

TABLE D-9-5 RUNOFF AND WATER DIVERSION (COMPUTATION CASE-2)

YEAR	DRCT	RESID	RIVER	BANG PAKONGS CHAN	DAM	EXISTING THA LAT RIVER	THA LAT RESID	LAT RIVER	EXPANSION CHAN	DAM	DRCT	RESID	ENTIRE RESID	RIVER	PROJECT CHAN	AREA	DAM
1968	17	3157	10	1395	109	76	48	22	1	0	5	32	184	100	0.09	0	
1969	17	3327	11	1500	110	76	46	22	1	0	8	34	193	100	0.09	0	
1970	17	3363	11	1530	110	76	42	22	1	0	8	34	193	100	0.09	0	
1971	22	3360	11	1529	110	88	20	22	1	0	8	34	193	100	0.09	0	
1972	22	3360	11	1529	110	88	14	22	1	0	8	34	193	100	0.09	0	
1973	21	3359	11	1528	110	66	45	22	1	0	8	34	193	100	0.09	0	
1974	21	3359	11	1528	110	66	52	22	1	0	8	34	193	100	0.09	0	
1975	21	3359	11	1528	110	66	24	22	1	0	8	34	193	100	0.09	0	
1976	21	3359	11	1528	110	66	42	22	1	0	8	34	193	100	0.09	0	
1977	21	3359	11	1528	110	66	24	22	1	0	8	34	193	100	0.09	0	
1978	21	3359	11	1528	110	66	42	22	1	0	8	34	193	100	0.09	0	
1979	21	3359	11	1528	110	66	42	22	1	0	8	34	193	100	0.09	0	
1980	21	3359	11	1528	110	66	42	22	1	0	8	34	193	100	0.09	0	
1981	21	3359	11	1528	110	66	42	22	1	0	8	34	193	100	0.09	0	
1982	21	3359	11	1528	110	66	42	22	1	0	8	34	193	100	0.09	0	
1983	21	3359	11	1528	110	66	42	22	1	0	8	34	193	100	0.09	0	
1984	21	3359	11	1528	110	66	42	22	1	0	8	34	193	100	0.09	0	
1985	21	3359	11	1528	110	66	42	22	1	0	8	34	193	100	0.09	0	
1986	21	3359	11	1528	110	66	42	22	1	0	8	34	193	100	0.09	0	
1987	16	3359	11	1528	110	66	42	22	1	0	8	34	193	100	0.09	0	
ANNUM																	

D.10 EXISTING IRRIGATION AND DRAINAGE FACILITIES

Tables D-10-1(1) to (3) : Inventory of existing irrigation canals

Tables D-10-2(1) to (5) : Inventory of drainage canals

TABLE D-10-1(1) INVENTORY OF EXISTING IRRIGATION CANAL(1)

Lat. Canal	Structure				Remarks
	No.	Type	Nos.	Dimension(m)	
1R	1.1	Head Regulator	15 7	1- ϕ 1.00m	
	1.2	Syphon		2- ϕ 0.80m	
	1.3	Culvert		1- ϕ 1.00x80.0m	
	1.4	Farm Turnout		ϕ 0.40m	
	1.5	Bridge			
	1.6	Tail Regulator		2- ϕ 0.40m	
2R	2.1	Head Regulator	20 4	1- ϕ 1.00m	
	2.2	Culvert		2- ϕ 1.00m	
	2.3	Farm Turnout		ϕ 0.40m	
	2.4	Bridge			
	2.5	Tail Regulator		2- ϕ 0.50m	
3R	3.1	Head Regulator	12 3	1- ϕ 1.00m	
	3.2	Culvert		2- ϕ 1.00m	
	3.3	Farm Turnout		ϕ 0.40m	
	3.4	Bridge			
	3.5	Tail Regulator		2- ϕ 0.50m	
4R	4.1	Head Regulator	23 3	1- \square 1.50x1.50m	Lat Pla Khao Lam Thap Kai
	4.2	Syphon		2- ϕ 0.80m	
	4.3	Syphon		1- ϕ 0.80m	
	4.4	Farm Turnout		ϕ 0.40m	
	4.5	Bridge			
	4.6	Tail Regulator		1- ϕ 0.60m	
5R	5.1	Head Regulator	9 5	1- \square 1.50x1.50m	
	5.2	Farm Turnout		ϕ 0.40m	
	5.3	Bridge			
	5.4	Tail Regulator		1- ϕ 0.50m	
6R	6.1	Head Regulator	25 4	1- \square 1.50x1.50m	
	6.2	Farm Turnout		ϕ 0.40m	
	6.3	Bridge			
	6.4	Tail Regulator		1- ϕ 0.50m	
F1	1.1	Head Regulator		1- ϕ 0.80m	From main canal Sta. 3+900m
	1.2	Canal		1.20x1.00x1,200m	
F2	2.1	Head Regulator		1- ϕ 0.80m	From main canal Sta. 4+800m
	2.2	Canal		1.20x1.00x3,250m	

TABLE D-10-1(2) INVENTORY OF EXISTING IRRIGATION CANAL(2)

Lat. Canal	Structure				Remarks
	No.	Type	Nos.	Dimension(m)	
F3	3.1 3.2	Head Regulator Canal		1- ϕ 1.00m 1.50x1.20x4,500m	From main canal Sta.5+800m
F4	4.1 4.2	Head Regulator Canal		1- ϕ 0.80m 1.20x1.00x1,500m	From main canal Sta.7+900m
F5	5.1 5.2	Head Regulator Canal		1- ϕ 0.80m 1.20x1.00x1,500m	From main canal Sta.9+000m
F10	10.1 10.2	Head Regulator Canal		1- ϕ 1.00m 2.50x2.00x8,000m	From main canal Sta.18+200m
F11	11.1 11.2	Head Regulator Canal		2- ϕ 0.40m 2.50x2.00x8,500m	From main canal Sta.19+395m
F12	12.1 12.2	Head Regulator Canal		1- ϕ 0.80m 2.50x2.00x5,000m	From main canal Sta.19+950m
F13	13.1 13.2	Head Regulator Canal		1- ϕ 0.80m 2.50x2.00x6,000m	From main canal Sta.22+200m
F14	14.1 14.2	Head Regulator Canal		1- ϕ 0.80m 1.20x1.00x8,000m	From main canal Sta.22+970m
F15	15.1 15.2	Head Regulator Canal		1- ϕ 1.00m 3.00x1.20x7,000m	From main canal Sta.29+908m
F16	16.1 16.2	Head Regulator Canal		1- ϕ 1.00m 3.00x1.50x4,500m	From main canal Sta.30+750m
F17	17.1 17.2	Head Regulator Canal		1- ϕ 1.00m 4.00x2.00x4,500m	From main canal Sta.32+760m
F18	18.1 18.2	Head Regulator Canal		1- ϕ 1.00m 14.0x2.5x10,000m	From main canal Sta.33+100m
F19	19.1 19.2	Head Regulator Canal		1- ϕ 1.00m 10.0x5.00x4,000m	From main canal Sta.36+350m
F6	6.1 6.2	Head Regulator Canal		1- ϕ 1.00m 1.20x1.00x5,000m	From lateral 1R Sta.5+100m

TABLE D-10-1(3) INVENTORY OF EXISTING IRRIGATION CANAL(3)

Lat. Canal	Structure				Remarks
	No.	Type	Nos.	Dimension(m)	
F7	7.1 7.2	Head Regulator Canal		1- ϕ 1.00m 1.20x1.00x3,000m	From lateral 1R Sta.5+100m
F8	8.1 8.2	Head Regulator Canal		1- ϕ 0.50m 4.00x2.5x12,000m	From lateral 2R Sta.9+000m
F9	9.1 9.2	Head Regulator Canal		1- ϕ 0.40m 3.00x2.5x15,000m	From lateral 3R Sta.3+200m
F20	20.1 20.2	Head Regulator Canal		1- ϕ 0.60m 1.20x0.80x7,300m	From lateral 4R Sta.2+050m
F21	21.1 21.2	Head Regulator Canal		1- ϕ 0.60m 1.50x1.00x2,300m	From lateral 4R Sta.4+880m
F22	22.1 22.2	Head Regulator Canal		1- ϕ 0.80m 1.50x1.00x1,500m	From lateral 4R Sta.1+630m
F23	23.1 23.2	Head Regulator Canal		1- ϕ 0.80m 1.20x0.80x2,000m	From lateral 5R Sta.3+100m
F24	24.1 24.2	Head Regulator Canal		1- ϕ 0.80m 1.50x1.00x1,500m	From lateral 5R Sta.4+520m
F25	25.1 25.2	Head Regulator Canal		1- ϕ 0.80m 1.50x1.20x2,000m	From lateral 6R Sta.6+000m
F26	26.1 26.2	Head Regulator Canal		1- ϕ 0.60m 1.50x1.20x500m	From lateral 6R Sta.6+500m
F27	27.1 27.2	Head Regulator Canal		1- ϕ 0.60m 2.00x1.00x1,000m	From lateral 6R Sta.4+800m
F28	28.1 28.2	Head Regulator Canal		1- ϕ 0.80m 1.50x1.20x1,000m	From lateral 6R Sta.7+200m
F29	29.1 29.2	Head Regulator Canal		1- ϕ 0.60m 1.20x1.00x1,000m	From lateral 6R Sta.7+000m

TABLE D-10-2(1) INVENTORY OF DRAINAGE CANAL(1)




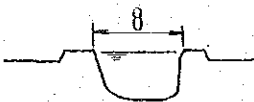
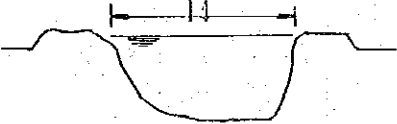
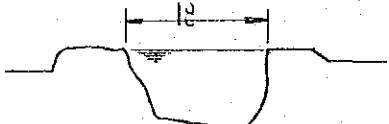
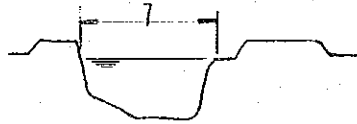

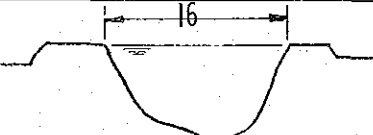

No	Name of Canal	Dimension			Cross-sectional Shape
		W(m)	B(m)	D(m)	
1	Wang Kloan Canal	14		2.50	
2	Bang Phai-Wang Yen	12		2.50	
3	Bang Phai-Wang Yen	18		2.20	
4	Chuad Sam Ko - Wat Ratsattakham	8		2.40	
5	Nong Bua - Chuad Sam Ko	14		3.20	
6	Nong Bua - Chuad Sam Ko	18		2.80	
7	Tha Kham-Wang Sala	7		2.15	
8	Nong Bua - Chuad Sam Ko	14		2.50	
9	Thung Chang	16		2.50	
10	Na Lang	17		2.50	

TABLE D-10-2(2) INVENTORY OF DRAINAGE CANAL(2)

No	Name of Canal	Dimension			Cross-sectional Shape
		W(m)	B(m)	D(m)	
11	Na Lang	20		2.20	
12	Nong Na Ban	14		3.50	
13	Chuad Pak Chee	14		2.00	
14	Hua Phai-Tha Kham	14		3.20	
15	Tha Kham-Sai Mul	8		3.00	
16	Hua Phai-Tha Kham	14		3.10	
17	Hua Phai-Tha Kham	14		2.80	
18	Chuad Lang	14		2.00	
19	Khet	16		2.50	
20	Suay-Chuad Pak Chee	6		1.50	

TABLE D-10-2(3) INVENTORY OF DRAINAGE CANAL(3)

No	Name of Canal	Dimension			Cross-sectional Shape
		W(m)	B(m)	D(m)	
21	Ban Pho	18		2.70	
22	Thon Man	15		2.80	
23	Lod Yuay Kam	20		2.50	
24	Lod Yuay Kam	12		2.50	
25	Lod Yuay Kam	12		2.50	
26	Chuad Ta Klien	14		2.80	
27	Mor Sor	15		3.50	
28	Mor Sor	14		2.20	
29	Sanam Chan - Khok Phlaeo	12		2.50	
30	Chuad Lang(Hua Phai)	12		3.00	

TABLE D-10-2(4) INVENTORY OF DRAINAGE CANAL(4)

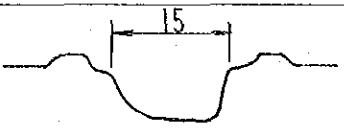


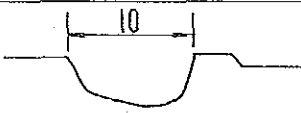
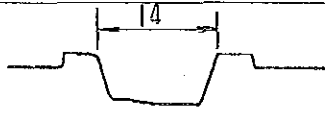
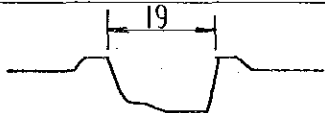
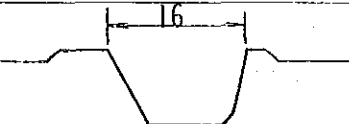
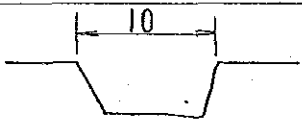
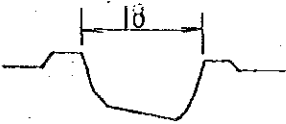
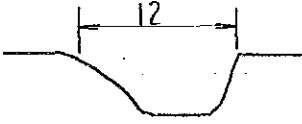

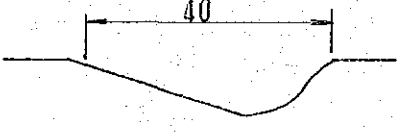
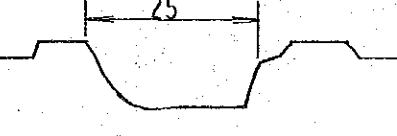
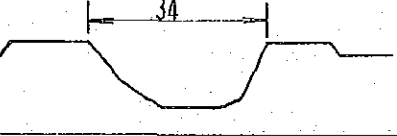

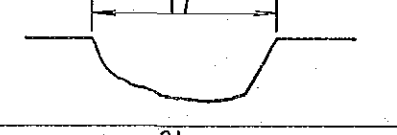
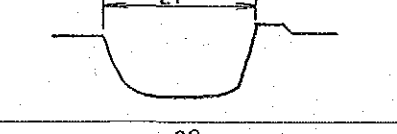
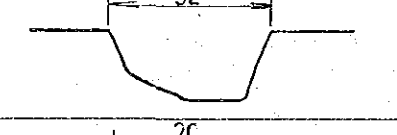
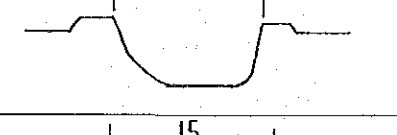
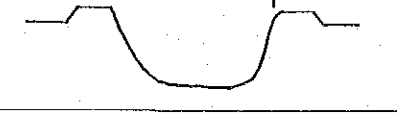
No	Name of Canal	Dimension			Cross-sectional Shape
		W(m)	B(m)	D(m)	
31	Bang Hak (Khok Kee Norn)	15		2.00	
32	Hua Khod	12		2.10	
33	Nond Ta Mak	8		2.00	
34	Nong Karm	10		2.00	
35	Sa Ka Ean	14		3.10	
36	Na Pradu	19		3.30	
37	Khok Paka	16		2.80	
38	Kong Kang	10		2.50	
39	Bang Nang	18		2.45	
40	Bang Nang	12		2.50	

TABLE D-10-2(5) INVENTORY OF DRAINAGE CANAL(5)

No	Name of Canal	Dimension			Cross-sectional Shape
		W(m)	B(m)	D(m)	
41	Mai	34		3.10	
42	Phan Thong	40		3.00	
43	Mai	25		4.20	
44	Mai	34		4.10	
45	Phan Thong	8		3.00	
46	Phan Thong	17		2.80	
47	Phan Thong	21		3.50	
48	Phan Thong	32		4.20	
49	Kwang-Phan Thong	20		3.00	
50	Nend Thond	15		2.90	

D.11 PRELIMINARY STUDY ON FLOOD SIMULATION

The following tables and figures present basic data and information to be given to flood simulation study.

Figure D-11-1 Diagram for flood simulation study

Table D-11-1 Flowing capacity of river channel

Table D-11-2 Water stage - volume relationship (1)

Table D-11-3 Water stage - volume relationship (2)

Inflow hydrographs into the river sections estimated for the 1983 flood are given in Table D-11-4.

FIGURE D-11-1 DIAGRAM FOR FLOOD SIMULATION STUDY

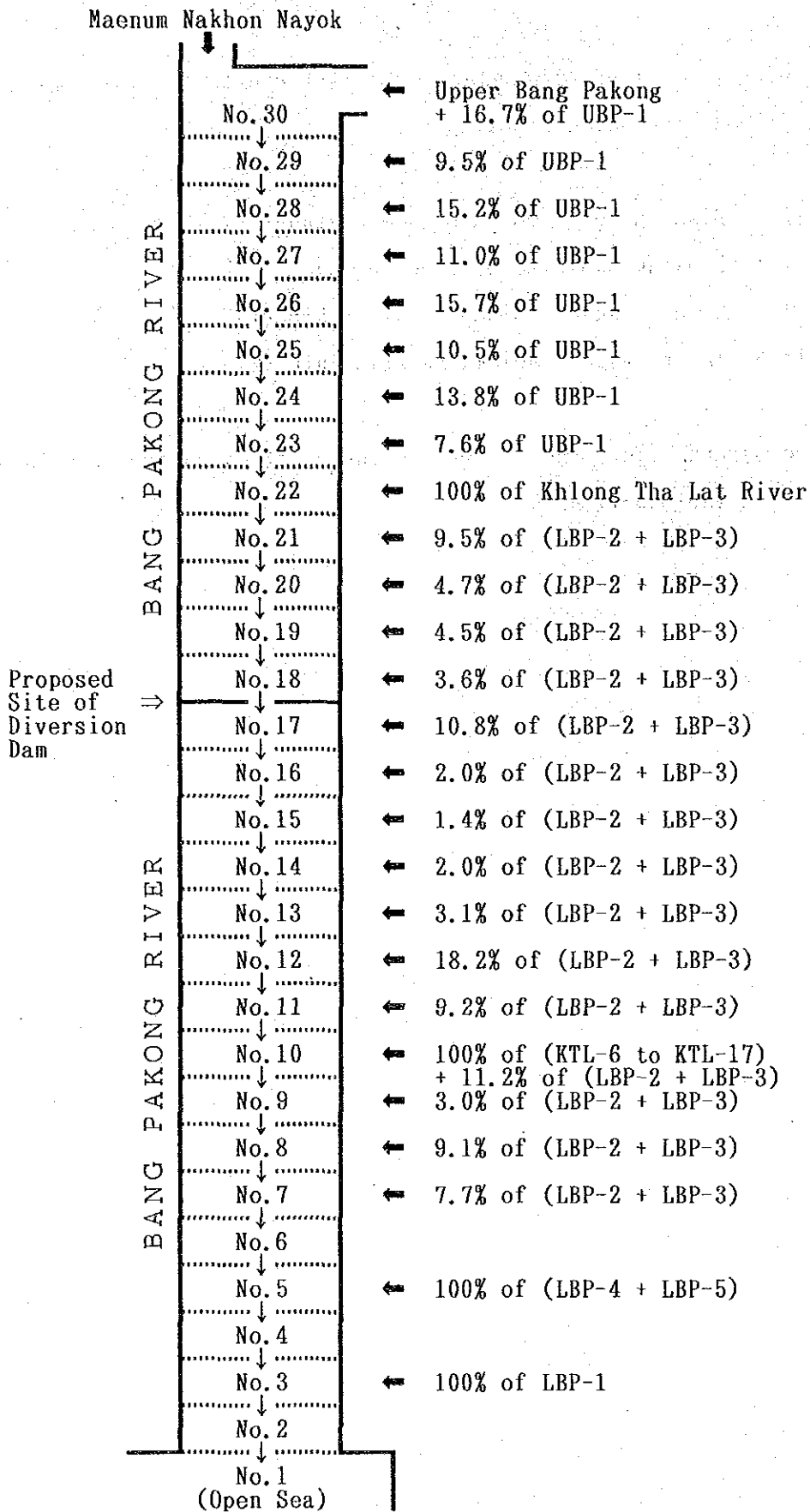


TABLE D-11-1 FLOWING CAPACITY OF RIVER CHANNEL

Section No.	Distance L(km)	Sill Elevation (El. m)	Flowing Capacity	
			a	b
1	2.5	-9.20	39.801	1.945
2	2.5	-9.00	50.654	1.870
3	2.5	-15.30	16.624	2.023
4	2.0	-7.10	29.378	2.178
5	2.0	-10.10	45.388	1.895
6	2.0	-8.60	52.468	1.831
7	2.5	-10.60	31.042	2.034
8	4.0	-7.10	58.522	1.996
9	3.0	-7.60	113.171	1.688
10	1.0	-8.20	68.763	1.874
11	1.0	-10.00	163.234	1.381
12	1.5	-9.10	119.077	1.536
13	2.0	-8.80	165.521	1.450
14	2.0	-8.60	152.124	1.524
15	2.0	-11.90	121.985	1.506
16	2.0	-11.60	69.057	1.841
17	2.0	-9.70	54.049	2.027
18	2.5	-6.90	66.430	1.974
19	2.5	-12.60	55.722	1.891
20	2.5	-9.20	74.820	1.947
21	3.0	-6.70	134.509	1.902
22	2.5	-11.50	79.058	1.802
23	2.0	-7.10	120.470	2.023
24	2.0	-11.30	78.469	1.893
25	2.5	-8.70	118.659	1.960
26	3.0	-10.00	52.092	2.196
27	2.5	-10.50	24.069	2.724
28	2.0	-6.15	184.639	2.276
29	2.0	-6.15	236.213	2.368

Remarks: $AR^{2/3} = aD^b$, D = water depth (m).

Table D-11-2 Water Stage - Volume Relationship (1)

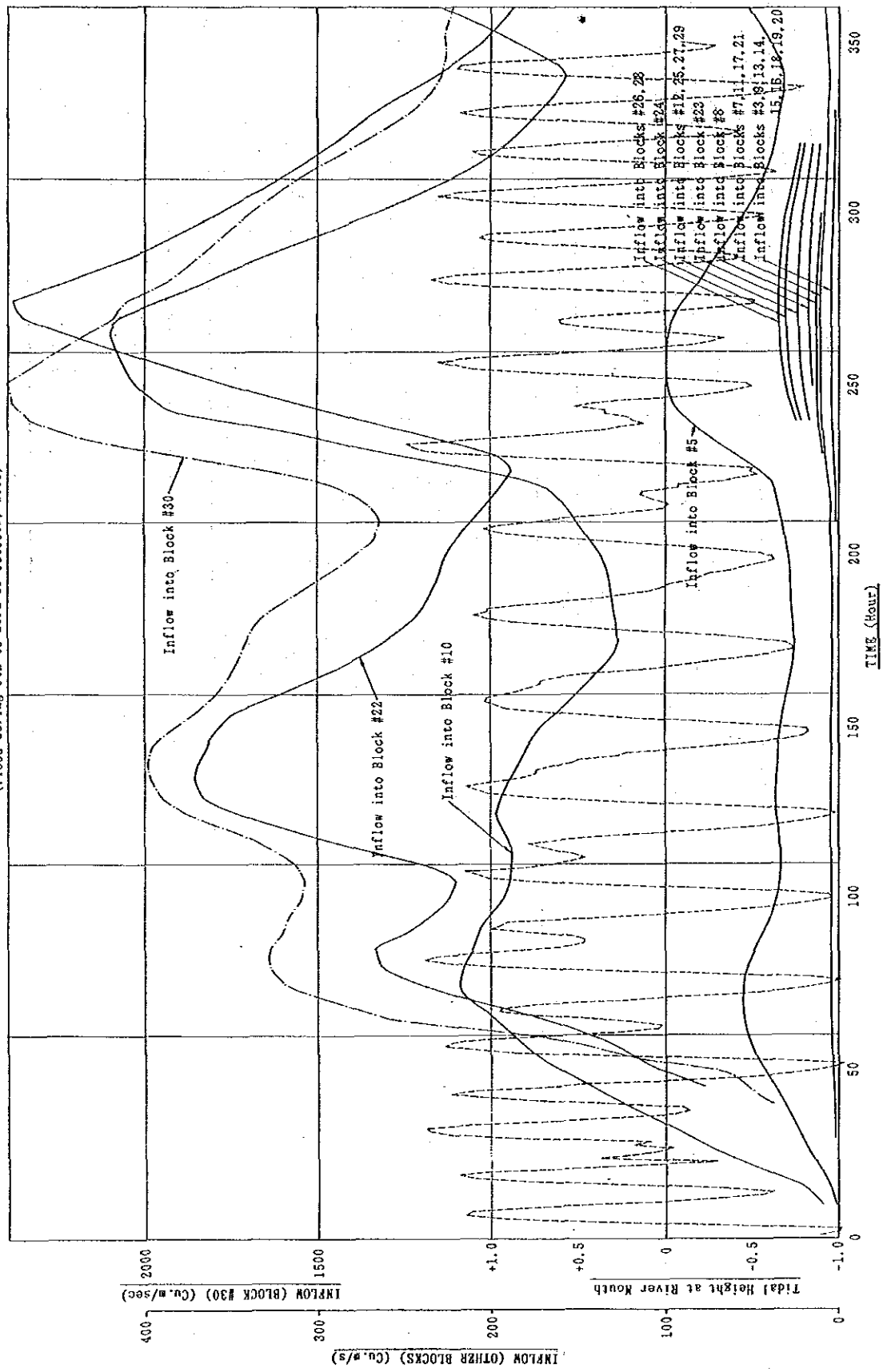
No	H El. m	V (MCM)	No	H El. m	V (MCM)	No	H El. m	V (MCM)	No	H El. m	V (MCM)
1			2	2.0	25.03	3	3.0	26.54	4	3.0	27.16
				1.4	17.17		2.0	16.44		2.0	15.16
				1.0	16.18		1.4	10.38		1.6	10.36
				0.0	13.73		1.1	10.05		1.0	9.51
				-1.0	11.36		1.0	9.89		0.0	8.23
				-2.0	9.84		0.0	8.28		-1.0	7.07
							-1.0	6.75		-2.0	6.05
							-2.0	5.38			
5	3.0	24.70	6	3.0	16.04	7	3.0	27.17	8	3.0	20.57
	2.0	13.60		2.0	8.34		2.0	10.67		2.0	8.57
	1.6	9.16		1.6	5.26		1.7	5.72		1.7	4.97
	1.0	8.49		1.0	4.97		1.5	5.62		1.5	4.93
	0.0	7.42		0.0	4.36		1.0	5.37		1.0	4.64
	-1.0	6.40		-1.0	3.78		0.0	4.77		0.0	4.08
	-2.0	5.43		-2.0	3.24		-1.0	4.20		-1.0	3.55
							-2.0	3.65		-2.0	3.04
9	3.0	23.01	10	3.0	21.47	11	3.0	22.51	12	3.0	23.54
	2.0	10.81		2.0	10.17		2.0	9.31		2.0	10.64
	1.7	7.15		1.7	6.78		1.6	4.03		1.6	5.48
	1.5	7.04		1.5	6.64		1.0	3.74		1.0	5.07
	1.0	6.57		1.0	6.21		0.0	3.26		0.0	4.41
	0.0	5.71		0.0	5.38		-1.0	2.82		-1.0	3.79
	-1.0	4.89		-1.0	4.60		-2.0	2.31		-2.0	3.24
	-2.0	4.13		-2.0	3.86						
13	3.0	12.59	14	3.0	11.78	15	3.0	15.14	16	3.0	38.95
	2.0	5.89		2.0	5.18		2.0	7.44		2.0	21.25
	1.7	3.88		1.8	3.86		1.5	3.59		1.0	3.55
	1.0	3.46		1.5	3.79		1.0	3.43		0.0	3.16
	0.0	2.88		1.0	3.55		0.0	3.05		-1.0	2.77
	-1.0	2.33		0.0	3.09		-1.0	2.69		-2.0	2.41
	-2.0	1.90		-1.0	2.65		-2.0	2.38			
				-2.0	2.24						

Table Water Stage - Volume Relationship (2)

No	H El. m	V (MCM)	No	H El. m	V (MCM)	No	H El. m	V (MCM)	No	H El. m	V (MCM)
17	3.0	29.16	18	3.0	20.81	19	3.0	13.83	20	3.0	15.73
	2.0	9.26		2.0	8.21		2.0	3.53		2.0	4.73
	1.7	3.29		1.6	3.17		1.8	1.47		1.7	1.43
	1.5	3.27		1.0	2.89		1.7	1.46		1.5	1.41
	1.0	3.12		0.0	2.45		1.0	1.32		1.0	1.31
	0.0	2.69		-1.0	2.03		0.0	1.13		0.0	1.11
	-1.0	2.32		-2.0	1.66		-1.0	0.95		-1.0	0.94
	-2.0	1.98					-2.0	0.80		-2.0	0.79
21	3.0	32.02	22	3.0	26.57	23	3.0	17.05	24	3.0	12.46
	2.0	11.62		2.0	8.67		2.0	6.15		2.0	4.76
	1.5	1.42		1.8	5.09		1.8	3.97		1.7	2.45
	1.0	1.32		1.4	4.80		1.0	3.52		1.0	2.22
	0.0	1.11		1.0	4.37		0.0	2.99		0.0	1.91
	-1.0	0.93		0.0	3.45		-1.0	2.50		-1.0	1.63
	-2.0	0.75		-1.0	2.67		-2.0	2.03		-2.0	1.37
				-2.0	1.98						
25	3.0	9.90	26	3.0	9.50	27	3.0	7.21	28	3.0	8.12
	2.0	4.80		2.0	4.60		2.0	4.01		2.0	4.32
	1.5	2.25		1.5	2.15		1.4	2.09		1.7	3.18
	1.0	2.11		1.0	1.99		1.0	2.04		1.4	3.16
	0.0	1.84		0.0	1.73		0.0	1.83		1.0	3.07
	-1.0	1.58		-1.0	1.48		-1.0	1.62		0.0	2.71
	-2.0	1.34		-2.0	1.24		-2.0	1.42		-1.0	2.37
										-2.0	2.04
29	3.0	7.63	30	3.0	16.18						
	2.0	3.83		2.0	7.78						
	1.5	1.93		1.5	3.58						
	1.0	1.84		1.0	3.40						
	0.0	1.60		0.0	2.94						
	-1.0	1.39		-1.0	2.50						
	-2.0	1.17		-2.0	2.08						

TABLE D-11-4 INFLOW HYDROGRAPHS INTO RIVER SECTIONS (1983)

BOUNDARY CONDITION GIVEN TO HYDRAULIC MODEL VERIFICATION
(Flood during 8th to 23rd of October, 1983)



APPENDIX-E. WATER DEMAND PROJECTION

APPENDIX-E WATER DEMAND PROJECTION

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E.1 DRINKING WATER SUPPLY

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TABLE E-1-1 POPULATION MOVEMENT BY PROVINCES/DISTRICT DURING 1984 TO 1988

Province/ District	Movement of Population					Increase '84-'88	Growth Rate(%)
	1984	1985	1986	1987	1988		
CHONBURI	780,091	806,396	835,766	842,867	897,207	117,116	15.0
M. Chonburi	189,797	197,008	204,840	206,570	217,146	27,349	14.4
Bo Thong	30,640	32,268	33,687	34,015	36,321	5,681	18.5
Ban Bung	78,107	79,613	80,230	80,255	91,893	13,786	17.7
Phanat Nikhom	131,866	135,022	138,334	139,220	143,908	12,042	9.1
Phan Thong	39,986	40,682	41,556	41,645	43,555	3,569	8.9
Others (5)	309,695	321,803	337,119	341,062	364,384	54,689	17.7
CHACHOENGSAO	510,308	525,717	540,864	546,678	569,411	59,103	11.6
M. Chachoengsao	121,970	125,413	128,349	128,758	132,447	10,477	8.6
Bang Khla	56,993	58,210	59,658	59,606	60,879	3,886	6.8
Bang Pakong	67,318	69,205	70,670	71,020	73,099	5,781	8.6
Ban Pho	43,106	43,917	44,433	44,462	45,022	1,916	4.4
Panom Sarakam	67,566	69,221	70,633	70,979	72,907	5,341	7.9
Sanam Chaikhet	49,658	53,218	57,736	61,886	71,606	21,948	44.2
Plaeng Yao	26,280	27,163	27,909	28,229	29,876	3,596	13.7
Others (2)	77,417	79,370	81,476	81,738	83,575	6,158	8.0
PRACHINBURI	746,318	779,763	815,983	827,265	854,245	107,927	14.5
M. Prachinburi	93,332	94,959	100,791	100,791	101,893	8,561	9.2
Kabin Buri	98,257	101,862	104,714	105,816	108,041	9,784	10.0
Khok Peep	16,657	17,085	17,549	17,517	17,622	965	5.8
Na Dee	32,948	34,124	36,914	37,550	39,234	6,286	19.1
Bang Srang	31,575	31,702	31,911	31,989	31,874	299	0.9
Prachan Takam	46,824	48,144	49,031	49,227	49,906	3,082	6.6
Wang Nam Yen	63,212	67,459	72,310	74,938	82,228	19,016	30.1
Wattana Nakhon	71,440	73,241	74,946	76,196	78,327	6,887	9.6
Simaha Pho	50,065	51,642	52,945	53,092	53,916	3,851	7.7
Sra Kaeo	114,721	121,861	128,359	130,843	136,719	21,998	19.2
Others (5)	127,287	137,684	146,958	149,306	154,985	27,698	21.8
NAKHON NAYOK	207,247	211,444	214,696	217,052	223,212	15,965	7.7
M. Nakhon Nayok	81,104	82,402	83,306	85,289	88,962	7,858	9.7
Ban Na	56,049	57,516	58,884	59,114	60,501	4,452	7.9
Pak Pli	25,234	25,653	26,033	26,033	26,333	1,099	4.4
Ongkarak	44,860	45,873	46,477	46,616	47,416	2,556	5.7

Data sources: Economic Branch, Project Planning Division, RID library

TABLE E-1-2 ANNUAL GROWTH RATE AND PROSPECT OF POPULATION IN TARGET YEAR 2000

<u>Province/ District</u>	<u>Population in 1988</u>	<u>Increased '84-'88</u>	<u>Annual Average Growth Rate</u> (%)	<u>Prospective Population</u>
CHONBURI	897,207	117,116	3.55	1,364,000
M. Chonburi	217,146	27,349	3.42	325,000
Bo Thong	36,321	5,681	4.33	60,000
Ban Bung	91,893	13,786	4.16	150,000
Phanat Nikhom	143,908	12,042	2.20	144,000
Phan Thong	43,555	3,569	2.15	56,000
Others (5)	364,384	54,689	4.27	605,000
CHACHOENGSAO	569,411	59,103	2.78	791,000
M. Chachoengsao	132,447	10,477	2.08	170,000
Bang Khla	60,879	3,886	1.66	74,000
Bang Pakong	73,099	5,781	2.08	94,000
Ban Pho	45,022	1,916	1.08	51,000
Panom Sarakam	72,907	5,341	1.92	92,000
Sanam Chaikhet	71,606	21,948	9.58	215,000
Plaeng Yao	29,876	3,596	3.26	44,000
Others (2)	83,575	6,158	1.94	105,000
PRACHINBURI	854,245	107,927	3.44	1,282,000
M. Prachinburi	101,893	8,561	2.22	133,000
Kabin Buri	108,041	9,784	2.41	144,000
Khok Peep	17,622	965	1.42	21,000
Na Dee	39,234	6,286	4.47	66,000
Ban Srang	31,874	299	0.22	33,000
Prachan Takan	49,906	3,082	1.61	60,000
Wang Nam Yen	82,228	19,016	6.80	181,000
Wattana Nakhon	78,327	6,887	2.32	103,000
Simaha Pho	53,916	3,851	1.87	67,000
Sra Kaeo	136,719	21,998	4.49	232,000
Others (5)	154,985	27,698	5.05	280,000
NAKHON NAYOK	223,212	15,965	1.87	279,000
M. Nakhon Nayok	88,962	7,858	2.34	117,000
Ban Na	60,501	4,452	1.92	76,000
Pak Pli	26,333	1,099	1.08	30,000
Ongkarak	47,416	2,556	1.40	56,000

Note: The present population and other informations indicated in the above refer to Table E-1-1.

E-1-3 INVENTORY OF WATERWORK SYSTEM UNDER PROVINCIAL WATERWORK AUTHORITY

- (1) CHONBURI
- (2) BAN BUNG
- (3) PHANAT NIKHOM
- (4) CHACHOENGSAO
- (5) BANG KHLA
- (6) BANG PAKONG
- (7) PHANOM SARAKHAM
- (8) PRACHINBURI
- (9) KABINBURI
- (10) WATTHANA NAKHON
- (11) NAKHON NAYOK
- (12) BAN NA

INVENTORY OF WATER WORK SYSTEM UNDER PROVINCIAL WATERWORK AUTHORITY

NAME OF PROJECT:Chon Buri

-Regional Office:No.1(Chon Buri)

-Province:Chon Buri

-Amphoe:Amp.Muang Chon Buri(M.Chon Buri, S.Ban Suan, S.Bang Sai, M.Saen Suk and S. Ang Sila)

<u>Subject</u>	<u>1988</u>	<u>2000</u>
-Total Population	204,770	265,740
-Served Ratio (%)	73	90
-Served Population	149,900	239,200
-Water Demand per Capita		
In Gross(l/c/d)	283	270
At house connection(l/c/d)	170	200
-Average Daily Water Demand(cu.m.)	57,555	95,000
For Domestic Water	42,422	64,584
For Industrial Water	15,133	30,416
-Averaged Daily Raw Water Demand(cu.m.)	60,500	100,000
-Annual Water Demand in Gross(mcm)	22.1	36.4
-Design Capacity(cu.m.)	48,000	48,000+66,000
-Total Water Losses(%)	40	25
-Water Resource:Bang Phra Reservoir		

REMARKS

- * 1: Figure difference 48,000 - 57,555 = Deficit water amount
- * 2: Proposed design capacity in the year 2000 assumed 1.20 times of averaged daily water demand (95,000 X 1.20 < 114,000).
- * 3: Averaged daily water demand(A.D.W.D.) indicates discharge at master water meter.
- * 4: Raw water demand estimates 1.05 times of A.D.W.D.
 1988 : 57,555 X1.05 = 60,500 cu.m.
 2000 : 95,000 X1.05 = 100,000 cu.m.

INVENTORY OF WATER WORK SYSTEM UNDER PROVINCIAL WATERWORK AUTHORITY

NAME OF PROJECT:Ban Bung

-Regional Office:No.1(Chon Buri)

-Province:Chon Buri

-Amphoe: Amp. Bang Pakong (M. Ban Bung)

<u>Subject</u>	<u>1988</u>	<u>2000</u>
-Total Population	10,100	14,040
-Served Ratio (%)	27	60
-Served Population	2,677	8,430
-Water Demand per Capita		
In Gross(l/c/d)	160	220
At house connection(l/c/d)	120	160
-Average Daily Water Demand(cu.m.)	610	2,090
For Domestic Water	428	1,860
For Industrial Water	182	230
-Averaged Daily Raw Water Demand(cu.m.)	640	2,200
-Annual Water Demand in Gross(mcm)	0.23	0.80
-Design Capacity(cu.m.)	1,080	1,080+1,430
-Total Water Losses(%)	25	25
-Water Resource:Chang Num Reservoir		

REMARKS

- * 1: Proposed design capacity in the year 2000 assumed 1.20 times of averaged daily water demand (2,090 X 1.20 = 2,510).
- * 2: Averaged daily water demand(A.D.W.D.) indicates discharge at master water meter.
- * 3: Raw water demand estimates 1.05 times of A.D.W.D.
 1988 : 610 X1.05 = 640 cu.m.
 2000 : 2,090 X1.05 = 2,200 cu.m.

INVENTORY OF WATER WORK SYSTEM UNDER PROVINCIAL WATERWORK AUTHORITY

NAME OF PROJECT:Phanat Nikhom

-Regional Office:No.1(Chon Buri)

-Province:Chon Buri

-Amphoe:Amp.Phanat Nikhom (M.Phanat Nikhom)

<u>Subject</u>	<u>1988</u>	<u>2000</u>
-Total Population	13,600	17,900
-Served Ratio (%)	61	80
-Served Population	8,296	14,290
-Water Demand per Capita		
In Gross(l/c/d)	220	270
At house connection(l/c/d)	162	200
-Average Daily Water Demand(cu.m.)	1,880	4,900
For Domestic Water	1,830	3,860
For Industrial Water	50	1,040
-Averaged Daily Raw Water Demand(cu.m.)	2,000	5,200
-Annual Water Demand in Gross(mcm)	0.73	1.90
-Design Capacity(cu.m.)	2,640	2,640+3,260
-Total Water Losses(%)	26	25
-Water Resource: Huai Sarika		

REMARKS

- * 1: Proposed design capacity in the year 2000 assumed 1.20 times of averaged daily water demand (4,900 X 1.20 < 5,900).
- * 2: Averaged daily water demand (A.D.W.D.) indicates discharge at master water meter.
- * 3: Raw water demand estimates 1.05 times of A.D.W.D.
 1988 : 1,880 X1.05 = 2,000 cu.m.
 2000 : 4,900 X1.05 = 5,200 cu.m.

INVENTORY OF WATER WORK SYSTEM UNDER PROVINCIAL WATERWORK AUTHORITY

NAME OF PROJECT:Chachoengsao

-Regional Office:No.1(Chon Buri)

-Province:Chachoengsao

-Amphoe:Amp.Muang Chachoengsao(M.Chachoengsao)

<u>Subject</u>	<u>1988</u>	<u>2000</u>
-Total Population	40,800	50,800
-Served Ratio (%)	67	85
-Served Population	27,255	43,200
-Water Demand per Capita		
In Gross(l/c/d)	386	400
At house connection(l/c/d)	270	300
-Average Daily Water Demand(cu.m.)	11,550	27,280
For Domestic Water	10,550	17,280
For Industrial Water	1,000	10,000
-Averaged Daily Raw Water Demand(cu.m.)	12,200	28,700
-Annual Water Demand in Gross(mcm)	4.45	10.48
-Design Capacity(cu.m.)	16,800	16,800+16,000
-Total Water Losses(%)	30	25
-Water Resource:Tha Khai canal(RID)		

REMARKS

- * 1: Proposed design capacity in the year 2000 assumed 1.20 times of averaged daily water demand (27,280 X 1.20 < 32,800).
- * 2: Averaged daily water demand (A.D.W.D.) indicates discharge at master water meter.
- * 3: Raw water demand estimates 1.05 times of A.D.W.D.
 1988 : 11,550 X1.05 = 12,200 cu.m.
 2000 : 27,280 X1.05 = 28,700 cu.m.

INVENTORY OF WATER WORK SYSTEM UNDER PROVINCIAL WATERWORK AUTHORITY

NAME OF PROJECT: Bang Khla

-Regional Office: No. 1 (Chon Buri)

-Province: Chachoengsao

-Amphoe: Amp. Bang Khla (M. Bang Khla)

<u>Subject</u>	<u>1988</u>	<u>2000</u>
-Total Population	7,517	9,300
-Served Ratio (%)	54	75
-Served Population	4,060	7,000
-Water Demand per Capita		
In Gross (l/c/d)	180	230
At house connection (l/c/d)	130	170
-Average Daily Water Demand (cu. m.)	1,206	3,610
For Domestic Water	731	1,610
For Industrial Water	475	2,000
-Averaged Daily Raw Water Demand (cu. m.)	1,300	3,800
-Annual Water Demand in Gross (mcm)	0.48	1.39
-Design Capacity (cu. m.)	1,440	1,440+2,900
-Total Water Losses (%)	28	25
-Water Resource: Tha Lat / Wat VChaeng canal and deep well		

REMARKS

- * 1: Proposed design capacity in the year 2000 assumed 1.20 times of averaged daily water demand (3,610 X 1.20 < 4,340).
- * 2: Averaged daily water demand (A.D.W.D.) indicates discharge at master water meter.
- * 3: Raw water demand estimates 1.05 times of A.D.W.D.
1988 : 1,206 X 1.05 = 1,300 cu. m.
2000 : 3,610 X 1.05 = 3,800 cu. m.

INVENTORY OF WATER WORK SYSTEM UNDER PROVINCIAL WATERWORK AUTHORITY

NAME OF PROJECT:Bang Pakong

-Regional Office:No.1(Chon Buri)

-Province:Chachoengsao

-Amphoe:Amp. Bang Pakong (S. Bang Pakong, S. Bang Wua and S. Tha Sa-an)

<u>Subject</u>	<u>1988</u>	<u>2000</u>
-Total Population	20,400	35,500
-Served Ratio (%)	48	70
-Served Population	9,792	24,800
-Water Demand per Capita		
In Gross(l/c/d)	147	270
At house connection(l/c/d)	110	200
-Average Daily Water Demand(cu.m.)	9,362	26,400
For Domestic Water	1,440	6,700
For Industrial Water	7,922	19,700
-Averaged Daily Raw Water Demand(cu.m.)	9,900	27,800
-Annual Water Demand in Gross(mcm)	3.61	10.15
-Design Capacity(cu.m.)	4,800	32,000
-Total Water Losses(%)	25	25
-Water Resource:Khleng Praong Chaiyanuchit		

REMARKS

- * 1: Figure difference $4,800 - 9,362 =$ Deficit water amount
- * 2: Proposed design capacity in the year 2000 assumed 1.20 times of averaged daily water demand ($26,400 \times 1.20 < 32,000$).
- * 3: Averaged daily water demand indicates discharge at master water meter.
- * 4: Raw water demand estimates 1.05 times of A.D.W.D.
 1988 : $9,362 \times 1.05 = 9,900$ cu.m.
 2000 : $26,400 \times 1.05 = 27,800$ cu.m.

INVENTORY OF WATER WORK SYSTEM UNDER PROVINCIAL WATERWORK AUTHORITY

NAME OF PROJECT:Phanom Sarakham

-Regional Office:No.1(Chon Buri)

-Province:Chachoengsao

-Amphoe:Amp.Phanom Sarakham(S.Phanom Sarakham, S.Ko Khanun)

<u>Subject</u>	<u>1988</u>	<u>2000</u>
-Total Population	14,640	18,400
-Served Ratio (%)	56	75
-Served Population	8,198	13,800
-Water Demand per Capita		
In Gross(l/c/d)	236	240
At house connection(l/c/d)	153	180
-Average Daily Water Demand(cu.m.)	2,010	4,070
For Domestic Water	1,935	3,320
For Industrial Water	75	750
-Averaged Daily Raw Water Demand(cu.m.)	2,200	4,300
-Annual Water Demand in Gross(mcm)	0.80	1.57
-Design Capacity(cu.m.)	3,360	3,360+1,800
-Total Water Losses(%)	35	25
-Water Resource:Tha Lat canal		

REMARKS

- * 1: Proposed design capacity in the year 2000 assumed 1.20 times of averaged daily water demand (4,070 X 1.20 < 5,160).
- * 2: Averaged daily water demand(A.D.W.D.) indicates discharge at master water meter.
- * 3: Raw water demand estimates 1.05 times of A.D.W.D.
1988 : 2,010 X1.05 = 2,200 cu.m.
2000 : 4,070 X1.05 = 4,300 cu.m.

INVENTORY OF WATER WORK SYSTEM UNDER PROVINCIAL WATERWORK AUTHORITY

NAME OF PROJECT:Prachin Buri

-Regional Office:No.2(Sara Buri)

-Province:Prachin Buri

-Amphoe:Amp.Muang Prachin Buri (M. Prachin Buri)

<u>Subject</u>	<u>1988</u>	<u>2000</u>
-Total Population	22,300	29,000
-Served Ratio (%)	82.5	95
-Served Population	18,398	27,600
-Water Demand per Capita		
In Gross(l/c/d)	445	470
At house connection(l/c/d)	316	350
-Average Daily Water Demand(cu. m.)	10,560	23,000
For Domestic Water	8,190	13,000
For Industrial Water	2,370	10,000
-Averaged Daily Raw Water Demand(cu. m.)	11,100	24,200
-Annual Water Demand in Gross(mcm)	4.05	8.84
-Design Capacity(cu. m.)	10,560	10,560+17,000
-Total Water Losses(%)	29	25
-Water Resource:Bang Pakong river		

REMARKS

- * 1: Proposed design capacity in the year 2000 assumed 1.20 times of averaged daily water demand (23,000 X 1.20 = 27,600).
- * 2: Averaged daily water demand(A.D.W.D.) indicates discharge at master water meter.
- * 3: Raw water demand estimates 1.05 times of A.D.W.D.
1988 : 10,560 X1.05 = 11,100 cu.m.
2000 : 23,000 X1.05 = 24,200 cu.m.

INVENTORY OF WATER WORK SYSTEM UNDER PROVINCIAL WATERWORK AUTHORITY

NAME OF PROJECT:Kabinburi

-Regional Office:No.2(Sara Buri)

-Province:Prachin Buri

-Amphoe:Amp.Kabinburi(M.Kabinburi and S.Muang Kao)

<u>Subject</u>	<u>1988</u>	<u>2000</u>
-Total Population	13,250	17,600
-Served Ratio (%)	50	80
-Served Population	6,625	14,100
-Water Demand per Capita		
In Gross(l/c/d)	278	320
At house connection(l/c/d)	200	240
-Average Daily Water Demand(cu.m.)	2,000	5,520
For Domestic Water	1,842	4,512
For Industrial Water	158	1,008
-Averaged Daily Raw Water Demand(cu.m.)	2,100	5,800
-Annual Water Demand in Gross(mcm)	0.77	2.12
-Design Capacity(cu.m.)	2,640	2,640+4,000
-Total Water Losses(%)	28	25
-Water Resource: Huai Praprong(Prachinburi river)		

REMARKS

- * 1: Proposed design capacity in the year 2000 assumed 1.20 times of averaged daily water demand (5,520 X 1.20 < 6,640).
- * 2: Averaged daily water demand (A.D.W.D.) indicates discharge at master water meter.
- * 3: Raw water demand estimates 1.05 times of A.D.W.D.
 1988 : 2,000 X1.05 = 2,100 cu.m.
 2000 : 5,520 X1.05 = 5,800 cu.m.

INVENTORY OF WATER WORK SYSTEM UNDER PROVINCIAL WATERWORK AUTHORITY

NAME OF PROJECT: Watthana Nakhon

-Regional Office: No. 2 (Sara Buri)

-Province: Prachin Buri

-Amphoe: Amp. Watthana Nakhon (S. Watthana Nakhon)

<u>Subject</u>	<u>1988</u>	<u>2000</u>
-Total Population	7,410	9,800
-Served Ratio (%)	74	90
-Served Population	5,469	8,800
-Water Demand per Capita		
In Gross (l/c/d)	290	320
At house connection (l/c/d)	200	240
-Average Daily Water Demand (cu. m.)	2,400	4,430
For Domestic Water	1,586	2,816
For Industrial Water	814	1,614
-Averaged Daily Raw Water Demand (cu. m.)	2,520	4,660
-Annual Water Demand in Gross (mcm)	0.92	1.70
-Design Capacity (cu. m.)	2,400	2,400+2,900
-Total Water Losses (%)	30	25
-Water Resource: Huai Phra Prong		

REMARKS

- * 1: Proposed design capacity in the year 2000 assumed 1.20 times of averaged daily water demand (4,430 X 1.20 < 5,300).
- * 2: Averaged daily water demand (A.D.W.D.) indicates discharge at master water meter.
- * 3: Raw water demand estimates 1.05 times of A.D.W.D.
 1988 : 2,400 X 1.05 = 2,520 cu. m.
 2000 : 4,430 X 1.05 = 4,660 cu. m.

INVENTORY OF WATER WORK SYSTEM UNDER PROVINCIAL WATERWORK AUTHORITY

NAME OF PROJECT:Nakhon Nayok

-Regional Office:No.2(Sara Buri)

-Province:Nakhon Nayok

-Amphoe:Amp.Muang Nakhon Nayok (M.Nakhon Nayok)

<u>Subject</u>	<u>1988</u>	<u>2000</u>
-Total Population	23,340	30,800
-Served Ratio (%)	63	90
-Served Population	14,751	27,700
-Water Demand per Capita		
In Gross(l/c/d)	346	360
At house connection(l/c/d)	180	270
-Average Daily Water Demand(cu.m.)	8,640	17,050
For Domestic Water	5,106	9,972
For Industrial Water	3,534	7,078
-Averaged Daily Raw Water Demand(cu.m.)	9,100	17,900
-Annual Water Demand in Gross(mcm)	3.33	6.54
-Design Capacity(cu.m.)	9,600	9,600+11,000
-Total Water Losses(%)	48	25
-Water Resource:Nakhon Nayok river		

REMARKS

- * 1: Proposed design capacity in the year 2000 assumed 1.20 times of averaged daily water demand (17,050 X 1.20 < 20,600).
- * 2: Averaged daily water demand (A.D.W.D.) indicates discharge at master water meter.
- * 3: Raw water demand estimates 1.05 times of A.D.W.D.
 1988 : 8,640 X1.05 = 9,100 cu.m.
 2000 : 17,050 X1.05 = 17,900 cu.m.

INVENTORY OF WATER WORK SYSTEM UNDER PROVINCIAL WATERWORK AUTHORITY

NAME OF PROJECT: Ban Na

-Regional Office: No. 2 (Sara Buri)

-Province: Nakhon Nayok

-Amphoe: Amp. Ban Na (S. Ban Na)

<u>Subject</u>	<u>1988</u>	<u>2000</u>
-Total Population	7,880	9,900
-Served Ratio (%)	70	90
-Served Population	5,516	8,900
-Water Demand per Capita		
In Gross (l/c/d)	160	200
At house connection (l/c/d)	120	150
-Average Daily Water Demand (cu. m.)	960	2,100
For Domestic Water	883	1,780
For Industrial Water	77	320
-Averaged Daily Raw Water Demand (cu. m.)	1,000	2,200
-Annual Water Demand in Gross (mcm)	0.37	0.80
-Design Capacity (cu. m.)	960	960+1,600
-Total Water Losses (%)	25	25
-Water Resource: Right canal of Nakhon Nayok irrigation project		

REMARKS

- * 1: Proposed design capacity in the year 2000 assumed 1.20 times of averaged daily water demand ($2,100 \times 1.20 = 2,560$).
- * 2: Averaged daily water demand (A.D.W.D.) indicates discharge at master water meter.
- * 3: Raw water demand estimates 1.05 times of A.D.W.D.
1988 : $960 \times 1.05 = 1,000$ cu.m.
2000 : $2,100 \times 1.05 = 2,200$ cu.m.

TABLE E-1-4 MONTHLY FLUCTUATION OF RAW WATER DEMANDS AND WATER LOSSES AT TREATMENT PLANT (1)

(A) Chonburi Waterwork

Month	1985/1986		1986/1987		1987/1988		Average
	Raw W.	Treated W.	Raw W.	Treated W.	Raw W.	Treated W.	Mon. Fluc.
OCT	1,559 (94)	1,465	1,644 (98)	1,587	1,599 (89)	1,479	(94)
NOV	1,616 (97)	1,549	1,628 (97)	1,583	1,619 (92)	1,535	(95)
DEC	1,739(105)	1,716	1,692(101)	1,645	1,705 (97)	1,617	(101)
JAN	1,736(104)	1,648	1,701(101)	1,591	1,922(110)	1,823	(105)
FEB	1,560 (94)	1,447	1,519 (90)	1,438	1,832(105)	1,738	(96)
MAR	1,722(104)	1,675	1,680(100)	1,591	1,915(109)	1,817	(104)
APR	1,665(100)	1,550	1,633 (97)	1,633	1,716 (98)	1,628	(98)
MAY	1,727(104)	1,627	1,714(102)	1,708	1,740 (99)	1,652	(102)
JUN	1,734(104)	1,577	1,749(104)	1,732	1,676 (96)	1,589	(101)
JUL	1,774(107)	1,640	1,814(108)	1,799	1,790(102)	1,699	(106)
AUG	1,604 (97)	1,541	1,779(106)	1,685	1,850(106)	1,755	(103)
SEP	1,518 (91)	1,503	1,632 (97)	1,581	1,683 (96)	1,682	(95)
Total	19,948	18,939	20,181	19,572	21,008	20,014	(100)
(Average)	(1,662)	(1,578)	(1,682)	(1,682)	(1,751)	(1,668)	

(B) Nakhon Nayok Waterwork

Month	1985/1986		1986/1987		1987/1988		Average
	Raw W.	Treated W.	Raw W.	Treated W.	Raw W.	Treated W.	Mon. Fluc.
OCT	95 (98)	92	102 (86)	100	125 (88)	123	(91)
NOV	92 (95)	91	105 (89)	101	134 (94)	130	(93)
DEC	94 (97)	92	104 (88)	103	136 (96)	132	(94)
JAN	92 (95)	90	117 (99)	114	144(101)	141	(98)
FEB	99(102)	97	111 (94)	108	138 (97)	135	(98)
MAR	93 (96)	91	128(108)	125	153(108)	149	(104)
APR	93 (96)	90	128(108)	125	158(111)	155	(105)
MAY	103(106)	101	122(103)	118	150(106)	146	(105)
JUN	104(107)	102	122(103)	118	144(101)	141	(104)
JUL	101(104)	100	126(107)	125	145(102)	142	(104)
AUG	103(106)	101	123(104)	122	143(101)	139	(104)
SEP	100(103)	98	125(106)	123	139 (98)	135	(103)
Total	1,169	1,145	1,413	1,382	1,709	1,668	(100)
(Average)	(97)	(95)	(118)	(115)	(142)	(139)	

Note: Water Losses:Chonburi=4.5%, Nakhon Nayok=2.3%

TABLE E-1-4 MONTHLY FLUCTUATION OF RAW WATER DEMAND AND WATER LOSSES AT TREATMENT PLANT(2)

(Unit:1,000cu.m or %)

(C) Prachinburi Waterwork

<u>Year</u>	<u>Month</u>	<u>Raw Water</u>	<u>Treated Water</u>	<u>At House Connection</u>
1988	AUG	396 (108)	390	188
1988	SEP	354 (97)	347	207
1988	OCT	385 (105)	377	196
1988	NOV	329 (90)	327	185
1988	DEC	350 (96)	343	208
1989	JAN	337 (92)	330	210
1989	FEB	353 (97)	345	214
1989	MAR	433 (118)	427	211
1989	APR	404 (111)	398	229
1989	MAY	370 (101)	350	191
1989	JUN	352 (96)	339	227
1989	JUL	324 (89)	306	201
<u>Total</u>		<u>4,387</u>	<u>4,279</u>	<u>2,467</u>
(Average)		(366)	357	206

Notes: (1) Water losses at treatment plant mainly are the water consumption of back wash purpose at the plant.

The value is $(4,387 - 4,279) / 4,279 = 2.52\%$

(2) The collectible ratio is the ratio of total amount of measured water, which is accumulated amount of water at house connection meters, to treated water amount at treatment plant. Therefore, around 42% ($2,467 / 4,279 = 58\%$) of treated water are non-collectible, and this amount of water are caused by water leakage from distribution pipelines and careless operation of facility concerned.

TABLE E-1-5 MONTHLY AVERAGE FLUCTUATION OF RAW WATER DEMAND

(Unit:Percentage)

Month	Chonburi	Prachinburi	Nakhon Nayok	Average
OCT	94	105	91	97
NOV	95	90	93	93
DEC	101	96	94	97
JAN	105	92	98	98
FEB	96	97	98	97
MAR	104	118	104	109
APR	98	111	105	105
MAY	102	101	105	103
JUN	101	96	104	100
JUL	106	89	104	100
AUG	103	108	104	105
SEP	95	97	103	98
AVERAGE	100	100	100	100

Note: All figures indicated the above are observed at respective plants and refer to Table E-1-4.

TABLE E-1-6 STATEMENT OF DOMESTIC WATER SUPPLY IN SANITARY DISTRICT

Name of Province	Name of Facility	No. of User	Population Served	Water Source	Production Capacity (cu. m/hour)	Water Demand Estimate (Max) (mcm/year)
Chonburi	Phan Thon	463	5,767	Pond	20	0.146
Chonburi	Ban Cherd	120	1,345	Pond	20	0.146
Chonburi	Ao-Udom	719	75,237	River	100	0.730
Chonburi	Nong Yai	265	4,314	Reservoir	20	0.146
Chonburi	Tha Boonmee	297	5,903	Canal	30	0.219
Sub-total	(5)	1,864	92,566			1.287
Chachoengsao	Bang Kanak	53	2,900	River	20	0.146
Chachoengsao	Bang Nam Prieo	311	2,937	Canal	30	0.219
Chachoengsao	Theparaj	115	6,847	Canal	30	0.219
Chachoengsao	Ban Pho	225	1,421	River	20	0.146
Chachoengsao	Don Chimpli	182	2,175	Canal	20	0.146
Chachoengsao	Plaeng Tao	87	8,167	Ground water	10	0.073
Sub-total	(6)	973	24,447			0.949
Prachinburi	Prachantakam	768	8,296	Canal	30	0.219
Prachinburi	Sri Mahapho	559	3,893	Bang Pakong river	30	0.219
Prachinburi	Kok Peep	218	7,881	Khlong Muang Khao	30	0.219
Prachinburi	Bang Sang	220	3,078	Bang Pakong river	30	0.219
Prachinburi	Na Prue	456	3,561	Ground water	20	0.146
Prachinburi	Ban Sampanta	250	2,750	Ground water	20	0.146
Prachinburi	Ban Siew Daeng	278	4,000	Ground water	10	0.073
Prachinburi	Sra Kaew	1,875	8,348	Khlong Phra Satung	50	0.365
Prachinburi	Ban Sala Lamdual	127	2,500	Ground water	6	0.044
Prachinburi	Ta Phraya	428	4,000	Pond	30	0.219
Sub-total	(10)	5,179	48,307			1.869
Nakhon Nayok	Ongkarak	370	3,622	Nakhon Nayok river	20	0.146
Sub-total	(1)	370	3,622			0.146
Total	(22)	8,386	168,942			4.497

Note: The estimate of "Maximum Water Demand" is made based on 20 hours per day operation for 365 days per annum.

TABLE E-1-7 WATER DEMAND PROJECTION IN TARGET YEAR 2000 (INDUSTRIAL AND URBAN WATER SUPPLY FROM WATERWORK FACILITY)

Province	District	Water Demand Projection (MCM)											
		PWA		Served Population		PWA		Water Demand		Projection (MCM)		Total	
		Urban	Rural	Total	Urban	Indust.	Rural	Urban	Indust.	Urban	Total		
Chonburi	M. Chonburi	239,200	35,600	274,800	11,657	24,752	36,409	0.400	2.044	2.444	12.057	26.796	38.853
Chonburi	Bo Thong	-	36,000	36,000	-	-	-	0.400	2.070	2.470	0.400	2.070	2.470
Chonburi	Ban Bung	8,430	81,600	90,030	0.088	0.713	0.801	0.930	4.670	5.600	1.018	5.383	6.401
Chonburi	Phanat Nikhom	14,290	75,700	89,990	0.400	1.480	1.880	0.880	4.350	5.230	1.280	5.830	7.110
Chonburi	Phan Thong	-	33,600	33,600	-	-	-	0.390	1.932	2.322	0.390	1.932	2.322
Chonburi	Others(5)	-	363,000	363,000	-	-	-	4.260	20.868	25.128	4.260	20.868	25.128
Total		281,920	623,500	887,420	12,145	26,945	39,090	7,260	35,934	43,194	19,405	62,878	82,284
Chachoengsao	M. Chachoengsao	43,200	71,500	114,700	3,833	6,623	10,456	0.820	4.112	4.932	4.653	10.735	15.388
Chachoengsao	Bang Khra	7,000	38,800	45,800	0.767	0.617	1.384	0.450	2.232	2.682	1.217	2.849	4.066
Chachoengsao	Bang Pakong	24,800	35,100	59,900	7,550	2,568	10,118	0.400	2.028	2.428	7,950	4,596	12,546
Chachoengsao	Ban Pho	-	30,600	30,600	-	-	-	0.350	1.759	2.109	0.350	1.759	2.109
Chachoengsao	Phanom Sarakam	13,800	44,200	58,000	0.288	1.272	1.560	0.510	2.538	3.048	0.798	3.811	4.608
Chachoengsao	Sanamchai Khet	-	129,000	129,000	-	-	-	1.480	7.416	8.896	1.480	7.416	8.896
Chachoengsao	Plaeng Yao	-	26,400	26,400	-	-	-	0.304	1.518	1.822	0.304	1.518	1.822
Chachoengsao	Others (2)	-	63,000	63,000	-	-	-	0.724	3.622	4.346	0.724	3.622	4.346
Total		88,800	438,600	527,400	12,438	11,080	23,518	5,038	25,226	30,264	17,476	36,306	53,782
Prachinburi	M. Prachinburi	27,600	62,400	90,000	3,833	4,982	8,815	0.710	3.587	4.297	4.543	8.569	13.112
Prachinburi	Kabinburi	14,100	75,800	89,900	0.386	1.728	2,115	0.870	4.360	5,230	1,256	6,089	7,345
Prachinburi	Khok Peep	-	12,600	12,600	-	-	-	0.150	0.725	0.875	0.150	0.725	0.875
Prachinburi	Na Dee	-	39,600	39,600	-	-	-	0.450	2.277	2,727	0.450	2,277	2,727
Prachinburi	Ban Srang	-	19,800	19,800	-	-	-	0.220	1.138	1,358	0.220	1,138	1,358
Prachinburi	Prachan Takan	-	36,000	36,000	-	-	-	0.410	2.070	2,480	0.410	2,070	2,480
Prachinburi	Wang Nam Yen	-	108,600	108,600	-	-	-	1.350	6.244	7,494	1,250	6,244	7,494
Prachinburi	Watthana Nakhon	8,800	55,900	64,700	0.619	1.079	1,698	0.640	3.215	3,855	1,259	4,294	5,553
Prachinburi	Si Ma Ha Pho	-	40,200	40,200	-	-	-	0.460	2.311	2,771	0.460	2,311	2,771
Prachinburi	Sra Kao	-	139,200	139,200	-	-	-	1.600	8.000	9,600	1.600	8,000	9,600
Prachinburi	Other (1)	-	168,000	168,000	-	-	-	1.930	9.658	11,588	1,930	9,658	11,588
Total		50,500	758,100	808,600	4,838	7,790	12,628	8,690	43,585	52,275	13,528	51,375	64,903
Nakhon Nayok	M. Nakhon Nayok	27,700	51,700	79,400	2,713	3,822	6,535	0.600	2.974	3,574	3,313	6,796	10,109
Nakhon Nayok	Ban Na	8,900	40,200	49,100	0.123	0.682	0,805	0.460	2.311	2,771	0,583	2,993	3,576
Nakhon Nayok	Pak Pli	-	18,000	18,000	-	-	-	0.210	1.035	1,245	0,210	1,035	1,245
Nakhon Nayok	Ongkarak	-	33,600	33,600	-	-	-	0.390	1.932	2,322	0,390	1,932	2,322
Total		36,600	143,500	180,100	2,836	4,504	7,340	1,860	8,252	9,912	4,496	12,758	17,252
Grand Total		437,820	1,965,700	2,403,520	32,257	50,319	82,576	22,650	112,997	135,647	54,907	163,316	218,223

Note: 1) The proposed served population was estimated based on population census during 1984 to 1988.
 2) The figures of PWA' water demand are based on PWA proposal in the inventory.
 3) Industrial water demands in the rural area assumed as 20 % of urban (drinking) water demands.

TABLE E-1-8 WATER DEMAND PROJECTION IN TARGET YEAR 2000 (OVERALL)

Province	District	Industrial Water Demand(MCM)				Urban (MCM)*	Total (MCM)
		By WWS*	IEAT	Private	Total		
		(11.057)		(-)	(11.057)	(16.796)	(27.853)
Chonburi	M.Chonburi	12.057	-	9.000	21.057	26.796	47.853
Chonburi	Bo Thong	0.400	-	-	0.400	2.070	2.470
Chonburi	Ban Bung	1.018	-	9.000	10.018	5.383	15.401
Chonburi	Phanat Nikhom	1.280	-	9.000	10.280	5.830	16.110
Chonburi	Phan Thong	0.390	-	-	0.390	1.932	2.322
Chonburi	Others(5)	(4.260)	-	(9.000)	(13.260)	(20.868)	(34.128)
Chachoengsao	M.Chachoengsao	4.653	18.000	9.000	31.653	10.735	42.388
Chachoengsao	Bang Khra	1.217	-	9.000	10.217	2.849	13.066
Chachoengsao	Bang Pakong	7.950	18.000	9.000	34.950	4.596	39.546
Chachoengsao	Ban Pho	0.350	-	4.500	4.850	1.759	6.609
Chachoengsao	Phanom Sarakam	0.798	-	4.500	5.298	3.811	9.109
Chachoengsao	Sanamchai Khet	1.480	-	-	1.480	7.416	8.896
Chachoengsao	Plaeng Yao	0.304	18.000	-	18.304	1.518	19.822
Chachoengsao	Others (2)	0.724	-	4.500	5.224	3.622	8.846
Prachinburi	M.Prachinburi	4.543	-	9.000	13.543	8.569	22.112
Prachinburi	Kabinburi	1.256	-	4.500	5.756	6.089	11.845
Prachinburi	Khok Peep	0.150	-	-	0.150	0.725	0.875
Prachinburi	Na Dee	0.450	-	4.500	4.950	2.277	7.227
Prachinburi	Ban Srang	0.220	-	-	0.220	1.138	1.357
Prachinburi	Prachan Takan	0.410	-	4.500	4.910	2.070	6.980
Prachinburi	Wang Nam Yen	1.250	-	-	1.250	6.244	7.494
Prachinburi	Watthana Nakhon	1.259	-	-	1.259	4.294	5.553
Prachinburi	Si Ma Ha Pho	0.460	-	4.500	4.960	2.311	7.271
Prachinburi	Sra Kaeo	1.600	-	-	1.600	8.000	9.600
Prachinburi	Other (1)	(1.930)	-	(4.500)	(6.430)	(9.658)	(16.088)
Nakhon Nayok	M.Nakhon Nayok	3.313	-	9.000	12.313	6.796	19.109
Nakhon Nayok	Ban Na	0.583	-	4.500	5.083	2.993	8.076
Nakhon Nayok	Pak Pli	0.210	-	-	0.210	1.035	1.245
Nakhon Nayok	Ongkarak	0.390	-	4.500	4.890	1.932	6.822
Grand Total		54.907	54.000	126.000	234.907	163.316	398.223
Total of Within Study Area		37.658	54.000	112.500	204.158	115.994	320.152

- Notes: 1) Water demands within study area are excluded the values of "others" in the provinces of Chonburi and Prachinburi and 27.853 MCM of Muang Chonburi from the Grand Total. Because the water supply values for Muang Chonburi considers only 20 MCM from Bang Pakong river basin.
- 2) The figures indicated in the column(*) refer to Table E-1-7.

TABLE E-1-9 DISTRIBUTION OF INDUSTRIAL AND DRINKING WATER BY IRRIGATION BLOCK(1)

Irrigation Block	Name of Amphoe	Industrial Water		Drinking Water		Total Quantity (mcm)
		Sharing (%)	Quantity (mcm)	Sharing (%)	Quantity (mcm)	
1. Lower Bang Pakong (LBP)						
LBP-1	M. Chonburi	60	6.000	60	6.000	12.000
	Bang Pakong	10	3.495	10	0.460	3.955
Sub-total	(2)		9.495		6.460	15.955
LBP-2	M. Chachoengsao	40	12.661	40	4.294	16.955
	Bang Khra	10	1.022	10	0.285	1.307
	Bang Pakong	30	10.485	30	1.379	11.864
Sub-total	(3)		24.168		5.958	30.126
LBP-3	Phan Thong	20	0.078	20	0.386	0.464
	M. Chachoengsao	60	18.992	60	6.441	25.433
	Bang Khra	60	6.130	60	1.709	7.839
	Bang Pakong	40	13.980	40	1.838	15.818
	Ban Pho	50	2.425	50	0.880	3.305
	Phanom Sarakam	30	1.589	30	1.143	2.732
	Plaeng Yao	50	9.152	50	0.759	9.911
	Others(Chacho.)	50	2.612	50	1.811	4.423
Sub-total	(8)		54.958		14.967	69.925
LBP-4	M. Chonburi	20	2.000	20	2.000	4.000
	Phan Thong	60	0.234	60	1.159	1.393
	Bang Pakong	20	6.990	20	0.919	7.909
Sub-total	(3)		9.224		4.078	13.302
LBP-5	M. Chonburi	20	2.000	20	2.000	4.000
	Ban Bung	70	7.013	70	3.767	10.780
	Phanat Nikhom	20	2.056	20	1.166	3.222
	Phan Thong	20	0.078	20	0.386	0.464
Sub-total	(4)		11.147		7.319	18.466
LBP-6	Phanat Nikhom	50	5.140	50	2.915	8.055
Sub-total	(1)		5.140		2.915	8.055
LBP-7	Ban Bung	30	3.005	30	1.615	4.620
Sub-total	(1)		3.005		1.615	4.620
LBP-8	Phanat Nikhom	20	2.056	20	1.166	3.222
Sub-total	(1)		2.056		1.166	3.222
LBP-9	Bo Thong	20	0.080	20	0.414	0.494
Sub-total	(1)		0.080		0.414	0.494
LBP-11	Bo Thong	30	0.120	30	0.621	0.741
Sub-total	(1)		0.120		0.621	0.741

TABLE E-1-9 DISTRIBUTION OF INDUSTRIAL AND DRINKING WATER BY IRRIGATION BLOCK(2)

Irrigation Block	Name of Amphoe	Industrial Water		Drinking Water		Total Quantity
		Sharing (%)	Quantity (mcm)	Sharing (%)	Quantity (mcm)	
LBP-12	Bo Thong	50	0.200	50	1.035	1.235
Sub-total (1)			0.200		1.035	1.235
LBP-13	Phanat Nikhom	10	1.028	10	0.583	1.611
	Ban Pho	20	0.970	20	0.352	1.322
	Plaeng Yao	20	3.661	20	0.304	3.965
	Others(Chacho.)	20	1.045	20	0.724	1.769
Sub-total (4)			6.704		1.963	8.667
LBP-14	Ban Pho	10	0.485	10	0.176	0.661
	Plaeng Yao	10	1.830	10	0.152	1.982
	Others(Chacho.)	10	0.522	10	0.362	0.884
Sub-total (3)			2.837		0.690	3.527
LBP-15	Ban Pho	20	0.970	20	0.352	1.322
	Plaeng Yao	20	3.661	20	0.304	3.965
	Others(Chacho.)	20	1.045	20	0.724	1.769
Sub-total (3)			5.676		1.380	7.056
LBP-16	Phanom Sarakam	20	1.060	20	0.762	1.822
	Sanamchai Khet	10	0.148	10	0.742	0.890
Sub-total (2)			1.208		1.504	2.712
LBP-17	Phanom Sarakam	20	1.060	20	0.762	1.822
Sub-total (1)			1.060		0.762	1.822
Total of LBP			137.078		52.847	189.925

2. Khlong Thalot (KTL)

KTL-1	Bang Khra	10	1.022	10	0.285	1.307
Sub-total (1)			1.022		0.285	1.307
KTL-2	Phanom Sarakam	20	1.060	20	0.762	1.822
Sub-total (1)			1.060		0.762	1.822
KTL-3	Phanom Sarakam	10	0.530	10	0.381	0.911
Sub-total (1)			0.530		0.381	0.911
KTL-4	Sanamchai Khet	40	0.592	40	2.966	3.558
Sub-total (1)			0.592		2.966	3.558
KTL-5	Sanamchai Khet	20	0.296	20	1.483	1.779
Sub-total (1)			0.296		1.483	1.779
KTL-6	Sanamchai Khet	10	0.148	10	0.742	0.890
Sub-total (1)			0.148		0.742	0.890
KTL-7	Sanamchai Khet	20	0.296	20	1.483	1.779
Sub-total (1)			0.296		1.483	1.779
Total of KTL			3.944		8.102	12.046

TABLE E-1-9 DISTRIBUTION OF INDUSTRIAL AND DRINKING WATER BY IRRIGATION BLOCK(3)

Irrigation Block	Name of Amphoe	Industrial Water		Drinking Water		Total
		Sharing (%)	Quantity (mcm)	Sharing (%)	Quantity (mcm)	Quantity (mcm)
<u>3. Upper Bang Pakong (UBP)</u>						
UBP-1	Bang Khra	20	2.043	20	0.570	2.613
	Bang Srang	100	0.217	100	1.135	1.352
	Khok Peep	100	0.150	100	0.725	0.875
	M.Prachinburi	10	1.354	10	0.857	2.211
	Simaha Pho	50	2.480	50	1.156	3.636
Sub-total	(5)		6.244		4.443	10.687
UBP-2	M.Prachinburi	60	8.126	60	5.141	13.267
	Pak Pli	10	0.021	10	0.104	0.125
Sub-total	(2)		8.147		5.245	13.392
UBP-3	Simaha Pho	50	2.480	50	1.156	3.636
	Prachan Takan	40	1.964	40	0.828	2.792
	Kabinburi	40	2.302	40	2.436	4.738
Sub-total	(3)		6.746		4.420	11.166
UBP-4	M.Prachinburi	30	4.063	30	2.571	6.634
	Prachan Takan	50	2.455	50	1.035	3.490
Sub-total	(2)		6.518		3.606	10.124
UBP-5	Prachan Takan	10	0.491	10	0.207	0.698
Sub-total	(1)		0.491		0.207	0.698
Total of UBP			28.146		17.921	46.067
<u>4. Mae Nam Nakhon Nayok (MNN)</u>						
MNN-1	M.Nakhon Nayok	60	7.388	60	4.078	11.466
	Ongkarak	50	2.445	50	0.966	3.411
	Ban Na	50	2.542	50	1.497	4.039
	Pak Pli	70	0.147	70	0.725	0.872
Sub-total	(4)		12.522		7.266	19.788
MNN-2	Ongkarak	50	2.445	50	0.966	3.411
	Ban Na	30	1.525	30	0.898	2.423
Sub-total	(2)		3.970		1.864	5.834

TABLE E-1-9 DISTRIBUTION OF INDUSTRIAL AND DRINKING WATER BY IRRIGATION BLOCK(4)

Irrigation Block	Name of Amphoe	Industrial Water		Drinking Water		Total Quantity
		Sharing (%)	Quantity (mcm)	Sharing (%)	Quantity (mcm)	
MNN-3	M. Nakhon Nayok	20	2.463	20	1.359	3.822
	Ban Na	20	1.017	20	0.599	1.616
Sub-total	(2)		3.480		1.958	5.438
MNN-5	M. Nakhon Nayok	20	2.463	20	1.359	3.822
	Pak Pli	20	0.042	20	0.207	0.249
Sub-total	(2)		2.505		1.566	4.071
Total of MNN			22.477		12.654	35.131

5. Middle Phra Prong (MPP)

MPP-1	Kabinburi	40	2.302	40	2.436	4.738
Sub-total	(1)		2.302		2.436	4.738
Total of MPP			2.302		2.436	4.738

6. Mae Nam Hanuman (MNH)

MNH-1	Na Dee	100	4.950	100	2.277	7.227
	Kabinburi	20	1.151	20	1.218	2.369
Sub-total	(2)		6.101		3.495	9.596
MNH-7	Sra Kaeo	10	0.160	10	0.800	0.960
Sub-total	(1)		0.160		0.800	0.960
MNH-9	Sra Kaeo	10	0.160	10	0.800	0.960
Sub-total			0.160		0.800	0.960
Total of MNH			6.421		5.095	11.516

7. Khlong Phra Sathung (KPS)

KPS-1	Sra Kaeo	30	0.480	30	2.400	2.880
Sub-total	(1)		0.480		2.400	2.880
KPS-2	Watthana Nakhon	40	0.504	40	1.718	2.222
Sub-total	(1)		0.504		1.718	2.222
KPS-3	Watthana Nakhon	40	0.504	40	1.718	2.222
Sub-total	(1)		0.504		1.718	2.222
KPS-4	Watthana Nakhon	20	0.252	20	0.859	1.111
Sub-total	(1)		0.252		0.859	1.111
Total of KPS			1.740		6.695	8.435

TABLE E-1-9 DISTRIBUTION OF INDUSTRIAL AND DRINKING WATER BY IRRIGATION BLOCK(5)

Irrigation Block	Name of Amphoe	Industrial Water		Drinking Water		Total
		Sharing (%)	Quantity (mcm)	Sharing (%)	Quantity (mcm)	Quantity (mcm)
8. Upper Phra Prong (UPP)						
UPP-1	Sra Kaeo	40	0.640	40	3.200	3.840
Sub-total	(1)		0.640		3.200	3.840
UPP-2	Sra Kaeo	10	0.160	10	0.800	0.960
	Wang Nam Yen	80	1.000	80	4.995	5.995
Sub-total	(2)		1.160		5.795	6.955
UPP-3	Wang Nam Yen	20	0.250	20	1.249	1.499
Sub-total	(1)		0.250		1.249	1.499
Total of UPP			2.050		10.244	12.294
GRAND TOTAL			204.158		115.994	320.152
LOWER BANG PAKONG:	LBP(16)		137.078		52.847	189.925
KHLONG THALAT:	KTL(7)		3.944		8.102	12.046
UPPER BANG PAKONG:	UBP(5)		28.146		17.921	46.067
MAE NAM NAKHON NAYOK:	MNN(4)		22.477		12.654	35.131
MIDDLE PHRA PRONG:	MPP(1)		2.302		2.436	4.738
MAE NAM HANUMAN:	MNH(3)		6.421		5.095	11.516
KHLONG PHRA SATHUNG:	KPS(4)		1.740		6.695	8.435
UPPER PHRA PRONG:	UPP(3)		2.050		10.244	12.294

TABLE E-1-10 DISTRIBUTION OF INDUSTRIAL AND DRINKING WATER BY IRRIGATION BLOCK FOR FEASIBILITY STUDY AREA

Name of Amphoe	Irrigation Block	Industrial Water		Drinking Water		Total
		Sharing (%)	Quantity (mcm)	Sharing (%)	Quantity (mcm)	Quantity (mcm)
<u>(1)Tha Lat Existing Area</u>						
Phanom Sarakam	LBP- 3	30	2.939	30	1.143	4.082
Phanom Sarakam	LBP-16	20	1.960	20	0.762	2.722
Phanom Sarakam	LBP-17	20	1.960	20	0.762	2.722
Phanom Sarakam	KTL- 2	20	1.960	20	0.762	2.722
Phanom Sarakam	KTL- 3	10	0.980	10	0.381	1.361
Plaeng Yao	LBP- 3	50	18.152	50	0.759	18.911
Plaeng Yao	LBP-13	20	7.261	20	0.304	7.565
Plaeng Yao	LBP-14	10	3.630	10	0.152	3.782
Plaeng Yao	LBP-15	20	7.261	20	0.304	7.565
Total			46.103		5.329	51.432
<u>(2)Bang Pakong Left Bank Existing Area</u>						
Ban Pho	LBP- 3	50	4.675	50	0.880	5.555
Ban Pho	LBP-13	20	1.870	20	0.352	2.222
Ban Pho	LBP-14	10	0.935	10	0.176	1.111
Ban Pho	LBP-15	20	1.870	20	0.352	2.222
Bang Pakong	LBP- 1	10	6.195	10	0.460	6.655
Bang Pakong	LBP- 2	30	18.585	30	1.379	19.964
Bang Pakong	LBP- 3	40	24.780	40	1.838	26.618
Bang Pakong	LBP- 4	20	12.390	20	0.919	13.309
Total			71.300		6.356	77.656
<u>(3)Tha Lat Expansion Area</u>						
Sanamchai Ket	LBP-16	10	0.148	10	0.742	0.890
Sanamchai Ket	KTL- 4	40	0.592	40	2.966	3.558
Sanamchai Ket	KTL- 5	20	0.296	20	1.483	1.779
Sanamchai Ket	KTL- 6	10	0.148	10	0.742	0.890
Sanamchai Ket	KTL- 7	20	0.296	20	1.483	1.779
Total			1.480		7.416	8.896
<u>(4)Bang Pakong Expansion Area</u>						
Bang Phra	LBP- 2	10	1.922	10	0.285	2.207
Bang Phra	LBP- 3	60	11.530	60	1.709	13.239
Bang Phra	KTL- 1	10	1.922	10	0.285	2.207
Bang Phra	UBP- 1	20	3.843	20	0.570	4.413
Chachoengsao	LBP- 2	40	9.061	40	4.294	13.355
Chachoengsao	LBP- 3	60	13.592	60	6.441	20.033
Total			41.870		13.584	55.454
Grand Total			160.753		32.685	193.438

E.2 INDUSTRIAL WATER SUPPLY

The following data and tables present procedures employed in estimating demand for industrial water supply:

Table E-2-1 Statistics of Industrial Water Consumption in Lat Krabang Industrial Estate (General Industrial Zone)

Table E-2-2 Statistics on Industrial Water Consumption in Lat Krabang Industrial Estate (Export Processing Zone)

Table E-2-3 Unit Water Demand for Existing and Newly Constructing Factories in Chachoengsao Province

Table E-2-4 Water Demand Projection in Target Year 2000 (Overall)

TABLE E-2-1 STATISTICS OF INDUSTRIAL WATER CONSUMPTION IN
LAT KRABANG INDUSTRIAL ESTATE(GENERAL INDUSTRIAL ZONE)

<u>Name of Industry</u>	<u>Area Occupied</u> (rai)	<u>Water Consumption (cu.m.)</u>	
		<u>Monthly</u> <u>Average</u>	<u>Daily Average</u> <u>per Rai</u>
Lat Krabang Hospital	3.48	350	3.9
Thai O.P.P. Ltd	4.04	407	3.9
Yanmar Thailand Co. Ltd	50.48	3,705	2.8
Gillete Thailand Ltd	27.00	432	0.6
Jhonson & Jhonson(Thailand)Co.Ltd	49.10	2,788	2.2
Q & Q Holding Co.Ltd	6.61	1,244	7.2
Kulthorn Kirby Co.Ltd	42.76	7,608	6.8
M.M.C.Sittipol Co.Ltd	66.76	7,405	4.3
Lever Brothers(Thailand) Co. Ltd	127.65	14,888	4.5
Thai Meiji Pharmaceutical Co.Ltd	37.62	16,365	16.7
Dynasty Foods Co.Ltd	2.98	408	5.3
Sun By Sun (Thailand) Co. Ltd	2.99	370	4.8
P.M. Foods Co. Ltd	3.13	1,374	16.9
Sunco Chemical & Paints Co. Ltd	2.98	1,250	16.1
Riotex Polymer Co. Ltd	2.00	2,057	39.6
Thai Vinegar Co. Ltd	1.96	132	2.6
Suninks(Thailand) Co. Ltd	3.96	116	1.1
Granite World Co. Ltd	5.14	306	2.3
President Bakery Co. Ltd	4.50	652	5.6
Penag Thai Rattana Ltd Part.	3.60	1,486	15.9
Sang Tat Industrial Co. Ltd	4.00	333	3.2
Tipco Emulsion Co. Ltd	14.36	3,780	10.1
Inter Foods Co. Ltd	3.96	1,198	11.6
Bangkok Emulsion Co. Ltd	3.60	1,301	13.9
P.M.Snack Co.Ltd	2.96	497	6.2
Ciba-Geigy(Thailand) Co. Ltd	9.64	689	2.8
Rieng Thong Armitil Co. ltd	2.00	164	3.2
<u>Total or Average</u>	<u>18.12</u>	<u>3,722</u>	<u>7.9</u>

Data Source: IEAT, Ministry of Industry

TABLE E-2-2 STATISTICS OF INDUSTRIAL WATER CONSUMPTION IN
LAT KRABANG INDUSTRIAL ESTATE(EXPORT PROCESSING ZONE)

<u>Name of Industry</u>	<u>Area Occupied</u> (rai)	<u>Water Consumption (cu. m.)</u>	
		<u>Monthly</u> <u>Average</u>	<u>Daily Average</u> <u>per Rai</u>
Bangkok Writting Instrument Co.Ltd	3.66	226	2.4
Thai Luggage & Bags Co.Ltd	5.27	555	4.1
Electronics Industry (USA)Co.Ltd	2.18	127	2.2
General Mercantile Co.Ltd	2.78	389	5.5
Eng Fung Chemical(Thailand) Co.Ltd	2.72	1,858	26.3
Worldwide anufactures Co.Ltd	1.36	360	10.2
Siam Art Flowers Co.Ltd	2.56	575	8.6
Kuang Charone Electronics Co.Ltd	1.80	1,056	22.6
Siam Linen Industry Co.Ltd	7.18	3,274	17.5
<u>Total or Average</u>	<u>3.28</u>	<u>936</u>	<u>11.0</u>

Data Source:IEAT,Ministry of Industry

TABLE E-2-3 UNIT WATER DEMAND FOR EXISTING AND NEWLY CONSTRUCTING FACTORIES IN THE CHACHOENGSAO PROVINCE

Name of Factory	Category of Factory	Land Occupied (rai)	Daily Water Demand		Working Day Per Month (days)	Source of Water Supply	Major Purpose of Utilize	Number of Labour
			Per day (cu.m)	Per day per rai (cu.m/rai)				
A. EXISTING FACTORY (Surveyed by JICA)								
Cargill Co. Ltd	Food/Feed	25	10	0.4	25	Pond	Boiler/Cleaning	62
Thai Paper Mill	Material	56	400	7.1	25	Canal/Pond	Cooling/Boiler	125
Udom Suk R. Mill	Food	60	NA	NA	26	Pond	Steam engine	30
Thai Arrow	Mech/Elect.	83	200	2.4	25	Canal/Deep W.	Cooling/Domest.	2,800
Cheewa Mongkol	Seed oil	8	72	9.0	25	Shallow well	Boiler/Cooling	25
Sharp Appliance	Mech/Elect.	98	600	6.1	25	Canal/Pond	Cooling/Domest.	2,500
B. NEWLY CONSTRUCTING FACTORY (Surveyed by Chachoengsao Industrial Office)								
Siam Elin Motor	Mech/Elect.	17	100	5.9	26	PWA systems	Domestic	150
Unic Design	Service	20	15	0.8	26	Canal	Boiler	50
S.N.B.	Food Product	6	50	8.3	NA	PWA systems	Boiler, Cooling	43
Sunny Precision	Mech/Elect.	3	15	5.0	30	Water Truck	Domestic	45
Sin Iew	Other	10	30	3.0	NA	Ground water	Domestic	162
Chiconi Electro.	Mech/Elect.	21	40	2.0	24	Ground water	Domestic	230
Thai Hitachi W.	Mech/Elect.	23	120	5.2	NA	PWA systems	Domestic	70
Bang Na Machine	Mech/Elect.	33	7	0.2	NA	PWA systems	Domestic	110
Thai Metal Box	Mech/Elect.	8	10	1.3	26	Water truck	Domestic	150
Sharp Appliance	Mech/Elect.	98	600	6.1	24	PWA systems	Domestic	2,600
Sunny Footwear	Textile	14	300	21.4	25	Water truck	Domestic	1,200
Thai Metal Proc.	Mech/Elect.	15	300	20.0	22	Water truck	Domestic	66
Uni-sole	Other	7	50	7.2	25	Canal	Cooling	359
Thai Helem	Other	3	6	2.0	26	Pond	Cleaning	60
Sonil	Const. Mater.	29	10	0.3	25	PWA systems	Cooling	200
Ruang Wa	Other	25	25	1.0	26	Canal/Pond	Cooling	NA
Kaset	Other	1	5	5.0	30	PWA/ground W.	Cooling	15
Thai Compressor	Mech/Elect.	51	250	4.9	26	PWA systems	Domestic	340
Ekarat Engine	Mech/Elect.	15	50	3.3	26	Canal	Domestic	500
Siam Tyre Cord	Vehicle	30	705	29.5	NA	Canal	Domestic	200
V.P. Concrete	Const. Mater.	2	8,000	9,000.0	NA	PWA/Canal	Domestic	6
						Canal	Mixing water	

Note: Water Usage per Day/Rai

Water Usage per Day/Rai	Number of Factory
0.1 - 5.0	15
5.1 - 7.0	4
7.1 - 10.0	4
10.1 - 15.0	0
Over 15.1	4

TABLE E-2-4 WATER DEMAND PROJECTION IN TARGET YEAR 2000 (OVERALL)

Province	District	Industrial Water Demand(MCM)				Urban (MCM)*	Total (MCM)
		By WWS*	IEAT	Private	Total		
		(11.057)		(-)	(11.057)	(16.796)	(27.853)
Chonburi	M.Chonburi	12.057	-	9.000	21.057	26.796	47.853
Chonburi	Bo Thong	0.400	-	-	0.400	2.070	2.470
Chonburi	Ban Bung	1.018	-	9.000	10.018	5.383	15.401
Chonburi	Phanat Nikhom	1.280	-	9.000	10.280	5.830	16.110
Chonburi	Phan Thong	0.390	-	-	0.390	1.932	2.322
Chonburi	Others(5)	(4.260)	-	(9.000)	(13.260)	(20.868)	(34.128)
Chachoengsao	M.Chachoengsao	4.653	18.000	9.000	31.653	10.735	42.388
Chachoengsao	Bang Khra	1.217	-	9.000	10.217	2.849	13.066
Chachoengsao	Bang Pakong	7.950	18.000	9.000	34.950	4.596	39.546
Chachoengsao	Ban Pho	0.350	-	4.500	4.850	1.759	6.609
Chachoengsao	Phanom Sarakam	0.798	-	4.500	5.298	3.811	9.109
Chachoengsao	Sanamchai Khet	1.480	-	-	1.480	7.416	8.896
Chachoengsao	Plaeng Yao	0.304	18.000	-	18.304	1.518	19.822
Chachoengsao	Others (2)	0.724	-	4.500	5.224	3.622	8.846
Prachinburi	M.Prachinburi	4.543	-	9.000	13.543	8.569	22.112
Prachinburi	Kabinburi	1.256	-	4.500	5.756	6.089	11.845
Prachinburi	Khok Peep	0.150	-	-	0.150	0.725	0.875
Prachinburi	Na Dee	0.450	-	4.500	4.950	2.277	7.227
Prachinburi	Ban Srang	0.220	-	-	0.220	1.138	1.357
Prachinburi	Prachan Takan	0.410	-	4.500	4.910	2.070	6.980
Prachinburi	Wang Nam Yen	1.250	-	-	1.250	6.244	7.494
Prachinburi	Watthana Nakhon	1.259	-	-	1.259	4.294	5.553
Prachinburi	Si Ma Ha Pho	0.460	-	4.500	4.960	2.311	7.271
Prachinburi	Sra Kaeo	1.600	-	-	1.600	8.000	9.600
Prachinburi	Other (1)	(1.930)	-	(4.500)	(6.430)	(9.658)	(16.088)
Nakhon Nayok	M.Nakhon Nayok	3.313	-	9.000	12.313	6.796	19.109
Nakhon Nayok	Ban Na	0.583	-	4.500	5.083	2.993	8.076
Nakhon Nayok	Pak Pli	0.210	-	-	0.210	1.035	1.245
Nakhon Nayok	Ongkarak	0.390	-	4.500	4.890	1.932	6.822
Grand Total		54.907	54.000	126.000	234.907	163.316	398.223
Total of Within Study Area		37.658	54.000	112.500	204.158	115.994	320.152

- Notes: 1) Water demands within study area are excluded the values of "others" in the provinces of Chonburi and Prachinburi and 27.853 MCM of Muang Chonburi from the Grand Total. Because the water supply values for Muang Chonburi considers only 20 MCM from Bang Pakong river basin.
- 2) The figures indicated in the column(*) refer to Table E-1-7.

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