132	122	923
1981	140	220	129	52	3	1	1	22	39	90	152	113	962
1982	146	241	98	68	0	0	13	52	41	81	125	104	969
1983	97	90	134	98	9	18	2	4	38	66	33	125	714
1984	77	204	131	37	12	30	0	2	0	122	112	160	887
1985	53	114	144	96	29	22	2	2	31	18	52	111	674
1986	207	213	227	115	47	0	34	26	31	23	37	138	1,098
1987	136	117	75	25	9	8	15	13	29	74	100	131	732
1988	194	139	142	134	41	0	1	9	64	41	49	92	906
1989	186	158	150	68	17	0	2	29	20	57	18	12	717
1990	132	30	61	4	34	54	3	14	23	101	188	120	764
1991	61	88	115	42	30	9	10	0	49	78	37	62	581
1992	69	72	130	35	12	9	11	24	5	100	55	54	576
1993	196	128	148	81	18	0	7	11	39	91	126	227	1,072
1994	336	321	371	173	76	29	14	32	179	81	145	250	2,007
1995	204	148	266	134	51	6	5	20	82	134	146	250	1,446
Mean	140	146	148	70	26	12	11	17	44	74	81	121	888
Max.	336	321	371	173	76	54	37	52	179	170	188	250	2,007
Min.	53	30	61	4	0	0	0	0	0	16	18	12	576

Table 7

Mean Monthly Rainfall

Observation Station: Casapalca

(unit : mm)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1947	130	139	153	66	50	13	2	24	80	48	39	83	827
1948	208	126	117	69	114	30	15	3	65	105	51	32	935
1949	136	93	120	57	4	25	23	11	31	90	58	70	718
1950	199	142	128	56	5	2	4	12	22	27	97	154	848
1951	140	298	387	46	30	0	0	0	46	133	236	177	1,493
1952	145	157	135	53	11	15	4	22	63	27	80	99	811
1953	125	197	111	57	8	19	9	15	46	52	135	102	876
1954	138	164	115	55	70	12	5	3	23	54	75	117	831
1955	117	150	166	43	19	7	4	1	43	34	31	68	683
1956	88	182	118	72	23	0	7	4	18	21	7	14	554
1957	101	136	114	37	0	0	0	18	29	34	13	59	541
1958	65	155	125	35	15	0	2	10	24	71	47	78	627
1959	51	206	130	177	21	28	5	17	38	94	41	142	950
1960	75	115	82	89	8	0	0	16	74	69	65	23	616
1961	134	228	99	107	63	10	0	NA	17	32	147	154	NA
1962	120	76	127	46	17	0	0	11	15	17	32	119	580
1963	218	115	161	77	33	1	4	7	48	41	119	83	907
1964	87	108	163	64	35	0	0	0	28	43	59	39	626
1965	78	171	108	30	16	1	26	26	312	50	23	103	944
1966	188	88	106	46	28	15	0	4	35	90	55	99	754
1967	82	179	161	30	22	9	24	21	19	89	36	78	750
1968	90	79	96	31	45	12	2	33	18	71	80	72	629
1969	42	100	88	63	3	10	7	20	52	63	67	187	702
1970	149	74	75	79	30	1	4	8	77	51	41	111	700
1971	72	167	142	42	5	0	0	9	3	51	23	165	679
1972	138	138	190	68	9	1	24	0	69	72	47	102	858
1973	154	134	148	90	24	9	17	12	27	85	45	122	867
1974	117	118	126	29	0	0	0	0	47	40	45	50	572
1975	101	82	179	68	0	0	0	0	33	45	66	81	655
1976	101	131	105	0	0	0	0	30	0	10	1	100	478
1977	61	120	80	9	49	1	6	6	38	29	98	84	581
1978	95	129	23	24	0	23	29	0	36	25	69	62	515
1979	44	180	142	53	21	14	0	12	28	36	33	85	648
1980	97	59	72	45	14	20	24	29	21	95	107	59	642
1981	106	223	80	48	4	0	0	26	39	80	62	79	747
1982	126	171	59	50	1	0	18	30	19	60	77	56	667
1983	69	18	125	49	7	1	0	0	35	56	49	109	518
1984	69	208	156	31	51	56	4	12	35	76	93	70	861
1985	60	88	161	79	30	18	0	0	37	14	32	94	613
1986	183	91	0	0	0	5	34	25	18	18	12	133	519
1987	129	110	71	18	11	5	25	14	24	33	67	94	601
1988	134	90	131	64	7	0	0	7	0	19	62	30	544
1989	152	132	175	23	6	9	3	26	45	14	10	26	621
1990	139	29	45	26	47	36	0	8	40	84	99	132	685
1991	36	50	132	38	40	25	15	0	51	32	37	39	495
1992	78	64	70	26	9	10	10	15	3	74	25	44	428
1993	133	137	116	76	18	0	10	17	26	74	100	120	827
1994	134	189	115	69	22	38	0	11	54	39	22	68	761
1995	66	58	74	49	10	11	2	0	25	37	26	79	437
Mean	112	130	120	52	22	10	8	12	40	53	60	89	703
Max.	218	298	387	177	114	30	26	33	312	133	236	187	1,493
Min.	42	74	75	29	0	0	0	0	3	17	7	14	541

Table 8 Mean Monthly Rainfall

Observation Station: San José de Parac

(unit : mm)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1965	NA	NA	98	34	2	0	11	T	1	NA	NA	84	NA
1966	117	104	72	NA	0	0	0	0	9	81	14	88	NA
1967	130	154	168	5	2	0	3	T	4	91	15	4	NA
1968	44	64	64	1	0	T	0	T	T	10	3	54	NA
1969	31	117	145	17	T	T	T	T	T	12	46	45	NA
1970	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1971	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1972	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1973	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1974	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1975	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1976	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1977	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1978	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1979	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1980	NA	20	109	20	8	5	2	0	3	93	64	63	NA
1981	132	164	143	20	0	0	0	15	13	31	69	129	716
1982	139	240	88	62	0	0	2	1	8	64	70	40	714
1983	86	77	150	91	5	5	0	0	33	33	20	163	663
1984	119	293	202	38	29	34	0	4	3	51	83	145	1,001
1985	80	123	144	49	19	7	0	6	29	14	29	116	616
1986	172	160	134	68	19	0	18	17	7	12	50	109	766
1987	127	129	67	33	8	0	4	16	16	12	55	81	548
1988	114	109	106	74	10	0	0	1	22	34	28	85	583
1989	153	175	175	28	8	6	0	2	19	67	18	12	663
1990	95	35	46	31	19	23	0	2	3	43	63	66	426
1991	25	50	122	33	6	2	1	0	6	34	17	31	327
1992	20	40	49	19	1	0	0	1	0	49	9	24	212
1993	97	108	127	52	6	0	1	0	11	53	96	108	659
1994	138	174	144	51	26	3	2	7	29	15	43	97	729
1995	79	57	103	33	3	1	0	2	12	30	6	95	421
1996	133	155	124	48	2	1	1	NA	8	NA	NA	NA	NA
1997	116	115	33	19	1	0	0	9	29	27	50	126	525
1998	119	137	123	34	0	3	1	0	28	40	20	NA	NA
1999	108	219	102	63	40	2	0	2	24	47	52	92	751
2000	155	157	167	23	22	0	3	10	9	54	27	120	747
Mean	105	127	116	38	9	4	2	5	14	42	39	82	615
Max.	172	293	202	91	40	34	18	17	33	93	96	163	1,001
Min.	20	20	33	1	0	0	0	0	0	10	3	4	212

Table 10

Mean Monthly Rainfall

Observation Station: San Cristóbal

(unit : mm)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1952	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	154	103	NA
1953	128	291	241	91	16	26	13	19	37	70	144	103	1,179
1954	97	198	77	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1955	NA	NA	NA	NA	NA	NA	NA	6	27	28	50	76	NA
1956	104	164	145	119	52	5	7	15	40	53	31	32	767
1957	95	112	102	65	18	10	0	16	47	82	44	77	668
1958	76	168	128	37	18	7	22	0	26	78	34	60	654
1959	58	187	165	122	12	7	0	26	40	109	98	101	925
1960	132	131	100	68	8	0	8	16	31	49	94	51	688
1961	208	160	131	78	69	9	4	3	5	44	119	166	996
1962	170	161	166	88	92	3	2	19	54	60	74	125	1,014
1963	181	154	195	91	3	4	0	9	49	70	127	95	978
1964	105	131	133	64	31	3	0	0	43	47	49	64	670
1965	66	153	129	80	12	1	14	24	55	63	31	122	750
1966	151	82	112	57	27	2	3	2	31	123	87	144	821
1967	124	223	239	73	21	17	16	17	13	62	48	35	888
1968	68	81	50	40	16	27	6	31	28	29	32	30	438
1969	34	85	31	94	2	NA	0	3	1	35	37	70	NA
1970	135	46	51	71	20	4	0	9	69	70	34	142	651
1971	86	57	140	78	34	0	0	21	29	44	101	142	732
1972	103	140	201	119	7	1	19	1	82	95	72	85	925
1973	164	198	236	97	26	21	16	19	49	126	70	174	1,196
1974	137	179	162	70	9	25	7	56	40	30	66	75	856
1975	123	154	160	73	76	18	3	26	37	31	54	102	857
1976	131	46	164	66	20	17	11	39	66	38	56	98	752
1977	117	249	145	74	63	3	11	2	36	56	216	115	1,087
1978	142	195	139	69	27	12	19	7	69	74	130	109	992
1979	64	120	165	65	14	7	16	27	24	42	82	68	694
1980	200	146	188	25	8	12	35	3	33	165	133	105	1,053
1981	115	121	107	43	3	1	3	NA	NA	NA	106	166	NA
1982	197	228	120	53	5	14	9	28	60	119	175	191	1,199
1983	171	65	142	68	18	24	5	12	71	52	47	155	830
1984	155	226	192	101	39	36	7	20	27	128	149	115	1,195
1985	126	156	252	95	53	26	6	9	66	28	55	126	998
1986	208	228	238	156	24	1	36	29	63	16	66	188	1,253
1987	191	154	110	54	24	2	16	7	23	12	124	136	853
1988	272	132	163	127	17	3	0	4	39	81	38	149	1,025
1989	232	203	239	87	35	30	5	43	52	117	44	58	1,145
1990	209	62	112	63	35	58	3	17	38	139	131	137	1,004
1991	111	78	167	43	32	22	0	17	16	31	97	71	685
1992	20	46	87	23	32	NA	NA	NA	NA	NA	NA	NA	NA
Mean	133	146	149	76	27	13	9	16	41	67	85	107	898
Max.	272	291	252	156	92	58	36	56	82	165	216	191	1,253
Min.	20	46	31	23	2	0	0	0	1	12	31	30	438

Table 11

Mean Monthly Rainfall

Observation Station:

Hueghue

(unit : mm)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1969	NA	NA	NA	NA	16	30	30	41	46	45	94	131	NA
1970	246	142	159	129	67	30	31	1	54	88	69	160	1,176
1971	140	150	97	44	49	6	12	25	28	154	40	147	892
1972	92	74	126	107	26	14	5	28	47	65	28	62	674
1973	217	158	163	55	11	28	38	54	29	160	51	174	1,138
1974	138	155	107	56	4	19	7	36	15	44	34	73	688
1975	125	136	147	68	55	14	13	18	63	73	77	144	933
1976	197	188	131	47	24	24	7	16	61	42	42	106	885
1977	165	156	102	36	43	4	3	2	27	31	161	87	817
1978	184	122	59	69	15	0	11	1	86	41	127	83	798
1979	121	133	131	69	33	0	22	16	26	78	112	91	832
1980	112	137	128	69	21	8	14	12	12	87	41	58	699
1981	174	191	128	30	27	14	0	50	55	131	123	197	1,120
1982	152	151	64	61	0	25	17	38	48	101	158	75	890
1983	121	47	207	56	10	34	0	17	46	54	38	118	748
1984	147	219	149	77	34	44	7	313	24	65	95	102	1,276
1985	117	81	120	132	0	17	13	6	116	74	101	116	893
1986	186	187	93	67	64	0	0	35	72	51	52	95	902
1987	267	104	66	40	38	11	18	10	74	57	74	99	858
1988	239	115	110	77	9	0	0	2	14	97	60	143	866
1989	137	144	129	95	19	11	0	53	43	106	53	78	868
1990	186	100	48	50	59	85	0	8	84	156	80	120	976
1991	47	47	80	50	46	18	0	1	58	59	108	76	590
1992	50	113	69	42	0	39	14	26	18	77	67	77	592
1993	197	206	116	109	37	0	37	0	90	55	204	99	1,150
1994	200	156	112	82	29	0	0	0	48	75	40	111	853
1995	92	86	202	40	27	3	12	3	22	58	102	72	719
Mean	156	135	117	68	28	18	12	30	48	79	83	107	878
Max.	267	219	207	132	67	85	38	313	116	160	204	197	1,276
Min.	47	47	48	30	0	0	0	0	12	31	28	58	590

Table 12

Mean Monthly Rainfall

Observation Station: Corpacancha

(unit : mm)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1956	102	163	102	103	32	18	16	34	42	27	64	61	764
1957	104	107	63	84	18	8	2	83	42	80	90	84	765
1958	101	212	136	23	14	15	10	23	46	123	62	112	877
1959	136	165	172	125	39	2	29	9	66	90	66	123	1,022
1960	119	NA	29	108	25	9	4	24	106	79	91	48	NA
1961	126	123	125	98	94	6	1	9	39	57	99	143	920
1962	110	116	100	83	20	14	3	7	22	66	94	147	782
1963	106	104	131	85	11	9	3	23	94	65	151	69	851
1964	83	131	152	53	74	0	22	35	37	107	70	45	809
1965	105	146	102	89	10	5	40	37	69	57	45	171	876
1966	67	80	86	82	36	3	14	7	56	122	39	119	711
1967	93	212	128	49	37	16	34	54	42	121	80	82	948
1968	152	85	102	48	71	22	32	50	65	89	104	71	891
1969	54	125	83	114	34	14	20	58	71	80	64	109	826
1970	197	110	82	141	38	24	8	27	116	85	72	115	1,015
1971	80	160	123	28	15	9	13	25	20	61	94	112	740
1972	115	96	176	73	19	2	32	9	71	33	61	96	783
1973	219	168	174	140	20	31	23	52	66	135	87	161	1,276
1974	125	151	91	51	3	26	19	34	46	57	34	83	720
1975	93	120	121	35	86	34	8	26	76	51	58	82	790
1976	192	160	117	60	58	14	27	46	56	50	35	95	910
1977	106	159	134	89	48	9	43	3	81	68	138	129	1,007
1978	135	210	88	81	10	25	20	31	76	NA	NA	NA	NA
1979	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1980	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1981	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1982	NA	NA	54	58	8	17	4	45	53	95	142	94	NA
1983	174	67	110	88	40	21	6	27	89	67	53	113	855
1984	77	158	131	63	41	26	5	25	38	63	89	117	833
1985	62	139	133	71	79	27	25	16	103	10	45	128	838
1986	152	133	138	182	45	19	12	28	78	15	49	148	999
1987	150	127	53	53	34	25	42	37	51	24	87	86	769
1988	151	177	205	106	42	4	3	3	101	125	76	86	1,079
1989	175	144	159	74	39	60	48	85	78	118	49	37	1,066
1990	216	77	82	78	41	64	9	48	79	110	105	101	1,010
1991	101	59	165	52	68	2	29	4	61	71	54	74	740
1992	71	72	135	51	21	37	14	55	20	200	78	30	784
1993	168	161	115	88	36	11	35	36	42	221	188	207	1,308
1994	188	138	133	114	21	11	8	15	64	54	50	75	871
1995	64	89	175	58	31	7	22	2	59	90	72	143	812
Mean	124	133	119	80	37	17	19	31	63	82	79	103	890
Max.	219	212	205	182	94	64	48	85	116	221	188	207	1,308
Min.	54	59	29	23	3	0	1	2	20	10	34	30	711

Table 13

Mean Monthly Rainfall

Observation Station: Marcapomacocha

													(unit : mm)
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1969	40	113	122	97	20	13	11	27	49	51	81	153	777
1970	144	79	67	126	44	7	14	6	79	35	24	106	731
1971	54	46	47	42	14	0	1	24	10	119	47	157	561
1972	90	83	197	38	3	5	22	6	56	56	30	90	676
1973	164	148	125	84	19	12	11	20	41	112	67	125	928
1974	134	130	88	58	8	11	15	42	24	36	33	73	652
1975	104	105	129	34	70	14	0	17	61	24	71	115	744
1976	126	128	103	56	23	34	14	37	32	8	24	84	669
1977	91	149	159	67	33	1	15	2	30	45	123	102	817
1978	121	190	182	32	3	10	17	23	61	68	75	67	849
1979	80	242	353	111	14	0	38	11	45	61	70	102	1,127
1980	230	134	344	67	20	2	47	11	50	286	199	107	1,497
1981	236	405	172	139	10	9	7	44	118	234	166	196	1,736
1982	279	323	229	150	19	32	32	159	103	283	317	143	2,069
1983	259	176	442	341	49	24	0	4	67	53	81	273	1,769
1984	175	358	242	245	164	65	18	31	13	124	152	215	1,802
1985	124	267	159	133	68	85	16	65	173	7	133	171	1,401
1986	233	309	268	203	47	0	52	20	22	18	55	177	1,404
1987	373	248	188	34	56	42	41	89	100	49	205	237	1,662
1988	365	198	175	140	43	4	0	5	42	147	92	160	1,371
1989	284	384	328	136	39	4	4	71	95	167	75	45	1,632
1990	378	83	129	21	82	113	21	36	86	310	345	319	1,923
1991	127	190	372	114	135	41	22	5	133	138	104	135	1,516
1992	159	236	241	84	48	48	13	71	75	192	126	73	1,366
1993	366	248	262	186	77	13	29	40	131	237	334	286	2,209
1994	302	273	390	157	59	12	13	58	101	111	161	211	1,848
1995	195	189	244	156	52	15	38	19	110	145	163	260	1,586
Mean	194	201	213	113	45	23	19	35	71	115	124	155	1,308
Max.	378	405	442	341	164	113	52	159	173	310	345	319	2,209
Min.	40	46	47	21	3	0	0	2	10	7	24	45	561

Table 14

Mean Monthly Rainfall

Observation Station: Morocochoa

													(unit : mm)
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1947	123	108	181	66	85	19	10	11	90	66	51	97	907
1948	165	122	84	80	104	39	41	2	50	98	46	56	887
1949	117	107	132	71	5	21	41	43	30	93	66	69	795
1950	139	142	111	52	13	5	12	15	39	36	102	159	825
1951	66	113	198	45	48	29	0	7	18	44	171	112	851
1952	155	123	144	85	47	19	29	27	87	44	105	109	974
1953	129	188	120	81	36	33	15	35	33	81	119	92	962
1954	124	149	89	94	60	28	2	2	33	70	70	114	835
1955	99	196	147	33	65	26	11	6	51	26	30	61	751
1956	69	155	98	107	43	1	38	18	34	29	34	33	659
1957	119	147	65	59	21	16	2	36	75	81	68	58	747
1958	82	135	129	54	25	3	10	9	36	96	49	47	675
1959	93	173	183	113	32	30	7	13	77	108	44	130	1,003
1960	108	157	73	58	12	5	10	28	53	76	78	19	677
1961	189	117	90	96	76	18	19	6	54	29	108	131	933
1962	101	84	138	69	39	5	8	11	30	37	32	105	659
1963	173	114	189	189	27	1	2	43	61	48	89	89	1,025
1964	159	155	138	57	71	0	2	40	20	91	59	27	819
1965	76	133	106	61	21	0	19	36	62	71	46	127	758
1966	115	38	94	49	32	0	1	4	27	123	54	95	632
1967	88	184	156	68	32	11	50	23	26	110	22	70	840
1968	126	66	130	36	57	25	15	49	50	71	92	107	824
1969	58	119	105	100	23	12	25	52	52	86	73	124	829
1970	179	78	85	109	43	20	3	17	132	88	29	149	932
1971	84	120	150	54	26	4	4	33	20	104	56	147	802
1972	110	108	234	98	5	8	32	8	101	74	74	104	956
1973	169	165	215	71	19	18	21	26	76	160	55	194	1,189
1974	115	168	123	49	20	16	8	78	66	63	56	66	828
1975	109	115	144	55	87	9	6	39	51	129	66	90	900
1976	167	149	91	42	31	31	21	52	77	9	61	90	821
1977	70	156	81	61	50	3	14	4	47	31	127	99	743
1978	119	124	57	17	8	12	24	25	78	36	63	88	651
1979	42	191	180	75	20	15	24	29	72	77	68	69	862
1980	109	113	150	22	21	31	50	8	63	129	106	43	845
1981	125	253	119	43	19	5	0	64	108	90	124	98	1,048
1982	145	188	83	44	24	14	5	72	73	79	115	127	969
1983	132	45	86	69	11	30	16	16	108	59	61	113	746
1984	89	229	185	76	25	48	21	16	15	89	110	100	1,003
1985	76	104	137	94	48	45	11	10	66	12	69	122	794
1986	191	172	130	151	43	5	45	35	59	3	100	220	1,154
1987	141	143	58	NA	36	29	48	48	21	28	81	99	NA
1988	142	35	93	82	7	1	0	0	35	38	0	144	577
1989	111	164	141	64	27	45	20	29	32	65	20	41	759
1990	193	54	22	58	45	78	7	17	62	86	141	107	870
1991	71	73	187	59	58	15	12	27	218	146	NA	NA	NA
1992	437	80	112	30	3	28	24	27	15	141	35	34	966
1993	191	146	117	115	57	4	23	22	47	94	168	131	1,115
1994	154	176	125	117	28	8	15	28	38	43	33	123	888
1995	79	98	169	62	10	4	10	16	76	28	62	74	688
Mean	127	132	126	72	36	18	17	26	58	72	73	98	850
Max.	437	253	234	189	104	78	50	78	218	160	171	220	1,189
Min.	42	35	22	17	3	0	0	0	15	3	0	19	577

Table 15

Mean Monthly Rainfall

Observation Station: Huascacocha

													(unit : mm)
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1955	NA	155	174	56	63	17	11	6	33	46	24	70	NA
1956	72	119	89	85	42	0	17	18	21	36	45	23	567
1957	103	127	83	51	27	6	2	23	35	74	48	60	639
1958	69	125	110	46	23	1	9	6	35	79	46	72	621
1959	104	137	169	97	28	21	3	13	55	104	54	138	923
1960	100	129	66	51	23	5	6	19	38	69	119	40	665
1961	186	119	97	27	72	10	0	9	46	31	140	152	889
1962	113	76	130	73	30	10	17	16	35	17	29	133	679
1963	195	158	194	72	7	3	2	32	72	52	126	78	991
1964	102	99	153	54	74	0	3	28	23	86	59	19	700
1965	79	133	92	50	12	3	28	32	66	40	39	114	688
1966	147	50	116	38	37	1	3	13	34	161	74	144	818
1967	84	188	150	65	28	13	31	29	27	111	46	87	859
1968	105	94	142	27	34	16	15	60	38	107	136	102	876
1969	74	113	77	89	10	24	35	30	67	77	64	139	799
1970	203	88	74	95	47	9	2	3	97	69	19	140	846
1971	92	115	112	60	48	1	4	33	8	74	42	99	688
1972	81	114	213	114	9	1	32	6	87	73	61	97	888
1973	184	171	173	67	24	29	12	20	59	114	67	126	1,046
1974	111	96	106	42	9	18	3	56	50	55	35	56	637
1975	110	138	140	31	93	23	8	22	41	46	75	68	795
1976	103	131	88	46	25	22	15	9	77	2	67	75	660
1977	89	153	89	56	61	2	23	5	43	26	199	72	818
1978	105	161	95	20	24	18	18	24	93	91	89	51	789
1979	29	152	167	72	16	10	18	38	45	53	59	81	740
1980	95	88	75	24	33	12	34	12	56	88	86	40	643
1981	146	205	136	37	17	3	0	45	62	91	112	136	990
1982	103	159	84	43	1	17	10	31	61	84	132	106	831
1983	141	137	71	66	11	30	11	16	102	59	55	91	790
1984	75	143	102	62	24	28	5	17	8	55	102	93	714
1985	84	70	100	62	21	46	7	4	59	0	39	106	598
1986	166	163	126	87	47	0	21	19	63	12	60	129	893
1987	145	113	73	23	29	24	38	19	38	39	82	113	736
1988	134	84	84	94	27	0	2	0	65	39	61	68	658
1989	138	161	140	64	26	25	15	0	41	95	53	30	788
1990	179	40	84	37	32	101	13	16	66	106	95	118	887
1991	53	59	160	57	59	19	6	0	53	46	97	103	712
1992	78	56	81	26	2	24	17	36	19	87	44	51	521
1993	157	150	121	86	81	19	19	24	49	74	144	122	1,046
1994	115	154	122	98	15	0	11	28	33	47	20	99	742
1995	77	108	101	66	13	6	18	6	35	48	50	77	605
Mean	113	123	116	59	32	15	13	20	50	65	73	91	769
Max.	203	205	213	114	93	101	38	60	102	161	199	152	1,046
Min.	29	40	66	20	1	0	0	0	8	0	19	19	521

Table 16 Mean Monthly Discharge

Observation Station: Tunel Trasandino

(unit : m³/sec)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1965	3.49	3.70	3.46	3.44	2.94	2.46	2.56	2.73	2.34	2.41	2.35	2.96	2.90
1966	3.68	3.45	3.66	5.63	5.70	5.32	5.62	6.05	4.66	4.36	3.84	3.01	4.58
1967	2.12	1.34	1.56	5.29	4.29	5.20	6.26	6.25	6.04	7.13	5.76	4.95	4.68
1968	4.34	4.06	4.04	4.39	5.47	5.11	4.08	4.83	5.07	4.85	4.72	4.74	4.64
1969	4.21	4.17	3.75	4.42	4.38	5.49	5.44	6.55	5.80	5.33	5.16	3.78	4.87
1970	1.38	4.60	3.92	4.34	4.35	6.56	6.95	5.50	5.23	4.83	4.84	6.19	4.89
1971	4.12	4.39	3.66	4.65	5.79	5.73	6.91	6.34	5.67	6.92	6.38	5.01	5.46
1972	4.28	2.29	5.77	4.38	3.10	3.94	4.76	5.83	4.37	5.22	6.64	4.81	4.62
1973	5.94	5.99	7.92	8.37	6.48	5.84	6.94	7.21	8.02	7.35	6.17	6.33	6.88
1974	3.27	3.46	3.86	3.72	3.97	4.61	5.32	5.77	4.22	6.21	8.57	6.00	4.92
1975	3.82	4.03	5.64	3.12	4.24	6.38	7.13	8.61	7.75	6.55	7.09	4.04	5.70
1976	3.27	3.46	3.86	3.72	3.97	6.68	6.71	7.59	7.86	6.02	5.61	3.94	5.22
1977	3.85	4.93	5.24	4.78	5.15	6.21	5.85	7.61	4.89	3.87	4.83	4.14	5.11
1978	3.76	4.54	3.94	3.70	4.98	6.83	6.71	4.99	2.29	3.96	3.74	3.36	4.40
1979	2.96	3.62	4.85	3.43	3.21	6.22	5.07	3.25	3.80	4.49	4.60	4.92	4.20
1980	3.00	3.17	3.76	2.87	5.12	7.42	6.35	4.28	3.40	3.05	3.74	3.28	4.12
1981	3.10	4.04	3.85	2.94	2.98	6.03	6.04	7.09	6.52	3.87	3.72	3.83	4.50
1982	4.00	5.20	5.50	3.30	3.12	5.39	4.25	3.85	4.34	3.15	2.46	2.70	3.94
1983	3.37	3.21	3.47	4.24	3.69	5.22	4.53	5.57	2.98	5.38	5.87	3.17	4.23
1984	3.60	3.83	4.58	4.38	4.32	4.60	6.24	6.05	2.77	4.10	5.50	3.26	4.44
1985	2.76	4.20	4.27	4.82	3.85	5.49	5.57	6.36	5.08	8.43	5.42	4.40	5.05
1986	3.51	3.95	4.74	4.60	4.00	4.30	6.13	9.26	5.20	4.18	2.94	4.11	4.74
1987	3.02	3.70	3.04	3.18	6.90	5.62	3.93	3.63	7.02	5.45	4.49	2.85	4.40
1988	5.24	3.43	3.78	3.74	3.68	5.78	5.12	5.90	5.89	4.47	4.99	4.36	4.70
1989	3.50	3.67	3.61	3.31	4.04	5.42	4.97	5.38	5.15	4.97	5.95	6.66	4.72
1990	3.50	2.87	2.34	1.57	2.47	2.70	2.62	3.53	3.18	2.00	2.94	2.93	2.72
1991	2.69	2.68	4.48	2.87	3.61	5.41	5.03	5.06	5.89	4.88	3.50	3.95	4.17
1992	2.46	1.94	2.95	2.25	2.16	2.61	3.25	3.12	3.03	2.05	2.69	2.29	2.57
1993	2.92	3.38	3.56	2.80	2.17	2.77	3.47	4.59	4.50	3.03	2.68	4.03	3.33
1994	4.23	NA	NA	NA	3.25	4.16	3.76	3.35	3.47	6.33	5.05	3.86	4.16
Mean	3.51	3.70	4.11	3.94	4.11	5.18	5.25	5.54	4.88	4.83	4.74	4.13	4.50
Max.	5.94	5.99	7.92	8.37	6.90	7.42	7.13	9.26	8.02	8.43	8.57	6.66	6.88
Min.	1.38	1.34	1.56	1.57	2.16	2.46	2.56	2.73	2.29	2.00	2.35	2.29	2.57

Source: EDEGEL S.A.

Table 17 Mean Monthly Discharge

Observation Station: Tamboraque

(unit : m³/sec)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1972	NA	NA	NA	NA	NA	NA	7.84	6.80	7.01	7.86	8.19	11.50	8.20
1973	28.38	37.37	38.21	31.97	14.33	10.23	8.24	7.19	7.25	8.80	10.48	20.85	18.61
1974	31.06	34.80	36.44	23.99	12.40	10.14	7.90	6.67	6.65	6.69	7.97	9.15	16.16
1975	13.42	16.67	37.92	20.77	13.51	9.33	6.72	6.55	7.72	7.35	8.72	10.80	13.29
1976	25.69	37.86	34.88	19.71	12.05	9.48	7.03	6.57	6.83	7.48	9.00	11.60	15.68
1977	13.76	31.95	26.05	15.29	12.00	8.32	6.87	6.18	6.60	7.80	14.51	13.43	13.56
1978	19.53	32.45	20.21	13.29	10.11	8.03	7.14	6.10	6.86	7.75	9.70	12.16	12.78
1979	10.67	30.52	33.93	18.23	10.13	7.85	6.66	6.11	6.77	7.06	7.73	8.80	12.87
1980	15.59	16.19	18.74	13.97	9.07	7.37	6.03	5.56	6.12	10.99	11.54	14.52	11.31
1981	20.42	42.54	37.66	17.70	11.19	8.37	6.92	6.37	5.87	8.15	11.20	14.95	15.95
1982	21.00	44.90	27.53	17.55	10.85	7.30	6.39	5.59	5.45	7.25	11.57	11.56	14.75
1983	12.73	11.85	17.43	20.77	12.23	8.81	6.88	6.70	6.86	7.81	7.64	16.04	11.31
1984	15.97	44.38	38.47	26.28	14.96	11.31	7.66	6.00	6.35	9.15	11.18	22.61	17.86
1985	14.38	21.88	31.46	27.90	12.73	9.08	5.76	5.81	6.08	6.07	7.04	13.25	13.45
1986	30.21	37.05	38.53	30.50	20.23	10.81	8.63	7.09	6.49	6.74	9.04	13.59	18.24
1987	30.80	32.49	23.12	13.00	9.94	8.20	6.95	6.82	6.78	7.64	9.75	13.90	14.12
1988	22.70	32.67	25.14	26.08	11.39	8.10	6.75	6.59	6.63	7.08	7.63	11.90	14.39
1989	27.30	38.40	38.80	26.40	13.20	9.30	7.10	6.30	6.40	7.60	7.90	7.70	16.37
1990	17.60	12.60	11.17	9.48	8.18	7.02	5.83	5.38	5.40	7.92	12.58	14.28	9.79
1991	14.22	16.79	35.09	16.16	11.57	8.25	6.55	5.89	6.18	6.03	7.15	7.86	11.81
1992	12.11	9.84	14.61	11.17	8.14	6.85	5.90	5.53	5.99	7.23	7.00	7.96	8.53
1993	18.05	28.93	31.83	18.06	12.44	8.33	6.71	6.00	6.09	7.83	17.55	29.45	15.94
1994	32.33	43.70	41.78	31.48	17.12	11.10	8.28	6.85	7.08	7.19	9.04	10.50	18.87
1995	16.19	15.26	22.63	17.46	10.13	7.69	6.50	6.61	6.70	6.88	8.44	9.62	11.18
1996	20.40	31.40	30.20	26.67	12.00	8.90	7.20	6.80	6.70	6.80	7.40	9.40	14.49
1997	8.80	16.40	10.10	4.90	3.10	3.40	2.80	2.10	4.20	7.80	5.70	10.40	6.64
Mean	19.73	28.76	28.88	19.95	11.72	8.54	6.82	6.16	6.43	7.58	9.45	12.99	13.70
Max.	32.33	44.90	41.78	31.97	20.23	11.31	8.63	7.19	7.72	10.99	17.55	29.45	18.87
Min.	8.80	9.84	10.10	4.90	3.10	3.40	2.80	2.10	4.20	6.03	5.70	7.70	6.64

Source: EDEGEL S.A.

Table 18 Mean Monthly Discharge

Observation Station: Chosica (SENAMHI)

(unit : m³/sec)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1967	NA	NA	NA	NA	NA	NA	NA	NA	18.93	23.96	21.16	20.40	NA
1968	24.57	22.45	31.40	20.81	16.55	15.08	14.40	14.01	NA	18.30	21.66	24.92	NA
1969	22.63	37.44	50.36	30.51	18.03	16.47	14.38	14.63	15.55	15.99	17.27	43.18	24.70
1970	85.62	36.38	45.58	37.64	25.18	20.77	18.66	17.36	18.71	18.22	17.53	23.72	30.45
1971	40.22	48.13	77.98	40.38	22.31	21.80	20.08	20.16	19.17	18.72	15.87	26.72	30.96
1972	47.96	65.33	140.57	66.01	22.41	17.02	15.28	15.62	13.26	14.53	16.56	25.99	38.38
1973	56.48	61.81	75.95	59.46	20.61	12.89	11.77	13.55	9.55	11.64	13.12	23.27	30.84
1974	36.78	47.14	56.16	32.23	15.09	11.58	9.62	11.92	13.15	15.61	15.07	11.61	23.00
1975	18.66	18.65	100.36	39.27	28.50	23.63	21.33	22.28	21.56	20.40	21.87	22.88	29.95
1976	41.36	76.08	65.03	36.78	20.89	19.46	16.57	16.83	17.45	17.55	18.62	18.24	30.40
1977	20.84	70.96	65.89	33.82	24.81	19.42	18.80	19.11	19.31	19.56	29.93	31.12	30.38
1978	37.84	78.10	45.27	30.32	18.43	17.15	18.29	17.04	16.41	17.56	17.77	21.08	27.94
1979	19.84	75.31	94.25	36.29	18.15	17.93	16.66	17.14	18.29	18.66	18.17	18.65	30.78
1980	28.70	28.88	39.21	31.94	17.53	17.95	14.84	14.74	18.14	17.63	18.31	22.68	22.55
1981	36.86	86.83	72.56	43.72	21.89	21.27	19.75	21.05	20.99	14.63	16.72	22.98	33.27
1982	29.03	53.56	50.99	45.34	38.79	33.41	29.46	30.61	23.32	23.61	28.14	26.27	34.38
1983	31.31	28.78	58.62	70.12	37.52	28.17	22.90	19.03	15.55	26.30	25.50	35.30	33.26
1984	31.95	67.57	53.75	34.40	25.17	31.10	28.79	27.76	NA	NA	NA	NA	NA
1985	NA	NA	NA	NA	NA	NA	NA	NA	24.85	24.29	27.92	39.69	NA
1986	84.03	92.42	103.47	74.13	55.29	23.90	24.05	23.77	21.60	19.09	23.52	28.51	47.82
1987	54.03	81.89	96.76	30.59	23.25	20.93	18.69	19.51	20.43	21.41	22.59	23.15	36.10
1988	40.60	40.35	38.51	50.39	27.89	21.05	21.64	24.31	20.83	19.86	19.57	26.19	29.27
1989	31.74	43.75	50.07	38.37	22.21	17.93	16.72	16.30	16.31	16.77	17.97	16.71	25.40
1990	22.03	17.00	17.09	14.65	13.17	12.01	10.86	9.97	11.00	15.01	22.54	20.48	15.49
1991	21.82	26.65	41.28	27.52	23.10	15.40	13.88	14.53	15.23	18.83	17.51	17.50	21.10
1992	19.42	12.67	22.61	18.05	12.75	12.91	14.30	13.79	13.45	12.77	11.29	11.28	14.61
1993	35.24	54.62	57.97	36.97	23.82	16.08	15.72	15.33	16.25	16.59	31.56	53.95	31.17
1994	51.36	93.56	81.45	50.88	35.05	23.39	21.47	22.10	21.93	21.27	21.41	22.13	38.83
1995	27.33	24.12	33.70	34.63	20.76	20.30	19.34	20.97	21.06	20.60	19.57	20.83	23.60
1996	47.48	74.01	58.85	47.49	24.71	26.20	26.14	23.38	22.56	19.95	18.82	18.93	34.04
1997	28.10	48.00	30.20	17.88	16.82	17.21	17.58	18.20	17.88	19.32	22.71	35.81	24.14
1998	56.62	71.86	64.27	43.80	27.65	25.27	23.12	22.28	NA	NA	NA	NA	NA
Mean	37.68	52.81	60.37	39.15	23.94	19.92	18.50	18.57	18.02	18.62	20.34	25.14	29.36
Max.	85.62	93.56	140.57	74.13	55.29	33.41	29.46	30.61	24.85	26.30	31.56	53.95	47.82
Min.	18.66	12.67	17.09	14.65	12.75	11.58	9.62	9.97	9.55	11.64	11.29	11.28	14.61

Source: OFICINA GENERAL DE ESTADISTICA E INFORMATICA DEL SENAMHI

Table 19 Mean Monthly Discharge

Observation Station: Chosica (EDEGEL)

													(unit : m ³ /sec)		
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	: Max.	Average	Min.
(*) 1912	29.60	34.22	44.70	28.60	15.20	12.50	10.00	12.40	8.52	10.00	17.79	20.90	: 44.70	20.37	8.52
(*) 1913	46.01	43.49	80.91	61.60	16.60	13.10	12.00	10.00	10.84	13.90	26.40	26.80	: 80.91	30.14	10.00
(*) 1914	21.30	31.64	54.31	42.80	19.40	11.70	10.90	10.60	9.97	10.60	16.00	19.00	: 54.31	21.52	9.97
(*) 1915	21.80	50.40	39.91	25.90	14.40	11.00	11.70	13.40	15.00	17.40	21.50	29.50	: 50.40	22.66	11.00
(*) 1916	75.56	103.74	61.41	52.39	31.21	16.99	12.98	13.56	12.62	10.61	13.38	20.70	: 103.74	35.43	10.61
(*) 1917	48.22	37.43	63.74	55.02	19.66	12.28	12.74	11.67	9.79	11.01	27.99	22.54	: 63.74	27.67	9.79
(*) 1918	82.05	97.61	75.45	40.04	20.10	14.24	9.72	10.18	11.21	10.98	16.62	44.63	: 97.61	36.07	9.72
(*) 1919	19.61	48.85	52.65	27.06	15.74	13.53	10.26	12.04	12.23	12.91	18.98	25.36	: 52.65	22.44	10.26
(*) 1920	45.39	43.15	91.73	64.66	22.51	12.22	11.06	10.46	8.17	10.52	13.82	51.19	: 91.73	32.07	8.17
(*) 1921	47.46	57.62	73.39	45.32	23.21	14.18	11.15	8.53	11.97	10.47	12.69	30.96	: 73.39	28.91	8.53
(*) 1922	27.00	44.01	68.69	42.01	27.61	10.59	10.23	8.15	11.36	14.02	15.20	25.64	: 68.69	25.38	8.15
(*) 1923	52.61	38.23	65.91	54.85	23.27	13.16	10.24	7.63	12.08	15.12	17.98	31.68	: 65.91	28.56	7.63
(*) 1924	35.28	41.83	66.41	45.37	20.88	12.55	10.52	11.72	13.16	14.63	15.68	35.97	: 66.41	27.00	10.52
(*) 1925	30.03	46.78	110.01	41.50	21.62	6.96	7.53	9.62	13.89	13.18	12.85	18.73	: 110.01	27.73	6.96
(*) 1926	34.72	83.23	105.11	59.21	27.48	8.97	8.44	11.55	14.29	13.64	15.16	21.41	: 105.11	33.60	8.44
(*) 1927	46.13	62.79	103.97	43.61	29.38	11.89	6.75	9.23	13.78	12.93	13.42	22.46	: 103.97	31.36	6.75
(*) 1928	38.55	79.17	91.50	52.50	24.06	8.51	9.04	11.46	12.48	12.38	14.51	25.54	: 91.50	31.64	8.51
(*) 1929	60.44	97.72	94.73	35.42	13.23	7.40	7.45	8.16	13.17	14.25	20.27	18.11	: 97.72	32.53	7.40
(*) 1930	44.49	33.36	96.45	73.88	46.25	21.88	8.84	9.72	9.51	9.94	13.58	23.41	: 96.45	32.61	8.84
(*) 1931	25.94	37.45	39.80	28.94	21.79	17.07	11.84	9.20	12.08	13.32	17.13	16.19	: 39.80	20.90	9.20
(*) 1932	46.29	131.57	69.31	49.50	27.82	12.85	12.18	13.23	10.62	12.80	17.32	35.85	: 131.57	36.61	10.62
(*) 1933	28.72	63.87	102.25	56.47	29.22	18.07	12.45	12.51	12.25	12.44	12.94	19.14	: 102.25	31.69	12.25
(*) 1934	50.05	77.92	118.63	54.81	32.84	22.44	15.38	12.09	11.62	12.91	13.22	21.04	: 118.63	36.91	11.62
(*) 1935	59.44	58.33	145.69	45.80	25.38	13.40	12.37	12.57	12.82	13.05	13.52	12.78	: 145.69	35.43	12.37
(*) 1936	55.30	40.98	45.29	29.68	18.89	13.10	12.55	12.51	12.56	12.72	13.05	36.10	: 55.30	25.23	12.51
(*) 1937	22.43	25.82	69.14	25.93	17.20	13.06	12.03	11.87	12.63	13.60	14.24	13.40	: 69.14	20.95	11.87
(*) 1938	32.64	91.28	60.42	44.94	22.86	13.32	13.05	12.75	12.63	12.61	12.96	22.78	: 91.28	29.35	12.61
(*) 1939	23.53	60.41	128.08	48.44	20.88	13.25	12.01	12.27	12.56	13.00	13.05	13.92	: 128.08	30.95	12.01
(*) 1940	44.23	32.38	75.30	33.85	16.71	13.38	12.15	12.61	12.63	12.95	13.60	21.38	: 75.30	25.10	12.15
(*) 1941	41.38	74.38	101.25	16.94	13.56	12.05	11.76	12.20	12.23	14.10	17.13	13.21	: 101.25	28.35	11.76
(*) 1942	53.90	76.64	53.06	31.07	19.07	14.14	13.84	13.55	12.54	12.76	12.73	28.97	: 76.64	28.52	12.54
(*) 1943	38.73	104.99	69.19	53.13	17.42	13.02	12.88	13.06	12.77	13.60	13.79	17.32	: 104.99	31.66	12.77
(*) 1944	47.50	57.07	67.08	32.01	18.22	14.02	13.00	13.03	12.60	13.42	13.67	23.79	: 67.08	27.12	12.60
(*) 1945	29.35	41.12	57.00	37.47	18.82	13.96	12.37	11.96	11.58	13.10	18.06	16.04	: 57.00	23.40	11.58
(*) 1946	70.05	56.35	109.79	53.44	25.44	15.67	12.72	12.29	12.63	13.24	18.50	31.92	: 109.79	36.00	12.29
(*) 1947	39.97	36.20	69.96	30.63	21.24	13.53	11.65	12.13	12.63	15.09	14.65	35.99	: 69.96	26.14	11.65
(*) 1948	56.61	46.00	54.95	36.27	25.37	19.52	15.32	12.59	12.65	22.79	22.35	17.69	: 56.61	28.51	12.59
(*) 1949	29.97	26.07	62.08	31.86	17.81	14.35	13.78	13.34	12.62	13.32	16.02	17.11	: 62.08	22.36	12.62
(*) 1950	37.99	44.71	45.36	40.34	20.56	15.11	13.26	12.79	12.06	12.44	14.37	11.89	: 45.36	23.41	11.89
(*) 1951	44.55	71.18	114.85	45.12	20.95	18.14	13.63	12.64	12.56	14.45	29.52	39.95	: 114.85	36.46	12.56
(*) 1952	66.48	85.43	86.53	51.88	20.08	17.60	14.74	12.66	13.21	13.14	17.97	31.86	: 86.53	35.97	12.66
(*) 1953	35.00	98.57	81.51	50.27	22.87	17.79	15.47	13.97	14.11	14.26	26.58	25.19	: 98.57	34.63	13.97
(*) 1954	47.69	90.11	94.68	31.43	23.16	17.63	14.90	13.89	13.11	14.71	20.67	28.74	: 94.68	34.23	13.11
(*) 1955	41.72	70.73	114.01	39.25	21.77	18.26	16.04	13.40	12.82	12.16	11.58	20.24	: 114.01	32.67	11.58
(*) 1956	18.42	72.89	69.28	37.43	16.66	12.21	10.86	11.93	12.48	11.82	11.39	15.18	: 72.89	25.05	10.86
(*) 1957	15.99	40.10	48.82	30.93	14.24	10.26	9.83	10.73	11.10	11.43	11.89	11.98	: 48.82	18.94	9.83
(*) 1958	17.44	40.21	48.45	17.99	12.32	10.55	10.40	10.55	10.78	12.04	12.36	13.12	: 48.45	18.02	10.40
(*) 1959	12.23	64.78	71.12	57.65	19.14	12.76	12.30	11.77	11.30	15.29	14.82	12.45	: 71.12	26.30	11.30
(*) 1960	31.35	38.27	40.60	22.34	14.34	12.28	11.78	11.62	12.07	13.10	13.64	23.82	: 40.60	20.43	11.62

(unit : m³/sec)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Max.	Average	Min.
(*) 1961	27.21	47.52	43.58	39.72	21.70	14.11	12.58	12.41	12.59	12.89	19.79	13.22	47.52	23.11	12.41
(*) 1962	41.38	39.27	61.49	32.15	17.62	13.91	13.98	14.15	13.45	13.73	13.12	33.73	61.49	25.67	13.12
(*) 1963	48.30	46.01	60.55	35.49	19.93	15.57	14.62	14.16	14.39	15.55	19.12	17.20	60.55	26.74	14.16
(*) 1964	22.89	35.74	53.53	42.38	22.38	15.35	14.76	14.84	14.91	15.41	14.16	34.81	53.53	25.10	14.16
(**) 1965	17.80	50.32	42.95	19.59	15.33	12.05	12.24	11.20	12.44	13.45	13.47	15.98	50.32	19.74	11.20
(**) 1966	31.34	27.67	36.04	23.83	18.22	14.13	14.27	13.66	14.30	19.61	19.33	26.15	36.04	21.55	13.66
(**) 1967	25.64	62.30	62.45	33.10	20.31	17.06	17.52	16.21	18.23	22.92	20.09	19.24	62.45	27.92	16.21
(**) 1968	23.09	21.07	29.98	19.38	15.54	13.98	13.45	12.92	13.61	15.09	16.82	17.97	29.98	17.74	12.92
(**) 1969	15.69	22.41	33.18	29.03	16.52	15.68	14.51	14.46	14.62	15.07	16.68	37.33	37.33	20.43	14.46
(**) 1970	66.31	35.69	31.13	27.84	21.83	18.44	17.04	16.76	18.18	18.73	18.66	27.27	66.31	26.49	16.76
(**) 1971	35.97	45.79	68.70	34.32	21.13	19.77	18.79	17.92	18.74	17.68	16.26	22.80	68.70	28.16	16.26
(**) 1972	38.16	43.12	88.54	51.20	22.25	16.61	16.06	16.14	16.23	16.67	16.67	25.04	88.54	30.56	16.06
(**) 1973	56.03	80.69	89.88	72.52	34.27	17.93	19.59	19.30	17.60	19.05	22.09	37.58	89.88	40.54	17.60
(**) 1974	49.79	57.74	61.42	38.73	19.11	18.60	16.15	16.77	19.58	19.49	22.04	18.81	61.42	29.85	16.15
(**) 1975	23.15	26.38	65.54	32.73	21.95	18.67	16.38	18.40	17.81	17.96	20.49	20.59	65.54	25.00	16.38
(**) 1976	37.82	58.35	53.90	30.09	19.57	18.02	15.34	15.76	17.51	18.12	19.27	19.02	58.35	26.90	15.34
(**) 1977	21.19	57.69	40.95	25.05	19.52	16.06	15.56	16.47	16.54	16.29	23.20	21.56	57.69	24.17	15.56
(**) 1978	28.57	53.96	32.07	21.72	17.48	17.02	17.19	17.28	17.31	17.39	17.88	20.08	53.96	23.16	17.02
(**) 1979	17.11	50.66	58.17	30.35	17.15	16.92	15.43	16.06	18.37	16.46	16.67	16.55	58.17	24.16	15.43
(**) 1980	25.22	25.38	32.19	24.16	17.51	17.18	15.36	15.15	16.41	19.04	20.28	24.61	32.19	21.04	15.15
(**) 1981	31.89	74.32	64.50	31.00	18.53	17.67	18.05	18.35	17.82	17.52	20.71	25.37	74.32	29.64	17.52
(**) 1982	31.05	78.06	44.79	29.34	19.38	16.31	16.74	16.41	15.26	16.47	20.37	19.69	78.06	26.99	15.26
(**) 1983	23.11	20.23	31.27	37.07	19.83	19.54	16.73	17.80	17.21	19.03	19.41	26.18	37.07	22.28	16.73
(**) 1984	26.42	80.29	68.02	45.96	26.92	20.79	19.87	18.95	17.01	19.59	21.99	34.25	80.29	33.34	17.01
(**) 1985	23.62	37.67	52.47	48.38	23.21	19.13	16.08	20.10	18.15	18.58	18.51	24.69	52.47	26.72	16.08
(**) 1986	50.05	68.92	66.74	52.27	34.22	21.06	20.58	19.50	16.68	17.10	18.52	23.23	68.92	34.07	16.68
(**) 1987	47.84	51.80	35.72	22.26	18.63	17.04	16.27	17.51	17.67	16.85	17.56	21.67	51.80	25.07	16.27
(**) 1988	37.24	55.66	36.73	42.28	20.29	16.84	17.17	18.11	16.67	16.03	16.05	18.95	55.66	26.00	16.03
(**) 1989	41.15	61.58	61.18	51.70	22.80	18.20	16.83	16.73	17.18	18.01	19.74	17.96	61.58	30.26	16.73
(**) 1990	27.44	18.99	17.43	13.47	11.54	10.37	9.81	9.29	10.25	13.04	19.38	21.71	27.44	15.23	9.29
(**) 1991	21.75	27.66	54.20	25.52	19.66	15.80	15.16	15.63	16.57	16.68	16.10	15.94	54.20	21.72	15.16
(**) 1992	18.59	13.41	22.80	16.99	11.86	11.45	12.35	12.45	12.34	12.35	12.07	12.61	22.80	14.11	11.45
(**) 1993	26.36	43.86	49.86	30.67	19.32	13.46	14.61	14.92	14.98	15.66	28.01	44.94	49.86	26.39	13.46
(**) 1994	50.66	67.99	62.42	48.92	30.62	21.99	19.29	19.53	19.87	21.67	20.66	21.00	67.99	33.72	19.29
(**) 1995	24.22	21.48	32.38	29.15	16.99	15.45	15.46	17.90	18.20	17.05	16.75	19.03	32.38	20.34	15.45
(**) 1996	32.08	48.00	45.42	37.62	20.72	21.61	18.80	20.87	20.13	17.83	16.37	16.14	48.00	26.30	16.14
(**) 1997	23.71	41.17	24.94	14.60	14.50	15.11	15.24	15.19	15.23	17.05	19.64	26.62	41.17	20.25	14.50
(**) 1998	36.54	40.08	43.07	29.79	23.92	22.49	20.88	19.30	19.84	21.18	22.40	21.20	43.07	26.72	19.30
(**) 1999	20.23	28.83	41.93	35.10	25.36	20.54	20.72	20.52	20.66	20.55	20.42	25.88	41.93	25.06	20.23
(**) 2000	39.43	50.18	65.75	41.46	28.91	22.71	22.03	22.35	22.74	23.78	22.38	25.48	65.75	32.27	22.03
(**) 2001	54.56	53.70	66.74	40.89	25.68	22.75	22.51								
Max.	70.05	131.57	145.69	73.88	46.25	22.75	22.51	22.35	22.74	23.78	29.52	51.19	145.69	40.54	22.03
Mean	36.19	53.11	64.83	37.95	21.32	15.59	14.19	14.07	14.46	15.35	17.17	23.29	69.93	27.25	13.23
Min.	12.23	13.41	17.43	13.47	11.54	6.96	6.75	7.63	8.17	9.94	11.39	11.89	22.80	14.11	6.75

Source: SEDAPAL 2001,07,31

(*) Data from Estudio Técnico "C-31" - José Arrisueño Arispe - Agosto 1978

(**) Data provided from EDEGEL, Huampaní intake

Note :Data between 1912 and 1962 are before the operation of the lagoons.

Table 20 Mean Monthly Discharge

Observation Station: Bocatoma Sheque

(unit : m³/sec)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1965	4.18	14.89	13.15	5.55	4.69	7.09	8.71	8.66	8.97	8.31	7.80	5.51	8.13
1966	14.81	11.46	12.73	8.36	3.76	9.48	7.82	8.48	8.77	10.73	9.50	6.49	9.37
1967	5.50	28.46	25.74	8.55	5.24	9.41	12.68	15.54	16.12	16.68	12.58	4.74	13.44
1968	5.76	4.08	8.19	6.05	2.81	5.08	6.51	7.34	8.00	7.24	8.51	3.34	6.08
1969	2.84	8.51	10.70	11.03	4.76	6.80	7.35	8.50	8.84	7.96	8.49	15.48	8.44
1970	22.43	11.16	10.86	10.44	7.72	10.71	12.51	13.16	16.50	13.66	9.75	10.01	12.41
1971	13.56	17.92	25.02	13.99	6.90	9.64	10.46	12.49	12.47	10.95	7.85	6.85	12.34
1972	17.85	14.92	30.54	18.21	7.34	11.45	12.43	14.03	14.41	12.65	9.20	8.90	14.33
1973	19.59	26.65	24.97	20.00	7.90	12.10	13.76	13.99	15.66	16.58	13.60	12.57	16.45
1974	14.65	16.50	19.66	9.35	3.73	10.08	11.12	12.68	12.96	11.61	8.97	4.72	11.34
1975	8.42	8.76	23.62	9.98	6.73	10.92	10.03	11.66	17.45	10.26	9.76	2.50	10.84
1976	10.26	17.54	15.53	8.87	4.18	11.21	11.50	13.53	13.52	10.11	7.58	2.99	10.57
1977	6.11	22.36	13.44	8.07	6.30	7.63	8.90	10.21	9.59	9.59	13.26	6.97	10.20
1978	7.76	17.57	9.75	6.16	4.40	8.31	9.34	11.62	11.73	11.35	8.44	6.03	9.37
1979	4.68	16.91	21.74	10.69	4.89	7.86	9.91	11.50	14.33	9.08	6.88	1.01	9.96
1980	8.46	7.04	12.84	8.98	4.12	7.60	8.69	9.17	12.19	11.02	13.71	7.38	9.27
1981	10.03	27.38	21.58	9.30	5.02	10.71	14.10	14.53	15.00	14.25	16.48	9.23	13.97
1982	8.48	28.51	11.69	6.10	5.64	8.10	10.36	14.57	12.16	11.84	13.43	5.69	11.38
1983	8.84	5.09	13.00	13.24	4.65	8.83	8.34	9.63	10.39	8.37	6.34	6.56	8.61
1984	9.36	32.15	24.61	15.00	7.80	11.92	12.90	15.16	16.23	14.48	11.47	12.84	15.33
1985	7.71	13.18	17.79	14.07	6.88	11.35	13.35	13.42	14.14	10.14	9.37	8.37	11.65
1986	17.29	18.60	24.46	18.53	9.11	12.86	12.25	14.71	15.28	12.16	9.86	6.26	14.28
1987	17.83	17.88	10.81	5.55	3.58	8.36	11.57	13.34	13.11	11.64	10.07	8.48	11.02
1988	14.31	20.27	11.74	14.19	6.67	10.09	11.11	11.96	12.15	10.64	8.92	3.12	11.26
1989	15.25	23.67	21.46	14.72	6.92	9.67	11.82	13.03	13.99	14.62	11.51	1.16	13.15
1990	9.80	5.49	6.01	4.16	1.81	7.80	5.96	6.19	7.61	8.59	18.54	8.61	7.55
1991	7.76	9.41	18.56	8.32	6.97	8.67	10.26	10.47	11.05	9.56	8.59	3.06	9.39
1992	5.79	3.02	8.19	5.94	3.30	4.80	5.80	6.72	6.04	7.41	5.03	2.02	5.34
1993	7.91	15.23	18.02	12.29	7.13	7.81	9.44	10.75	11.52	12.46	20.62	15.47	12.39
1994	18.12	19.94	18.97	19.17	10.18	14.35	14.92	16.91	17.95	13.22	12.64	6.19	15.21
1995	9.73	8.18	13.03	12.47	4.91	7.18	8.25	9.52	9.54	8.08	9.48	7.70	9.01
1996	13.81	21.04	18.17	13.18	6.14	8.63	9.64	12.10	11.83	9.57	8.84	4.01	11.41
1997	2.93	5.02	2.41	3.26	4.82	7.51	8.85	8.15	9.41	8.21	4.47	5.84	5.91
1998	5.10	8.52	9.82	2.19	6.51	9.01	8.90	9.67	7.75	7.11	9.54	7.69	7.65
Mean	10.50	15.51	16.14	10.47	5.69	9.21	10.28	11.57	12.25	10.89	10.33	6.70	10.79
Max.	22.43	32.15	30.54	20.00	10.18	14.35	14.92	16.91	17.95	16.68	20.62	15.48	16.45
Min.	2.84	3.02	2.41	2.19	1.81	4.80	5.80	6.19	6.04	7.11	4.47	1.01	5.34

Source: EDEGEL S.A.

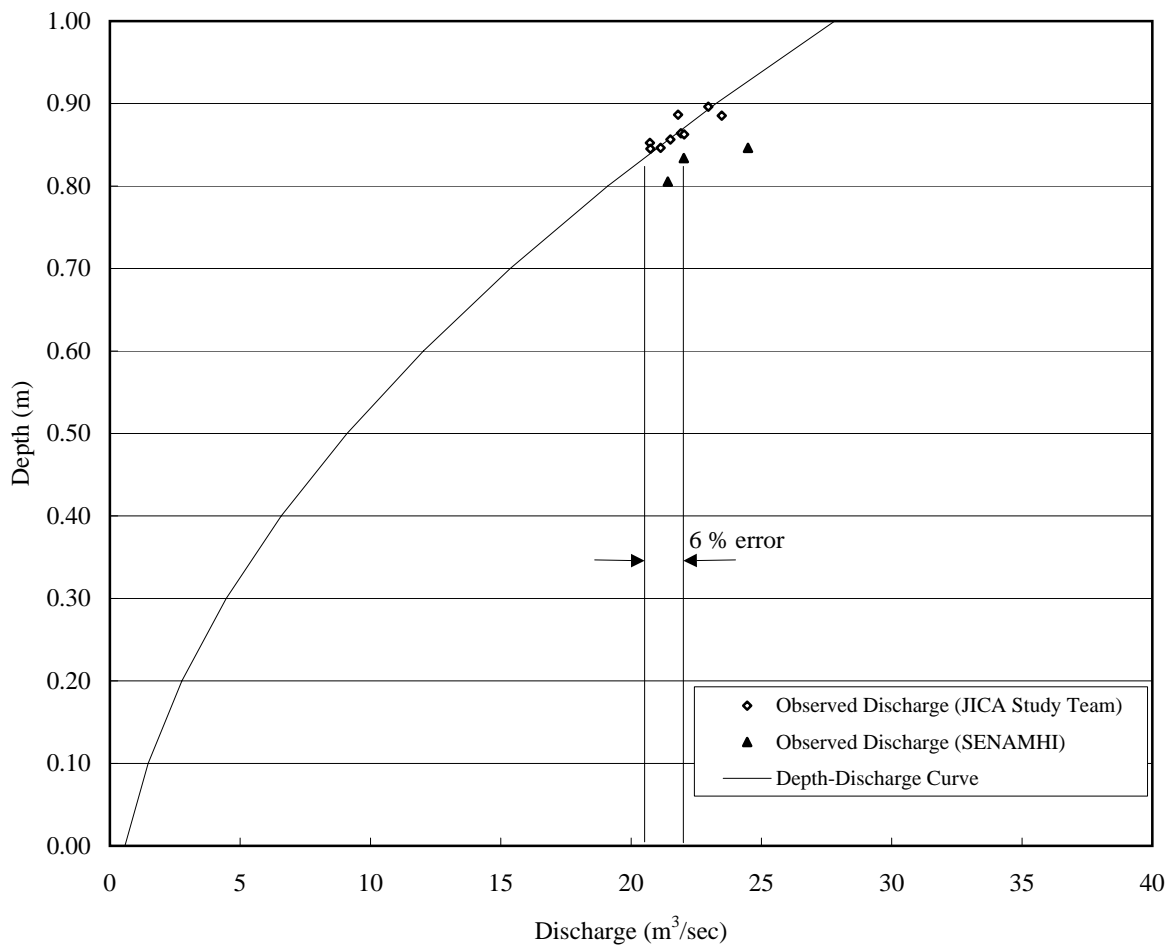
No.	Discharge (m ³ /sec)	Area (m ²)	Depth (m)
Observation Data by JICA Study Team			
1	23.478	14.875	0.885
2	21.804	14.893	0.886
3	22.962	15.055	0.896
4	20.723	14.320	0.852
5	21.131	14.217	0.846
6	20.738	14.199	0.845
7	21.912	14.515	0.864
8	22.033	14.492	0.863
9	21.509	14.387	0.856

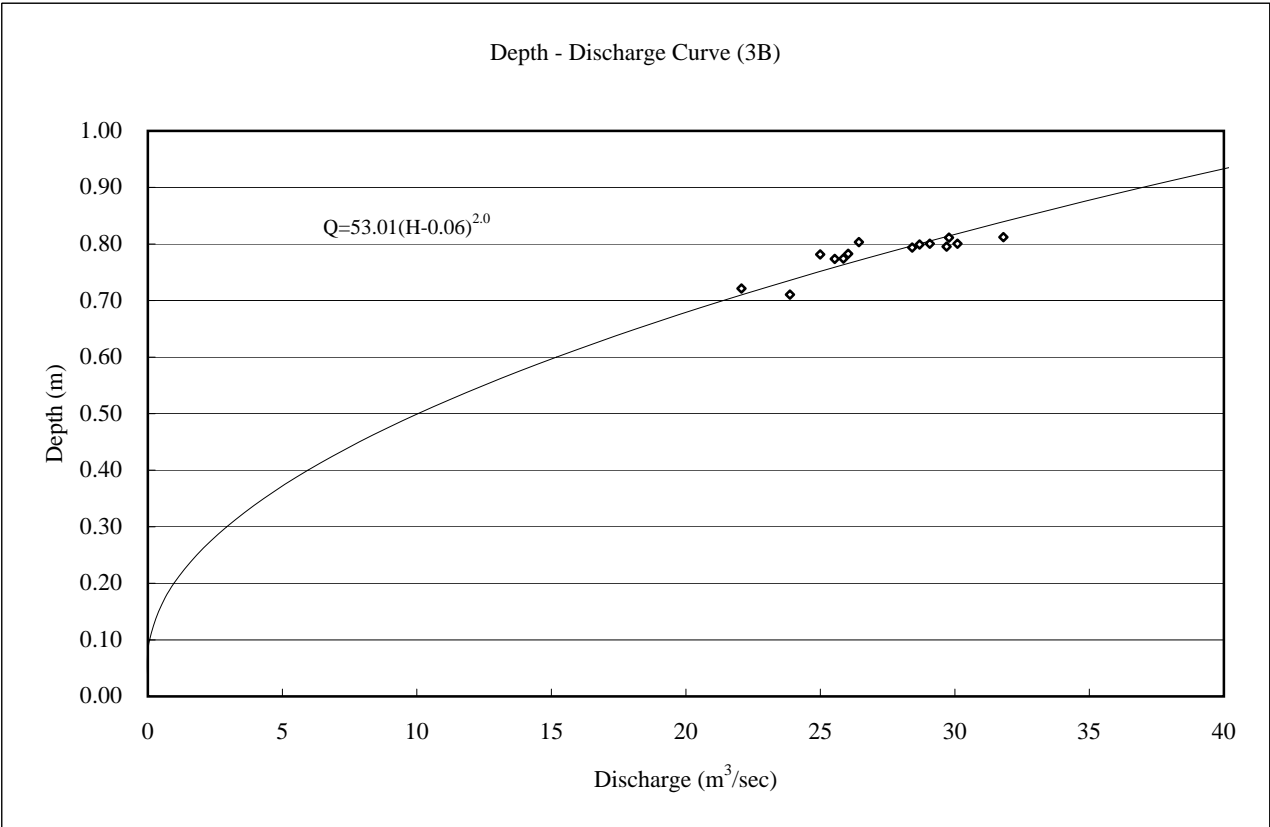
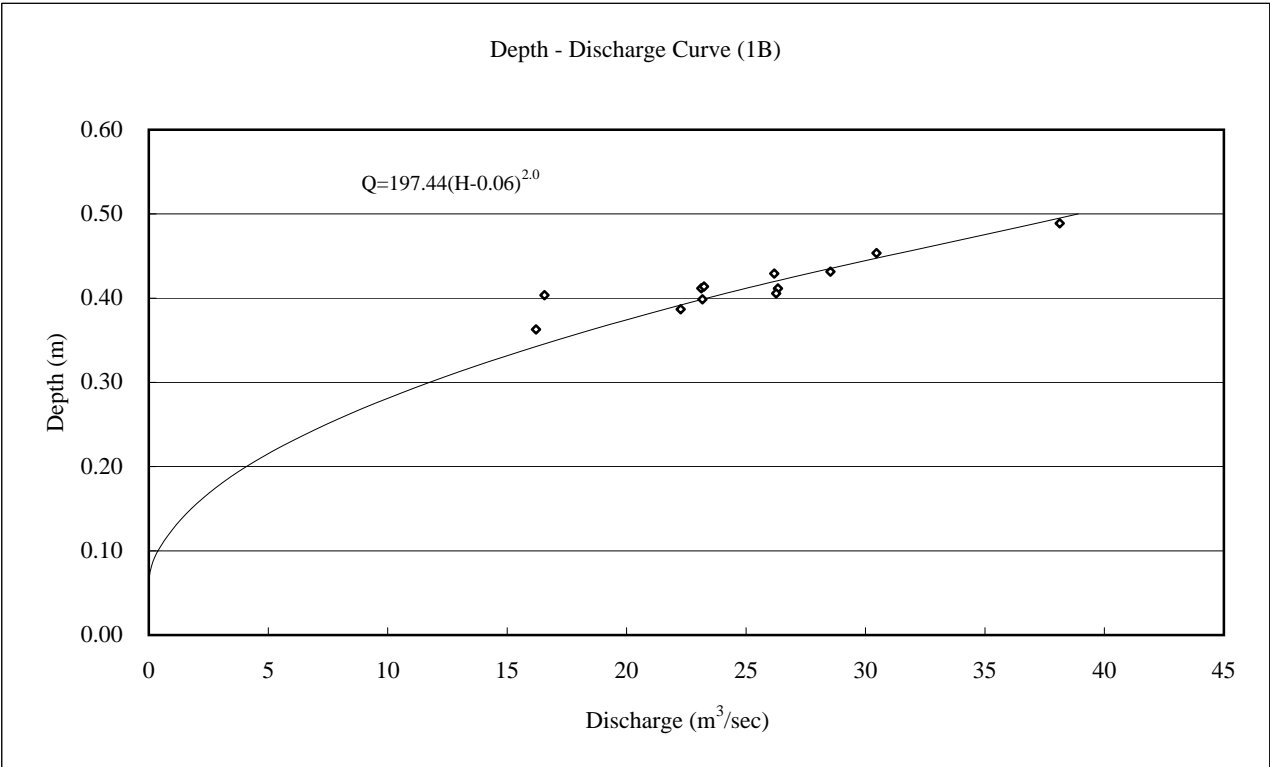
$$Q = 20.39 \times (H+0.17)^{2.0}$$

Q: Discharge (m³/sec)
H: Depth (m)

Observation Data by SENAMHI			
1	22.025	14.010	0.834
2	21.410	13.530	0.805
3	24.486	14.220	0.846

Depth - Discharge Curve Observed by JICA Study Team and SENAMHI

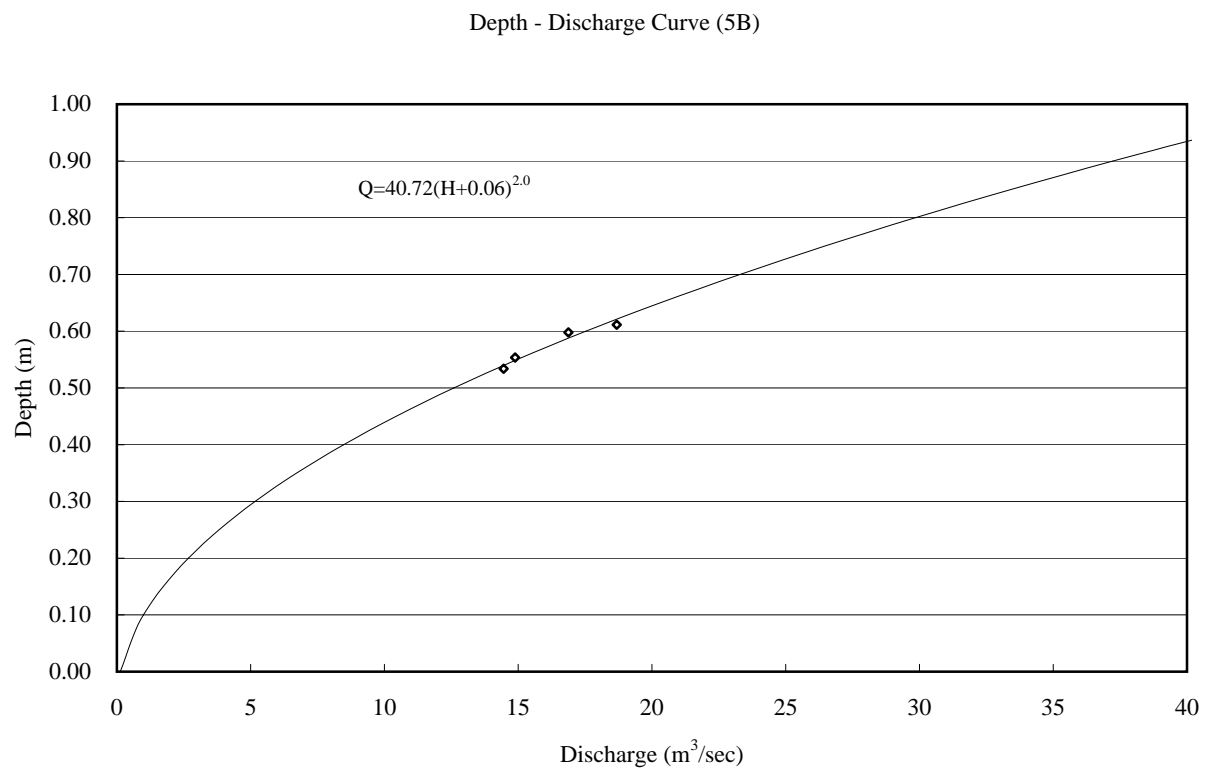
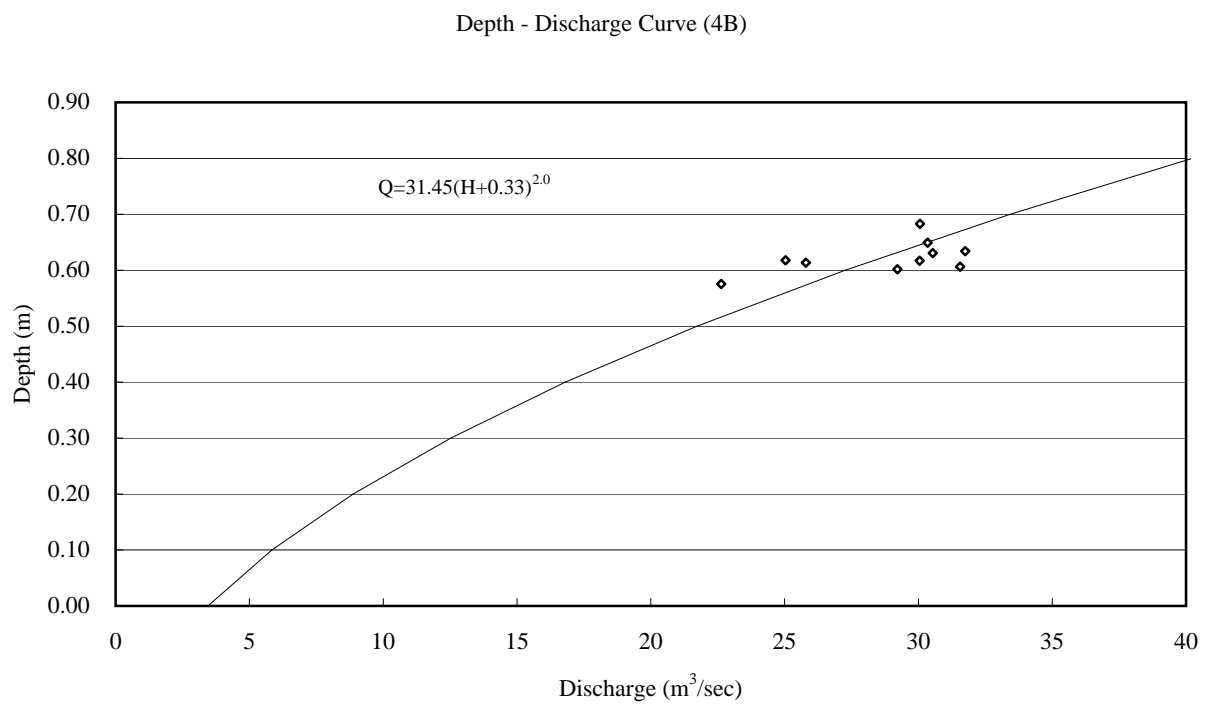




2B is not shown because one observation was conducted.

SUPPLEMENTAL INVESTIGATION
OF
THE STUDY ON INTEGRATED WATER RESOURCES DEVELOPMENT
IN THE CAÑETE RIVER BASIN IN THE REPUBLIC OF PERU
JAPAN INTERNATIONAL COOPERATION AGENCY

Figure 2
Depth - Discharge Curve (1/2)



SUPPLEMENTAL INVESTIGATION
OF

THE STUDY ON INTEGRATED WATER RESOURCES DEVELOPMENT
IN THE CAÑETE RIVER BASIN IN THE REPUBLIC OF PERU

JAPAN INTERNATIONAL COOPERATION AGENCY

Figure 3

Depth - Discharge Curve (2/2)

SEDAPAL Water Balance in Year 2030 Alternative 1a^(*)

Alternative 1a - including Cañete river (al 2021)				Year: 2030														
Description	Imp. Date	Probable Discharg	Ref.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average	Dry season	Wet season
Sources																		
Rímac River Basin																		
Rímac river at 90%	-	22.22	1	28.94	45.73	50.27	31.14	16.88	12.32	11.46	11.38	11.97	12.83	14.25	19.42	22.22	13.01	35.10
Yuracmayo	-	2.50	2	-	-	-	-	2.00	2.00	2.00	2.00	2.00	2.00	2.00	-	1.17	2.00	-
Marca III	2001	3.10	3	-	-	-	-	5.31	5.31	5.31	5.31	5.31	5.31	5.31	-	3.10	5.31	-
Marca II	2002	3.95	4	-	-	-	-	6.00	6.00	6.00	6.00	6.00	6.00	6.00	-	3.50	6.00	-
Losses ^(**)		-5%		-	-	-	-	(0.67)	(0.67)	(0.67)	(0.67)	(0.67)	(0.67)	(0.67)	-	(0.39)	(0.67)	-
Total Rímac River Basin				28.94	45.73	50.27	31.14	29.53	24.97	24.11	24.03	24.62	25.48	26.90	19.42	29.60	25.66	35.10
Chillón River Basin																		
Chillón river (Irrigation Water Deman	-	1.00	6	1.30	1.80	1.90	1.70	1.00	1.30	0.80	0.30	0.30	0.30	0.30	1.00	1.00	0.61	1.54
Chillón Extraction/Recharge	2000	0.53	7	-	-	-	-	-	0.10	0.10	0.10	0.10	0.10	0.20	-	0.06	0.10	-
Huascacocha Reservoir	2010	1.92	8	1.10	1.10	1.10	1.10	2.50	2.50	2.50	2.50	2.50	2.50	2.50	1.10	1.92	2.50	1.10
Total Chillón River Basin				2.40	2.90	3.00	2.80	3.50	3.90	3.40	2.90	2.90	2.90	3.00	2.10	2.98	3.21	2.64
Lurín River Basin																		
Lurín river at 90%	-	2.28	9	2.13	8.77	10.84	4.41	0.30	0.15	0.05	0.02	0.02	0.01	0.04	0.65	2.28	0.08	5.36
Lurín River New Wells	2002	0.30	10	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Total Lurín River Basin				2.43	9.07	11.14	4.71	0.60	0.45	0.35	0.32	0.32	0.31	0.34	0.95	2.58	0.38	5.66
Cañete River	2021	7.50	11	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Wells		5.00		3.70	3.70	3.70	3.70	6.52	6.52	6.52	6.52	6.52	6.52	6.52	3.70	5.35	6.52	3.70
TOTAL SOURCES				42.47	66.40	73.11	47.35	45.15	40.84	39.38	38.77	39.36	40.21	41.76	31.17	45.51	40.78	52.10
Total Produced Water Required (**)				42.03	42.03	42.03	42.03	42.03	42.03	42.03	42.03	42.03	42.03	42.03	42.03	42.03	42.03	42.03
Seasonal Factor				1.03	1.07	1.09	1.05	1.00	0.98	0.95	0.98	0.06	0.92	0.97	0.99	1.00	0.97	1.05
Monthly Produced Water required				43.29	44.97	45.81	44.13	42.03	41.19	39.93	41.19	40.35	38.67	40.77	41.61	41.99	40.59	43.96
Superavit (Déficit) Potable Water				(0.82)	21.43	27.30	3.22	3.12	(0.35)	(0.55)	(2.42)	(0.99)	1.55	0.99	(10.44)	3.50	0.19	8.14
Agriculture, Irrigation Demand (Rímac and Lurín)				2.50	2.50	2.50	2.50	1.80	1.80	1.80	1.80	1.80	1.80	1.80	2.50	2.09	1.80	2.50
Minus Water Reuse Projects	2005			0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Superavit (Déficit) Raw Water				(2.82)	19.43	25.30	1.22	1.82	(1.65)	(1.85)	(3.72)	(2.29)	0.25	(0.31)	(12.44)	1.91	(1.11)	6.14

(*) Table took from Volume V, Tome 1, Potable Water "Master Plan of the Lima and Callo Potable Water and Sewerage System", December 1998.

(**) Losses = 5 % of the dry season discharge = 0.67 m³/sec

Annex III Moritz Formula

The Moritz formula suggests computations of total seepage loss in cubic feet per second (cfs) per mile of canal as follows:

$$S = 0.2 \cdot C \cdot \sqrt{Q/V}$$

where, S=loss in cfs per mile of canal,

Q=discharge of canal in cfs,

V=mean velocity of flow in fps, and

C=cubic feet of water lost in 24 hours through each square foot of wetted area of canal prism.

Observations on eight different projects gave the following average figures for the value of C in earth canals. These factors are suitable for rough preliminary estimates, but measurements have shown that actual seepage losses vary widely within each of the general soil types. For design purposes, therefore, it is usually necessary to make estimates of seepage losses in questionable areas on the basis of field tests.

Value of C

Type of materials	Value of C
Cemented gravel and hardpan with sandy loam	0.34
Clay and clayey loam	0.41
Sandy loam	0.66
Volcanic ash	0.68
Volcanic ash with sand	0.98
Sand and volcanic ash or clay	1.20
Sandy soil with rock	1.68
Sandy and gravelly soil	2.20

Annex IV-1

Discharge and Water Demand

Month/Year	Surface flow discharge at Chosica (SENAMHI Station)	1995 1998								Case A1											
		Surface flow discharge at La Atarjea								WATER DEMANDS					SURPLUS OR DEFICIT CASE A1						
		A, C	B	Case A: M1	Case A1: M1+YU	Case B1: M1+YU+M3	Case B2: M1+YU+M2+M3	Case C1: M1+YU+M2+M3+HU+MA	Qc	La Atarjea	La Atarjea	La Atarjea	La Atarjea	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	Def.2000	Def.2005	Def.2010
01/79	19.84	13.84	19.17	13.84	13.84	19.17	19.17	13.84	33.08	27.15	30.03	36.25	41.41	-19.24	-13.31	-16.19	-22.42	-27.57			
02/79	75.31	69.31	74.64	69.31	69.31	74.64	74.64	69.31	34.36	28.21	31.19	37.66	43.02	34.95	41.11	38.12	31.65	26.30			
03/79	94.25	88.25	93.58	88.25	88.25	93.58	93.58	88.25	35.00	28.73	31.78	38.36	43.82	53.25	59.52	56.48	49.89	44.43			
04/79	36.29	30.29	35.62	30.29	30.29	35.62	35.62	30.29	33.72	27.68	30.61	36.96	42.21	-3.43	2.61	-0.32	-6.66	-11.92			
05/79	18.15	12.15	17.48	12.15	12.15	17.48	17.48	12.15	32.12	26.36	29.15	35.20	40.20	-19.97	-14.21	-17.01	-23.05	-28.06			
06/79	17.93	11.93	17.26	11.93	13.71	22.04	28.54	30.71	31.47	25.84	28.57	34.50	39.40	-17.76	-12.12	-14.86	-20.78	-25.69			
07/79	16.66	10.66	15.99	10.66	12.44	20.77	27.27	29.44	30.51	25.04	27.70	33.44	38.19	-18.07	-12.60	-15.25	-21.00	-25.75			
08/79	17.14	11.14	16.47	11.14	12.92	21.25	27.75	29.92	31.47	25.84	28.57	34.50	39.40	-18.56	-12.92	-15.66	-21.58	-26.49			
09/79	18.29	12.29	17.62	12.29	14.07	22.40	28.90	31.07	30.83	25.31	27.99	33.79	38.60	-16.76	-11.24	-13.92	-19.72	-24.53			
10/79	18.66	12.66	17.99	12.66	14.44	22.77	29.27	31.44	29.55	24.25	26.82	32.39	36.99	-15.11	-9.81	-12.38	-17.94	-22.55			
11/79	18.17	12.17	17.50	12.17	13.95	22.28	28.78	30.95	31.15	25.57	28.28	34.14	39.00	-17.21	-11.62	-14.33	-20.20	-25.05			
12/79	18.65	12.65	17.98	12.65	12.65	17.98	17.98	12.65	31.80	26.10	28.86	34.85	39.80	-19.15	-13.45	-16.22	-22.20	-27.16			
01/80	28.70	22.70	28.03	22.70	22.70	28.03	28.03	22.70	33.08	27.15	30.03	36.25	41.41	-10.38	-4.46	-7.33	-13.56	-18.71			
02/80	28.88	22.88	28.21	22.88	22.88	28.21	28.21	22.88	34.36	28.21	31.19	37.66	43.02	-11.48	-5.32	-8.31	-14.78	-20.13			
03/80	39.21	33.21	38.54	33.21	33.21	38.54	38.54	33.21	35.00	28.73	31.78	38.36	43.82	-1.79	4.48	1.43	-5.15	-10.61			
04/80	31.94	25.94	31.27	25.94	25.94	31.27	31.27	25.94	33.72	27.68	30.61	36.96	42.21	-7.78	-1.74	-4.67	-11.02	-16.27			
05/80	17.53	11.53	16.86	11.53	11.53	16.86	16.86	11.53	32.12	26.36	29.15	35.20	40.20	-20.59	-14.83	-17.63	-23.67	-28.68			
06/80	17.95	11.95	17.28	11.95	13.73	22.06	28.56	30.73	31.47	25.84	28.57	34.50	39.40	-17.74	-12.11	-14.84	-20.77	-25.67			
07/80	14.84	8.84	14.17	8.84	10.62	18.95	25.45	27.62	30.51	25.04	27.70	33.44	38.19	-19.89	-14.43	-17.08	-22.82	-27.58			
08/80	14.74	8.74	14.07	8.74	10.52	18.85	25.35	27.52	31.47	25.84	28.57	34.50	39.40	-20.96	-15.32	-18.05	-23.98	-28.88			
09/80	18.14	12.14	17.47	12.14	13.92	22.25	28.75	30.92	30.83	25.31	27.99	33.79	38.60	-16.91	-11.39	-14.07	-19.87	-24.67			
10/80	17.63	11.63	16.96	11.63	13.41	21.74	28.24	30.41	29.55	24.25	26.82	32.39	36.99	-16.14	-10.84	-13.41	-18.97	-23.58			
11/80	18.31	12.31	17.64	12.31	14.09	22.42	28.92	31.09	31.15	25.57	28.28	34.14	39.00	-17.06	-11.48	-14.19	-20.05	-24.91			
12/80	22.68	16.68	22.01	16.68	16.68	22.01	22.01	16.68	31.80	26.10	28.86	34.85	39.80	-15.11	-9.41	-12.18	-18.16	-23.12			
01/81	36.86	30.86	36.19	30.86	30.86	36.19	36.19	30.86	33.08	27.15	30.03	36.25	41.41	-2.22	3.70	0.83	-5.40	-10.55			
02/81	86.83	80.83	86.16	80.83	80.83	86.16	86.16	80.83	34.36	28.21	31.19	37.66	43.02	46.47	52.63	49.64	43.17	37.82			
03/81	72.56	66.56	71.89	66.56	66.56	71.89	71.89	66.56	35.00	28.73	31.78	38.36	43.82	31.56	37.83	34.78	28.20	22.74			
04/81	43.72	37.72	43.05	37.72	37.72	43.05	43.05	37.72	33.72	27.68	30.61	36.96	42.21	4.00	10.04	7.11	0.76	-4.49			
05/81	21.89	15.89	21.22	15.89	15.89	21.22	21.22	15.89	32.12	26.36	29.15	35.20	40.20	-16.23	-10.48	-13.27	-19.31	-24.32			
06/81	21.27	15.27	20.60	15.27	17.05	25.38	31.88	34.05	31.47	25.84	28.57	34.50	39.40	-14.42	-8.78	-11.52	-17.44	-22.35			
07/81	19.75	13.75	19.08	13.75	15.53	23.86	30.36	32.53	30.51	25.04	27.70	33.44	38.19	-14.98	-9.51	-12.17	-17.91	-22.66			
08/81	21.05	15.05	20.38	15.05	16.83	25.16	31.66	33.83	31.47	25.84	28.57	34.50	39.40	-14.64	-9.01	-11.74	-17.67	-22.57			
09/81	20.99	14.99	20.32	14.99	16.77	25.10	31.60	33.77	30.83	25.31	27.99	33.79	38.60	-14.06	-8.54	-11.22	-17.02	-21.83			
10/81	14.63	8.63	13.96	8.63	10.41	18.74	25.24	27.41	29.55	24.25	26.82	32.39	36.99	-19.14	-13.85	-16.42	-21.98	-26.58			

Month/Year	Surface flow discharge at Chosica (SENAMHI Station)	1995 1998							Case A1										
		Surface flow discharge at La Atarjea							WATER DEMANDS					SURPLUS OR DEFICIT CASE A1					
		A, C	B	Case A: M1	Case A1: M1+YU	Case B1: M1+YU+M3	Case B2: M1+YU+M2+M3	Case C1: M1+YU+M2+M3+HU+MA	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030	
Qc	La Atarjea	La Atarjea	La Atarjea	La Atarjea	La Atarjea	La Atarjea	La Atarjea												
11/81	16.72	10.72	16.05	10.72	12.50	20.83	27.33	29.50	31.15	25.57	28.28	34.14	39.00	-18.66	-13.08	-15.78	-21.65	-26.50	
12/81	22.98	16.98	22.31	16.98	16.98	22.31	22.31	16.98	31.80	26.10	28.86	34.85	39.80	-14.82	-9.12	-11.88	-17.87	-22.82	
01/82	29.03	23.03	28.36	23.03	23.03	28.36	28.36	23.03	33.08	27.15	30.03	36.25	41.41	-10.05	-4.13	-7.00	-13.23	-18.38	
02/82	53.56	47.56	52.89	47.56	47.56	52.89	52.89	47.56	34.36	28.21	31.19	37.66	43.02	13.20	19.35	16.37	9.90	4.54	
03/82	50.99	44.99	50.32	44.99	44.99	50.32	50.32	44.99	35.00	28.73	31.78	38.36	43.82	9.99	16.26	13.22	6.63	1.18	
04/82	45.34	39.34	44.67	39.34	39.34	44.67	44.67	39.34	33.72	27.68	30.61	36.96	42.21	5.61	11.66	8.72	2.38	-2.88	
05/82	38.79	32.79	38.12	32.79	32.79	38.12	38.12	32.79	32.12	26.36	29.15	35.20	40.20	0.67	6.43	3.63	-2.41	-7.42	
06/82	33.41	27.41	32.74	27.41	29.19	37.52	44.02	46.19	31.47	25.84	28.57	34.50	39.40	-2.29	3.35	0.62	-5.31	-10.21	
07/82	29.46	23.46	28.79	23.46	25.24	33.57	40.07	42.24	30.51	25.04	27.70	33.44	38.19	-5.27	0.20	-2.45	-8.20	-12.95	
08/82	30.61	24.61	29.94	24.61	26.39	34.72	41.22	43.39	31.47	25.84	28.57	34.50	39.40	-5.09	0.55	-2.18	-8.11	-13.01	
09/82	23.32	17.32	22.65	17.32	19.10	27.43	33.93	36.10	30.83	25.31	27.99	33.79	38.60	-11.73	-6.21	-8.89	-14.69	-19.50	
10/82	23.61	17.61	22.94	17.61	19.39	27.72	34.22	36.39	29.55	24.25	26.82	32.39	36.99	-10.16	-4.87	-7.44	-13.00	-17.60	
11/82	28.14	22.14	27.47	22.14	23.92	32.25	38.75	40.92	31.15	25.57	28.28	34.14	39.00	-7.24	-1.65	-4.36	-10.23	-15.08	
12/82	26.27	20.27	25.60	20.27	20.27	25.60	25.60	20.27	31.80	26.10	28.86	34.85	39.80	-11.53	-5.83	-8.59	-14.58	-19.53	
01/83	31.31	25.31	30.64	25.31	25.31	30.64	30.64	25.31	33.08	27.15	30.03	36.25	41.41	-7.77	-1.84	-4.72	-10.94	-16.10	
02/83	28.78	22.78	28.11	22.78	22.78	28.11	28.11	22.78	34.36	28.21	31.19	37.66	43.02	-11.59	-5.43	-8.42	-14.88	-20.24	
03/83	58.62	52.62	57.95	52.62	52.62	57.95	57.95	52.62	35.00	28.73	31.78	38.36	43.82	17.61	23.89	20.84	14.25	8.80	
04/83	70.12	64.12	69.45	64.12	64.12	69.45	69.45	64.12	33.72	27.68	30.61	36.96	42.21	30.40	36.44	33.51	27.16	21.91	
05/83	37.52	31.52	36.85	31.52	31.52	36.85	36.85	31.52	32.12	26.36	29.15	35.20	40.20	-0.60	5.15	2.36	-3.68	-8.69	
06/83	28.17	22.17	27.50	22.17	23.95	32.28	38.78	40.95	31.47	25.84	28.57	34.50	39.40	-7.53	-1.89	-4.62	-10.55	-15.45	
07/83	22.90	16.90	22.23	16.90	18.68	27.01	33.51	35.68	30.51	25.04	27.70	33.44	38.19	-11.83	-6.37	-9.02	-14.76	-19.52	
08/83	19.03	13.03	18.36	13.03	14.81	23.14	29.64	31.81	31.47	25.84	28.57	34.50	39.40	-16.66	-11.02	-13.76	-19.68	-24.59	
09/83	15.55	9.55	14.88	9.55	11.33	19.66	26.16	28.33	30.83	25.31	27.99	33.79	38.60	-19.51	-13.98	-16.66	-22.47	-27.27	
10/83	26.30	20.30	25.63	20.30	22.08	30.41	36.91	39.08	29.55	24.25	26.82	32.39	36.99	-7.47	-2.18	-4.75	-10.31	-14.91	
11/83	25.50	19.50	24.83	19.50	21.28	29.61	36.11	38.28	31.15	25.57	28.28	34.14	39.00	-9.87	-4.29	-7.00	-12.86	-17.72	
12/83	35.30	29.30	34.63	29.30	29.30	34.63	34.63	29.30	31.80	26.10	28.86	34.85	39.80	-2.50	3.20	0.43	-5.55	-10.51	
01/84	31.95	25.95	31.28	25.95	25.95	31.28	31.28	25.95	33.08	27.15	30.03	36.25	41.41	-7.13	-1.20	-4.08	-10.30	-15.46	
02/84	67.57	61.57	66.90	61.57	61.57	66.90	66.90	61.57	34.36	28.21	31.19	37.66	43.02	27.21	33.37	30.38	23.91	18.56	
03/84	53.75	47.75	53.08	47.75	47.75	53.08	53.08	47.75	35.00	28.73	31.78	38.36	43.82	12.74	19.01	15.97	9.38	3.93	
04/84	34.40	28.40	33.73	28.40	28.40	33.73	33.73	28.40	33.72	27.68	30.61	36.96	42.21	-5.33	0.72	-2.22	-8.56	-13.82	
05/84	25.17	19.17	24.50	19.17	19.17	24.50	24.50	19.17	32.12	26.36	29.15	35.20	40.20	-12.94	-7.19	-9.98	-16.03	-21.03	
06/84	31.10	25.10	30.43	25.10	26.88	35.21	41.71	43.88	31.47	25.84	28.57	34.50	39.40	-4.59	1.05	-1.69	-7.61	-12.52	
07/84	28.79	22.79	28.12	22.79	24.57	32.90	39.40	41.57	30.51	25.04	27.70	33.44	38.19	-5.94	-0.47	-3.13	-8.87	-13.62	
08/84	27.76	21.76	27.09	21.76	23.54	31.87	38.37	40.54	31.47	25.84	28.57	34.50	39.40	-7.94	-2.30	-5.03	-10.96	-15.86	
09/84	17.01	11.01	16.34	11.01	12.79	21.12	27.62	29.79	30.83	25.31	27.99	33.79	38.60	-18.04	-12.52	-15.20	-21.00	-25.81	
10/84	19.59	13.59	18.92	13.59	15.37	23.70	30.20	32.37	29.55	24.25	26.82	32.39	36.99	-14.18	-8.88	-11.45	-17.02	-21.62	
11/84	21.99	15.99	21.32	15.99	17.77	26.10	32.60	34.77	31.15	25.57	28.28	34.14	39.00	-13.38	-7.80	-10.51	-16.37	-21.23	
12/84	34.25	28.25	33.58	28.25	28.25	33.58	33.58	28.25	31.80	26.10	28.86	34.85	39.80	-3.55	2.15	-0.61	-6.60	-11.55	

Month/Year	Surface flow discharge at Chosica (SENAMHI Station)	1995 1998							Case A1									
		Surface flow discharge at La Atarjea							WATER DEMANDS					SURPLUS OR DEFICIT CASE A1				
		A, C	B	Case A: M1	Case A1: M1+YU	Case B1: M1+YU+M3	Case B2: M1+YU+M2+M3	Case C1: M1+YU+M2+M3+HU+MA	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030
Qc	La Atarjea	La Atarjea	La Atarjea	La Atarjea	La Atarjea	La Atarjea	La Atarjea											
01/85	23.62	17.62	22.95	17.62	17.62	22.95	22.95	17.62	33.08	27.15	30.03	36.25	41.41	-15.46	-9.53	-12.41	-18.63	-23.79
02/85	37.67	31.67	37.00	31.67	31.67	37.00	37.00	31.67	34.36	28.21	31.19	37.66	43.02	-2.69	3.46	0.48	-5.99	-11.35
03/85	52.47	46.47	51.80	46.47	46.47	51.80	51.80	46.47	35.00	28.73	31.78	38.36	43.82	11.47	17.74	14.69	8.11	2.65
04/85	48.38	42.38	47.71	42.38	42.38	47.71	47.71	42.38	33.72	27.68	30.61	36.96	42.21	8.66	14.70	11.77	5.42	0.17
05/85	23.21	17.21	22.54	17.21	17.21	22.54	22.54	17.21	32.12	26.36	29.15	35.20	40.20	-14.91	-9.15	-11.94	-17.99	-22.99
06/85	19.13	13.13	18.46	13.13	14.91	23.24	29.74	31.91	31.47	25.84	28.57	34.50	39.40	-16.56	-10.93	-13.66	-19.59	-24.49
07/85	16.08	10.08	15.41	10.08	11.86	20.19	26.69	28.86	30.51	25.04	27.70	33.44	38.19	-18.65	-13.18	-15.84	-21.58	-26.33
08/85	20.10	14.10	19.43	14.10	15.88	24.21	30.71	32.88	31.47	25.84	28.57	34.50	39.40	-15.59	-9.96	-12.69	-18.62	-23.52
09/85	24.85	18.85	24.18	18.85	20.63	28.96	35.46	37.63	30.83	25.31	27.99	33.79	38.60	-10.20	-4.68	-7.36	-13.16	-17.97
10/85	24.29	18.29	23.62	18.29	20.07	28.40	34.90	37.07	29.55	24.25	26.82	32.39	36.99	-9.48	-4.18	-6.75	-12.31	-16.92
11/85	27.92	21.92	27.25	21.92	23.70	32.03	38.53	40.70	31.15	25.57	28.28	34.14	39.00	-7.45	-1.87	-4.58	-10.44	-15.29
12/85	39.69	33.69	39.02	33.69	33.69	39.02	39.02	33.69	31.80	26.10	28.86	34.85	39.80	1.90	7.60	4.83	-1.15	-6.11
01/86	84.03	78.03	83.36	78.03	78.03	83.36	83.36	78.03	33.08	27.15	30.03	36.25	41.41	44.95	50.88	48.00	41.78	36.62
02/86	92.42	86.42	91.75	86.42	86.42	91.75	91.75	86.42	34.36	28.21	31.19	37.66	43.02	52.06	58.22	55.23	48.76	43.41
03/86	103.47	97.47	102.80	97.47	97.47	102.80	102.80	97.47	35.00	28.73	31.78	38.36	43.82	62.47	68.74	65.70	59.11	53.65
04/86	74.13	68.13	73.46	68.13	68.13	73.46	73.46	68.13	33.72	27.68	30.61	36.96	42.21	34.41	40.45	37.52	31.17	25.92
05/86	55.29	49.29	54.62	49.29	49.29	54.62	54.62	49.29	32.12	26.36	29.15	35.20	40.20	17.17	22.93	20.14	14.09	9.09
06/86	23.90	17.90	23.23	17.90	19.68	28.01	34.51	36.68	31.47	25.84	28.57	34.50	39.40	-11.79	-6.16	-8.89	-14.82	-19.72
07/86	24.05	18.05	23.38	18.05	19.83	28.16	34.66	36.83	30.51	25.04	27.70	33.44	38.19	-10.68	-5.21	-7.86	-13.61	-18.36
08/86	23.77	17.77	23.10	17.77	19.55	27.88	34.38	36.55	31.47	25.84	28.57	34.50	39.40	-11.93	-6.29	-9.03	-14.95	-19.86
09/86	21.60	15.60	20.93	15.60	17.38	25.71	32.21	34.38	30.83	25.31	27.99	33.79	38.60	-13.45	-7.93	-10.61	-16.41	-21.22
10/86	19.09	13.09	18.42	13.09	14.87	23.20	29.70	31.87	29.55	24.25	26.82	32.39	36.99	-14.68	-9.39	-11.96	-17.52	-22.12
11/86	23.52	17.52	22.85	17.52	19.30	27.63	34.13	36.30	31.15	25.57	28.28	34.14	39.00	-11.85	-6.27	-8.98	-14.84	-19.70
12/86	28.51	22.51	27.84	22.51	22.51	27.84	27.84	22.51	31.80	26.10	28.86	34.85	39.80	-9.28	-3.59	-6.35	-12.33	-17.29
01/87	54.03	48.03	53.36	48.03	48.03	53.36	53.36	48.03	33.08	27.15	30.03	36.25	41.41	14.95	20.88	18.00	11.78	6.62
02/87	81.89	75.89	81.22	75.89	75.89	81.22	81.22	75.89	34.36	28.21	31.19	37.66	43.02	41.53	47.69	44.70	38.23	32.88
03/87	96.76	90.76	96.09	90.76	90.76	96.09	96.09	90.76	35.00	28.73	31.78	38.36	43.82	55.76	62.03	58.99	52.40	46.94
04/87	30.59	24.59	29.92	24.59	24.59	29.92	29.92	24.59	33.72	27.68	30.61	36.96	42.21	-9.13	-3.09	-6.02	-12.37	-17.62
05/87	23.25	17.25	22.58	17.25	17.25	22.58	22.58	17.25	32.12	26.36	29.15	35.20	40.20	-14.87	-9.11	-11.91	-17.95	-22.95
06/87	20.93	14.93	20.26	14.93	16.71	25.04	31.54	33.71	31.47	25.84	28.57	34.50	39.40	-14.77	-9.13	-11.86	-17.79	-22.69
07/87	18.69	12.69	18.02	12.69	14.47	22.80	29.30	31.47	30.51	25.04	27.70	33.44	38.19	-16.04	-10.57	-13.22	-18.97	-23.72
08/87	19.51	13.51	18.84	13.51	15.29	23.62	30.12	32.29	31.47	25.84	28.57	34.50	39.40	-16.19	-10.55	-13.29	-19.21	-24.12
09/87	20.43	14.43	19.76	14.43	16.21	24.54	31.04	33.21	30.83	25.31	27.99	33.79	38.60	-14.62	-9.09	-11.78	-17.58	-22.38
10/87	21.41	15.41	20.74	15.41	17.19	25.52	32.02	34.19	29.55	24.25	26.82	32.39	36.99	-12.36	-7.06	-9.63	-15.19	-19.80
11/87	22.59	16.59	21.92	16.59	18.37	26.70	33.20	35.37	31.15	25.57	28.28	34.14	39.00	-12.79	-7.21	-9.92	-15.78	-20.63
12/87	23.15	17.15	22.48	17.15	17.15	22.48	22.48	17.15	31.80	26.10	28.86	34.85	39.80	-14.64	-8.94	-11.71	-17.69	-22.65
01/88	40.60	34.60	39.93	34.60	34.60	39.93	39.93	34.60	33.08	27.15	30.03	36.25	41.41	1.52	7.45	4.57	-1.65	-6.81
02/88	40.35	34.35	39.68	34.35	34.35	39.68	39.68	34.35	34.36	28.21	31.19	37.66	43.02	-0.01	6.15	3.16	-3.31	-8.66

Month/Year	Surface flow discharge at Chosica (SENAMHI Station)	1995 1998							Case A1									
		Surface flow discharge at La Atarjea							WATER DEMANDS					SURPLUS OR DEFICIT CASE A1				
		A, C	B	Case A: M1	Case A1: M1+YU	Case B1: M1+YU+M3	Case B2: M1+YU+M2+M3	Case C1: M1+YU+M2+M3+HU+MA	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030
Qc	La Atarjea																	
03/88	38.51	32.51	37.84	32.51	32.51	37.84	37.84	32.51	35.00	28.73	31.78	38.36	43.82	-2.50	3.77	0.73	-5.86	-11.31
04/88	50.39	44.39	49.72	44.39	44.39	49.72	49.72	44.39	33.72	27.68	30.61	36.96	42.21	10.66	16.71	13.78	7.43	2.17
05/88	27.89	21.89	27.22	21.89	21.89	27.22	27.22	21.89	32.12	26.36	29.15	35.20	40.20	-10.23	-4.48	-7.27	-13.31	-18.32
06/88	21.05	15.05	20.38	15.05	16.83	25.16	31.66	33.83	31.47	25.84	28.57	34.50	39.40	-14.65	-9.01	-11.75	-17.67	-22.58
07/88	21.64	15.64	20.97	15.64	17.42	25.75	32.25	34.42	30.51	25.04	27.70	33.44	38.19	-13.09	-7.62	-10.28	-16.02	-20.77
08/88	24.31	18.31	23.64	18.31	20.09	28.42	34.92	37.09	31.47	25.84	28.57	34.50	39.40	-11.38	-5.74	-8.48	-14.40	-19.31
09/88	20.83	14.83	20.16	14.83	16.61	24.94	31.44	33.61	30.83	25.31	27.99	33.79	38.60	-14.23	-8.70	-11.38	-17.19	-21.99
10/88	19.86	13.86	19.19	13.86	15.64	23.97	30.47	32.64	29.55	24.25	26.82	32.39	36.99	-13.91	-8.61	-11.18	-16.74	-21.35
11/88	19.57	13.57	18.90	13.57	15.35	23.68	30.18	32.35	31.15	25.57	28.28	34.14	39.00	-15.81	-10.22	-12.93	-18.80	-23.65
12/88	26.19	20.19	25.52	20.19	20.19	25.52	25.52	20.19	31.80	26.10	28.86	34.85	39.80	-11.60	-5.91	-8.67	-14.65	-19.61
01/89	31.74	25.74	31.07	25.74	25.74	31.07	31.07	25.74	33.08	27.15	30.03	36.25	41.41	-7.34	-1.41	-4.29	-10.52	-15.67
02/89	43.75	37.75	43.08	37.75	37.75	43.08	43.08	37.75	34.36	28.21	31.19	37.66	43.02	3.38	9.54	6.55	0.08	-5.27
03/89	50.07	44.07	49.40	44.07	44.07	49.40	49.40	44.07	35.00	28.73	31.78	38.36	43.82	9.07	15.34	12.29	5.71	0.25
04/89	38.37	32.37	37.70	32.37	32.37	37.70	37.70	32.37	33.72	27.68	30.61	36.96	42.21	-1.35	4.69	1.76	-4.59	-9.84
05/89	22.21	16.21	21.54	16.21	16.21	21.54	21.54	16.21	32.12	26.36	29.15	35.20	40.20	-15.91	-10.16	-12.95	-18.99	-24.00
06/89	17.93	11.93	17.26	11.93	13.71	22.04	28.54	30.71	31.47	25.84	28.57	34.50	39.40	-17.76	-12.12	-14.86	-20.78	-25.69
07/89	16.72	10.72	16.05	10.72	12.50	20.83	27.33	29.50	30.51	25.04	27.70	33.44	38.19	-18.02	-12.55	-15.20	-20.94	-25.70
08/89	16.30	10.30	15.63	10.30	12.08	20.41	26.91	29.08	31.47	25.84	28.57	34.50	39.40	-19.39	-13.75	-16.49	-22.41	-27.32
09/89	16.31	10.31	15.64	10.31	12.09	20.42	26.92	29.09	30.83	25.31	27.99	33.79	38.60	-18.74	-13.22	-15.90	-21.70	-26.51
10/89	16.77	10.77	16.10	10.77	12.55	20.88	27.38	29.55	29.55	24.25	26.82	32.39	36.99	-17.00	-11.70	-14.27	-19.83	-24.44
11/89	17.97	11.97	17.30	11.97	13.75	22.08	28.58	30.75	31.15	25.57	28.28	34.14	39.00	-17.40	-11.82	-14.53	-20.39	-25.25
12/89	16.71	10.71	16.04	10.71	10.71	16.04	16.04	10.71	31.80	26.10	28.86	34.85	39.80	-21.09	-15.39	-18.16	-24.14	-29.10
01/90	22.03	16.03	21.36	16.03	16.03	21.36	21.36	16.03	33.08	27.15	30.03	36.25	41.41	-17.05	-11.12	-14.00	-20.22	-25.38
02/90	17.00	11.00	16.33	11.00	11.00	16.33	16.33	11.00	34.36	28.21	31.19	37.66	43.02	-23.37	-17.21	-20.20	-26.66	-32.02
03/90	17.09	11.09	16.42	11.09	11.09	16.42	16.42	11.09	35.00	28.73	31.78	38.36	43.82	-23.91	-17.64	-20.68	-27.27	-32.73
04/90	14.65	8.65	13.98	8.65	8.65	13.98	13.98	8.65	33.72	27.68	30.61	36.96	42.21	-25.07	-19.03	-21.96	-28.31	-33.56
05/90	13.17	7.17	12.50	7.17	7.17	12.50	12.50	7.17	32.12	26.36	29.15	35.20	40.20	-24.95	-19.19	-21.98	-28.03	-33.03
06/90	12.01	6.01	11.34	6.01	7.79	16.12	22.62	24.79	31.47	25.84	28.57	34.50	39.40	-23.69	-18.05	-20.78	-26.71	-31.61
07/90	10.86	4.86	10.19	4.86	6.64	14.97	21.47	23.64	30.51	25.04	27.70	33.44	38.19	-23.87	-18.40	-21.06	-26.80	-31.55
08/90	9.97	3.97	9.30	3.97	5.75	14.08	20.58	22.75	31.47	25.84	28.57	34.50	39.40	-25.72	-20.08	-22.82	-28.74	-33.65
09/90	11.00	5.00	10.33	5.00	6.78	15.11	21.61	23.78	30.83	25.31	27.99	33.79	38.60	-24.05	-18.53	-21.21	-27.01	-31.81
10/90	15.01	9.01	14.34	9.01	10.79	19.12	25.62	27.79	29.55	24.25	26.82	32.39	36.99	-18.76	-13.46	-16.03	-21.59	-26.20
11/90	22.54	16.54	21.87	16.54	18.32	26.65	33.15	35.32	31.15	25.57	28.28	34.14	39.00	-12.83	-7.25	-9.96	-15.82	-20.67
12/90	20.48	14.48	19.81	14.48	14.48	19.81	19.81	14.48	31.80	26.10	28.86	34.85	39.80	-17.32	-11.62	-14.39	-20.37	-25.32
01/91	21.82	15.82	21.15	15.82	15.82	21.15	21.15	15.82	33.08	27.15	30.03	36.25	41.41	-17.26	-11.33	-14.21	-20.43	-25.59
02/91	26.65	20.65	25.98	20.65	20.65	25.98	25.98	20.65	34.36	28.21	31.19	37.66	43.02	-13.72	-7.56	-10.55	-17.01	-22.37
03/91	41.28	35.28	40.61	35.28	35.28	40.61	40.61	35.28	35.00	28.73	31.78	38.36	43.82	0.28	6.55	3.51	-3.08	-8.54
04/91	27.52	21.52	26.85	21.52	21.52	26.85	26.85	21.52	33.72	27.68	30.61	36.96	42.21	-12.20	-6.16	-9.09	-15.43	-20.69

Month/Year	Surface flow discharge at Chosica (SENAMHI Station)	1995 1998							Case A1									
		Surface flow discharge at La Atarjea							WATER DEMANDS					SURPLUS OR DEFICIT CASE A1				
		A, C	B	Case A: M1	Case A1: M1+YU	Case B1: M1+YU+M3	Case B2: M1+YU+M2+M3	Case C1: M1+YU+M2+M3+HU+MA	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030
Qc	La Atarjea	La Atarjea	La Atarjea	La Atarjea	La Atarjea	La Atarjea	La Atarjea											
05/91	23.10	17.10	22.43	17.10	17.10	22.43	22.43	17.10	32.12	26.36	29.15	35.20	40.20	-15.01	-9.26	-12.05	-18.10	-23.10
06/91	15.40	9.40	14.73	9.40	11.18	19.51	26.01	28.18	31.47	25.84	28.57	34.50	39.40	-20.30	-14.66	-17.40	-23.32	-28.23
07/91	13.88	7.88	13.21	7.88	9.66	17.99	24.49	26.66	30.51	25.04	27.70	33.44	38.19	-20.85	-15.39	-18.04	-23.78	-28.54
08/91	14.53	8.53	13.86	8.53	10.31	18.64	25.14	27.31	31.47	25.84	28.57	34.50	39.40	-21.16	-15.52	-18.26	-24.18	-29.09
09/91	15.23	9.23	14.56	9.23	11.01	19.34	25.84	28.01	30.83	25.31	27.99	33.79	38.60	-19.82	-14.30	-16.98	-22.78	-27.59
10/91	18.83	12.83	18.16	12.83	14.61	22.94	29.44	31.61	29.55	24.25	26.82	32.39	36.99	-14.94	-9.64	-12.21	-17.78	-22.38
11/91	17.51	11.51	16.84	11.51	13.29	21.62	28.12	30.29	31.15	25.57	28.28	34.14	39.00	-17.86	-12.28	-14.99	-20.85	-25.71
12/91	17.50	11.50	16.83	11.50	11.50	16.83	16.83	11.50	31.80	26.10	28.86	34.85	39.80	-20.30	-14.60	-17.37	-23.35	-28.31
01/92	19.42	13.42	18.75	13.42	13.42	18.75	18.75	13.42	33.08	27.15	30.03	36.25	41.41	-19.66	-13.74	-16.61	-22.84	-27.99
02/92	12.67	6.67	12.00	6.67	6.67	12.00	12.00	6.67	34.36	28.21	31.19	37.66	43.02	-27.69	-21.53	-24.52	-30.99	-36.34
03/92	22.61	16.61	21.94	16.61	16.61	21.94	21.94	16.61	35.00	28.73	31.78	38.36	43.82	-18.40	-12.12	-15.17	-21.76	-27.21
04/92	18.05	12.05	17.38	12.05	12.05	17.38	17.38	12.05	33.72	27.68	30.61	36.96	42.21	-21.67	-15.63	-18.56	-24.91	-30.16
05/92	12.75	6.75	12.08	6.75	6.75	12.08	12.08	6.75	32.12	26.36	29.15	35.20	40.20	-25.36	-19.61	-22.40	-28.45	-33.45
06/92	12.91	6.91	12.24	6.91	8.69	17.02	23.52	25.69	31.47	25.84	28.57	34.50	39.40	-22.78	-17.14	-19.88	-25.80	-30.71
07/92	14.30	8.30	13.63	8.30	10.08	18.41	24.91	27.08	30.51	25.04	27.70	33.44	38.19	-20.44	-14.97	-17.62	-23.36	-28.12
08/92	13.79	7.79	13.12	7.79	9.57	17.90	24.40	26.57	31.47	25.84	28.57	34.50	39.40	-21.91	-16.27	-19.01	-24.93	-29.83
09/92	13.45	7.45	12.78	7.45	9.23	17.56	24.06	26.23	30.83	25.31	27.99	33.79	38.60	-21.60	-16.08	-18.76	-24.56	-29.37
10/92	12.77	6.77	12.10	6.77	8.55	16.88	23.38	25.55	29.55	24.25	26.82	32.39	36.99	-21.00	-15.71	-18.28	-23.84	-28.44
11/92	11.29	5.29	10.62	5.29	7.07	15.40	21.90	24.07	31.15	25.57	28.28	34.14	39.00	-24.08	-18.50	-21.21	-27.07	-31.92
12/92	11.28	5.28	10.61	5.28	5.28	10.61	10.61	5.28	31.80	26.10	28.86	34.85	39.80	-26.52	-20.82	-23.59	-29.57	-34.53
01/93	35.24	29.24	34.57	29.24	29.24	34.57	34.57	29.24	33.08	27.15	30.03	36.25	41.41	-3.84	2.08	-0.79	-7.02	-12.17
02/93	54.62	48.62	53.95	48.62	48.62	53.95	53.95	48.62	34.36	28.21	31.19	37.66	43.02	14.25	20.41	17.42	10.96	5.60
03/93	57.97	51.97	57.30	51.97	51.97	57.30	57.30	51.97	35.00	28.73	31.78	38.36	43.82	16.97	23.24	20.20	13.61	8.15
04/93	36.97	30.97	36.30	30.97	30.97	36.30	36.30	30.97	33.72	27.68	30.61	36.96	42.21	-2.75	3.30	0.36	-5.98	-11.24
05/93	23.82	17.82	23.15	17.82	17.82	23.15	23.15	17.82	32.12	26.36	29.15	35.20	40.20	-14.29	-8.54	-11.33	-17.38	-22.38
06/93	16.08	10.08	15.41	10.08	11.86	20.19	26.69	28.86	31.47	25.84	28.57	34.50	39.40	-19.61	-13.97	-16.71	-22.63	-27.54
07/93	15.72	9.72	15.05	9.72	11.50	19.83	26.33	28.50	30.51	25.04	27.70	33.44	38.19	-19.01	-13.55	-16.20	-21.94	-26.70
08/93	15.33	9.33	14.66	9.33	11.11	19.44	25.94	28.11	31.47	25.84	28.57	34.50	39.40	-20.37	-14.73	-17.46	-23.39	-28.29
09/93	16.25	10.25	15.58	10.25	12.03	20.36	26.86	29.03	30.83	25.31	27.99	33.79	38.60	-18.81	-13.28	-15.96	-21.77	-26.57
10/93	16.59	10.59	15.92	10.59	12.37	20.70	27.20	29.37	29.55	24.25	26.82	32.39	36.99	-17.18	-11.89	-14.45	-20.02	-24.62
11/93	31.56	25.56	30.89	25.56	27.34	35.67	42.17	44.34	31.15	25.57	28.28	34.14	39.00	-3.82	1.76	-0.94	-6.81	-11.66
12/93	53.95	47.95	53.28	47.95	47.95	53.28	53.28	47.95	31.80	26.10	28.86	34.85	39.80	16.15	21.85	19.09	13.10	8.15
01/94	51.36	45.36	50.69	45.36	45.36	50.69	50.69	45.36	33.08	27.15	30.03	36.25	41.41	12.28	18.21	15.33	9.10	3.95
02/94	93.56	87.56	92.89	87.56	87.56	92.89	92.89	87.56	34.36	28.21	31.19	37.66	43.02	53.20	59.36	56.37	49.90	44.55
03/94	81.45	75.45	80.78	75.45	75.45	80.78	80.78	75.45	35.00	28.73	31.78	38.36	43.82	40.45	46.72	43.68	37.09	31.64
04/94	50.88	44.88	50.21	44.88	44.88	50.21	50.21	44.88	33.72	27.68	30.61	36.96	42.21	11.16	17.20	14.27	7.93	2.67
05/94	35.05	29.05	34.38	29.05	29.05	34.38	34.38	29.05	32.12	26.36	29.15	35.20	40.20	-3.06	2.69	-0.10	-6.15	-11.15
06/94	23.39	17.39	22.72	17.39	19.17	27.50	34.00	36.17	31.47	25.84	28.57	34.50	39.40	-12.31	-6.67	-9.40	-15.33	-20.23

Month/Year	Surface flow discharge at Chosica (SENAMHI Station)	1995							1998							Case A1				
		Surface flow discharge at La Atarjea							WATER DEMANDS							SURPLUS OR DEFICIT CASE A1				
		A, C	B	Case A: M1	Case A1: M1+YU	Case B1: M1+YU+M3	Case B2: M1+YU+M2+M3	Case C1: M1+YU+M2+M3+HU+MA	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030		
Qc	La Atarjea	La Atarjea	La Atarjea	La Atarjea	La Atarjea	La Atarjea	La Atarjea													
07/94	21.47	15.47	20.80	15.47	17.25	25.58	32.08	34.25	30.51	25.04	27.70	33.44	38.19	-13.26	-7.79	-10.44	-16.19	-20.94		
08/94	22.10	16.10	21.43	16.10	17.88	26.21	32.71	34.88	31.47	25.84	28.57	34.50	39.40	-13.60	-7.96	-10.70	-16.62	-21.53		
09/94	21.93	15.93	21.26	15.93	17.71	26.04	32.54	34.71	30.83	25.31	27.99	33.79	38.60	-13.12	-7.60	-10.28	-16.08	-20.89		
10/94	21.27	15.27	20.60	15.27	17.05	25.38	31.88	34.05	29.55	24.25	26.82	32.39	36.99	-12.50	-7.20	-9.77	-15.33	-19.94		
11/94	21.41	15.41	20.74	15.41	17.19	25.52	32.02	34.19	31.15	25.57	28.28	34.14	39.00	-13.97	-8.38	-11.09	-16.96	-21.81		
12/94	22.13	16.13	21.46	16.13	16.13	21.46	21.46	16.13	31.80	26.10	28.86	34.85	39.80	-15.67	-9.97	-12.73	-18.72	-23.67		
01/95	27.33	21.33	26.66	21.33	21.33	26.66	26.66	21.33	33.08	27.15	30.03	36.25	41.41	-11.75	-5.82	-8.70	-14.93	-20.08		
02/95	24.12	18.12	23.45	18.12	18.12	23.45	23.45	18.12	34.36	28.21	31.19	37.66	43.02	-16.24	-10.08	-13.07	-19.54	-24.89		
03/95	33.70	27.70	33.03	27.70	27.70	33.03	33.03	27.70	35.00	28.73	31.78	38.36	43.82	-7.30	-1.03	-4.07	-10.66	-16.12		
04/95	34.63	28.63	33.96	28.63	28.63	33.96	33.96	28.63	33.72	27.68	30.61	36.96	42.21	-5.10	0.95	-1.99	-8.33	-13.59		
05/95	20.76	14.76	20.09	14.76	14.76	20.09	20.09	14.76	32.12	26.36	29.15	35.20	40.20	-17.35	-11.60	-14.39	-20.44	-25.44		
06/95	20.30	14.30	19.63	12.52	14.30	22.63	29.13	31.30	31.47	25.84	28.57	34.50	39.40	-17.17	-11.53	-14.27	-20.19	-25.10		
07/95	19.34	13.34	18.67	11.56	13.34	21.67	28.17	30.34	30.51	25.04	27.70	33.44	38.19	-17.18	-11.71	-14.36	-20.11	-24.86		
08/95	20.97	14.97	20.30	13.19	14.97	23.30	29.80	31.97	31.47	25.84	28.57	34.50	39.40	-16.50	-10.86	-13.60	-19.52	-24.43		
09/95	21.06	15.06	20.39	13.28	15.06	23.39	29.89	32.06	30.83	25.31	27.99	33.79	38.60	-15.77	-10.25	-12.93	-18.73	-23.53		
10/95	20.60	14.60	19.93	12.82	14.60	22.93	29.43	31.60	29.55	24.25	26.82	32.39	36.99	-14.95	-9.66	-12.23	-17.79	-22.39		
11/95	19.57	13.57	18.90	11.79	13.57	21.90	28.40	30.57	31.15	25.57	28.28	34.14	39.00	-17.58	-12.00	-14.71	-20.57	-25.42		
12/95	20.83	14.83	20.16	14.83	14.83	20.16	20.16	14.83	31.80	26.10	28.86	34.85	39.80	-16.96	-11.26	-14.03	-20.01	-24.97		
01/96	47.48	41.48	46.81	41.48	41.48	46.81	46.81	41.48	33.08	27.15	30.03	36.25	41.41	8.40	14.33	11.45	5.22	0.07		
02/96	74.01	68.01	73.34	68.01	68.01	73.34	73.34	68.01	34.36	28.21	31.19	37.66	43.02	33.65	39.80	36.82	30.35	24.99		
03/96	58.85	52.85	58.18	52.85	52.85	58.18	58.18	52.85	35.00	28.73	31.78	38.36	43.82	17.85	24.12	21.08	14.49	9.03		
04/96	47.49	41.49	46.82	41.49	41.49	46.82	46.82	41.49	33.72	27.68	30.61	36.96	42.21	7.76	13.81	10.87	4.53	-0.73		
05/96	24.71	18.71	24.04	18.71	18.71	24.04	24.04	18.71	32.12	26.36	29.15	35.20	40.20	-13.41	-7.65	-10.45	-16.49	-21.50		
06/96	26.20	20.20	25.53	18.42	20.20	28.53	35.03	37.20	31.47	25.84	28.57	34.50	39.40	-11.28	-5.64	-8.37	-14.30	-19.20		
07/96	26.14	20.14	25.47	18.36	20.14	28.47	34.97	37.14	30.51	25.04	27.70	33.44	38.19	-10.37	-4.90	-7.56	-13.30	-18.05		
08/96	23.38	17.38	22.71	15.60	17.38	25.71	32.21	34.38	31.47	25.84	28.57	34.50	39.40	-14.09	-8.46	-11.19	-17.12	-22.02		
09/96	22.56	16.56	21.89	14.78	16.56	24.89	31.39	33.56	30.83	25.31	27.99	33.79	38.60	-14.28	-8.75	-11.43	-17.24	-22.04		
10/96	19.95	13.95	19.28	12.17	13.95	22.28	28.78	30.95	29.55	24.25	26.82	32.39	36.99	-15.60	-10.30	-12.87	-18.44	-23.04		
11/96	18.82	12.82	18.15	11.04	12.82	21.15	27.65	29.82	31.15	25.57	28.28	34.14	39.00	-18.33	-12.75	-15.46	-21.32	-26.18		
12/96	18.93	12.93	18.26	12.93	12.93	18.26	18.26	12.93	31.80	26.10	28.86	34.85	39.80	-18.87	-13.17	-15.94	-21.92	-26.88		
01/97	28.10	22.10	27.43	22.10	22.10	27.43	27.43	22.10	33.08	27.15	30.03	36.25	41.41	-10.98	-5.05	-7.93	-14.15	-19.31		
02/97	48.00	42.00	47.33	42.00	42.00	47.33	47.33	42.00	34.36	28.21	31.19	37.66	43.02	7.64	13.80	10.81	4.34	-1.01		
03/97	30.20	24.20	29.53	24.20	24.20	29.53	29.53	24.20	35.00	28.73	31.78	38.36	43.82	-10.80	-4.53	-7.58	-14.16	-19.62		
04/97	17.88	11.88	17.21	11.88	11.88	17.21	17.21	11.88	33.72	27.68	30.61	36.96	42.21	-21.84	-15.80	-18.73	-25.08	-30.33		
05/97	16.82	10.82	16.15	10.82	10.82	16.15	16.15	10.82	32.12	26.36	29.15	35.20	40.20	-21.29	-15.54	-18.33	-24.38	-29.38		
06/97	17.21	11.21	16.54	9.43	11.21	19.54	26.04	28.21	31.47	25.84	28.57	34.50	39.40	-20.27	-14.63	-17.37	-23.29	-28.19		
07/97	17.58	11.58	16.91	9.80	11.58	19.91	26.41	28.58	30.51	25.04	27.70	33.44	38.19	-18.94	-13.47	-16.12	-21.87	-26.62		
08/97	18.20	12.20	17.53	10.42	12.20	20.53	27.03	29.20	31.47	25.84	28.57	34.50	39.40	-19.27	-13.64	-16.37	-22.30	-27.20		

Month/Year	Surface flow discharge at Chosica (SENAMHI Station)	1995 1998								Case A1									
		Surface flow discharge at La Atarjea								WATER DEMANDS					SURPLUS OR DEFICIT CASE A1				
		A, C	B	Case A: M1	Case A1: M1+YU	Case B1: M1+YU+M3	Case B2: M1+YU+M2+M3	Case C1: M1+YU+M2+M3+HU+MA	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030	
Qc	La Atarjea		La Atarjea		La Atarjea		La Atarjea												
09/97	17.88	11.88	17.21	10.10	11.88	20.21	26.71	28.88	30.83	25.31	27.99	33.79	38.60	-18.95	-13.43	-16.11	-21.91	-26.71	
10/97	19.32	13.32	18.65	11.54	13.32	21.65	28.15	30.32	29.55	24.25	26.82	32.39	36.99	-16.23	-10.94	-13.51	-19.07	-23.67	
11/97	22.71	16.71	22.04	14.93	16.71	25.04	31.54	33.71	31.15	25.57	28.28	34.14	39.00	-14.45	-8.87	-11.58	-17.44	-22.29	
12/97	35.81	29.81	35.14	29.81	29.81	35.14	35.14	29.81	31.80	26.10	28.86	34.85	39.80	-1.99	3.71	0.94	-5.04	-9.99	
01/98	56.62	50.62	55.95	50.62	50.62	55.95	55.95	50.62	33.08	27.15	30.03	36.25	41.41	17.54	23.47	20.59	14.37	9.21	
02/98	71.86	65.86	71.19	65.86	65.86	71.19	71.19	65.86	34.36	28.21	31.19	37.66	43.02	31.49	37.65	34.66	28.19	22.84	
03/98	64.27	58.27	63.60	58.27	58.27	63.60	63.60	58.27	35.00	28.73	31.78	38.36	43.82	23.26	29.54	26.49	19.90	14.45	
04/98	43.80	37.80	43.13	37.80	37.80	43.13	43.13	37.80	33.72	27.68	30.61	36.96	42.21	4.08	10.12	7.19	0.84	-4.41	
05/98	27.65	21.65	26.98	21.65	21.65	26.98	26.98	21.65	32.12	26.36	29.15	35.20	40.20	-10.47	-4.71	-7.50	-13.55	-18.55	
06/98	25.27	19.27	24.60	17.49	19.27	27.60	34.10	36.27	31.47	25.84	28.57	34.50	39.40	-12.21	-6.57	-9.31	-15.23	-20.14	
07/98	23.12	17.12	22.45	15.34	17.12	25.45	31.95	34.12	30.51	25.04	27.70	33.44	38.19	-13.39	-7.93	-10.58	-16.32	-21.08	
08/98	22.28	16.28	21.61	14.50	16.28	24.61	31.11	33.28	31.47	25.84	28.57	34.50	39.40	-15.20	-9.56	-12.29	-18.22	-23.12	
09/98	19.84	13.84	19.17	12.06	13.84	22.17	28.67	30.84	30.83	25.31	27.99	33.79	38.60	-16.99	-11.47	-14.15	-19.95	-24.76	
10/98	21.18	15.18	20.51	13.40	15.18	23.51	30.01	32.18	29.55	24.25	26.82	32.39	36.99	-14.37	-9.07	-11.64	-17.21	-21.81	
11/98	22.40	16.40	21.73	14.62	16.40	24.73	31.23	33.40	31.15	25.57	28.28	34.14	39.00	-14.75	-9.17	-11.88	-17.74	-22.60	
12/98	21.20	15.20	20.53	15.20	15.20	20.53	20.53	15.20	31.80	26.10	28.86	34.85	39.80	-16.60	-10.90	-13.66	-19.65	-24.60	

Annex IV:

Discharg

	Case B1					Case B2					Case C1				
	SURPLUS OR DEFICIT CASE B1					SURPLUS OR DEFICIT CASE B2					SURPLUS OR DEFICIT CASE C1				
Month/Year	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030
01/79	-6.05	-0.12	-3.00	-9.23	-14.38	-6.05	-0.12	-3.00	-9.23	-14.38	-14.24	-8.31	-11.19	-17.42	-22.57
02/79	48.14	54.30	51.31	44.84	39.49	48.14	54.30	51.31	44.84	39.49	39.95	46.11	43.12	36.65	31.30
03/79	66.44	72.71	69.67	63.08	57.62	66.44	72.71	69.67	63.08	57.62	58.25	64.52	61.48	54.89	49.43
04/79	9.76	15.80	12.87	6.53	1.27	9.76	15.80	12.87	6.53	1.27	1.57	7.61	4.68	-1.66	-6.92
05/79	-6.78	-1.02	-3.82	-9.86	-14.87	-6.78	-1.02	-3.82	-9.86	-14.87	-14.97	-9.21	-12.01	-18.05	-23.06
06/79	-1.57	4.07	1.33	-4.59	-9.50	4.93	10.57	7.83	1.91	-3.00	4.24	9.88	7.14	1.22	-3.69
07/79	-1.88	3.59	0.94	-4.81	-9.56	4.62	10.09	7.44	1.69	-3.06	3.93	9.40	6.75	1.00	-3.75
08/79	-2.37	3.27	0.53	-5.39	-10.30	4.13	9.77	7.03	1.11	-3.80	3.44	9.08	6.34	0.42	-4.49
09/79	-0.57	4.95	2.27	-3.53	-8.34	5.93	11.45	8.77	2.97	-1.84	5.24	10.76	8.08	2.28	-2.53
10/79	1.08	6.38	3.81	-1.75	-6.36	7.58	12.88	10.31	4.75	0.14	6.89	12.19	9.62	4.06	-0.55
11/79	-1.02	4.57	1.86	-4.01	-8.86	5.48	11.07	8.36	2.49	-2.36	4.79	10.38	7.67	1.80	-3.05
12/79	-5.96	-0.26	-3.03	-9.01	-13.97	-5.96	-0.26	-3.03	-9.01	-13.97	-14.15	-8.45	-11.22	-17.20	-22.16
01/80	2.81	8.73	5.86	-0.37	-5.52	2.81	8.73	5.86	-0.37	-5.52	-5.38	0.54	-2.33	-8.56	-13.71
02/80	1.71	7.87	4.88	-1.59	-6.94	1.71	7.87	4.88	-1.59	-6.94	-6.48	-0.32	-3.31	-9.78	-15.13
03/80	11.40	17.67	14.62	8.04	2.58	11.40	17.67	14.62	8.04	2.58	3.21	9.48	6.43	-0.15	-5.61
04/80	5.41	11.45	8.52	2.17	-3.08	5.41	11.45	8.52	2.17	-3.08	-2.78	3.26	0.33	-6.02	-11.27
05/80	-7.40	-1.64	-4.44	-10.48	-15.49	-7.40	-1.64	-4.44	-10.48	-15.49	-15.59	-9.83	-12.63	-18.67	-23.68
06/80	-1.55	4.08	1.35	-4.58	-9.48	4.95	10.58	7.85	1.92	-2.98	4.26	9.89	7.16	1.23	-3.67
07/80	-3.70	1.76	-0.89	-6.63	-11.39	2.80	8.26	5.61	-0.13	-4.89	2.11	7.57	4.92	-0.82	-5.58
08/80	-4.77	0.87	-1.86	-7.79	-12.69	1.73	7.37	4.64	-1.29	-6.19	1.04	6.68	3.95	-1.98	-6.88
09/80	-0.72	4.80	2.12	-3.68	-8.48	5.78	11.30	8.62	2.82	-1.98	5.09	10.61	7.93	2.13	-2.67
10/80	0.05	5.35	2.78	-2.78	-7.39	6.55	11.85	9.28	3.72	-0.89	5.86	11.16	8.59	3.03	-1.58
11/80	-0.87	4.71	2.00	-3.86	-8.72	5.63	11.21	8.50	2.64	-2.22	4.94	10.52	7.81	1.95	-2.91
12/80	-1.92	3.78	1.01	-4.97	-9.93	-1.92	3.78	1.01	-4.97	-9.93	-10.11	-4.41	-7.18	-13.16	-18.12
01/81	10.97	16.89	14.02	7.79	2.64	10.97	16.89	14.02	7.79	2.64	2.78	8.70	5.83	-0.40	-5.55
02/81	59.66	65.82	62.83	56.36	51.01	59.66	65.82	62.83	56.36	51.01	51.47	57.63	54.64	48.17	42.82
03/81	44.75	51.02	47.97	41.39	35.93	44.75	51.02	47.97	41.39	35.93	36.56	42.83	39.78	33.20	27.74
04/81	17.19	23.23	20.30	13.95	8.70	17.19	23.23	20.30	13.95	8.70	9.00	15.04	12.11	5.76	0.51
05/81	-3.04	2.71	-0.08	-6.12	-11.13	-3.04	2.71	-0.08	-6.12	-11.13	-11.23	-5.48	-8.27	-14.31	-19.32
06/81	1.77	7.41	4.67	-1.25	-6.16	8.27	13.91	11.17	5.25	0.34	7.58	13.22	10.48	4.56	-0.35
07/81	1.21	6.68	4.02	-1.72	-6.47	7.71	13.18	10.52	4.78	0.03	7.02	12.49	9.83	4.09	-0.66
08/81	1.55	7.18	4.45	-1.48	-6.38	8.05	13.68	10.95	5.02	0.12	7.36	12.99	10.26	4.33	-0.57
09/81	2.13	7.65	4.97	-0.83	-5.64	8.63	14.15	11.47	5.67	0.86	7.94	13.46	10.78	4.98	0.17
10/81	-2.95	2.34	-0.23	-5.79	-10.39	3.55	8.84	6.27	0.71	-3.89	2.86	8.15	5.58	0.02	-4.58

	Case B1					Case B2					Case C1				
	SURPLUS OR DEFICIT CASE B1					SURPLUS OR DEFICIT CASE B2					SURPLUS OR DEFICIT CASE C1				
Month/Year	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030
11/81	-2.47	3.11	0.41	-5.46	-10.31	4.03	9.61	6.91	1.04	-3.81	3.34	8.92	6.22	0.35	-4.50
12/81	-1.63	4.07	1.31	-4.68	-9.63	-1.63	4.07	1.31	-4.68	-9.63	-9.82	-4.12	-6.88	-12.87	-17.82
01/82	3.14	9.06	6.19	-0.04	-5.19	3.14	9.06	6.19	-0.04	-5.19	-5.05	0.87	-2.00	-8.23	-13.38
02/82	26.39	32.54	29.56	23.09	17.73	26.39	32.54	29.56	23.09	17.73	18.20	24.35	21.37	14.90	9.54
03/82	23.18	29.45	26.41	19.82	14.37	23.18	29.45	26.41	19.82	14.37	14.99	21.26	18.22	11.63	6.18
04/82	18.80	24.85	21.91	15.57	10.31	18.80	24.85	21.91	15.57	10.31	10.61	16.66	13.72	7.38	2.12
05/82	13.86	19.62	16.82	10.78	5.77	13.86	19.62	16.82	10.78	5.77	5.67	11.43	8.63	2.59	-2.42
06/82	13.90	19.54	16.81	10.88	5.98	20.40	26.04	23.31	17.38	12.48	19.71	25.35	22.62	16.69	11.79
07/82	10.92	16.39	13.74	7.99	3.24	17.42	22.89	20.24	14.49	9.74	16.73	22.20	19.55	13.80	9.05
08/82	11.10	16.74	14.01	8.08	3.18	17.60	23.24	20.51	14.58	9.68	16.91	22.55	19.82	13.89	8.99
09/82	4.46	9.98	7.30	1.50	-3.31	10.96	16.48	13.80	8.00	3.19	10.27	15.79	13.11	7.31	2.50
10/82	6.03	11.32	8.75	3.19	-1.41	12.53	17.82	15.25	9.69	5.09	11.84	17.13	14.56	9.00	4.40
11/82	8.95	14.54	11.83	5.96	1.11	15.45	21.04	18.33	12.46	7.61	14.76	20.35	17.64	11.77	6.92
12/82	1.66	7.36	4.60	-1.39	-6.34	1.66	7.36	4.60	-1.39	-6.34	-6.53	-0.83	-3.59	-9.58	-14.53
01/83	5.42	11.35	8.47	2.25	-2.91	5.42	11.35	8.47	2.25	-2.91	-2.77	3.16	0.28	-5.94	-11.10
02/83	1.60	7.76	4.77	-1.69	-7.05	1.60	7.76	4.77	-1.69	-7.05	-6.59	-0.43	-3.42	-9.88	-15.24
03/83	30.80	37.08	34.03	27.44	21.99	30.80	37.08	34.03	27.44	21.99	22.61	28.89	25.84	19.25	13.80
04/83	43.59	49.63	46.70	40.35	35.10	43.59	49.63	46.70	40.35	35.10	35.40	41.44	38.51	32.16	26.91
05/83	12.59	18.34	15.55	9.51	4.50	12.59	18.34	15.55	9.51	4.50	4.40	10.15	7.36	1.32	-3.69
06/83	8.66	14.30	11.57	5.64	0.74	15.16	20.80	18.07	12.14	7.24	14.47	20.11	17.38	11.45	6.55
07/83	4.36	9.82	7.17	1.43	-3.33	10.86	16.32	13.67	7.93	3.17	10.17	15.63	12.98	7.24	2.48
08/83	-0.47	5.17	2.43	-3.49	-8.40	6.03	11.67	8.93	3.01	-1.90	5.34	10.98	8.24	2.32	-2.59
09/83	-3.32	2.21	-0.47	-6.28	-11.08	3.18	8.71	6.03	0.22	-4.58	2.49	8.02	5.34	-0.47	-5.27
10/83	8.72	14.01	11.44	5.88	1.28	15.22	20.51	17.94	12.38	7.78	14.53	19.82	17.25	11.69	7.09
11/83	6.32	11.90	9.19	3.33	-1.53	12.82	18.40	15.69	9.83	4.97	12.13	17.71	15.00	9.14	4.28
12/83	10.69	16.39	13.62	7.64	2.68	10.69	16.39	13.62	7.64	2.68	2.50	8.20	5.43	-0.55	-5.51
01/84	6.06	11.99	9.11	2.89	-2.27	6.06	11.99	9.11	2.89	-2.27	-2.13	3.80	0.92	-5.30	-10.46
02/84	40.40	46.56	43.57	37.10	31.75	40.40	46.56	43.57	37.10	31.75	32.21	38.37	35.38	28.91	23.56
03/84	25.93	32.20	29.16	22.57	17.12	25.93	32.20	29.16	22.57	17.12	17.74	24.01	20.97	14.38	8.93
04/84	7.86	13.91	10.97	4.63	-0.63	7.86	13.91	10.97	4.63	-0.63	-0.33	5.72	2.78	-3.56	-8.82
05/84	0.25	6.00	3.21	-2.84	-7.84	0.25	6.00	3.21	-2.84	-7.84	-7.94	-2.19	-4.98	-11.03	-16.03
06/84	11.60	17.24	14.50	8.58	3.67	18.10	23.74	21.00	15.08	10.17	17.41	23.05	20.31	14.39	9.48
07/84	10.25	15.72	13.06	7.32	2.57	16.75	22.22	19.56	13.82	9.07	16.06	21.53	18.87	13.13	8.38
08/84	8.25	13.89	11.16	5.23	0.33	14.75	20.39	17.66	11.73	6.83	14.06	19.70	16.97	11.04	6.14
09/84	-1.85	3.67	0.99	-4.81	-9.62	4.65	10.17	7.49	1.69	-3.12	3.96	9.48	6.80	1.00	-3.81
10/84	2.01	7.31	4.74	-0.83	-5.43	8.51	13.81	11.24	5.67	1.07	7.82	13.12	10.55	4.98	0.38
11/84	2.81	8.39	5.68	-0.18	-5.04	9.31	14.89	12.18	6.32	1.46	8.62	14.20	11.49	5.63	0.77
12/84	9.64	15.34	12.58	6.59	1.64	9.64	15.34	12.58	6.59	1.64	1.45	7.15	4.39	-1.60	-6.55

	Case B1					Case B2					Case C1				
	SURPLUS OR DEFICIT CASE B1					SURPLUS OR DEFICIT CASE B2					SURPLUS OR DEFICIT CASE C1				
Month/Year	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030
01/85	-2.27	3.66	0.78	-5.44	-10.60	-2.27	3.66	0.78	-5.44	-10.60	-10.46	-4.53	-7.41	-13.63	-18.79
02/85	10.50	16.65	13.67	7.20	1.84	10.50	16.65	13.67	7.20	1.84	2.31	8.46	5.48	-0.99	-6.35
03/85	24.66	30.93	27.88	21.30	15.84	24.66	30.93	27.88	21.30	15.84	16.47	22.74	19.69	13.11	7.65
04/85	21.85	27.89	24.96	18.61	13.36	21.85	27.89	24.96	18.61	13.36	13.66	19.70	16.77	10.42	5.17
05/85	-1.72	4.04	1.25	-4.80	-9.80	-1.72	4.04	1.25	-4.80	-9.80	-9.91	-4.15	-6.94	-12.99	-17.99
06/85	-0.37	5.26	2.53	-3.40	-8.30	6.13	11.76	9.03	3.10	-1.80	5.44	11.07	8.34	2.41	-2.49
07/85	-2.46	3.01	0.35	-5.39	-10.14	4.04	9.51	6.85	1.11	-3.64	3.35	8.82	6.16	0.42	-4.33
08/85	0.60	6.23	3.50	-2.43	-7.33	7.10	12.73	10.00	4.07	-0.83	6.41	12.04	9.31	3.38	-1.52
09/85	5.99	11.51	8.83	3.03	-1.78	12.49	18.01	15.33	9.53	4.72	11.80	17.32	14.64	8.84	4.03
10/85	6.71	12.01	9.44	3.88	-0.73	13.21	18.51	15.94	10.38	5.77	12.52	17.82	15.25	9.69	5.08
11/85	8.74	14.32	11.61	5.75	0.90	15.24	20.82	18.11	12.25	7.40	14.55	20.13	17.42	11.56	6.71
12/85	15.09	20.79	18.02	12.04	7.08	15.09	20.79	18.02	12.04	7.08	6.90	12.60	9.83	3.85	-1.11
01/86	58.14	64.07	61.19	54.97	49.81	58.14	64.07	61.19	54.97	49.81	49.95	55.88	53.00	46.78	41.62
02/86	65.25	71.41	68.42	61.95	56.60	65.25	71.41	68.42	61.95	56.60	57.06	63.22	60.23	53.76	48.41
03/86	75.66	81.93	78.89	72.30	66.84	75.66	81.93	78.89	72.30	66.84	67.47	73.74	70.70	64.11	58.65
04/86	47.60	53.64	50.71	44.36	39.11	47.60	53.64	50.71	44.36	39.11	39.41	45.45	42.52	36.17	30.92
05/86	30.36	36.12	33.33	27.28	22.28	30.36	36.12	33.33	27.28	22.28	22.17	27.93	25.14	19.09	14.09
06/86	4.40	10.03	7.30	1.37	-3.53	10.90	16.53	13.80	7.87	2.97	10.21	15.84	13.11	7.18	2.28
07/86	5.51	10.98	8.33	2.58	-2.17	12.01	17.48	14.83	9.08	4.33	11.32	16.79	14.14	8.39	3.64
08/86	4.26	9.90	7.16	1.24	-3.67	10.76	16.40	13.66	7.74	2.83	10.07	15.71	12.97	7.05	2.14
09/86	2.74	8.26	5.58	-0.22	-5.03	9.24	14.76	12.08	6.28	1.47	8.55	14.07	11.39	5.59	0.78
10/86	1.51	6.80	4.23	-1.33	-5.93	8.01	13.30	10.73	5.17	0.57	7.32	12.61	10.04	4.48	-0.12
11/86	4.34	9.92	7.21	1.35	-3.51	10.84	16.42	13.71	7.85	2.99	10.15	15.73	13.02	7.16	2.30
12/86	3.91	9.60	6.84	0.86	-4.10	3.91	9.60	6.84	0.86	-4.10	-4.28	1.41	-1.35	-7.33	-12.29
01/87	28.14	34.07	31.19	24.97	19.81	28.14	34.07	31.19	24.97	19.81	19.95	25.88	23.00	16.78	11.62
02/87	54.72	60.88	57.89	51.42	46.07	54.72	60.88	57.89	51.42	46.07	46.53	52.69	49.70	43.23	37.88
03/87	68.95	75.22	72.18	65.59	60.13	68.95	75.22	72.18	65.59	60.13	60.76	67.03	63.99	57.40	51.94
04/87	4.06	10.10	7.17	0.82	-4.43	4.06	10.10	7.17	0.82	-4.43	-4.13	1.91	-1.02	-7.37	-12.62
05/87	-1.68	4.08	1.28	-4.76	-9.76	-1.68	4.08	1.28	-4.76	-9.76	-9.87	-4.11	-6.91	-12.95	-17.95
06/87	1.42	7.06	4.33	-1.60	-6.50	7.92	13.56	10.83	4.90	0.00	7.23	12.87	10.14	4.21	-0.69
07/87	0.15	5.62	2.97	-2.78	-7.53	6.65	12.12	9.47	3.72	-1.03	5.96	11.43	8.78	3.03	-1.72
08/87	0.00	5.64	2.90	-3.02	-7.93	6.50	12.14	9.40	3.48	-1.43	5.81	11.45	8.71	2.79	-2.12
09/87	1.57	7.10	4.41	-1.39	-6.19	8.07	13.60	10.91	5.11	0.31	7.38	12.91	10.22	4.42	-0.38
10/87	3.83	9.13	6.56	1.00	-3.61	10.33	15.63	13.06	7.50	2.89	9.64	14.94	12.37	6.81	2.20
11/87	3.40	8.98	6.27	0.41	-4.44	9.90	15.48	12.77	6.91	2.06	9.21	14.79	12.08	6.22	1.37
12/87	-1.45	4.25	1.48	-4.50	-9.46	-1.45	4.25	1.48	-4.50	-9.46	-9.64	-3.94	-6.71	-12.69	-17.65
01/88	14.71	20.64	17.76	11.54	6.38	14.71	20.64	17.76	11.54	6.38	6.52	12.45	9.57	3.35	-1.81
02/88	13.18	19.34	16.35	9.88	4.53	13.18	19.34	16.35	9.88	4.53	4.99	11.15	8.16	1.69	-3.66

	Case B1					Case B2					Case C1				
	SURPLUS OR DEFICIT CASE B1					SURPLUS OR DEFICIT CASE B2					SURPLUS OR DEFICIT CASE C1				
Month/Year	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030
03/88	10.69	16.96	13.92	7.33	1.88	10.69	16.96	13.92	7.33	1.88	2.50	8.77	5.73	-0.86	-6.31
04/88	23.85	29.90	26.97	20.62	15.36	23.85	29.90	26.97	20.62	15.36	15.66	21.71	18.78	12.43	7.17
05/88	2.96	8.71	5.92	-0.12	-5.13	2.96	8.71	5.92	-0.12	-5.13	-5.23	0.52	-2.27	-8.31	-13.32
06/88	1.54	7.18	4.44	-1.48	-6.39	8.04	13.68	10.94	5.02	0.11	7.35	12.99	10.25	4.33	-0.58
07/88	3.10	8.57	5.91	0.17	-4.58	9.60	15.07	12.41	6.67	1.92	8.91	14.38	11.72	5.98	1.23
08/88	4.81	10.45	7.71	1.79	-3.12	11.31	16.95	14.21	8.29	3.38	10.62	16.26	13.52	7.60	2.69
09/88	1.96	7.49	4.81	-1.00	-5.80	8.46	13.99	11.31	5.50	0.70	7.77	13.30	10.62	4.81	0.01
10/88	2.28	7.58	5.01	-0.55	-5.16	8.78	14.08	11.51	5.95	1.34	8.09	13.39	10.82	5.26	0.65
11/88	0.38	5.97	3.26	-2.61	-7.46	6.88	12.47	9.76	3.89	-0.96	6.19	11.78	9.07	3.20	-1.65
12/88	1.59	7.28	4.52	-1.46	-6.42	1.59	7.28	4.52	-1.46	-6.42	-6.60	-0.91	-3.67	-9.65	-14.61
01/89	5.85	11.78	8.90	2.67	-2.48	5.85	11.78	8.90	2.67	-2.48	-2.34	3.59	0.71	-5.52	-10.67
02/89	16.57	22.73	19.74	13.27	7.92	16.57	22.73	19.74	13.27	7.92	8.38	14.54	11.55	5.08	-0.27
03/89	22.26	28.53	25.48	18.90	13.44	22.26	28.53	25.48	18.90	13.44	14.07	20.34	17.29	10.71	5.25
04/89	11.84	17.88	14.95	8.60	3.35	11.84	17.88	14.95	8.60	3.35	3.65	9.69	6.76	0.41	-4.84
05/89	-2.72	3.03	0.24	-5.80	-10.81	-2.72	3.03	0.24	-5.80	-10.81	-10.91	-5.16	-7.95	-13.99	-19.00
06/89	-1.57	4.07	1.33	-4.59	-9.50	4.93	10.57	7.83	1.91	-3.00	4.24	9.88	7.14	1.22	-3.69
07/89	-1.83	3.64	0.99	-4.75	-9.51	4.67	10.14	7.49	1.75	-3.01	3.98	9.45	6.80	1.06	-3.70
08/89	-3.20	2.44	-0.30	-6.22	-11.13	3.30	8.94	6.20	0.28	-4.63	2.61	8.25	5.51	-0.41	-5.32
09/89	-2.55	2.97	0.29	-5.51	-10.32	3.95	9.47	6.79	0.99	-3.82	3.26	8.78	6.10	0.30	-4.51
10/89	-0.81	4.49	1.92	-3.64	-8.25	5.69	10.99	8.42	2.86	-1.75	5.00	10.30	7.73	2.17	-2.44
11/89	-1.21	4.37	1.66	-4.20	-9.06	5.29	10.87	8.16	2.30	-2.56	4.60	10.18	7.47	1.61	-3.25
12/89	-7.90	-2.20	-4.97	-10.95	-15.91	-7.90	-2.20	-4.97	-10.95	-15.91	-16.09	-10.39	-13.16	-19.14	-24.10
01/90	-3.86	2.07	-0.81	-7.03	-12.19	-3.86	2.07	-0.81	-7.03	-12.19	-12.05	-6.12	-9.00	-15.22	-20.38
02/90	-10.18	-4.02	-7.01	-13.47	-18.83	-10.18	-4.02	-7.01	-13.47	-18.83	-18.37	-12.21	-15.20	-21.66	-27.02
03/90	-10.72	-4.45	-7.49	-14.08	-19.54	-10.72	-4.45	-7.49	-14.08	-19.54	-18.91	-12.64	-15.68	-22.27	-27.73
04/90	-11.88	-5.84	-8.77	-15.12	-20.37	-11.88	-5.84	-8.77	-15.12	-20.37	-20.07	-14.03	-16.96	-23.31	-28.56
05/90	-11.76	-6.00	-8.79	-14.84	-19.84	-11.76	-6.00	-8.79	-14.84	-19.84	-19.95	-14.19	-16.98	-23.03	-28.03
06/90	-7.50	-1.86	-4.59	-10.52	-15.42	-1.00	4.64	1.91	-4.02	-8.92	-1.69	3.95	1.22	-4.71	-9.61
07/90	-7.68	-2.21	-4.87	-10.61	-15.36	-1.18	4.29	1.63	-4.11	-8.86	-1.87	3.60	0.94	-4.80	-9.55
08/90	-9.53	-3.89	-6.63	-12.55	-17.46	-3.03	2.61	-0.13	-6.05	-10.96	-3.72	1.92	-0.82	-6.74	-11.65
09/90	-7.86	-2.34	-5.02	-10.82	-15.62	-1.36	4.16	1.48	-4.32	-9.12	-2.05	3.47	0.79	-5.01	-9.81
10/90	-2.57	2.73	0.16	-5.40	-10.01	3.93	9.23	6.66	1.10	-3.51	3.24	8.54	5.97	0.41	-4.20
11/90	3.36	8.94	6.23	0.37	-4.48	9.86	15.44	12.73	6.87	2.02	9.17	14.75	12.04	6.18	1.33
12/90	-4.13	1.57	-1.20	-7.18	-12.13	-4.13	1.57	-1.20	-7.18	-12.13	-12.32	-6.62	-9.39	-15.37	-20.32
01/91	-4.07	1.86	-1.02	-7.24	-12.40	-4.07	1.86	-1.02	-7.24	-12.40	-12.26	-6.33	-9.21	-15.43	-20.59
02/91	-0.53	5.63	2.64	-3.82	-9.18	-0.53	5.63	2.64	-3.82	-9.18	-8.72	-2.56	-5.55	-12.01	-17.37
03/91	13.47	19.74	16.70	10.11	4.65	13.47	19.74	16.70	10.11	4.65	5.28	11.55	8.51	1.92	-3.54
04/91	0.99	7.03	4.10	-2.24	-7.50	0.99	7.03	4.10	-2.24	-7.50	-7.20	-1.16	-4.09	-10.43	-15.69

	Case B1					Case B2					Case C1				
	SURPLUS OR DEFICIT CASE B1					SURPLUS OR DEFICIT CASE B2					SURPLUS OR DEFICIT CASE C1				
Month/Year	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030
05/91	-1.82	3.93	1.14	-4.91	-9.91	-1.82	3.93	1.14	-4.91	-9.91	-10.01	-4.26	-7.05	-13.10	-18.10
06/91	-4.11	1.53	-1.21	-7.13	-12.04	2.39	8.03	5.29	-0.63	-5.54	1.70	7.34	4.60	-1.32	-6.23
07/91	-4.66	0.80	-1.85	-7.59	-12.35	1.84	7.30	4.65	-1.09	-5.85	1.15	6.61	3.96	-1.78	-6.54
08/91	-4.97	0.67	-2.07	-7.99	-12.90	1.53	7.17	4.43	-1.49	-6.40	0.84	6.48	3.74	-2.18	-7.09
09/91	-3.63	1.89	-0.79	-6.59	-11.40	2.87	8.39	5.71	-0.09	-4.90	2.18	7.70	5.02	-0.78	-5.59
10/91	1.25	6.55	3.98	-1.59	-6.19	7.75	13.05	10.48	4.91	0.31	7.06	12.36	9.79	4.22	-0.38
11/91	-1.67	3.91	1.20	-4.66	-9.52	4.83	10.41	7.70	1.84	-3.02	4.14	9.72	7.01	1.15	-3.71
12/91	-7.11	-1.41	-4.18	-10.16	-15.12	-7.11	-1.41	-4.18	-10.16	-15.12	-15.30	-9.60	-12.37	-18.35	-23.31
01/92	-6.47	-0.55	-3.42	-9.65	-14.80	-6.47	-0.55	-3.42	-9.65	-14.80	-14.66	-8.74	-11.61	-17.84	-22.99
02/92	-14.50	-8.34	-11.33	-17.80	-23.15	-14.50	-8.34	-11.33	-17.80	-23.15	-22.69	-16.53	-19.52	-25.99	-31.34
03/92	-5.21	1.07	-1.98	-8.57	-14.02	-5.21	1.07	-1.98	-8.57	-14.02	-13.40	-7.12	-10.17	-16.76	-22.21
04/92	-8.48	-2.44	-5.37	-11.72	-16.97	-8.48	-2.44	-5.37	-11.72	-16.97	-16.67	-10.63	-13.56	-19.91	-25.16
05/92	-12.17	-6.42	-9.21	-15.26	-20.26	-12.17	-6.42	-9.21	-15.26	-20.26	-20.36	-14.61	-17.40	-23.45	-28.45
06/92	-6.59	-0.95	-3.69	-9.61	-14.52	-0.09	5.55	2.81	-3.11	-8.02	-0.78	4.86	2.12	-3.80	-8.71
07/92	-4.25	1.22	-1.43	-7.17	-11.93	2.25	7.72	5.07	-0.67	-5.43	1.56	7.03	4.38	-1.36	-6.12
08/92	-5.72	-0.08	-2.82	-8.74	-13.64	0.78	6.42	3.68	-2.24	-7.14	0.09	5.73	2.99	-2.93	-7.83
09/92	-5.41	0.11	-2.57	-8.37	-13.18	1.09	6.61	3.93	-1.87	-6.68	0.40	5.92	3.24	-2.56	-7.37
10/92	-4.81	0.48	-2.09	-7.65	-12.25	1.69	6.98	4.41	-1.15	-5.75	1.00	6.29	3.72	-1.84	-6.44
11/92	-7.89	-2.31	-5.02	-10.88	-15.73	-1.39	4.19	1.48	-4.38	-9.23	-2.08	3.50	0.79	-5.07	-9.92
12/92	-13.33	-7.63	-10.40	-16.38	-21.34	-13.33	-7.63	-10.40	-16.38	-21.34	-21.52	-15.82	-18.59	-24.57	-29.53
01/93	9.35	15.27	12.40	6.17	1.02	9.35	15.27	12.40	6.17	1.02	1.16	7.08	4.21	-2.02	-7.17
02/93	27.44	33.60	30.61	24.15	18.79	27.44	33.60	30.61	24.15	18.79	19.25	25.41	22.42	15.96	10.60
03/93	30.16	36.43	33.39	26.80	21.34	30.16	36.43	33.39	26.80	21.34	21.97	28.24	25.20	18.61	13.15
04/93	10.44	16.49	13.55	7.21	1.95	10.44	16.49	13.55	7.21	1.95	2.25	8.30	5.36	-0.98	-6.24
05/93	-1.10	4.65	1.86	-4.19	-9.19	-1.10	4.65	1.86	-4.19	-9.19	-9.29	-3.54	-6.33	-12.38	-17.38
06/93	-3.42	2.22	-0.52	-6.44	-11.35	3.08	8.72	5.98	0.06	-4.85	2.39	8.03	5.29	-0.63	-5.54
07/93	-2.82	2.64	-0.01	-5.75	-10.51	3.68	9.14	6.49	0.75	-4.01	2.99	8.45	5.80	0.06	-4.70
08/93	-4.18	1.46	-1.27	-7.20	-12.10	2.32	7.96	5.23	-0.70	-5.60	1.63	7.27	4.54	-1.39	-6.29
09/93	-2.62	2.91	0.23	-5.58	-10.38	3.88	9.41	6.73	0.92	-3.88	3.19	8.72	6.04	0.23	-4.57
10/93	-0.99	4.30	1.74	-3.83	-8.43	5.51	10.80	8.24	2.67	-1.93	4.82	10.11	7.55	1.98	-2.62
11/93	12.37	17.95	15.25	9.38	4.53	18.87	24.45	21.75	15.88	11.03	18.18	23.76	21.06	15.19	10.34
12/93	29.34	35.04	32.28	26.29	21.34	29.34	35.04	32.28	26.29	21.34	21.15	26.85	24.09	18.10	13.15
01/94	25.47	31.40	28.52	22.29	17.14	25.47	31.40	28.52	22.29	17.14	17.28	23.21	20.33	14.10	8.95
02/94	66.39	72.55	69.56	63.09	57.74	66.39	72.55	69.56	63.09	57.74	58.20	64.36	61.37	54.90	49.55
03/94	53.64	59.91	56.87	50.28	44.83	53.64	59.91	56.87	50.28	44.83	45.45	51.72	48.68	42.09	36.64
04/94	24.35	30.39	27.46	21.12	15.86	24.35	30.39	27.46	21.12	15.86	16.16	22.20	19.27	12.93	7.67
05/94	10.13	15.88	13.09	7.04	2.04	10.13	15.88	13.09	7.04	2.04	1.94	7.69	4.90	-1.15	-6.15
06/94	3.88	9.52	6.79	0.86	-4.04	10.38	16.02	13.29	7.36	2.46	9.69	15.33	12.60	6.67	1.77

	Case B1					Case B2					Case C1				
	SURPLUS OR DEFICIT CASE B1					SURPLUS OR DEFICIT CASE B2					SURPLUS OR DEFICIT CASE C1				
Month/Year	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030
07/94	2.93	8.40	5.75	0.00	-4.75	9.43	14.90	12.25	6.50	1.75	8.74	14.21	11.56	5.81	1.06
08/94	2.59	8.23	5.49	-0.43	-5.34	9.09	14.73	11.99	6.07	1.16	8.40	14.04	11.30	5.38	0.47
09/94	3.07	8.59	5.91	0.11	-4.70	9.57	15.09	12.41	6.61	1.80	8.88	14.40	11.72	5.92	1.11
10/94	3.69	8.99	6.42	0.86	-3.75	10.19	15.49	12.92	7.36	2.75	9.50	14.80	12.23	6.67	2.06
11/94	2.22	7.81	5.10	-0.77	-5.62	8.72	14.31	11.60	5.73	0.88	8.03	13.62	10.91	5.04	0.19
12/94	-2.48	3.22	0.46	-5.53	-10.48	-2.48	3.22	0.46	-5.53	-10.48	-10.67	-4.97	-7.73	-13.72	-18.67
01/95	1.44	7.37	4.49	-1.74	-6.89	1.44	7.37	4.49	-1.74	-6.89	-6.75	-0.82	-3.70	-9.93	-15.08
02/95	-3.05	3.11	0.12	-6.35	-11.70	-3.05	3.11	0.12	-6.35	-11.70	-11.24	-5.08	-8.07	-14.54	-19.89
03/95	5.89	12.16	9.12	2.53	-2.93	5.89	12.16	9.12	2.53	-2.93	-2.30	3.97	0.93	-5.66	-11.12
04/95	8.09	14.14	11.20	4.86	-0.40	8.09	14.14	11.20	4.86	-0.40	-0.10	5.95	3.01	-3.33	-8.59
05/95	-4.16	1.59	-1.20	-7.25	-12.25	-4.16	1.59	-1.20	-7.25	-12.25	-12.35	-6.60	-9.39	-15.44	-20.44
06/95	-0.98	4.66	1.92	-4.00	-8.91	5.52	11.16	8.42	2.50	-2.41	4.83	10.47	7.73	1.81	-3.10
07/95	-0.99	4.48	1.83	-3.92	-8.67	5.51	10.98	8.33	2.58	-2.17	4.82	10.29	7.64	1.89	-2.86
08/95	-0.31	5.33	2.59	-3.33	-8.24	6.19	11.83	9.09	3.17	-1.74	5.50	11.14	8.40	2.48	-2.43
09/95	0.42	5.94	3.26	-2.54	-7.34	6.92	12.44	9.76	3.96	-0.84	6.23	11.75	9.07	3.27	-1.53
10/95	1.24	6.53	3.96	-1.60	-6.20	7.74	13.03	10.46	4.90	0.30	7.05	12.34	9.77	4.21	-0.39
11/95	-1.39	4.19	1.48	-4.38	-9.23	5.11	10.69	7.98	2.12	-2.73	4.42	10.00	7.29	1.43	-3.42
12/95	-3.77	1.93	-0.84	-6.82	-11.78	-3.77	1.93	-0.84	-6.82	-11.78	-11.96	-6.26	-9.03	-15.01	-19.97
01/96	21.59	27.52	24.64	18.41	13.26	21.59	27.52	24.64	18.41	13.26	13.40	19.33	16.45	10.22	5.07
02/96	46.84	52.99	50.01	43.54	38.18	46.84	52.99	50.01	43.54	38.18	38.65	44.80	41.82	35.35	29.99
03/96	31.04	37.31	34.27	27.68	22.22	31.04	37.31	34.27	27.68	22.22	22.85	29.12	26.08	19.49	14.03
04/96	20.95	27.00	24.06	17.72	12.46	20.95	27.00	24.06	17.72	12.46	12.76	18.81	15.87	9.53	4.27
05/96	-0.22	5.54	2.74	-3.30	-8.31	-0.22	5.54	2.74	-3.30	-8.31	-8.41	-2.65	-5.45	-11.49	-16.50
06/96	4.91	10.55	7.82	1.89	-3.01	11.41	17.05	14.32	8.39	3.49	10.72	16.36	13.63	7.70	2.80
07/96	5.82	11.29	8.63	2.89	-1.86	12.32	17.79	15.13	9.39	4.64	11.63	17.10	14.44	8.70	3.95
08/96	2.10	7.73	5.00	-0.93	-5.83	8.60	14.23	11.50	5.57	0.67	7.91	13.54	10.81	4.88	-0.02
09/96	1.91	7.44	4.76	-1.05	-5.85	8.41	13.94	11.26	5.45	0.65	7.72	13.25	10.57	4.76	-0.04
10/96	0.59	5.89	3.32	-2.25	-6.85	7.09	12.39	9.82	4.25	-0.35	6.40	11.70	9.13	3.56	-1.04
11/96	-2.14	3.44	0.73	-5.13	-9.99	4.36	9.94	7.23	1.37	-3.49	3.67	9.25	6.54	0.68	-4.18
12/96	-5.68	0.02	-2.75	-8.73	-13.69	-5.68	0.02	-2.75	-8.73	-13.69	-13.87	-8.17	-10.94	-16.92	-21.88
01/97	2.21	8.14	5.26	-0.96	-6.12	2.21	8.14	5.26	-0.96	-6.12	-5.98	-0.05	-2.93	-9.15	-14.31
02/97	20.83	26.99	24.00	17.53	12.18	20.83	26.99	24.00	17.53	12.18	12.64	18.80	15.81	9.34	3.99
03/97	2.39	8.66	5.61	-0.97	-6.43	2.39	8.66	5.61	-0.97	-6.43	-5.80	0.47	-2.58	-9.16	-14.62
04/97	-8.65	-2.61	-5.54	-11.89	-17.14	-8.65	-2.61	-5.54	-11.89	-17.14	-16.84	-10.80	-13.73	-20.08	-25.33
05/97	-8.10	-2.35	-5.14	-11.19	-16.19	-8.10	-2.35	-5.14	-11.19	-16.19	-16.29	-10.54	-13.33	-19.38	-24.38
06/97	-4.08	1.56	-1.18	-7.10	-12.00	2.42	8.06	5.32	-0.60	-5.50	1.73	7.37	4.63	-1.29	-6.19
07/97	-2.75	2.72	0.07	-5.68	-10.43	3.75	9.22	6.57	0.82	-3.93	3.06	8.53	5.88	0.13	-4.62
08/97	-3.08	2.55	-0.18	-6.11	-11.01	3.42	9.05	6.32	0.39	-4.51	2.73	8.36	5.63	-0.30	-5.20

	Case B1					Case B2					Case C1				
	SURPLUS OR DEFICIT CASE B1					SURPLUS OR DEFICIT CASE B2					SURPLUS OR DEFICIT CASE C1				
Month/Year	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030	Def.2000	Def.2005	Def.2010	Def.2020	Def.2030
09/97	-2.76	2.76	0.08	-5.72	-10.52	3.74	9.26	6.58	0.78	-4.02	3.05	8.57	5.89	0.09	-4.71
10/97	-0.04	5.25	2.68	-2.88	-7.48	6.46	11.75	9.18	3.62	-0.98	5.77	11.06	8.49	2.93	-1.67
11/97	1.74	7.32	4.61	-1.25	-6.10	8.24	13.82	11.11	5.25	0.40	7.55	13.13	10.42	4.56	-0.29
12/97	11.20	16.90	14.13	8.15	3.20	11.20	16.90	14.13	8.15	3.20	3.01	8.71	5.94	-0.04	-4.99
01/98	30.73	36.66	33.78	27.56	22.40	30.73	36.66	33.78	27.56	22.40	22.54	28.47	25.59	19.37	14.21
02/98	44.68	50.84	47.85	41.38	36.03	44.68	50.84	47.85	41.38	36.03	36.49	42.65	39.66	33.19	27.84
03/98	36.45	42.73	39.68	33.09	27.64	36.45	42.73	39.68	33.09	27.64	28.26	34.54	31.49	24.90	19.45
04/98	17.27	23.31	20.38	14.03	8.78	17.27	23.31	20.38	14.03	8.78	9.08	15.12	12.19	5.84	0.59
05/98	2.72	8.48	5.69	-0.36	-5.36	2.72	8.48	5.69	-0.36	-5.36	-5.47	0.29	-2.50	-8.55	-13.55
06/98	3.98	9.62	6.88	0.96	-3.95	10.48	16.12	13.38	7.46	2.55	9.79	15.43	12.69	6.77	1.86
07/98	2.80	8.26	5.61	-0.13	-4.89	9.30	14.76	12.11	6.37	1.61	8.61	14.07	11.42	5.68	0.92
08/98	0.99	6.63	3.90	-2.03	-6.93	7.49	13.13	10.40	4.47	-0.43	6.80	12.44	9.71	3.78	-1.12
09/98	-0.80	4.72	2.04	-3.76	-8.57	5.70	11.22	8.54	2.74	-2.07	5.01	10.53	7.85	2.05	-2.76
10/98	1.82	7.12	4.55	-1.02	-5.62	8.32	13.62	11.05	5.48	0.88	7.63	12.93	10.36	4.79	0.19
11/98	1.44	7.02	4.31	-1.55	-6.41	7.94	13.52	10.81	4.95	0.09	7.25	12.83	10.12	4.26	-0.60
12/98	-3.41	2.29	-0.47	-6.46	-11.41	-3.41	2.29	-0.47	-6.46	-11.41	-11.60	-5.90	-8.66	-14.65	-19.60

Annex IV:

Discharg:

Month/Year	Case A1					Case B1					Case B2					Case C1					
	ONLY DEFICIT CASE A1					ONLY DEFICIT CASE B1					ONLY DEFICIT CASE B2					ONLY DEFICIT CASE C1					
	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	
01/79	19.24	13.31	16.19	22.42	27.57	6.05	0.12	3.00	9.23	14.38	6.05	0.12	3.00	9.23	14.38	14.24	8.31	11.19	17.42	22.57	
02/79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03/79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/79	3.43	0.00	0.32	6.66	11.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.66	6.92	
05/79	19.97	14.21	17.01	23.05	28.06	6.78	1.02	3.82	9.86	14.87	6.78	1.02	3.82	9.86	14.87	14.97	9.21	12.01	18.05	23.06	
06/79	17.76	12.12	14.86	20.78	25.69	1.57	0.00	0.00	4.59	9.50	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	3.69	
07/79	18.07	12.60	15.25	21.00	25.75	1.88	0.00	0.00	4.81	9.56	0.00	0.00	0.00	0.00	3.06	0.00	0.00	0.00	0.00	3.75	
08/79	18.56	12.92	15.66	21.58	26.49	2.37	0.00	0.00	5.39	10.30	0.00	0.00	0.00	0.00	3.80	0.00	0.00	0.00	0.00	4.49	
09/79	16.76	11.24	13.92	19.72	24.53	0.57	0.00	0.00	3.53	8.34	0.00	0.00	0.00	0.00	1.84	0.00	0.00	0.00	0.00	2.53	
10/79	15.11	9.81	12.38	17.94	22.55	0.00	0.00	0.00	1.75	6.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55	
11/79	17.21	11.62	14.33	20.20	25.05	1.02	0.00	0.00	4.01	8.86	0.00	0.00	0.00	0.00	2.36	0.00	0.00	0.00	0.00	3.05	
12/79	19.15	13.45	16.22	22.20	27.16	5.96	0.26	3.03	9.01	13.97	5.96	0.26	3.03	9.01	13.97	14.15	8.45	11.22	17.20	22.16	
01/80	10.38	4.46	7.33	13.56	18.71	0.00	0.00	0.00	0.37	5.52	0.00	0.00	0.00	0.37	5.52	5.38	0.00	2.33	8.56	13.71	
02/80	11.48	5.32	8.31	14.78	20.13	0.00	0.00	0.00	1.59	6.94	0.00	0.00	0.00	1.59	6.94	6.48	0.32	3.31	9.78	15.13	
03/80	1.79	0.00	0.00	5.15	10.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	5.61	
04/80	7.78	1.74	4.67	11.02	16.27	0.00	0.00	0.00	0.00	3.08	0.00	0.00	0.00	0.00	3.08	2.78	0.00	0.00	6.02	11.27	
05/80	20.59	14.83	17.63	23.67	28.68	7.40	1.64	4.44	10.48	15.49	7.40	1.64	4.44	10.48	15.49	15.59	9.83	12.63	18.67	23.68	
06/80	17.74	12.11	14.84	20.77	25.67	1.55	0.00	0.00	4.58	9.48	0.00	0.00	0.00	0.00	2.98	0.00	0.00	0.00	0.00	3.67	
07/80	19.89	14.43	17.08	22.82	27.58	3.70	0.00	0.89	6.63	11.39	0.00	0.00	0.00	0.13	4.89	0.00	0.00	0.00	0.82	5.58	
08/80	20.96	15.32	18.05	23.98	28.88	4.77	0.00	1.86	7.79	12.69	0.00	0.00	0.00	1.29	6.19	0.00	0.00	0.00	1.98	6.88	
09/80	16.91	11.39	14.07	19.87	24.67	0.72	0.00	0.00	3.68	8.48	0.00	0.00	0.00	0.00	1.98	0.00	0.00	0.00	0.00	2.67	
10/80	16.14	10.84	13.41	18.97	23.58	0.00	0.00	0.00	2.78	7.39	0.00	0.00	0.00	0.00	0.89	0.00	0.00	0.00	0.00	1.58	
11/80	17.06	11.48	14.19	20.05	24.91	0.87	0.00	0.00	3.86	8.72	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	2.91	
12/80	15.11	9.41	12.18	18.16	23.12	1.92	0.00	0.00	4.97	9.93	1.92	0.00	0.00	4.97	9.93	10.11	4.41	7.18	13.16	18.12	
01/81	2.22	0.00	0.00	5.40	10.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	5.55	
02/81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03/81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04/81	0.00	0.00	0.00	0.00	4.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05/81	16.23	10.48	13.27	19.31	24.32	3.04	0.00	0.08	6.12	11.13	3.04	0.00	0.08	6.12	11.13	11.23	5.48	8.27	14.31	19.32	
06/81	14.42	8.78	11.52	17.44	22.35	0.00	0.00	0.00	1.25	6.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	
07/81	14.98	9.51	12.17	17.91	22.66	0.00	0.00	0.00	1.72	6.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.66	
08/81	14.64	9.01	11.74	17.67	22.57	0.00	0.00	0.00	1.48	6.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57	
09/81	14.06	8.54	11.22	17.02	21.83	0.00	0.00	0.00	0.83	5.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
10/81	19.14	13.85	16.42	21.98	26.58	2.95	0.00	0.23	5.79	10.39	0.00	0.00	0.00	0.00	3.89	0.00	0.00	0.00	0.00	4.58	

Month/Year	Case A1					Case B1					Case B2					Case C1				
	ONLY DEFICIT CASE A1					ONLY DEFICIT CASE B1					ONLY DEFICIT CASE B2					ONLY DEFICIT CASE C1				
	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030
11/81	18.66	13.08	15.78	21.65	26.50	2.47	0.00	0.00	5.46	10.31	0.00	0.00	0.00	0.00	3.81	0.00	0.00	0.00	0.00	4.50
12/81	14.82	9.12	11.88	17.87	22.82	1.63	0.00	0.00	4.68	9.63	1.63	0.00	0.00	4.68	9.63	9.82	4.12	6.88	12.87	17.82
01/82	10.05	4.13	7.00	13.23	18.38	0.00	0.00	0.00	0.04	5.19	0.00	0.00	0.00	0.04	5.19	5.05	0.00	2.00	8.23	13.38
02/82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03/82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/82	0.00	0.00	0.00	0.00	2.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/82	0.00	0.00	0.00	2.41	7.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.42
06/82	2.29	0.00	0.00	5.31	10.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/82	5.27	0.00	2.45	8.20	12.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/82	5.09	0.00	2.18	8.11	13.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/82	11.73	6.21	8.89	14.69	19.50	0.00	0.00	0.00	0.00	3.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/82	10.16	4.87	7.44	13.00	17.60	0.00	0.00	0.00	0.00	1.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/82	7.24	1.65	4.36	10.23	15.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/82	11.53	5.83	8.59	14.58	19.53	0.00	0.00	0.00	1.39	6.34	0.00	0.00	0.00	1.39	6.34	6.53	0.83	3.59	9.58	14.53
01/83	7.77	1.84	4.72	10.94	16.10	0.00	0.00	0.00	0.00	2.91	0.00	0.00	0.00	2.91	2.77	0.00	0.00	5.94	11.10	
02/83	11.59	5.43	8.42	14.88	20.24	0.00	0.00	0.00	1.69	7.05	0.00	0.00	0.00	1.69	7.05	6.59	0.43	3.42	9.88	15.24
03/83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/83	0.60	0.00	0.00	3.68	8.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.69
06/83	7.53	1.89	4.62	10.55	15.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/83	11.83	6.37	9.02	14.76	19.52	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/83	16.66	11.02	13.76	19.68	24.59	0.47	0.00	0.00	3.49	8.40	0.00	0.00	0.00	1.90	0.00	0.00	0.00	0.00	0.00	2.59
09/83	19.51	13.98	16.66	22.47	27.27	3.32	0.00	0.47	6.28	11.08	0.00	0.00	0.00	4.58	0.00	0.00	0.00	0.47	5.27	
10/83	7.47	2.18	4.75	10.31	14.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/83	9.87	4.29	7.00	12.86	17.72	0.00	0.00	0.00	0.00	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/83	2.50	0.00	0.00	5.55	10.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55	5.51
01/84	7.13	1.20	4.08	10.30	15.46	0.00	0.00	0.00	0.00	2.27	0.00	0.00	0.00	2.27	2.13	0.00	0.00	5.30	10.46	
02/84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03/84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/84	5.33	0.00	2.22	8.56	13.82	0.00	0.00	0.00	0.00	0.63	0.00	0.00	0.00	0.63	0.33	0.00	0.00	3.56	8.82	
05/84	12.94	7.19	9.98	16.03	21.03	0.00	0.00	0.00	2.84	7.84	0.00	0.00	0.00	2.84	7.84	7.94	2.19	4.98	11.03	16.03
06/84	4.59	0.00	1.69	7.61	12.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/84	5.94	0.47	3.13	8.87	13.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/84	7.94	2.30	5.03	10.96	15.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/84	18.04	12.52	15.20	21.00	25.81	1.85	0.00	0.00	4.81	9.62	0.00	0.00	0.00	3.12	0.00	0.00	0.00	0.00	0.00	3.81
10/84	14.18	8.88	11.45	17.02	21.62	0.00	0.00	0.00	0.83	5.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/84	13.38	7.80	10.51	16.37	21.23	0.00	0.00	0.00	0.18	5.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/84	3.55	0.00	0.61	6.60	11.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.60	6.55	

Month/Year	Case A1					Case B1					Case B2					Case C1				
	ONLY DEFICIT CASE A1					ONLY DEFICIT CASE B1					ONLY DEFICIT CASE B2					ONLY DEFICIT CASE C1				
Month/Year	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030
03/88	2.50	0.00	0.00	5.86	11.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.86	6.31
04/88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/88	10.23	4.48	7.27	13.31	18.32	0.00	0.00	0.00	0.12	5.13	0.00	0.00	0.00	0.12	5.13	5.23	0.00	2.27	8.31	13.32
06/88	14.65	9.01	11.75	17.67	22.58	0.00	0.00	0.00	1.48	6.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.58
07/88	13.09	7.62	10.28	16.02	20.77	0.00	0.00	0.00	0.00	4.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/88	11.38	5.74	8.48	14.40	19.31	0.00	0.00	0.00	0.00	3.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/88	14.23	8.70	11.38	17.19	21.99	0.00	0.00	0.00	1.00	5.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/88	13.91	8.61	11.18	16.74	21.35	0.00	0.00	0.00	0.55	5.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/88	15.81	10.22	12.93	18.80	23.65	0.00	0.00	0.00	2.61	7.46	0.00	0.00	0.00	0.00	0.96	0.00	0.00	0.00	0.00	1.65
12/88	11.60	5.91	8.67	14.65	19.61	0.00	0.00	0.00	1.46	6.42	0.00	0.00	0.00	1.46	6.42	6.60	0.91	3.67	9.65	14.61
01/89	7.34	1.41	4.29	10.52	15.67	0.00	0.00	0.00	0.00	2.48	0.00	0.00	0.00	0.00	2.48	2.34	0.00	0.00	5.52	10.67
02/89	0.00	0.00	0.00	0.00	5.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27
03/89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/89	1.35	0.00	0.00	4.59	9.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.84
05/89	15.91	10.16	12.95	18.99	24.00	2.72	0.00	0.00	5.80	10.81	2.72	0.00	0.00	5.80	10.81	10.91	5.16	7.95	13.99	19.00
06/89	17.76	12.12	14.86	20.78	25.69	1.57	0.00	0.00	4.59	9.50	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	3.69
07/89	18.02	12.55	15.20	20.94	25.70	1.83	0.00	0.00	4.75	9.51	0.00	0.00	0.00	0.00	3.01	0.00	0.00	0.00	0.00	3.70
08/89	19.39	13.75	16.49	22.41	27.32	3.20	0.00	0.30	6.22	11.13	0.00	0.00	0.00	0.00	4.63	0.00	0.00	0.00	0.41	5.32
09/89	18.74	13.22	15.90	21.70	26.51	2.55	0.00	0.00	5.51	10.32	0.00	0.00	0.00	0.00	3.82	0.00	0.00	0.00	0.00	4.51
10/89	17.00	11.70	14.27	19.83	24.44	0.81	0.00	0.00	3.64	8.25	0.00	0.00	0.00	0.00	1.75	0.00	0.00	0.00	0.00	2.44
11/89	17.40	11.82	14.53	20.39	25.25	1.21	0.00	0.00	4.20	9.06	0.00	0.00	0.00	0.00	2.56	0.00	0.00	0.00	0.00	3.25
12/89	21.09	15.39	18.16	24.14	29.10	7.90	2.20	4.97	10.95	15.91	7.90	2.20	4.97	10.95	15.91	16.09	10.39	13.16	19.14	24.10
01/90	17.05	11.12	14.00	20.22	25.38	3.86	0.00	0.81	7.03	12.19	3.86	0.00	0.81	7.03	12.19	12.05	6.12	9.00	15.22	20.38
02/90	23.37	17.21	20.20	26.66	32.02	10.18	4.02	7.01	13.47	18.83	10.18	4.02	7.01	13.47	18.83	18.37	12.21	15.20	21.66	27.02
03/90	23.91	17.64	20.68	27.27	32.73	10.72	4.45	7.49	14.08	19.54	10.72	4.45	7.49	14.08	19.54	18.91	12.64	15.68	22.27	27.73
04/90	25.07	19.03	21.96	28.31	33.56	11.88	5.84	8.77	15.12	20.37	11.88	5.84	8.77	15.12	20.37	20.07	14.03	16.96	23.31	28.56
05/90	24.95	19.19	21.98	28.03	33.03	11.76	6.00	8.79	14.84	19.84	11.76	6.00	8.79	14.84	19.84	19.95	14.19	16.98	23.03	28.03
06/90	23.69	18.05	20.78	26.71	31.61	7.50	1.86	4.59	10.52	15.42	1.00	0.00	0.00	4.02	8.92	1.69	0.00	0.00	4.71	9.61
07/90	23.87	18.40	21.06	26.80	31.55	7.68	2.21	4.87	10.61	15.36	1.18	0.00	0.00	4.11	8.86	1.87	0.00	0.00	4.80	9.55
08/90	25.72	20.08	22.82	28.74	33.65	9.53	3.89	6.63	12.55	17.46	3.03	0.00	0.13	6.05	10.96	3.72	0.00	0.82	6.74	11.65
09/90	24.05	18.53	21.21	27.01	31.81	7.86	2.34	5.02	10.82	15.62	1.36	0.00	0.00	4.32	9.12	2.05	0.00	0.00	5.01	9.81
10/90	18.76	13.46	16.03	21.59	26.20	2.57	0.00	0.00	5.40	10.01	0.00	0.00	0.00	0.00	3.51	0.00	0.00	0.00	0.00	4.20
11/90	12.83	7.25	9.96	15.82	20.67	0.00	0.00	0.00	0.00	4.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/90	17.32	11.62	14.39	20.37	25.32	4.13	0.00	1.20	7.18	12.13	4.13	0.00	1.20	7.18	12.13	12.32	6.62	9.39	15.37	20.32
01/91	17.26	11.33	14.21	20.43	25.59	4.07	0.00	1.02	7.24	12.40	4.07	0.00	1.02	7.24	12.40	12.26	6.33	9.21	15.43	20.59
02/91	13.72	7.56	10.55	17.01	22.37	0.53	0.00	0.00	3.82	9.18	0.53	0.00	0.00	3.82	9.18	8.72	2.56	5.55	12.01	17.37
03/91	0.00	0.00	0.00	3.08	8.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.54
04/91	12.20	6.16	9.09	15.43	20.69	0.00	0.00	0.00	2.24	7.50	0.00	0.00	0.00	2.24	7.50	7.20	1.16	4.09	10.43	15.69

Month/Year	Case A1					Case B1					Case B2					Case C1				
	ONLY DEFICIT CASE A1					ONLY DEFICIT CASE B1					ONLY DEFICIT CASE B2					ONLY DEFICIT CASE C1				
	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030
07/94	13.26	7.79	10.44	16.19	20.94	0.00	0.00	0.00	0.00	4.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/94	13.60	7.96	10.70	16.62	21.53	0.00	0.00	0.00	0.43	5.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/94	13.12	7.60	10.28	16.08	20.89	0.00	0.00	0.00	0.00	4.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/94	12.50	7.20	9.77	15.33	19.94	0.00	0.00	0.00	0.00	3.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/94	13.97	8.38	11.09	16.96	21.81	0.00	0.00	0.00	0.77	5.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/94	15.67	9.97	12.73	18.72	23.67	2.48	0.00	0.00	5.53	10.48	2.48	0.00	0.00	5.53	10.48	10.67	4.97	7.73	13.72	18.67
01/95	11.75	5.82	8.70	14.93	20.08	0.00	0.00	0.00	1.74	6.89	0.00	0.00	0.00	1.74	6.89	6.75	0.82	3.70	9.93	15.08
02/95	16.24	10.08	13.07	19.54	24.89	3.05	0.00	0.00	6.35	11.70	3.05	0.00	0.00	6.35	11.70	11.24	5.08	8.07	14.54	19.89
03/95	7.30	1.03	4.07	10.66	16.12	0.00	0.00	0.00	0.00	2.93	0.00	0.00	0.00	0.00	2.93	2.30	0.00	0.00	5.66	11.12
04/95	5.10	0.00	1.99	8.33	13.59	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.40	0.10	0.00	0.00	3.33	8.59
05/95	17.35	11.60	14.39	20.44	25.44	4.16	0.00	1.20	7.25	12.25	4.16	0.00	1.20	7.25	12.25	12.35	6.60	9.39	15.44	20.44
06/95	17.17	11.53	14.27	20.19	25.10	0.98	0.00	0.00	4.00	8.91	0.00	0.00	0.00	0.00	2.41	0.00	0.00	0.00	0.00	3.10
07/95	17.18	11.71	14.36	20.11	24.86	0.99	0.00	0.00	3.92	8.67	0.00	0.00	0.00	0.00	2.17	0.00	0.00	0.00	0.00	2.86
08/95	16.50	10.86	13.60	19.52	24.43	0.31	0.00	0.00	3.33	8.24	0.00	0.00	0.00	0.00	1.74	0.00	0.00	0.00	0.00	2.43
09/95	15.77	10.25	12.93	18.73	23.53	0.00	0.00	0.00	2.54	7.34	0.00	0.00	0.00	0.00	0.84	0.00	0.00	0.00	0.00	1.53
10/95	14.95	9.66	12.23	17.79	22.39	0.00	0.00	0.00	1.60	6.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39
11/95	17.58	12.00	14.71	20.57	25.42	1.39	0.00	0.00	4.38	9.23	0.00	0.00	0.00	0.00	2.73	0.00	0.00	0.00	0.00	3.42
12/95	16.96	11.26	14.03	20.01	24.97	3.77	0.00	0.84	6.82	11.78	3.77	0.00	0.84	6.82	11.78	11.96	6.26	9.03	15.01	19.97
01/96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02/96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03/96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/96	0.00	0.00	0.00	0.00	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/96	13.41	7.65	10.45	16.49	21.50	0.22	0.00	0.00	3.30	8.31	0.22	0.00	0.00	3.30	8.31	8.41	2.65	5.45	11.49	16.50
06/96	11.28	5.64	8.37	14.30	19.20	0.00	0.00	0.00	0.00	3.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/96	10.37	4.90	7.56	13.30	18.05	0.00	0.00	0.00	0.00	1.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/96	14.09	8.46	11.19	17.12	22.02	0.00	0.00	0.00	0.93	5.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
09/96	14.28	8.75	11.43	17.24	22.04	0.00	0.00	0.00	1.05	5.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
10/96	15.60	10.30	12.87	18.44	23.04	0.00	0.00	0.00	2.25	6.85	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.00	0.00	1.04
11/96	18.33	12.75	15.46	21.32	26.18	2.14	0.00	0.00	5.13	9.99	0.00	0.00	0.00	0.00	3.49	0.00	0.00	0.00	0.00	4.18
12/96	18.87	13.17	15.94	21.92	26.88	5.68	0.00	2.75	8.73	13.69	5.68	0.00	2.75	8.73	13.69	13.87	8.17	10.94	16.92	21.88
01/97	10.98	5.05	7.93	14.15	19.31	0.00	0.00	0.00	0.96	6.12	0.00	0.00	0.00	0.96	6.12	5.98	0.05	2.93	9.15	14.31
02/97	0.00	0.00	0.00	0.00	1.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03/97	10.80	4.53	7.58	14.16	19.62	0.00	0.00	0.00	0.97	6.43	0.00	0.00	0.00	0.97	6.43	5.80	0.00	2.58	9.16	14.62
04/97	21.84	15.80	18.73	25.08	30.33	8.65	2.61	5.54	11.89	17.14	8.65	2.61	5.54	11.89	17.14	16.84	10.80	13.73	20.08	25.33
05/97	21.29	15.54	18.33	24.38	29.38	8.10	2.35	5.14	11.19	16.19	8.10	2.35	5.14	11.19	16.19	16.29	10.54	13.33	19.38	24.38
06/97	20.27	14.63	17.37	23.29	28.19	4.08	0.00	1.18	7.10	12.00	0.00	0.00	0.00	0.60	5.50	0.00	0.00	0.00	1.29	6.19
07/97	18.94	13.47	16.12	21.87	26.62	2.75	0.00	0.00	5.68	10.43	0.00	0.00	0.00	0.00	3.93	0.00	0.00	0.00	0.00	4.62
08/97	19.27	13.64	16.37	22.30	27.20	3.08	0.00	0.18	6.11	11.01	0.00	0.00	0.00	0.00	4.51	0.00	0.00	0.00	0.30	5.20

	Case A1					Case B1					Case B2					Case C1					
	ONLY DEFICIT CASE A1					ONLY DEFICIT CASE B1					ONLY DEFICIT CASE B2					ONLY DEFICIT CASE C1					
Month/Year	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	O. Def.2000	O. Def.2005	O. Def.2010	O. Def.2020	O. Def.2030	
09/97	18.95	13.43	16.11	21.91	26.71	2.76	0.00	0.00	5.72	10.52	0.00	0.00	0.00	0.00	4.02	0.00	0.00	0.00	0.00	0.00	4.71
10/97	16.23	10.94	13.51	19.07	23.67	0.04	0.00	0.00	2.88	7.48	0.00	0.00	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00	1.67
11/97	14.45	8.87	11.58	17.44	22.29	0.00	0.00	0.00	1.25	6.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
12/97	1.99	0.00	0.00	5.04	9.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	4.99
01/98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02/98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03/98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/98	0.00	0.00	0.00	0.00	4.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/98	10.47	4.71	7.50	13.55	18.55	0.00	0.00	0.00	0.36	5.36	0.00	0.00	0.00	0.36	5.36	5.47	0.00	2.50	8.55	13.55	
06/98	12.21	6.57	9.31	15.23	20.14	0.00	0.00	0.00	0.00	3.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/98	13.39	7.93	10.58	16.32	21.08	0.00	0.00	0.00	0.13	4.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/98	15.20	9.56	12.29	18.22	23.12	0.00	0.00	0.00	2.03	6.93	0.00	0.00	0.00	0.00	0.43	0.00	0.00	0.00	0.00	0.00	1.12
09/98	16.99	11.47	14.15	19.95	24.76	0.80	0.00	0.00	3.76	8.57	0.00	0.00	0.00	0.00	2.07	0.00	0.00	0.00	0.00	0.00	2.76
10/98	14.37	9.07	11.64	17.21	21.81	0.00	0.00	0.00	1.02	5.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/98	14.75	9.17	11.88	17.74	22.60	0.00	0.00	0.00	1.55	6.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60
12/98	16.60	10.90	13.66	19.65	24.60	3.41	0.00	0.47	6.46	11.41	3.41	0.00	0.47	6.46	11.41	11.60	5.90	8.66	14.65	19.60	
	27.69	21.53	24.52	30.99	36.34	14.50	8.34	11.33	17.80	23.15	14.50	8.34	11.33	17.80	23.15	22.69	16.53	19.52	25.99	31.34	

Annex IV-2

Water Demand and Supply Balance Analysis

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Month/Year	VOLUME DEFICIT CASE A1					VOLUME DEFICIT CASE B1					VOLUME DEFICIT CASE B2					VOLUME DEFICIT CASE C1				
	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030
01/79	52	36	43	60	74	16.21	0	8.03	25	39	16	0	8	25	39	38	22	30	47	60
02/79	0	0	0	0	0	0.00	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0
03/79	0	0	0	0	0	0.00	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0
04/79	9	0	0.82	17	31	0.00	0	0.00	0	0	0	0	0	0	0	0	0	0	4	18
05/79	53	38.07	45.55	62	75	18.16	3	10.22	26.42	40	18	3	10	26	40	40	25	32	48	62
06/79	46	31.42	38.51	54	67	4.21	0	0.00	12.30	25	0	0	0	0	8	0	0	0	0	10
07/79	48	33.75	40.86	56	69	5.03	0	0.00	12.88	26	0	0	0	0	8	0	0	0	0	10
08/79	50	34.61	41.93	58	71	6.35	0	0.00	14.44	28	0	0	0	0	10	0	0	0	0	12
09/79	43	29.13	36.08	51	64	1.54	0	0.00	9.46	22	0	0	0	0	5	0	0	0	0	7
10/79	40	26.28	33.16	48	60	0.00	0	0.00	4.69	17	0	0	0	0	0	0	0	0	0	1
11/79	45	30.13	37.15	52	65	2.72	0	0.00	10.73	24	0	0	0	0	6	0	0	0	0	8
12/79	51	36.03	43.44	59	73	15.97	1	8.11	24.14	37	16	1	8	24	37	38	23	30	46	59
01/80	28	11.93	19.64	36	50	0	0	0	0.98	15	0	0	0	1	15	14	0	6	23	37
02/80	29	13.34	20.82	37	50	0	0	0	4.26	19	0	0	0	4	19	16	1	8	25	38
03/80	5	0	0	14	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
04/80	20	5	12	29	42	0	0	0	0	8	0	0	0	0	8	7	0	0	16	29
05/80	55	40	47	63	77	20	4.41	12	28	41	20	4	12	28	41	42	26	34	50	63
06/80	46	31	38	54	67	4	0	0	12	25	0	0	0	0	8	0	0	0	0	10
07/80	53	39	46	61	74	10	0	2	18	30	0	0	0	0	13	0	0	0	2	15
08/80	56	41	48	64	77	13	0	5	21	34	0	0	0	3	17	0	0	0	5	18
09/80	44	30	36	52	64	2	0	0	10	23	0	0	0	0	5	0	0	0	0	7
10/80	43	29	36	51	63	0	0	0	7	20	0	0	0	0	2	0	0	0	0	4
11/80	44	30	37	52	65	2	0	0	10	23	0	0	0	0	6	0	0	0	0	8
12/80	40	25	33	49	62	5	0	0	13	27	5	0	0	13	27	27	12	19	35	49
01/81	6	0	0	14	28	0	0	0	0	0	0	0	0	0	0	0	0	0	1	15
02/81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04/81	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/81	43	28	36	52	65	8	0	0	16	30	8	0	0	16	30	30	15	22	38	52
06/81	37	23	30	45	58	0	0	0	3	16	0	0	0	0	0	0	0	0	0	1
07/81	40	25	33	48	61	0	0	0	5	17	0	0	0	0	0	0	0	0	0	2
08/81	39	24	31	47	60	0	0	0	4	17	0	0	0	0	0	0	0	0	0	2
09/81	36	22	29	44	57	0	0	0	2	15	0	0	0	0	0	0	0	0	0	0
10/81	51	37	44	59	71	8	0	1	16	28	0	0	0	0	10	0	0	0	0	12
11/81	48	34	41	56	69	7	0	0	15	28	0	0	0	0	10	0	0	0	0	12

Month/Year	VOLUME DEFICIT CASE A1					VOLUME DEFICIT CASE B1					VOLUME DEFICIT CASE B2					VOLUME DEFICIT CASE C1				
	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030
10/88	37	23	30	45	57	0	0	0	1	14	0	0	0	0	0	0	0	0	0	0
11/88	41	26	34	49	61	0	0	0	7	20	0	0	0	0	3	0	0	0	0	4
12/88	31	16	23	39	53	0	0	0	4	17	0	0	0	4	17	18	2	10	26	39
01/89	20	4	11	28	42	0	0	0	0	7	0	0	0	0	7	6	0	0	15	29
02/89	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03/89	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04/89	3	0	0	12	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
05/89	43	27	35	51	64	7	0	0	16	29	7	0	0	16	29	29	14	21	37	51
06/89	46	31	39	54	67	4	0	0	12	25	0	0	0	0	8	0	0	0	0	10
07/89	48	34	41	56	69	5	0	0	13	25	0	0	0	0	8	0	0	0	0	10
08/89	52	37	44	60	73	9	0	1	17	30	0	0	0	0	12	0	0	0	1	14
09/89	49	34	41	56	69	7	0	0	15	28	0	0	0	0	10	0	0	0	0	12
10/89	46	31	38	53	65	2	0	0	10	22	0	0	0	0	5	0	0	0	0	7
11/89	45	31	38	53	65	3	0	0	11	24	0	0	0	0	7	0	0	0	0	8
12/89	56	41	49	65	78	21	6	13	29	43	21	6	13	29	43	43	28	35	51	65
01/90	46	30	37	54	68	10	0	2	19	33	10	0	2	19	33	32	16	24	41	55
02/90	57	42	49	65	77	27	11	19	36	50	27	11	19	36	50	44	30	37	52	65
03/90	64	47	55	73	88	29	12	20	38	52	29	12	20	38	52	51	34	42	60	74
04/90	65	49	57	73	87	32	16	23	40	55	32	16	23	40	55	52	36	44	60	74
05/90	67	51	59	75	88	31	16	24	40	53	31	16	24	40	53	53	38	45	62	75
06/90	61	47	54	69	82	20	5	12	28	41	3	0	0	11	24	4	0	0	12	25
07/90	64	49	56	72	85	21	6	13	28	41	3	0	0	11	24	5	0	0	13	26
08/90	69	54	61	77	90	26	10	18	34	47	8	0	0	16	29	10	0	2	18	31
09/90	62	48	55	70	82	21	6	13	29	42	4	0	0	12	24	5	0	0	13	25
10/90	50	36	43	58	70	7	0	0	14	27	0	0	0	0	9	0	0	0	0	11
11/90	33	19	26	41	54	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0
12/90	46	31	39	55	68	11	0	3	19	33	11	0	3	19	33	33	18	25	41	54
01/91	46	30	38	55	69	11	0	3	19	33	11	0	3	19	33	33	17	25	41	55
02/91	33	18	26	41	54	1	0	0	10	25	1	0	0	10	25	21	6	13	29	42
03/91	0	0	0	8	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
04/91	32	16	24	40	54	0	0	0	6	20	0	0	0	6	20	19	3	11	27	41
05/91	40	25	32	48	62	5	0	0	13	27	5	0	0	13	27	27	11	19	35	48
06/91	53	38	45	60	73	11	0	3	19	32	0	0	0	2	15	0	0	0	3	16
07/91	56	41	48	64	76	12	0	5	20	33	0	0	0	3	16	0	0	0	5	18
08/91	57	42	49	65	78	13	0	6	21	35	0	0	0	4	17	0	0	0	6	19
09/91	51	37	44	59	72	10	0	2	18	31	0	0	0	0	13	0	0	0	2	14
10/91	40	26	33	48	60	0	0	0	4	17	0	0	0	0	0	0	0	0	0	1
11/91	46	32	39	54	67	4	0	0	12	25	0	0	0	0	8	0	0	0	0	10
12/91	54	39	47	63	76	19	4	11	27	40	19	4	11	27	40	41	26	33	49	62
01/92	53	37	44	61	75	17	1	9	26	40	17	1	9	26	40	39	23	31	48	62
02/92	69	54	61	78	91	39	22	30	48	62	39	22	30	48	62	57	41	49	65	79

Month/Year	VOLUME DEFICIT CASE A1					VOLUME DEFICIT CASE B1					VOLUME DEFICIT CASE B2					VOLUME DEFICIT CASE C1				
	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030
03/92	49	32	41	58	73	14	0	5	23	38	14	0	5	23	38	36	19	27	45	59
04/92	56	41	48	65	78	23	7	14	31	45	23	7	14	31	45	43	28	35	52	65
05/92	68	53	60	76	90	33	17	25	41	54	33	17	25	41	54	55	39	47	63	76
06/92	59	44	52	67	80	18	3	10	26	39	0	0	0	8	21	2	0	0	10	23
07/92	55	40	47	63	75	11	0	4	19	32	0	0	0	2	15	0	0	0	4	16
08/92	59	44	51	67	80	15	0	8	23	37	0	0	0	6	19	0	0	0	8	21
09/92	56	42	49	64	76	14	0	7	22	35	0	0	0	5	18	0	0	0	7	19
10/92	56	42	49	64	76	13	0	6	20	33	0	0	0	3	15	0	0	0	5	17
11/92	62	48	55	70	83	21	6	13	29	42	3.72	0	0	12	25	5	0	0	13	26
12/92	71	56	63	79	92	36	20	28	44	57	35.71	20	27.85	44	57	58	42	50	66	79
01/93	10	0	2	19	33	0	0	0	0	0	0.00	0	0	0	0	0	0	0	5	19
02/93	0	0	0	0	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0
03/93	0	0	0	0	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0
04/93	7	0	0	16	29	0	0	0	0	0	0.00	0	0	0	0	0	0	0	3	16
05/93	38	23	30	47	60	3	0	0	11	25	2.95	0	0	11	25	25	9	17	33	47
06/93	51	36	43	59	71	9	0	1	17	30	0	0	0	0	13	0	0	0	2	14
07/93	51	36	43	59	72	8	0	0	15	28	0	0	0	0	11	0	0	0	0	13
08/93	55	39	47	63	76	11	0	3	19	32	0	0	0	2	15	0	0	0	4	17
09/93	49	34	41	56	69	7	0	0	15	28	0	0	0	0	10	0	0	0	0	12
10/93	46	32	39	54	66	3	0	0	10	23	0	0	0	0	5	0	0	0	0	7
11/93	10	0	2	18	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01/94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02/94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04/94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/94	8.21	0	0	16	29.87	0	0	0	0	0	0	0	0	0	0	0	0	0	3	16
06/94	31.90	17	24	40	52.44	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0
07/94	35.51	21	28	43	56.09	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0
08/94	36.43	21	29	45	57.65	0	0	0	1	14	0	0	0	0	0	0	0	0	0	0
09/94	34.02	20	27	42	54.14	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0
10/94	33.48	19	26	41	53.40	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0
11/94	36.20	22	29	44	56.54	0	0	0	2	15	0	0	0	0	0	0	0	0	0	0
12/94	41.96	27	34	50	63.40	7	0	0	15	28	7	0	0	14.81	28.07	28.57	13	20.71	36.74	50.01
01/95	31.47	16	23	40	53.78	0	0	0	5	18	0	0	0	4.65	18.45	18.08	2	9.91	26.58	40.39
02/95	39.29	24	32	47	60.22	8	0	0	17	31	8	0	0	17.01	31.35	27.19	12	19.53	35.17	48.13
03/95	19.56	3	11	29	43.17	0	0	0	0	8	0	0	0	0.00	7.84	6.17	0	0.00	15.17	29.78
04/95	13.21	0	5	22	35.22	0	0	0	0	1	0	0	0	0.00	1.06	0.25	0	0.00	8.64	22.26
05/95	46.48	31	39	55	68.14	11	0	3	19	33	11	0	3	19.41	32.81	33.09	18	25.15	41.34	54.75
06/95	44.51	30	37	52	65.06	3	0	0	11	24	0	0	0	0.00	6.45	0.00	0	0.00	0.00	8.03
07/95	46.01	31	38	54	66.58	3	0	0	10	23	0	0	0	0.00	5.81	0.00	0	0.00	0.00	7.66

Month/Year	VOLUME DEFICIT CASE A1					VOLUME DEFICIT CASE B1					VOLUME DEFICIT CASE B2					VOLUME DEFICIT CASE C1				
	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030	WD.2000	WD.2005	WD.2010	WD.2020	WD.2030
08/95	44.20	29	36	52	65.43	1	0	0	9	22	0	0	0	0.00	4.65	0.00	0	0.00	0.00	6.50
09/95	40.88	27	34	49	61.00	0	0	0	7	20	0	0	0	0.00	2.26	0.00	0	0.00	0.00	3.98
10/95	40.05	26	33	48	59.98	0	0	0	4	17	0	0	0	0.00	0.00	0.00	0	0.00	0.00	1.05
11/95	45.57	31	38	53	65.90	4	0	0	12	25	0	0	0	0.00	7.32	0.00	0	0.00	0.00	8.88
12/95	45.43	30	38	54	66.87	10	0	2	18	32	10	0	2	18.28	31.55	32.04	17	24.18	40.21	53.48
01/96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02/96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04/96	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/96	36	21	28	44	58	1	0	0	9	22	1	0	0	9	22	23	7	15	31	44
06/96	29	15	22	37	50	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0
07/96	28	13	20	36	48	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0
08/96	38	23	30	46	59	0	0	0	2	16	0	0	0	0	0	0	0	0	0	0
09/96	37	23	30	45	57	0	0	0	3	16	0	0	0	0	0	0	0	0	0	0
10/96	42	28	34	49	62	0	0	0	6	18	0	0	0	0	1	0	0	0	0	3
11/96	48	33	40	55	68	6	0	0	14	27	0	0	0	0	9	0	0	0	0	11
12/96	51	35	43	59	72	15	0	7	23	37	15	0	7	23	37	37	22	29	45	59
01/97	29	14	21	38	52	0	0	0	3	16	0	0	0	3	16	16	0	8	25	38
02/97	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/97	29	12	20	37.94	53	0	0	0	3	17.22	0	0	0	3	17	16	0	7	25	39
04/97	57	41	49	65.00	79	23	7	15	32	45.91	23	6.99	15	32	46	44	27.99	36	52	66
05/97	57	42	49	65.29	79	22	6	14	30	43.36	22	6.29	14	30	43	44	28.23	36	52	65
06/97	53	38	45	60.37	73	11	0	3	19	32.15	0	0	0	2	15	0	0	0	3	16
07/97	51	36	43	58.57	71	7	0	0	15	27.94	0	0	0	0	11	0	0	0	0	12
08/97	52	37	44	59.72	73	8	0	0	16	29.49	0	0	0	0	12	0	0	0	1	14
09/97	49	35	42	56.79	69	7	0	0	15	28.19	0	0	0	0	11	0	0	0	0	12
10/97	43	29	36	51.07	63	0	0	0	8	20.04	0	0	0	0	3	0	0	0	0	4
11/97	37	23	30	45.20	58	0	0	0	3	16.35	0	0	0	0	0	0	0	0	0	1
12/97	5	0	0	13.50	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
01/98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02/98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04/98	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05/98	28	13	20	36	50	0	0	0	1	14	0	0	0	1	14	15	0	7	23	36
06/98	32	17	24	39	52	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0
07/98	36	21	28	44	56	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0
08/98	41	26	33	49	62	0	0	0	5	19	0	0	0	0	1	0	0	0	0	3
09/98	44	30	37	52	64	2	0	0	10	23	0	0	0	0	6	0	0	0	0	7
10/98	38	24	31	46	58	0	0	0	3	15	0	0	0	0	0	0	0	0	0	0
11/98	38	24	31	46	59	0	0	0	4	17	0	0	0	0	0	0	0	0	0	2
12/98	44	29	37	53	66	9	0	1	17	31	9	0	1	17	31	31	16	23	39	53