

Table 4.1.17 Staged Development in Upstream of Nakhon Sawan

Year	Development in Sub-basins (Area in rai)				Runoff
	Ping Basin	Wang Basin	Yom Basin	Nan Basin	C2 Station
1936	70,000	0	0	0	
1937	70,000	0	0	0	
1938	70,000	0	0	0	
1939	70,000	0	0	0	
1940	70,000	0	0	0	
1941	114,900	0	0	0	
1942	114,900	0	0	0	
1943	114,900	0	0	0	
1944	114,900	0	0	0	
1945	114,900	0	0	0	
1946	114,900	0	0	0	
1947	114,900	0	0	0	
1948	114,900	0	0	0	
1949	114,900	97,000	0	0	
1950	116,900	97,000	0	0	
1951	116,900	97,000	0	7,500	
1952	139,400	97,000	0	8,000	
1953	139,400	97,000	0	61,500	
1954	214,150	97,000	0	66,500	
1955	214,150	97,000	0	67,500	
1956	219,650	97,000	0	67,500	27,111
1957	219,650	97,000	0	67,500	16,565
1958	219,650	97,000	0	67,500	12,464
1959	219,650	97,000	12,000	67,500	23,364
1960	219,650	97,000	12,000	67,500	20,079
1961	219,650	97,000	12,000	97,500	33,370
1962	226,650	97,000	12,000	107,500	23,475
1963	226,650	97,000	12,000	107,500	24,327
1964	226,650	97,000	12,000	107,500	25,796
1965	226,650	97,000	12,000	107,500	16,479
1966	226,650	97,000	12,000	118,500	23,333
1967	226,650	97,000	12,000	142,400	18,387
1968	226,650	97,000	12,000	191,500	14,595
1969	226,650	97,000	12,000	236,500	21,039
1970	250,150	97,000	27,000	251,500	37,585
1971	305,450	100,000	27,000	318,800	24,462
1972	463,850	153,000	27,000	328,800	15,627
1973	464,850	153,000	251,000	371,800	22,603
1974	467,150	153,000	255,000	386,800	21,706
1975	477,200	153,000	255,000	398,000	36,905
1976	481,436	155,500	264,500	398,000	31,538
1977	575,363	157,000	291,350	488,190	21,371
1978	643,303	165,900	300,950	531,020	31,258
1979	695,721	181,400	317,250	582,302	18,056
1980	751,571	201,200	349,760	623,902	29,741
1981	921,474	220,000	384,180	677,252	25,841
1982	1,007,568	233,100	412,400	716,442	19,839
1983	1,072,107	264,520	498,082	787,752	23,995
1984	1,145,723	283,180	542,922	862,512	18,743
1985	1,339,011	324,390	619,109	1,580,089	23,374
1986	1,384,449	369,830	644,899	1,625,900	19,963
1987	1,457,198	393,410	697,779	1,677,940	17,647
1988	1,501,711	401,810	759,199	1,706,150	18,639
1989	1,535,296	417,960	799,899	1,740,580	16,447
1990	1,570,653	448,610	831,274	1,795,880	16,885
1991	1,739,174	463,060	909,939	1,882,823	14,076
1992	1,767,444	479,350	930,179	1,936,973	12,020
1993	1,687,914	484,375	945,354	1,983,083	10,350
1994				2,005,633	24,002
1995				2,048,333	36,205
1996	1,974,337	533,800	1,086,459	2,080,754	
1997					

Table 4.1.18 Comparison of Long-term River Flow at Major Stations

Year	N1	Sirikit	N7	P12	P2A	W3A	Y6	C2
1934				6,818.0				
1935				9,229.0				
1936				6,617.0				
1937				9,001.0				
1938				11,206.0				
1939				12,295.0				
1940				14,590.0				
1941				7,660.0				
1942				15,451.0				
1943				7,945.0				
1944			11,701.0	6,901.0				
1945			12,601.0	9,167.0				
1946			10,492.0	9,465.0				
1947			11,308.0	10,380.0				
1948	2,300.1		10,643.0	10,922.0				
1949	2,704.8		13,456.0	11,398.0				
1950	2,051.3		12,710.0	10,165.0				
1951	3,558.9		15,274.0	11,932.0				
1952	4,574.3		12,919.0	6,562.0	9,945.0			
1953	2,757.6		11,983.0	8,760.0	12,753.0			
1954	1,909.5		8,102.0	4,787.0	6,620.0		1,813.0	
1955	3,506.6		9,692.0	5,476.0	7,314.0	1,283.0	2,303.0	
1956	3,161.2		11,789.0	7,247.0	9,979.0	1,502.0	3,298.0	27,111.0
1957	2,465.1		8,026.0	3,809.0	4,744.0	936.0	2,715.0	16,565.0
1958	1,386.3		6,153.0	3,187.0	3,792.0	490.0	914.0	12,464.0
1959	3,025.8		9,684.0	6,632.0	8,397.0	1,471.0	2,705.0	23,364.0
1960	2,877.8		8,791.0	5,509.0	6,878.0	1,485.0	2,596.0	20,079.0
1961	2,898.1		13,288.0	8,582.0	10,480.0	2,716.0	5,318.0	33,370.0
1962	2,165.2		8,638.0	7,105.0	7,507.0	1,361.0	1,555.0	23,475.0
1963	3,631.3		11,773.0	7,338.0	3,240.0	1,556.0	2,978.0	24,327.0
1964	2,493.2		10,025.0	3,229.0	5,977.0	1,682.0	2,084.0	25,796.0
1965	1,760.9		6,450.0	5,331.0	6,789.0	611.0	1,141.0	16,479.0
1966	2,626.0		8,605.0	5,204.0	6,558.0	979.0	1,709.0	23,333.0
1967	2,023.3		6,873.0	6,328.0	7,119.0	1,432.0	2,004.0	18,387.0
1968			6,129.0	5,765.0	5,407.0	714.0	1,262.0	14,595.0
1969	1,958.5		7,631.0	5,130.0	6,045.0	1,513.0	1,585.0	21,039.0
1970	4,747.7	9,535.0	13,901.0	6,859.0	9,193.0	2,509.0	4,895.0	37,585.0
1971	2,876.0	6,438.0	7,645.0	8,265.0	10,443.0	2,408.0	3,886.0	24,462.0
1972	1,888.4	4,804.0	5,113.0	5,896.0	7,387.0	930.0	1,760.0	15,627.0
1973	2,494.7	6,698.8	5,389.0	7,919.0	11,607.0	2,899.0	4,938.0	22,603.0
1974	1,341.7	4,419.7	8,280.0	5,424.0	8,578.0	2,009.0	3,073.0	21,706.0
1975	2,951.5	8,529.5	14,288.0	7,518.0	11,123.0	2,007.0	4,209.0	36,905.0
1976	1,978.9	6,281.2	13,221.0	7,271.0	8,885.0	1,176.0	2,831.0	31,538.0
1977	1,437.0	4,229.5	9,756.0	6,736.0	8,671.0	1,273.0	2,215.0	21,371.0
1978	2,141.6	6,460.0	12,500.0	5,681.0	7,363.0	1,929.0	4,120.0	31,258.0
1979	1,850.0	3,684.2	8,464.0	6,317.0	8,078.0	680.0	1,132.0	18,056.0
1980	4,043.6	6,301.8	11,664.0	2,420.0	4,495.0	942.0	2,897.0	29,741.0
1981	3,933.9	7,828.3	13,037.0	4,241.0	6,417.0	1,578.0	4,095.0	25,841.0
1982	3,004.7	5,236.6	9,472.0	5,340.0	6,652.0	515.0	1,423.0	19,839.0
1983	3,412.6	5,441.6	8,864.0	3,695.0	5,511.0	762.0	2,490.0	23,995.0
1984	4,204.4	6,446.4	10,030.0	3,743.0	5,524.0	604.0	2,264.0	18,743.0
1985	2,906.5	5,364.8	10,475.0	3,154.0	5,231.0	847.0	2,222.0	23,374.0
1986	2,072.5	4,559.1	8,654.0	5,216.0	8,399.0	693.0	1,949.0	19,963.0
1987	1,344.0	2,986.2	6,275.0	4,194.0	7,302.0	1,003.0	2,257.0	17,647.0
1988	2,116.7	4,559.8	4,561.0	3,700.0	6,471.0	1,354.0	2,546.0	18,639.0
1989	2,218.2	3,959.0	5,471.0	4,958.0	8,165.0	944.0	2,207.0	16,447.0
1990	2,205.0	4,022.0	8,338.0	4,191.0	7,141.0	617.0	1,689.0	16,885.0
1991	2,084.4	3,455.8	5,558.0	2,541.0	4,607.0	461.0	1,708.0	14,076.0
1992	1,776.8	3,033.8						12,020.0
1993	2,016.7	3,230.2						10,350.0
1994								24,002.0
1995								
1996								
1997								

Table 4.1.19 Staged Development in the Kok Basin

Year	Type of Irrigation Project (Area in rai)				Runoff
	Large/Medium	Small Scale	DEDP Pump	Others	GN1 Station
1936	0	0	0	0	
1937	0	0	0	0	
1938	0	0	0	0	
1939	0	0	0	0	
1940	0	0	0	0	
1941	0	0	0	0	
1942	0	0	0	0	
1943	0	0	0	0	
1944	0	0	0	0	
1945	0	0	0	0	
1946	0	0	0	0	
1947	0	0	0	0	
1948	0	0	0	0	
1949	0	0	0	0	
1950	0	0	0	0	
1951	0	0	0	0	
1952	0	0	0	0	
1953	0	0	0	0	
1954	0	0	0	0	
1955	0	0	0	0	
1956	0	0	0	0	
1957	0	0	0	0	
1958	0	0	0	0	
1959	0	0	0	0	
1960	0	0	0	0	
1961	0	0	0	0	
1962	0	0	0	0	
1963	13200	0	0	0	
1964	13200	0	0	0	
1965	13200	0	0	0	
1966	13200	0	0	0	
1967	13200	0	0	0	
1968	13200	0	0	0	
1969	13200	0	0	0	
1970	13200	0	0	0	4979
1971	13200	0	0	0	5686
1972	13200	0	0	0	4065
1973	13200	0	0	0	5074
1974	13200	300	0	0	3369
1975	17200	300	0	0	4281
1976	22900	300	0	0	3413
1977	30900	2800	0	0	3522
1978	30900	6800	0	0	4180
1979	30900	12200	0	0	2316
1980	30900	17000	0	0	2559
1981	44400	20400	0	0	5135
1982	89400	28600	0	0	3561
1983	89400	35600	7340	0	3948
1984	101400	44721	7340	0	3664
1985	133750	47821	8940	0	3734
1986	154750	51871	8940	0	3005
1987	166750	52871	12140	0	2702
1988	166750	53371	14130	0	3662
1989	176750	57321	20220	0	3196
1990	186750	58321	21420	0	2739
1991	199250	59521	25320	0	3204
1992	199250	62421	25320	0	2754
1993	199250	64121	25320	0	2478
1994	205250	66621	28110	0	3227
1995	215250	66621	28110	0	4267
1996	223250	74321	29610	2550	3826
1997	281450	74321	29610	2550	

Table 4.1.20 Staged Development in the Ing Basin

Year	Type of Irrigation Project (Area in rai)				Runoff INI Station
	Large/Medium	Small Scale	DEDP Pump	Others	
1936	0	0	0	0	
1937	0	0	0	0	
1938	0	0	0	0	
1939	0	0	0	0	
1940	0	0	0	0	
1941	0	0	0	0	
1942	0	0	0	0	
1943	0	0	0	0	
1944	0	0	0	0	
1945	0	0	0	0	
1946	0	0	0	0	
1947	0	0	0	0	
1948	0	0	0	0	
1949	0	0	0	0	
1950	0	0	0	0	
1951	0	0	0	0	
1952	0	0	0	0	
1953	0	0	0	0	
1954	0	0	0	0	
1955	0	0	0	0	
1956	0	0	0	0	
1957	0	0	0	0	
1958	0	0	0	0	
1959	0	0	0	0	
1960	0	0	0	0	
1961	0	0	0	0	
1962	0	0	0	0	
1963	0	0	0	0	
1964	0	0	0	0	
1965	0	0	0	0	
1966	0	0	0	0	
1967	0	0	0	0	
1968	0	0	0	0	
1969	0	0	0	0	
1970	0	0	0	0	3150
1971	0	0	0	0	1957
1972	0	0	0	0	2200
1973	15000	0	0	0	3926
1974	15000	0	0	0	1949
1975	15000	0	0	0	2788
1976	15000	0	0	0	1477
1977	15000	0	0	0	2473
1978	15000	1100	0	0	2612
1979	20000	3300	0	0	933
1980	20000	10100	0	0	2910
1981	42000	23300	0	0	1760
1982	71000	29100	0	0	990
1983	71000	39600	7890	0	1633
1984	91000	46250	7890	1500	1862
1985	119000	60250	11550	2000	1898
1986	138900	68050	11550	2500	1239
1987	164200	69450	16200	2500	1575
1988	209850	78750	20000	2500	1392
1989	251850	85000	21250	2500	1722
1990	254850	89000	21250	2500	1324
1991	274550	93200	21250	3900	1438
1992	282150	99050	22550	6500	902
1993	295150	117250	22550	6500	1178
1994	305150	130690	30050	11300	4266
1995	308350	144237	30050	12500	3331
1996	325850	155837	30050	13900	
1997	341850	168257	30050	13900	

Table 4.1.21 Water Cost by Large/Medium Scale Storage Dam

Project Name	Basin	①Active Storage (MCM/Year)	②Dry Season Use (MCM/Year) (①x30%)	③Total Project Cost (Mill.Bh)	Irrigation Area (rai)		⑥Investment Per cu.m(③/②) (Baht/cu.m)	Ranking of Water Cost	Remark
					Wet Season ④	Dry Season ⑤			
Pasak Dam	Pasak	785.00	235.50	19,231.0			81.7	⑧	Short Pl.
Lam Sonthi	-ditto-	108.82	32.65						Short Pl.
Huai Samong	Prachinburi	275.50	82.65	3,451.4	111,300		41.8	③	Short Pl.
Khlong Tha Dan	Bang Pakong	220.00	66.00	11,183.0	206,359	30,000	169.4	⑮	Short Pl.
Khlong Sri Yat	-ditto-	325.00	97.50						Short Pl.
Khlong Luang	-ditto-	98.00	29.40	3,716.6	44,000		126.4	⑬	Short Pl.
Nam Man	Khong	130.00	39.00						LgPl'06
Huai Bang Sai	-ditto-	279.00	83.70						LgPl'06
Mae Khan	Pin	71.32	21.40	1,891.0	68,370		88.4	⑩	LgPl'06
Kiu Khorma	Wang	141.00	42.30	2,128.0	90,200		50.3	④	LgPl'06
Kaeng Suatein	Yom	1,175.00	352.50	4,684.0	386,000		13.3	①	LgPl'06
Khawe Noi	Nan	733.00	219.90	6,780.8	155,166	93,100 (max)	30.8	②	LgPl'06
Upper Maewong	Sakae Krung	230.00	69.00	4,108.2	233,600		59.5	⑤	LgPl'06
Ban Thung Krabin	Prachinburi	196.00	58.80						LgPl'06
Khlong Phrasathung	-ditto-	61.40	18.42	1,750.5	40,640		95.0	⑪	LgPl'06
Sai Noi - Sai Yai	-ditto-	328.00	98.40	9,714.5	283,900		98.7	⑫	LgPl'06
Khlong Nongkaew	-ditto-	133.00	39.90						LgPl'06
Huai Khrai	-ditto-	172.10	51.63	3,309.0	43,288		64.1	⑥	LgPl'06
Prasae	Eastern Coast	202.00	60.60	9,016.8	137,000		148.8	⑭	LgPl'06
Khlong Ruproe	South-East Coast	143.00	42.90	3,244.2	91,600		75.6	⑦	LgPl'06
Khlong Hincho	-ditto-	112.00	33.60						Existing
Khlong Kradae	-ditto-	70.00	21.00	1,773.0	16,000		82.1	③	Existing
Khlong-krung	Tapi	1,233.00	369.90						incl.HyP
Khlong Panom	-ditto-	306.10	91.83						Co&HyP
Lumloan	South-West Coast	300.00	90.00						
Kok-Ing-Nan	Kok-Ing-Nan	2,000.00	2,000.00	43,386.0		1,223,000	21.7		

Note : Short Pl. : Short Plan (B.E.2536-2539)
 LgPl'06 : Long Plan (B.E.2540-2549)
 incl.HyP : includ Hydropower
 Co&HyP : Consumed Hydropower

Table 4.1.22 Estimation of Other Water Demand in Upper Chao Phraya Basin

	Nam	Ping	Wang	Yom	Sakae Krang	Total	Pasak	Grand Total
(1) Water Demand in 1996 by 25 Basins								
Municipal Use	46.4	64.1	21.0	16.5	2.0	150.0	86.3	236.3
Domestic Use	68.5	80.1	0.0	56.4	6.8	211.8	28.6	240.4
Industrial Use	2.9	3.6	1.3	0.6	0.0	8.4	0.0	8.4
<i>Total</i>	117.8	147.8	22.3	73.5	8.8	370.2	114.9	485.1
(1) Water Demand in 2006 by 25 Basins								
Municipal Use	57.1	90.2	23.0	28.0	2.5	200.8	114.0	314.8
Domestic Use	76.4	93.8	0.0	63.6	13.0	246.8	34.0	280.8
Industrial Use	5.6	6.4	2.6	0.6	0.0	15.2	0.0	15.2
<i>Total</i>	139.1	190.4	25.6	92.2	15.5	462.8	148.0	610.8
(3) Increased Water Demand (2)-(1)								
Municipal Use	10.7	26.1	2.0	11.5	0.5	50.8	27.7	78.5
Domestic Use	7.9	13.7	0.0	7.2	6.2	35.0	5.4	40.4
Industrial Use	2.7	2.8	1.3	0.0	0.0	6.8	0.0	6.8
<i>Total</i>	21.3	42.6	3.3	18.7	6.7	92.6	33.1	125.7
(4) Water Demand in 2016 (JICA Estimation)								
Municipal Use	67.8	116.3	25.0	39.5	3.0	251.6	141.7	393.3
Domestic Use	84.3	107.5	0.0	70.8	19.2	281.8	39.4	321.2
Industrial Use	8.3	9.2	3.9	0.6	0.0	22.0	0.0	22.0
<i>Total</i>	160.4	233.0	28.9	110.9	22.2	555.4	181.1	736.5

Table 4.2.1 Sub-Basin and Runoff Yield in Kok, Ing and Nan Basins

Basin	Sub-Basin	Catchment Area (Km ²)	Average Annual Runoff (MCM)	Runoff Yield (mm)
<i>Kok</i>	Mae Kok (Myanmar)	2,980	2,106	725
	Mae Fang	2,160	1,296	600
	Mae Lao	3,110	570	184
	Mae Suai (Lao Tributary)	470	200	426
	Lower Mae Kok	2,160	1,108	513
Total		10,880	5,280	490
<i>Ing</i>	Upper Mae Ing	1,100	270	245
	Middle Mae Ing	2,210	670	300
	Nam Phung	1,130	280	250
	Mae Lao	1,260	315	250
	Lower Mae Ing	1,420	405	285
Total		7,120	1,940	272
<i>Upper Nan</i>	Upper Part of Nan	2,220	1,263	569
	Huai Nam Yao	640	307	480
	Nam Wa	2,180	1,612	739
	Second Part of Nan	1,570	566	361
	Nam Yao	600	538	897
	Nam Samnun	1,350	113	84
	Nam Haeng	1,050	115	110
	Third Part of Nan	3,370	1,098	326
Total		12,980	5,612	432
<i>Lower Nan</i>	Nam Pat	1,960	212	108
	Fourth Part of Nan	3,230	912	282
	Nam Phak	1,000	365	365
	Khong Tron	1,270	146	115
	Nam Khwai Noi	4,680	1,326	283
	Nam Wang Thong	2,300	783	340
	Lower Part of Nan	6,920	214	31
Sub-Total		21,360	3,958	185
Total for Nan		34,340	9,570	279

The above value is based on Thai Study.

CHAPTER 5.

WATER DEMAND PROJECTION IN THE BENEFICIAL AREAS

CHAPTER 5. WATER DEMAND PROJECTION IN THE BENEFICIAL AREAS

The Chapter 5 of the Supporting Report contains the following tables and figures to provide more information regarding the water demand projection in the beneficial areas;

5.3 Current Situation and Future Trend of Irrigated Agriculture

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5.4 Irrigation Water Demand

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Table 5.3.1(1) Harvested Area of 25 Irrigation Projects in Chao Phraya Delta (1/7)

(Unit = 10³ rai)

Year	Wet Season Paddy	Whole Year Crops				Dry Season Crops				Total		Crop Intensity	
		Sugar Cane	Fruit Trees	Fish Pond	Sub-Total	Dry Paddy	Field Crops	Vegetable	Sub-Total	Harvested		Wet	Dry
										Wet	Dry		
(1) Phollathep (Irrigation Area 95,000 rai)													
1986	96.0	0.0	0.2	0.0	0.2	59.4	0.0	0.0	59.4	96.2	59.6	101.3	62.7
1987	96.0	0.0	0.2	0.0	0.2	58.2	0.0	0.0	58.2	96.2	58.4	101.3	61.5
1988	96.0	0.0	0.2	0.3	0.5	29.2	0.2	0.0	29.4	96.5	29.9	101.6	31.5
1989	96.0	0.0	0.0	0.3	0.3	78.5	0.0	0.0	78.5	96.3	78.8	101.4	82.9
1990	95.5	0.0	0.5	0.3	0.8	54.3	0.0	0.0	54.3	96.3	55.1	101.4	58.0
(86-90)	(95.9)	(0.0)	(0.2)	(0.2)	(0.4)	(55.9)	(0.0)	(0.0)	(56.0)	(96.3)	(56.4)	(101.4)	(59.3)
1991	95.0	0.5	0.5	0.3	1.3	36.9	0.1	0.0	37.0	96.3	38.3	101.4	40.3
1992	95.2	0.5	0.5	0.3	1.3	47.0	0.3	0.0	47.3	96.5	48.6	101.6	51.2
1993	94.8	0.7	0.5	0.2	1.4	56.0	0.8	0.0	56.8	96.2	58.2	101.3	61.3
1994	93.8	1.8	0.5	0.1	2.4	46.4	1.2	0.0	47.6	96.2	50.0	101.3	52.6
1995	93.4	1.8	0.6	0.1	2.5	70.8	0.3	0.0	71.1	95.9	73.6	100.9	77.5
1996	96.3	2.1	0.7	0.1	2.9	90.0	0.1	0.0	90.1	99.2	93.0	104.4	97.9
(91-96)	(94.8)	(1.2)	(0.6)	(0.2)	(2.0)	(57.9)	(0.5)	(0.0)	(58.3)	(96.7)	(60.3)	(101.8)	(63.5)
(2) Tha Bod (Irrigation Area 161,000 rai)													
1986	181.6	0.6	0.0	0.2	0.8	84.8	0.4	0.0	85.2	182.4	86.0	113.3	53.4
1987	191.1	0.5	0.0	0.1	0.6	88.3	0.5	0.0	88.8	191.7	89.4	119.1	55.5
1988	184.6	0.1	0.0	0.9	1.0	79.7	0.4	0.0	80.1	185.6	81.1	115.3	50.4
1989	181.3	0.3	0.0	0.9	1.2	136.4	0.0	0.0	136.4	182.5	137.6	113.4	85.5
1990	181.1	0.1	0.0	0.7	0.8	85.5	0.0	0.0	85.5	181.9	86.3	113.0	53.6
(86-90)	(183.9)	(0.3)	(0.0)	(0.6)	(0.9)	(94.9)	(0.3)	(0.0)	(95.2)	(184.8)	(96.1)	(114.8)	(59.7)
1991	176.9	4.4	0.0	0.5	4.9	39.0	0.4	0.0	39.4	181.8	44.3	112.9	27.5
1992	176.9	4.3	0.0	0.3	4.6	44.1	3.2	0.0	47.3	181.5	51.9	112.7	32.2
1993	175.3	4.3	0.0	0.2	4.5	57.0	0.4	0.0	57.4	179.8	61.9	111.7	38.4
1994	167.3	6.0	2.0	0.2	8.2	32.1	0.1	0.0	32.2	175.5	40.4	109.0	25.1
1995	161.0	18.0	2.8	0.4	21.2	135.4	0.0	0.0	135.4	182.2	156.6	113.2	97.3
1996	159.2	18.7	2.9	0.4	22.0	156.7	0.0	0.0	156.7	181.2	178.7	112.5	111.0
(91-96)	(169.4)	(9.3)	(1.3)	(0.3)	(10.9)	(77.4)	(0.7)	(0.0)	(78.1)	(180.3)	(89.0)	(112.0)	(55.3)
(3) Samchook (Irrigation Area 305,000 rai)													
1986	269.2	30.8	2.1	1.8	34.7	164.3	6.7	0.4	171.4	303.9	206.1	99.6	67.6
1987	266.9	30.1	1.1	5.3	36.5	96.9	8.1	0.2	105.2	303.4	141.7	99.5	46.5
1988	255.2	27.2	1.1	13.7	42.0	155.7	2.8	0.0	158.5	297.2	200.5	97.4	65.7
1989	263.5	29.0	1.1	13.1	43.2	200.6	0.0	0.0	200.6	306.7	243.8	100.6	79.9
1990	263.7	29.3	1.1	1.8	32.2	233.4	1.7	0.1	235.2	295.9	267.4	97.0	87.7
(86-90)	(263.7)	(29.3)	(1.3)	(7.1)	(37.7)	(170.2)	(3.9)	(0.1)	(174.2)	(301.4)	(211.9)	(98.8)	(69.5)
1991	253.4	37.4	4.8	1.8	44.0	81.1	4.0	3.0	88.1	297.4	132.1	97.5	43.3
1992	248.8	42.3	8.7	2.1	53.1	153.3	6.3	0.2	159.8	301.9	212.9	99.0	69.8
1993	247.1	42.5	8.1	2.1	52.7	102.6	2.3	0.4	105.3	299.8	158.0	98.3	51.8
1994	237.2	8.4	3.1	1.6	13.1	74.0	1.3	0.1	75.4	250.3	88.5	82.1	29.0
1995	216.1	52.8	11.4	1.5	65.7	146.2	0.6	0.3	147.1	281.8	212.8	92.4	69.8
1996	282.8	52.9	12.0	1.5	66.4	224.3	0.2	0.2	224.7	349.2	291.1	114.5	95.4
(91-96)	(247.6)	(39.4)	(8.0)	(1.8)	(49.2)	(130.3)	(2.5)	(0.7)	(133.4)	(296.7)	(182.6)	(97.3)	(59.9)
(4) Pho Phaya (Irrigation Area 370,000 rai)													
1986	168.3	0.0	0.0	0.0	0.0	224.2	1.4	0.9	226.5	168.3	226.5	45.5	61.2
1987	168.3	0.0	0.0	0.0	0.0	177.5	2.8	1.3	181.6	168.3	181.6	45.5	49.1
1988	151.3	0.0	0.0	0.0	0.0	111.2	2.2	0.4	113.8	151.3	113.8	40.9	30.8
1989	158.8	0.2	0.0	0.0	0.2	213.4	3.0	0.6	217.0	159.0	217.2	43.0	58.7
1990	166.6	0.0	0.0	0.0	0.0	157.9	5.0	0.4	163.3	166.6	163.3	45.0	44.1
(86-90)	(162.7)	(0.0)	(0.0)	(0.0)	(0.0)	(176.8)	(2.9)	(0.7)	(180.4)	(162.7)	(180.5)	(44.0)	(48.8)
1991	158.7	0.0	0.0	0.0	0.0	122.7	5.2	0.3	128.2	158.7	128.2	42.9	34.6
1992	279.1	0.0	16.0	2.6	18.6	156.0	1.5	0.4	157.9	297.7	176.5	80.5	47.7
1993	279.1	0.0	11.0	2.6	13.6	155.2	1.0	0.3	156.5	292.7	170.1	79.1	46.0
1994	284.5	0.0	11.7	4.2	15.9	172.6	1.6	0.8	175.0	300.4	190.9	81.2	51.6
1995	287.0	0.0	15.0	5.9	20.9	271.6	3.0	0.5	275.1	307.9	296.0	83.2	80.0
1996	241.6	0.0	15.0	5.9	20.9	279.4	1.7	0.7	281.8	262.5	302.7	70.9	81.8
(91-96)	(255.0)	(0.0)	(11.5)	(3.5)	(15.0)	(192.9)	(2.3)	(0.5)	(195.8)	(270.0)	(210.7)	(73.0)	(57.0)

Table 5.3.1(2) Harvested Area of 25 Irrigation Projects in Chao Phraya Delta (2/7)

(Unit = 10³ rai)

Year	Wet Season Paddy	Whole Year Crops				Dry Season Crops				Total		Crop Intensity	
		Sugar Cane	Fruit Trees	Fish Pond	Sub-Total	Dry Paddy	Field Crops	Vegetable	Sub-Total	Harvested		Wet	Dry
										Wet	Dry		
(5) Don Chedi (Irrigation Area 133,000 rai)													
1986	144.5	2.9	7.2	0.1	10.2	86.0	3.5	2.5	92.0	154.7	102.2	116.3	76.8
1987	136.3	2.6	7.2	3.5	13.3	54.0	2.8	0.0	56.8	149.6	70.1	112.5	52.7
1988	129.6	5.2	0.1	3.6	8.9	81.1	1.3	0.2	82.6	138.5	91.5	104.1	68.8
1989	137.2	6.3	0.2	2.5	9.0	72.6	0.0	0.8	73.4	146.2	82.4	109.9	62.0
1990	137.1	5.6	0.4	1.7	7.7	79.8	1.5	0.6	81.9	144.8	89.6	108.9	67.4
(86-90)	(136.9)	(4.5)	(3.0)	(2.3)	(9.8)	(74.7)	(1.8)	(0.8)	(77.3)	(146.8)	(87.2)	(110.3)	(65.5)
1991	133.5	5.5	0.2	1.7	7.4	44.3	2.2	1.8	48.3	140.9	55.7	105.9	41.9
1992	129.4	10.1	0.0	1.6	11.7	14.5	1.4	0.0	15.9	141.1	27.6	106.1	20.8
1993	130.6	12.7	0.1	1.8	14.6	12.9	1.0	1.3	15.2	145.2	29.8	109.2	22.4
1994	124.2	14.0	2.2	0.3	16.5	17.1	0.5	1.5	19.1	140.7	35.6	105.8	26.8
1995	123.9	19.0	2.2	1.3	22.5	79.1	0.2	1.0	80.3	146.4	102.8	110.1	77.3
1996	122.1	15.3	18.9	2.0	36.2	99.8	0.8	1.5	102.1	158.3	138.3	119.0	104.0
(91-96)	(127.3)	(12.8)	(3.9)	(1.5)	(18.2)	(44.6)	(1.0)	(1.2)	(46.8)	(145.4)	(65.0)	(109.3)	(48.8)
(6) Boromathad (Irrigation Area 365,000 rai)													
1986	364.2	0.7	0.0	0.0	0.7	145.4	11.5	0.4	157.3	364.9	158.0	100.0	43.3
1987	354.0	0.0	0.0	0.0	0.0	126.7	13.9	0.2	140.8	354.0	140.8	97.0	38.6
1988	360.4	0.5	0.0	0.0	0.5	134.1	3.7	0.2	138.0	360.9	138.5	98.9	37.9
1989	362.7	0.0	0.0	0.0	0.0	99.9	3.8	0.0	103.7	362.7	103.7	99.4	28.4
1990	361.0	0.2	0.0	0.0	0.2	160.2	5.3	0.1	165.6	361.2	165.8	99.0	45.4
(86-90)	(360.5)	(0.3)	(0.0)	(0.0)	(0.3)	(133.3)	(7.6)	(0.2)	(141.1)	(360.7)	(141.4)	(98.8)	(38.7)
1991	352.3	14.4	0.0	0.0	14.4	17.5	10.4	0.2	28.1	366.7	42.5	100.5	11.6
1992	345.9	14.4	0.0	0.0	14.4	57.3	17.5	0.0	74.8	360.3	89.2	98.7	24.4
1993	344.9	18.5	0.0	0.9	19.4	30.3	14.0	0.5	44.8	364.3	64.2	99.8	17.6
1994	339.0	13.1	0.6	1.2	14.9	31.6	10.9	0.0	42.5	353.9	57.4	97.0	15.7
1995	341.2	8.4	0.0	0.0	8.4	143.6	6.4	0.0	150.0	349.6	158.4	95.8	43.4
1996	336.6	19.8	0.0	0.0	19.8	258.5	1.5	0.0	260.0	356.4	279.8	97.6	76.7
(91-96)	(343.3)	(14.8)	(0.1)	(0.4)	(15.2)	(89.8)	(10.1)	(0.1)	(100.0)	(358.5)	(115.3)	(98.2)	(31.6)
(7) Channasutr (Irrigation Area 475,000 rai)													
1986	431.7	14.0	0.2	0.0	14.2	140.1	6.3	0.2	146.6	445.9	160.8	93.9	33.9
1987	417.7	20.7	0.0	2.5	23.2	198.6	2.5	1.0	202.1	440.9	225.3	92.8	47.4
1988	417.4	15.2	0.0	0.0	15.2	204.6	6.0	0.0	210.6	432.6	225.8	91.1	47.5
1989	415.9	25.0	0.0	3.3	28.3	241.8	0.8	0.1	242.7	444.2	271.0	93.5	57.1
1990	397.0	20.7	0.0	3.1	23.8	184.6	3.9	0.2	188.7	420.8	212.5	88.6	44.7
(86-90)	(415.9)	(19.1)	(0.0)	(1.8)	(20.9)	(193.9)	(3.9)	(0.3)	(198.1)	(436.9)	(219.1)	(92.0)	(46.1)
1991	354.0	83.7	0.0	0.0	83.7	92.9	4.5	0.4	97.8	437.7	181.5	92.1	38.2
1992	359.3	85.9	0.0	1.7	87.6	61.0	4.7	0.4	66.1	446.9	153.7	94.1	32.4
1993	362.5	92.0	2.4	2.5	96.9	33.7	3.7	1.1	38.5	459.4	135.4	96.7	28.5
1994	347.4	77.4	3.9	1.4	82.7	16.0	3.3	1.3	20.6	430.1	103.3	90.5	21.7
1995	320.6	75.3	3.3	1.2	79.8	93.5	2.4	1.2	97.1	400.4	176.9	84.3	37.2
1996	321.1	89.5	8.4	1.2	99.1	252.0	1.0	1.0	254.0	420.2	353.1	88.5	74.3
(91-96)	(344.2)	(84.0)	(3.0)	(1.3)	(88.3)	(91.5)	(3.3)	(0.9)	(95.7)	(432.5)	(184.0)	(91.0)	(38.7)
(8) Yang Manee (Irrigation Area 210,000 rai)													
1986	185.7	0.2	0.0	0.0	0.2	11.7	3.8	0.3	15.8	185.9	16.0	88.5	7.6
1987	186.4	0.2	0.0	0.0	0.2	32.1	2.4	0.3	34.8	186.6	35.0	88.9	16.7
1988	187.0	0.2	17.6	1.1	18.9	22.5	0.8	0.4	23.7	205.9	42.6	98.0	20.3
1989	187.1	0.3	0.0	0.0	0.3	45.6	0.9	0.5	47.0	187.4	47.3	89.2	22.5
1990	179.1	0.3	0.0	0.0	0.3	27.5	0.7	0.2	28.4	179.4	28.7	85.4	13.7
(86-90)	(185.1)	(0.2)	(3.5)	(0.2)	(4.0)	(27.9)	(1.7)	(0.3)	(29.9)	(189.0)	(33.9)	(90.0)	(16.2)
1991	184.1	0.5	0.0	0.0	0.5	23.4	1.0	1.0	25.4	184.6	25.9	87.9	12.3
1992	183.5	0.2	18.1	1.5	19.8	10.5	1.3	0.7	12.5	203.3	32.3	96.8	15.4
1993	184.9	0.4	5.4	0.5	6.3	4.1	2.0	0.4	6.5	191.2	12.8	91.0	6.1
1994	185.8	0.6	2.1	0.0	2.7	2.7	2.1	0.7	5.5	188.5	8.2	89.8	3.9
1995	181.8	0.6	0.9	0.0	1.5	12.7	0.5	0.5	13.7	183.3	15.2	87.3	7.2
1996	169.2	0.4	29.1	1.8	31.3	44.3	0.3	0.1	44.7	200.5	76.0	95.5	36.2
(91-96)	(181.6)	(0.5)	(9.3)	(0.6)	(10.4)	(16.3)	(1.2)	(0.6)	(18.1)	(191.9)	(28.4)	(91.4)	(13.5)

Table 5.3.1(3) Harvested Area of 25 Irrigation Projects in Chao Phraya Delta (3/7)

(Unit = 10³ rai)

Year	Wet Season Paddy	Whole Year Crops				Dry Season Crops				Total		Crop	
		Sugar Cane	Fruit Trees	Fish Pond	Sub- Total	Dry Paddy	Field Crops	Vege- table	Sub- Total	Harvested		Intensity	
										Wet	Dry	Wet	Dry
(9) Phak Hai (Irrigation Area 185,000 rai)													
1986	193.4	0.0	0.7	2.5	3.2	11.1	0.4	0.1	11.6	196.6	14.8	106.3	8.0
1987	196.8	0.0	0.7	4.7	5.4	6.9	0.8	0.0	7.7	202.2	13.1	109.3	7.1
1988	188.9	0.3	0.7	3.1	4.1	6.6	1.5	0.2	8.3	193.0	12.4	104.3	6.7
1989	189.6	0.0	0.7	3.8	4.5	6.0	1.5	0.0	7.5	194.1	12.0	104.9	6.5
1990	193.1	0.0	1.2	3.3	4.5	9.0	0.6	0.0	9.6	197.6	14.1	106.8	7.6
(86-90)	(192.4)	(0.1)	(0.8)	(3.5)	(4.3)	(7.9)	(1.0)	(0.1)	(8.9)	(196.7)	(13.3)	(106.3)	(7.2)
1991	182.5	0.0	1.1	4.1	5.2	7.9	1.6	0.1	9.6	187.7	14.8	101.5	8.0
1992	192.2	0.0	1.1	4.1	5.2	8.1	1.0	0.0	9.1	197.4	14.3	106.7	7.7
1993	193.8	0.0	1.1	2.6	3.7	9.0	1.8	0.3	11.1	197.5	14.8	106.8	8.0
1994	91.8	0.0	1.6	2.6	4.2	11.3	2.5	0.0	13.8	96.0	18.0	51.9	9.7
1995	115.1	0.0	4.4	2.8	7.2	12.9	0.1	0.7	13.7	122.3	20.9	66.1	11.3
1996	103.3	0.0	3.7	2.9	6.6	23.5	0.6	2.2	26.3	109.9	32.9	59.4	17.8
(91-96)	(146.5)	(0.0)	(2.2)	(3.2)	(5.4)	(12.1)	(1.3)	(0.6)	(13.9)	(151.8)	(19.3)	(82.1)	(10.4)
(10) Bang Ban (Irrigation Area 137,000 rai)													
1986	134.7	0.0	0.0	0.2	0.2	2.7	0.7	0.1	3.5	134.9	3.7	98.5	2.7
1987	137.0	0.0	0.1	0.2	0.3	0.0	0.5	0.0	0.5	137.3	0.8	100.2	0.6
1988	136.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	1.1	136.0	1.1	99.3	0.8
1989	134.7	0.0	0.0	0.0	0.0	1.8	0.5	0.1	2.4	134.7	2.4	98.3	1.8
1990	133.3	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.8	133.3	0.8	97.3	0.6
(86-90)	(135.1)	(0.0)	(0.0)	(0.1)	(0.1)	(1.2)	(0.4)	(0.0)	(1.7)	(135.2)	(1.8)	(98.7)	(1.3)
1991	119.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	119.3	0.0	87.1	0.0
1992	96.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5	96.0	0.5	70.1	0.4
1993	115.0	0.0	0.1	0.0	0.1	0.5	0.2	0.0	0.7	115.1	0.8	84.0	0.6
1994	113.0	0.0	0.1	0.0	0.1	0.4	0.0	0.0	0.4	113.1	0.5	82.6	0.4
1995	100.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.6	100.0	0.6	73.0	0.4
1996	73.9	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	73.9	2.0	53.9	1.5
(91-96)	(102.9)	(0.0)	(0.0)	(0.0)	(0.0)	(0.6)	(0.1)	(0.0)	(0.7)	(102.9)	(0.7)	(75.1)	(0.5)
(11) Chao Ched Bang Yihon (Irrigation Area 406,000 rai)													
1986	125.8	0.4	5.1	14.8	20.3	259.1	8.0	1.7	268.8	146.1	289.1	36.0	71.2
1987	145.9	0.8	5.2	16.9	22.9	243.7	1.8	2.3	247.8	168.8	270.7	41.6	66.7
1988	213.7	0.9	6.5	7.5	14.9	217.5	3.8	2.7	224.0	228.6	238.9	56.3	58.8
1989	258.3	0.2	8.3	24.5	33.0	251.6	2.7	1.6	255.9	291.3	288.9	71.7	71.2
1990	264.3	0.2	9.3	18.0	27.5	264.7	1.4	0.6	266.7	291.8	294.2	71.9	72.5
(86-90)	(201.6)	(0.5)	(6.9)	(16.3)	(23.7)	(247.3)	(3.5)	(1.8)	(252.6)	(225.3)	(276.4)	(55.5)	(68.1)
1991	237.2	0.2	9.2	18.2	27.6	265.5	1.4	1.1	268.0	264.8	295.6	65.2	72.8
1992	148.8	0.2	9.4	18.2	27.8	253.7	2.1	1.4	257.2	176.6	285.0	43.5	70.2
1993	220.0	0.2	10.0	16.6	26.8	254.5	2.0	0.8	257.3	246.8	284.1	60.8	70.0
1994	205.8	0.0	9.5	16.2	25.7	249.5	2.1	0.9	252.5	231.5	278.2	57.0	68.5
1995	258.9	0.0	9.9	16.3	26.2	263.0	1.4	0.9	265.3	285.1	291.5	70.2	71.8
1996	261.6	0.0	4.8	16.4	21.2	266.8	1.5	1.5	269.8	282.8	291.0	69.7	71.7
(91-96)	(222.1)	(0.1)	(8.8)	(17.0)	(25.9)	(258.8)	(1.8)	(1.1)	(261.7)	(247.9)	(287.6)	(61.1)	(70.8)
(12) Phraya Banlue (Irrigation Area 438,000 rai)													
1986	180.0	0.0	26.3	7.9	34.2	337.8	0.4	6.3	344.5	214.2	378.7	48.9	86.5
1987	258.5	0.0	19.1	10.9	30.0	327.8	0.8	9.0	337.6	288.5	367.6	65.9	83.9
1988	297.3	0.0	21.3	13.7	35.0	314.4	1.5	8.0	323.9	332.3	358.9	75.9	81.9
1989	297.3	0.0	22.3	13.8	36.1	306.6	0.6	8.4	315.6	333.4	351.7	76.1	80.3
1990	260.1	0.0	22.1	5.8	27.9	325.1	0.0	7.6	332.7	288.0	360.6	65.8	82.3
(86-90)	(258.6)	(0.0)	(22.2)	(10.4)	(32.6)	(322.3)	(0.7)	(7.9)	(330.9)	(291.3)	(363.5)	(66.5)	(83.0)
1991	307.1	0.0	22.8	9.0	31.8	307.7	0.0	8.2	315.9	338.9	347.7	77.4	79.4
1992	310.0	0.0	22.3	8.1	30.4	309.2	0.0	8.2	317.4	340.4	347.8	77.7	79.4
1993	308.4	0.0	23.9	7.4	31.3	308.7	0.0	6.6	315.3	339.7	346.6	77.6	79.1
1994	304.2	0.0	23.7	8.1	31.8	304.2	0.7	6.7	311.6	336.0	343.4	76.7	78.4
1995	180.6	0.0	23.7	7.9	31.6	180.5	0.4	7.5	188.4	212.2	220.0	48.4	50.2
1996	278.9	0.0	21.4	7.1	28.5	290.5	1.1	9.2	300.8	307.4	329.3	70.2	75.2
(91-96)	(281.5)	(0.0)	(23.0)	(7.9)	(30.9)	(283.5)	(0.4)	(7.7)	(291.6)	(312.4)	(322.5)	(71.3)	(73.6)

Table 5.3.1(4) Harvested Area of 25 Irrigation Projects in Chao Phraya Delta (4/7)

(Unit = 10³ rai)

Year	Wet Season Paddy	Whole Year Crops				Dry Season Crops				Total		Crop Intensity	
		Sugar Cane	Fruit Trees	Fish Pond	Sub-Total	Dry Paddy	Field Crops	Vegetable	Sub-Total	Wet	Dry	Wet	Dry
(13) Phra Phimon (Irrigation Area 266,000 rai)													
1986	203.0	0.0	22.5	0.0	22.5	209.9	2.0	11.5	223.4	225.5	245.9	84.8	92.4
1987	194.0	0.0	22.5	0.2	22.7	195.5	2.0	12.2	209.7	216.7	232.4	81.5	87.4
1988	197.7	1.0	22.3	1.1	24.4	203.3	0.0	10.9	214.2	222.1	238.6	83.5	89.7
1989	194.9	0.0	22.3	1.1	23.4	195.5	0.0	9.8	205.3	218.3	228.7	82.1	86.0
1990	197.0	1.7	22.3	0.8	24.8	194.9	0.0	9.9	204.8	221.8	229.6	83.4	86.3
(86-90)	(197.3)	(0.5)	(22.4)	(0.6)	(23.6)	(199.8)	(0.8)	(10.9)	(215.5)	(220.9)	(235.0)	(83.0)	(88.4)
1991	193.2	2.3	22.3	0.8	25.4	193.2	0.0	0.0	193.2	218.6	218.6	82.2	82.2
1992	193.8	3.3	22.3	0.8	26.4	193.8	0.0	9.5	203.3	220.2	229.7	82.8	86.4
1993	193.8	2.3	22.3	0.8	25.4	193.6	0.0	11.6	205.2	219.2	230.6	82.4	86.7
1994	190.6	1.7	22.3	0.3	24.3	191.5	0.0	9.7	201.2	214.9	225.5	80.8	84.8
1995	180.6	1.7	34.9	0.3	36.9	180.5	0.0	7.8	188.3	217.5	225.2	81.8	84.7
1996	164.0	1.7	32.1	1.3	35.1	168.0	0.0	14.0	182.0	199.1	217.1	74.8	81.6
(91-96)	(186.0)	(2.2)	(26.0)	(0.7)	(28.9)	(186.8)	(0.0)	(8.8)	(195.5)	(214.9)	(224.5)	(80.8)	(84.4)
(14) Phrasi Charoen (Irrigation Area 200,000 rai)													
1986	88.5	0.0	48.5	0.2	48.7	70.8	1.2	26.4	98.4	137.2	147.1	68.6	73.6
1987	88.0	0.0	48.3	0.8	49.1	61.6	1.2	23.6	86.4	137.1	135.5	68.6	67.8
1988	66.6	0.0	49.3	1.1	50.4	36.6	0.2	18.5	55.3	117.0	105.7	58.5	52.9
1989	54.0	0.0	29.8	3.7	33.5	41.5	0.1	27.8	69.4	87.5	102.9	43.8	51.5
1990	58.8	0.0	29.7	3.7	33.4	40.6	0.1	28.5	69.2	92.2	102.6	46.1	51.3
(86-90)	(71.2)	(0.0)	(41.1)	(1.9)	(43.0)	(50.2)	(0.6)	(25.0)	(75.7)	(114.2)	(118.8)	(57.1)	(59.4)
1991	50.5	0.0	25.0	3.7	28.7	34.2	0.0	15.4	49.6	79.2	78.3	39.6	39.2
1992	40.2	0.0	31.7	3.2	34.9	49.5	0.0	19.7	69.2	75.1	104.1	37.6	52.1
1993	32.9	0.0	35.5	2.6	38.1	29.2	0.0	21.2	50.4	71.0	88.5	35.5	44.3
1994	24.5	0.0	46.5	6.9	53.4	20.8	0.0	12.7	33.5	77.9	86.9	39.0	43.5
1995	19.8	0.0	44.8	7.0	51.8	19.1	0.0	13.6	32.7	71.6	84.5	35.8	42.3
1996	18.7	0.0	30.2	4.9	35.1	19.4	0.0	12.6	32.0	53.8	67.1	26.9	33.6
(91-96)	(31.1)	(0.0)	(35.6)	(4.7)	(40.3)	(28.7)	(0.0)	(15.9)	(44.6)	(71.4)	(84.9)	(35.7)	(42.5)
(15) Maharaj (Irrigation Area 422,000 rai)													
1986	476.3	0.0	1.1	0.0	1.1	78.7	16.8	0.9	96.4	477.4	97.5	113.1	23.1
1987	476.1	0.5	1.1	0.0	1.6	12.6	21.3	1.0	34.9	477.7	36.5	113.2	8.6
1988	446.3	0.5	1.1	0.0	1.6	92.4	12.5	1.1	106.0	447.9	107.6	106.1	25.5
1989	476.3	0.0	0.0	0.0	0.0	19.2	15.0	0.3	34.5	476.3	34.5	112.9	8.2
1990	462.0	0.0	0.0	0.0	0.0	129.3	19.0	0.5	148.8	462.0	148.8	109.5	35.3
(86-90)	(467.4)	(0.2)	(0.7)	(0.0)	(0.9)	(66.4)	(16.9)	(0.8)	(84.1)	(468.3)	(85.0)	(111.0)	(20.1)
1991	476.3	1.2	0.0	0.0	1.2	7.3	32.1	0.7	40.1	477.5	41.3	113.2	9.8
1992	473.9	1.1	0.0	0.0	1.1	7.0	17.6	0.4	25.0	475.0	26.1	112.6	6.2
1993	474.1	3.1	0.0	0.0	3.1	2.0	20.3	0.8	23.1	477.2	26.2	113.1	6.2
1994	430.5	3.8	3.3	0.2	7.3	2.6	14.2	0.4	17.2	437.8	24.5	103.7	5.8
1995	425.0	2.8	3.2	0.2	6.2	27.2	14.8	0.5	42.5	431.2	48.7	102.2	11.5
1996	393.6	4.0	3.2	0.3	7.5	202.0	9.4	0.2	211.6	401.1	219.1	95.0	51.9
(91-96)	(445.6)	(2.7)	(1.6)	(0.1)	(4.4)	(41.4)	(18.1)	(0.5)	(59.9)	(450.0)	(64.3)	(106.6)	(15.2)
(16) Manorom (Irrigation Area 192,000 rai)													
1986	242.1	0.0	0.0	0.0	0.0	51.0	1.0	0.0	52.0	242.1	52.0	126.1	27.1
1987	242.1	0.0	0.0	0.0	0.0	62.5	2.0	0.0	64.5	242.1	64.5	126.1	33.6
1988	242.1	0.0	0.0	0.0	0.0	66.3	2.4	0.0	68.7	242.1	68.7	126.1	35.8
1989	259.5	0.0	0.0	0.0	0.0	26.2	0.0	0.0	26.2	259.5	26.2	135.2	13.6
1990	259.5	0.2	2.2	0.3	2.7	164.5	0.7	0.0	165.2	262.2	167.9	136.6	87.4
(86-90)	(249.1)	(0.0)	(0.4)	(0.1)	(0.5)	(74.1)	(1.2)	(0.0)	(75.3)	(249.6)	(75.9)	(130.0)	(39.5)
1991	249.4	7.3	0.0	0.0	7.3	2.3	0.7	0.1	3.1	256.7	10.4	133.7	5.4
1992	254.6	5.0	2.0	0.0	7.0	37.1	10.4	0.3	47.8	261.6	54.8	136.3	28.5
1993	254.0	5.7	2.1	0.1	7.9	24.8	5.3	0.2	30.3	261.9	38.2	136.4	19.9
1994	253.4	8.1	0.4	0.1	8.6	24.7	3.4	0.1	28.2	262.0	36.8	136.5	19.2
1995	253.2	8.0	1.9	0.1	10.0	72.3	3.4	0.0	75.7	263.2	85.7	137.1	44.6
1996	258.0	7.2	1.5	0.1	8.8	213.9	0.0	0.0	213.9	266.8	222.7	139.0	116.0
(91-96)	(253.8)	(6.9)	(1.3)	(0.1)	(8.3)	(62.5)	(3.9)	(0.1)	(66.5)	(262.0)	(74.8)	(136.5)	(38.9)

Table 5.3.1(5) Harvested Area of 25 Irrigation Projects in Chao Phraya Delta (5/7)

(Unit = 10³ rai)

Year	Wet Season Paddy	Whole Year Crops				Dry Season Crops				Total		Crop Intensity	
		Sugar Cane	Fruit Trees	Fish Pond	Sub-Total	Dry Paddy	Field Crops	Vegetable	Sub-Total	Harvested	Wet	Dry	
										Wet		Dry	
(17) Chong Kae (Irrigation Area 238,000 rai)													
1986	238.3	0.0	0.0	0.0	0.0	39.5	25.5	0.8	65.8	238.3	65.8	100.1	27.6
1987	238.4	0.0	0.0	0.0	0.0	35.3	4.9	1.2	41.4	238.4	41.4	100.2	17.4
1988	238.4	0.0	0.0	0.0	0.0	30.7	5.7	1.5	37.9	238.4	37.9	100.2	15.9
1989	238.7	0.0	0.0	0.0	0.0	28.9	0.0	0.0	28.9	238.7	28.9	100.3	12.1
1990	226.9	0.0	0.0	0.0	0.0	83.0	4.0	0.4	87.4	226.9	87.4	95.3	36.7
(86-90)	(236.1)	(0.0)	(0.0)	(0.0)	(0.0)	(43.5)	(8.0)	(0.8)	(52.3)	(236.1)	(52.3)	(99.2)	(22.0)
1991	237.6	0.2	0.0	0.0	0.2	0.0	3.7	0.5	4.2	237.8	4.4	99.9	1.8
1992	237.9	0.4	0.0	0.0	0.4	0.3	7.0	0.9	8.2	238.3	8.6	100.1	3.6
1993	236.9	0.8	0.0	0.4	1.2	0.1	5.2	1.8	7.1	238.1	8.3	100.0	3.5
1994	237.0	1.2	0.7	0.4	2.3	0.0	1.2	0.2	1.4	239.3	3.7	100.5	1.6
1995	236.9	0.6	1.5	0.4	2.5	40.0	1.1	0.0	41.1	239.4	43.6	100.6	18.3
1996	233.9	0.6	1.6	0.0	2.2	147.3	0.0	0.0	147.3	236.1	149.5	99.2	62.8
(91-96)	(236.7)	(0.6)	(0.6)	(0.2)	(1.5)	(31.3)	(3.0)	(0.6)	(34.9)	(238.2)	(36.4)	(100.1)	(15.3)
(18) Koke Krathiem (Irrigation Area 196,000 rai)													
1986	205.5	0.0	0.0	0.0	0.0	30.9	3.3	0.4	34.6	205.5	34.6	104.8	17.7
1987	205.0	0.0	0.0	0.0	0.0	18.7	5.4	2.2	26.3	205.0	26.3	104.6	13.4
1988	205.5	0.0	0.0	0.0	0.0	33.4	3.2	0.4	37.0	205.5	37.0	104.8	18.9
1989	205.5	0.0	0.0	0.0	0.0	28.0	0.8	0.1	28.9	205.5	28.9	104.8	14.7
1990	168.0	0.0	0.0	0.0	0.0	38.9	3.3	0.6	42.8	168.0	42.8	85.7	21.8
(86-90)	(197.9)	(0.0)	(0.0)	(0.0)	(0.0)	(30.0)	(3.2)	(0.7)	(33.9)	(197.9)	(33.9)	(101.0)	(17.3)
1991	205.3	0.0	0.0	0.0	0.0	9.1	7.1	0.8	17.0	205.3	17.0	104.7	8.7
1992	205.4	0.0	0.0	0.0	0.0	11.5	12.3	0.7	24.5	205.4	24.5	104.8	12.5
1993	205.5	0.1	0.0	0.0	0.1	0.2	12.5	1.3	14.0	205.6	14.1	104.9	7.2
1994	205.5	0.2	0.0	0.0	0.2	0.1	3.2	0.6	3.9	205.7	4.1	104.9	2.1
1995	205.5	0.0	0.2	0.0	0.2	41.1	5.2	1.3	47.6	205.7	47.8	104.9	24.4
1996	205.5	0.0	0.2	0.0	0.2	88.0	1.5	0.4	89.9	205.7	90.1	104.9	46.0
(91-96)	(205.5)	(0.1)	(0.1)	(0.0)	(0.1)	(25.0)	(7.0)	(0.9)	(32.8)	(205.6)	(32.9)	(104.9)	(16.8)
(19) Reang Rang (Irrigation Area 163,000 rai)													
1986	180.2	0.0	0.0	0.0	0.0	0.0	5.2	0.0	5.2	180.2	5.2	110.6	3.2
1987	176.0	0.0	0.0	0.0	0.0	0.0	22.3	0.0	22.3	176.0	22.3	108.0	13.7
1988	176.1	0.0	0.0	0.0	0.0	15.1	0.2	0.0	15.3	176.1	15.3	108.0	9.4
1989	172.1	0.0	0.0	0.0	0.0	11.5	6.8	0.0	18.3	172.1	18.3	105.6	11.2
1990	151.4	0.0	0.0	0.0	0.0	16.0	7.7	0.6	24.3	151.4	24.3	92.9	14.9
(86-90)	(171.2)	(0.0)	(0.0)	(0.0)	(0.0)	(8.5)	(8.4)	(0.1)	(17.1)	(171.2)	(17.1)	(105.0)	(10.5)
1991	172.4	0.0	0.0	0.0	0.0	0.8	9.0	1.6	11.4	172.4	11.4	105.8	7.0
1992	170.4	0.0	0.0	0.0	0.0	7.1	8.6	1.0	16.7	170.4	16.7	104.5	10.2
1993	176.0	0.0	0.0	0.0	0.0	0.2	3.0	0.5	3.7	176.0	3.7	108.0	2.3
1994	163.5	0.0	0.0	0.0	0.0	0.1	6.6	0.6	7.3	163.5	7.3	100.3	4.5
1995	155.3	2.5	5.5	0.9	8.9	4.6	6.9	0.9	12.4	164.2	21.3	100.7	13.1
1996	142.3	2.5	5.5	0.9	8.9	32.7	7.1	0.8	40.6	151.2	49.5	92.8	30.4
(91-96)	(163.3)	(0.8)	(1.8)	(0.3)	(3.0)	(7.6)	(6.9)	(0.9)	(15.4)	(166.3)	(18.3)	(102.0)	(11.2)
(20) Pasak Thai (Irrigation Area 226,000 rai)													
1986	209.0	0.0	5.6	0.4	6.0	38.9	6.7	0.0	45.6	215.0	51.6	95.1	22.8
1987	232.0	0.0	9.4	0.5	9.9	30.6	2.2	0.0	32.8	241.9	42.7	107.0	18.9
1988	137.5	0.0	7.3	0.0	7.3	39.5	2.5	0.0	42.0	144.8	49.3	64.1	21.8
1989	215.6	0.0	5.3	0.7	6.0	23.9	1.3	0.0	25.2	221.6	31.2	98.1	13.8
1990	209.0	0.0	17.2	1.9	19.1	43.9	1.1	0.0	45.0	228.1	64.1	100.9	28.4
(86-90)	(200.6)	(0.0)	(9.0)	(0.7)	(9.7)	(35.4)	(2.8)	(0.0)	(38.1)	(210.3)	(47.8)	(93.0)	(21.1)
1991	214.7	0.0	17.4	1.9	19.3	19.5	1.1	0.0	20.6	234.0	39.9	103.5	17.7
1992	200.5	0.0	17.4	1.9	19.3	36.2	1.2	0.0	37.4	219.8	56.7	97.3	25.1
1993	212.9	0.0	18.3	1.9	20.2	0.9	1.5	0.0	2.4	233.1	22.6	103.1	10.0
1994	202.3	0.0	18.3	1.9	20.2	0.0	5.4	1.1	6.5	222.5	26.7	98.5	11.8
1995	202.6	0.0	28.9	0.9	29.8	19.2	5.1	0.3	24.6	232.4	54.4	102.8	24.1
1996	192.2	0.0	28.6	0.9	29.5	57.5	0.4	0.3	58.2	221.7	87.7	98.1	38.8
(91-96)	(204.2)	(0.0)	(21.5)	(1.6)	(23.1)	(22.2)	(2.5)	(0.3)	(25.0)	(227.3)	(48.0)	(100.6)	(21.2)

Table 5.3.1(6) Harvested Area of 25 Irrigation Projects in Chao Phraya Delta (6/7)

(Unit = 10³ rai)

Year	Wet Season Paddy	Whole Year Crops				Dry Season Crops				Total		Crop Intensity	
		Sugar Cane	Fruit Trees	Fish Pond	Sub-Total	Dry Paddy	Field Crops	Vegetable	Sub-Total	Harvested Wet	Dry	Wet	Dry
(21) Nakhon Luang (Irrigation Area 220,000 rai)													
1986	259.0	0.0	0.0	0.0	0.0	2.3	4.0	0.0	6.3	259.0	6.3	117.7	2.9
1987	264.9	0.0	1.5	0.2	1.7	0.0	0.0	0.0	0.0	266.6	1.7	121.2	0.8
1988	167.3	0.0	0.0	0.0	0.0	0.8	0.2	0.0	1.0	167.3	1.0	76.0	0.5
1989	254.0	0.0	2.7	0.7	3.4	1.3	4.4	0.0	5.7	257.4	9.1	117.0	4.1
1990	224.9	0.0	2.0	1.5	3.5	3.6	1.7	0.0	5.3	228.4	8.8	103.8	4.0
(86-90)	(234.0)	(0.0)	(1.2)	(0.5)	(1.7)	(1.6)	(2.1)	(0.0)	(3.7)	(235.7)	(5.4)	(107.2)	(2.4)
1991	176.2	0.0	0.0	0.0	0.0	0.2	0.3	0.0	0.5	176.2	0.5	80.1	0.2
1992	241.1	0.0	0.0	0.0	0.0	2.0	0.1	0.0	2.1	241.1	2.1	109.6	1.0
1993	239.4	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.5	239.4	0.5	108.8	0.2
1994	216.4	0.0	0.4	1.2	1.6	0.1	0.4	0.1	0.6	218.0	2.2	99.1	1.0
1995	211.1	0.1	2.2	1.2	3.5	0.6	0.2	0.0	0.8	214.6	4.3	97.5	2.0
1996	126.7	0.1	2.2	1.2	3.5	15.4	1.0	0.0	16.4	130.2	19.9	59.2	9.0
(91-96)	(201.8)	(0.0)	(0.8)	(0.6)	(1.4)	(3.1)	(0.4)	(0.0)	(3.5)	(203.3)	(4.9)	(92.4)	(2.2)
(22) Rangsit Nua (Irrigation Area 454,000 rai)													
1986	285.5	0.0	99.7	4.6	104.3	126.0	0.4	0.3	126.7	389.8	231.0	85.9	50.9
1987	272.6	0.0	99.7	4.6	104.3	133.4	0.0	0.1	133.5	376.9	237.8	83.0	52.4
1988	258.6	0.0	104.9	4.2	109.1	85.9	0.2	0.2	86.3	367.7	195.4	81.0	43.0
1989	249.2	0.0	110.6	4.7	115.3	126.9	0.0	0.1	127.0	364.5	242.3	80.3	53.4
1990	238.4	0.0	119.7	4.7	124.4	121.0	0.2	0.1	121.3	362.8	245.7	79.9	54.1
(86-90)	(260.9)	(0.0)	(106.9)	(4.6)	(111.5)	(118.6)	(0.2)	(0.2)	(119.0)	(372.3)	(230.4)	(82.0)	(50.8)
1991	212.6	0.0	116.9	3.9	120.8	64.4	0.0	0.1	64.5	333.4	185.3	73.4	40.8
1992	185.0	0.0	132.1	3.8	135.9	81.9	0.0	0.0	81.9	320.9	217.8	70.7	48.0
1993	174.0	0.0	135.8	4.2	140.0	68.2	0.0	0.0	68.2	314.0	208.2	69.2	45.9
1994	133.7	0.0	140.4	3.5	143.9	33.2	0.0	0.2	33.4	277.6	177.3	61.1	39.1
1995	136.6	0.0	140.4	3.5	143.9	66.8	0.0	0.2	67.0	280.5	210.9	61.8	46.5
1996	87.5	0.0	151.5	2.9	154.4	85.9	0.0	0.2	86.1	241.9	240.5	53.3	53.0
(91-96)	(154.9)	(0.0)	(136.2)	(3.6)	(139.8)	(66.7)	(0.0)	(0.1)	(66.9)	(294.7)	(206.7)	(64.9)	(45.5)
(23) Rangsit Tai (Irrigation Area 450,000 rai)													
1986	479.4	0.0	13.7	0.2	13.9	172.2	2.2	1.2	175.6	493.3	189.5	109.6	42.1
1987	444.2	0.0	13.7	0.2	13.9	130.2	2.6	0.7	133.5	458.1	147.4	101.8	32.8
1988	432.5	0.0	16.8	1.2	18.0	172.8	0.0	0.0	172.8	450.5	190.8	100.1	42.4
1989	425.8	0.0	29.3	9.9	39.2	256.5	2.5	1.0	260.0	465.0	299.2	103.3	66.5
1990	417.6	0.0	29.0	9.7	38.7	179.2	0.0	0.0	179.2	456.3	217.9	101.4	48.4
(86-90)	(439.9)	(0.0)	(20.5)	(4.2)	(24.7)	(182.2)	(1.5)	(0.6)	(184.2)	(464.6)	(209.0)	(103.3)	(46.4)
1991	417.6	0.0	26.6	7.9	34.5	82.1	0.2	0.8	83.1	452.1	117.6	100.5	26.1
1992	429.8	0.0	26.7	7.9	34.6	221.0	0.4	0.6	222.0	464.4	256.6	103.2	57.0
1993	429.9	0.0	32.0	12.2	44.2	242.0	0.3	0.4	242.7	474.1	286.9	105.4	63.8
1994	414.0	0.0	32.0	8.5	40.5	170.2	0.3	0.4	170.9	454.5	211.4	101.0	47.0
1995	402.0	0.0	19.4	7.4	26.8	184.2	0.5	0.0	184.7	428.8	211.5	95.3	47.0
1996	363.0	0.0	19.4	12.0	31.4	256.6	0.0	0.0	256.6	394.4	288.0	87.6	64.0
(91-96)	(409.4)	(0.0)	(26.0)	(9.3)	(35.3)	(192.7)	(0.3)	(0.4)	(193.3)	(444.7)	(228.7)	(148.2)	(50.8)
(24) Khlong Dan (Irrigation Area 525,000 rai)													
1986	268.4	0.0	30.9	77.6	108.5	95.7	0.1	0.6	96.4	376.9	204.9	71.8	39.0
1987	255.4	0.0	3.6	82.3	85.9	92.8	0.0	0.8	93.6	341.3	179.5	65.0	34.2
1988	234.4	0.0	3.6	98.7	102.3	70.1	0.0	0.9	71.0	336.7	173.3	64.1	33.0
1989	252.9	0.0	1.6	76.2	77.8	78.9	0.0	1.0	79.9	330.7	157.7	63.0	30.0
1990	244.7	0.0	0.0	0.0	0.0	68.4	0.0	0.1	68.5	244.7	68.5	46.6	13.0
(86-90)	(251.2)	(0.0)	(7.9)	(67.0)	(74.9)	(81.2)	(0.0)	(0.7)	(81.9)	(326.1)	(156.8)	(62.1)	(29.9)
1991	200.9	0.0	0.0	86.1	86.1	79.7	0.0	0.0	79.7	287.0	165.8	54.7	31.6
1992	166.1	0.0	0.0	21.1	21.1	69.4	0.0	0.0	69.4	187.2	90.5	35.7	17.2
1993	152.7	0.0	0.0	57.5	57.5	62.1	0.0	0.0	62.1	210.2	119.6	40.0	22.8
1994	137.1	0.0	0.0	56.3	56.3	49.9	0.0	0.0	49.9	193.4	106.2	36.8	20.2
1995	133.6	0.0	0.0	20.0	20.0	76.2	0.0	0.0	76.2	153.6	96.2	29.3	18.3
1996	125.3	0.0	0.0	61.9	61.9	80.3	0.0	0.0	80.3	187.2	142.2	35.7	27.1
(91-96)	(152.6)	(0.0)	(0.0)	(50.5)	(50.5)	(69.6)	(0.0)	(0.0)	(69.6)	(203.1)	(120.1)	(38.7)	(22.9)

Table 5.3.1(7) Harvested Area of 25 Irrigation Projects in Chao Phraya Delta (7/7)

(Unit = 10³ rai)

Year	Wet Season Paddy	Whole Year Crops				Dry Season Crops				Total		Crop	
		Sugar Cane	Fruit Trees	Fish Pond	Sub- Total	Dry Paddy	Field Crops	Vege- table	Sub- Total	Harvested		Intensity	
										Wet	Dry	Wet	Dry
(25) Phra Ong Chaiyaa Nuchit (Irrigation Area 510,000 rai)													
1986	442.6	0.0	0.0	65.9	65.9	316.6	0.0	0.0	316.6	508.5	382.5	99.7	75.0
1987	440.9	0.0	0.0	65.9	65.9	288.9	0.0	0.0	288.9	506.8	354.8	99.4	69.6
1988	421.0	0.0	0.0	65.9	65.9	293.8	0.0	0.0	293.8	486.9	359.7	95.5	70.5
1989	408.7	0.0	0.0	75.0	75.0	276.5	0.0	0.0	276.5	483.7	351.5	94.8	68.9
1990	373.5	0.0	0.0	75.0	75.0	273.9	0.0	0.0	273.9	448.5	348.9	87.9	68.4
(86-90)	(417.3)	(0.0)	(0.0)	(69.5)	(69.5)	(289.9)	(0.0)	(0.0)	(289.9)	(486.9)	(359.5)	(95.5)	(70.5)
1991	300.1	0.0	0.0	0.0	0.0	244.3	0.0	0.0	244.3	300.1	244.3	58.8	47.9
1992	292.5	0.0	0.0	0.0	0.0	234.4	0.0	0.0	234.4	292.5	234.4	57.4	46.0
1993	283.9	0.0	0.0	42.7	42.7	223.0	0.0	0.0	223.0	326.6	265.7	64.0	52.1
1994	267.9	0.0	0.0	38.2	38.2	214.5	0.0	0.0	214.5	306.1	252.7	60.0	49.5
1995	250.9	0.0	0.0	42.6	42.6	193.9	0.0	0.0	193.9	293.5	236.5	57.5	46.4
1996	231.7	0.0	0.0	41.6	41.6	183.2	0.0	0.0	183.2	273.3	224.8	53.6	44.1
(91-96)	(271.2)	(0.0)	(0.0)	(27.5)	(27.5)	(215.6)	(0.0)	(0.0)	(215.6)	(298.7)	(243.1)	(58.6)	(47.7)

Table 5.3.2 Phitsanuloke Irrigation Project , Stage I : Present Features

No.	Sub - Project	Year		System Area (1,000 rai)		On - Farm Development					Dry Season Cropping Intensity 1991 - 1996 (%)			
						Land Consolidation (%)		Ditch and Dike (%)						Total (%)
		Const.	Funct.	Project	Irrigation	Inten.	Exten.	Indirect	Direct					
(1)	Naresuan Dam	1970	1985	105.4	94.7	-	23	-	77	100	25	2	27	
(2)	Phlaichumphon	1970	1985	275.0	218.0	24	69	-	7	100	51	8	59	
(3)	Dong Setthi	1970	1985	240.0	186.0	1	76	-	23	100	57	1	58	
(4)	Tha Bua	1970	1985	219.8	168.4	-	100	-	-	100	85	1	86	
Total (4 Sub - Projects)				840.2	667.1	6	67	-	27	100	57	4	61	

Source : O/M Section , RID. Region 3

Table 5.3.3 Crop Harvested Area and Intensity in the Phitsanuloke Irrigation Projects Stage I

(Unit 10³ Rai)

Year	Wet	Perennial				Dry Season Crop				Total		Cropping Intensity (%)	
	Season	Sugar cane	Fruit	Fish Pond	Sub -total	Dry Paddy	Field crops	Vegetable	Sub -total	Wet	Dry	Wet	Dry
	Paddy (1)				(2)				(3)	(1)+(2)	(2)+(3)		
(1) Naresuan Dam (Irrigable Area 94.7)													
1986 - 1990		(not available)											
1991	90.6	-	-	0.6	0.6	15.2	1.7	-	16.9	91.2	17.5	96	18
1992	91.6	-	-	0.3	0.3	1.9	3.5	-	5.4	91.9	5.7	97	6
1993	91.0	-	-	-	0.0	0.8	3.3	-	4.1	91.0	4.1	96	4
1994	92.2	-	-	-	0.0	1.7	2.5	-	4.2	92.2	4.2	97	4
1995	94.0	-	-	-	0.0	60.6	-	-	60.6	94.0	60.6	99	64
1996	60.7	-	-	-	0.0	59.2	-	-	59.2	60.7	59.2	64	63
Mean (1991-1996)	86.7	-	-	0.2	0.2	23.2	1.8	-	25.0	86.8	25.2	92	27
(2) Phlaichumpoen (Irrigable Area 218.0)													
		(not available)											
1991	214.1	-	-	0.4	0.4	162.8	7.3	0.01	170.1	214.5	170.5	98	78
1992	206.7	-	-	-	0.0	44.0	6.7	0.02	50.6	206.7	50.6	95	23
1993	196.8	-	-	-	0.0	17.3	35.7	0.22	53.2	196.8	53.2	90	24
1994	209.1	-	-	-	0.0	79.4	49.1	0.15	128.6	209.1	128.6	96	59
1995	206.1	-	-	-	0.0	189.4	0.1	-	189.5	206.1	189.5	95	87
1996	206.3	-	-	-	0.0	174.8	-	-	174.8	206.3	174.8	95	80
Mean (1991-1996)	206.5	-	-	0.1	0.1	111.3	16.5	0.1	127.8	206.6	127.9	95	59
(3) Dong Setthi (Irrigable Area 186.0)													
		(not available)											
1991	171.7	-	-	-	0.0	117.8	4.0	-	121.8	171.7	121.8	92	65
1992	185.0	-	-	-	0.0	40.7	1.5	-	42.2	185.0	42.2	99	23
1993	184.0	-	-	-	0.0	41.1	2.5	0.2	43.8	184.0	43.8	99	24
1994	183.7	-	-	-	0.0	100.3	0.8	-	101.1	183.7	101.1	99	54
1995	184.5	-	-	-	0.0	161.1	-	-	161.1	184.5	161.1	99	87
1996	185.0	-	-	-	0.0	173.4	-	-	173.4	185.0	173.4	99	93
Mean (1991-1996)	182.3	-	-	-	0.0	105.7	1.5	0.0	107.2	182.3	107.2	98	58
(4) Tha Bua (Irrigable Area 168.4)													
		(not available)											
1991	168.0	-	-	-	0.0	134.1	-	-	134.1	168.0	134.1	100	80
1992	165.2	-	-	-	0.0	165.2	0.7	-	165.9	165.2	165.9	98	99
1993	166.1	-	-	-	0.0	166.1	1.5	-	167.6	166.1	167.6	99	100
1994	138.9	-	-	-	0.0	138.9	1.4	-	140.3	138.9	140.3	82	83
1995	97.4	-	-	-	0.0	97.4	-	0.7	98.1	97.4	98.1	58	58
1996	159.1	-	-	-	0.0	159.1	-	-	159.1	159.1	159.1	94	94
Mean (1991-1996)	149.1	-	-	-	0.0	143.5	0.6	0.1	144.2	149.1	144.2	89	86
Total	624.6	-	-	0.3	0.3	383.7	20.4	0.2	404.2	624.8	404.6	94	61

Figure 5.3.1(1) Wet Season and Dry Season Cropping Intensity in the Chao Phraya Delta (1/7)

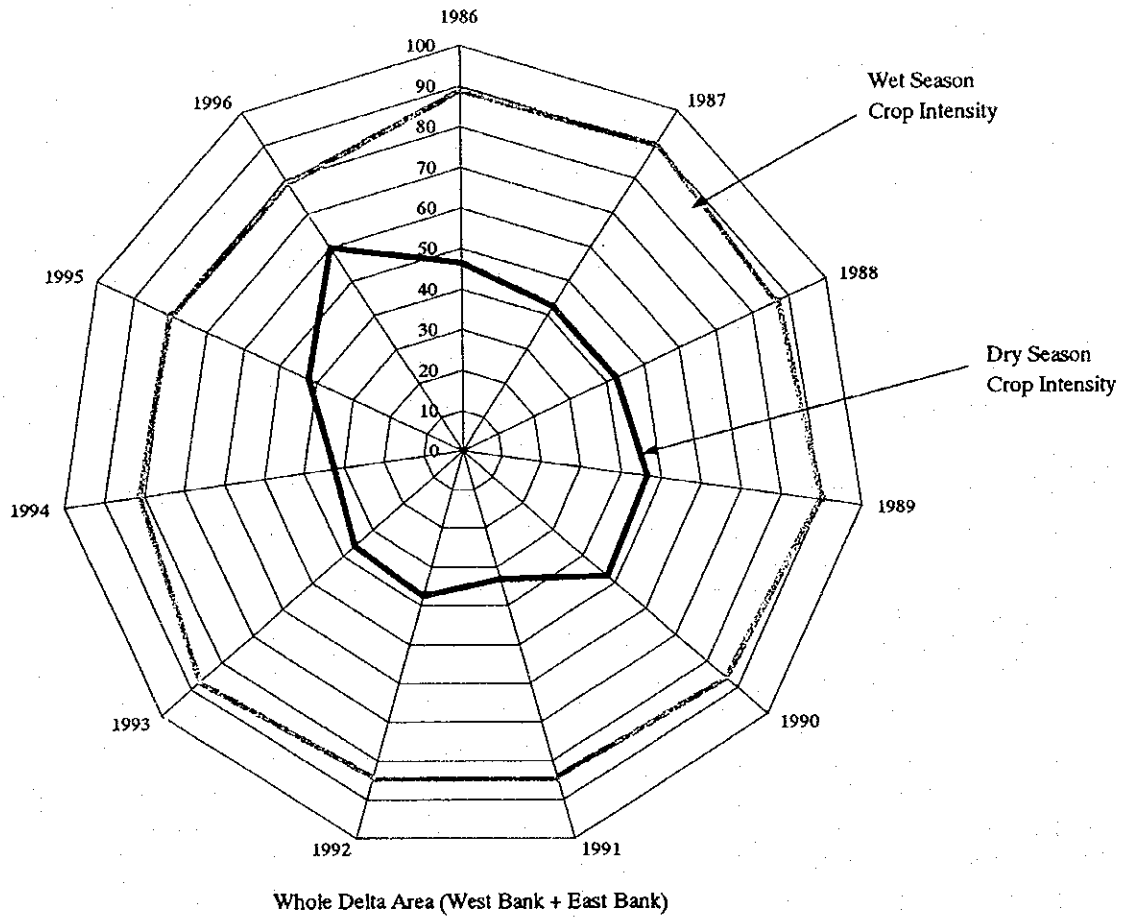
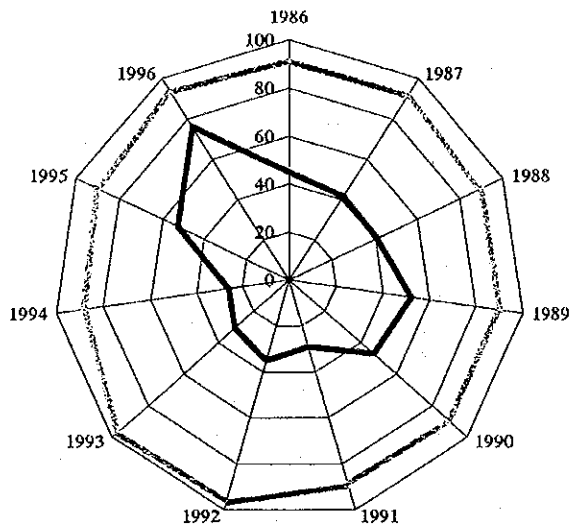
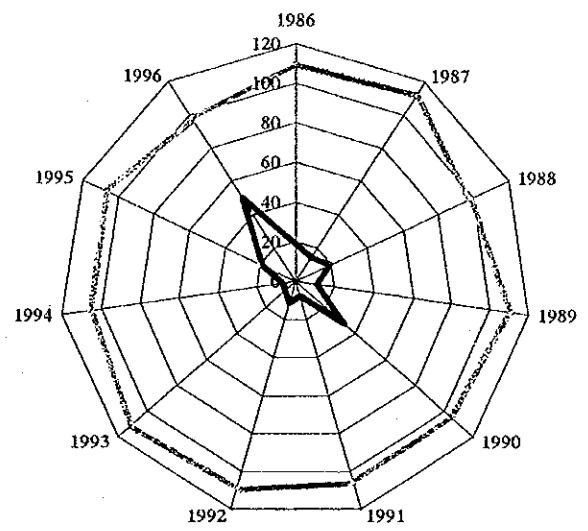


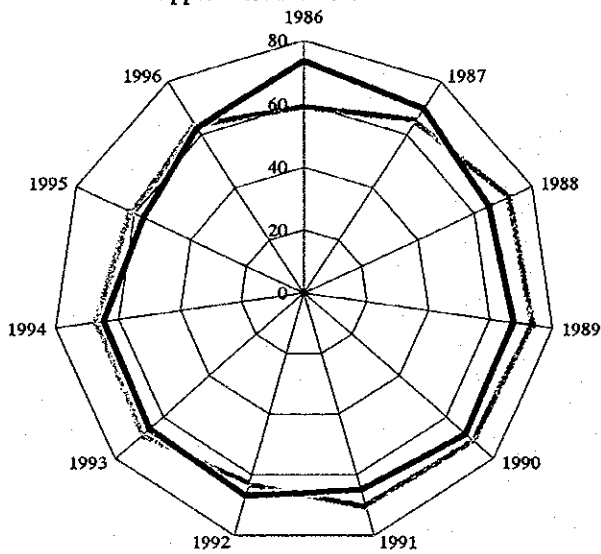
Figure 5.3.1(2) Wet Season and Dry Season Cropping Intensity in the Chao Phraya Delta (2/7)



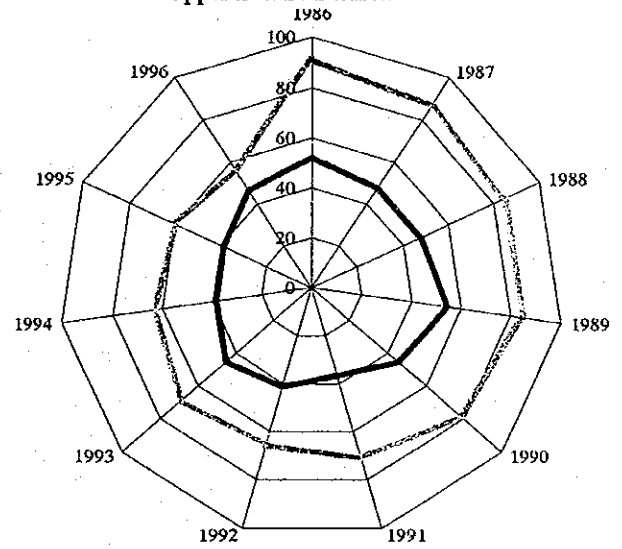
Upper West Bank Area



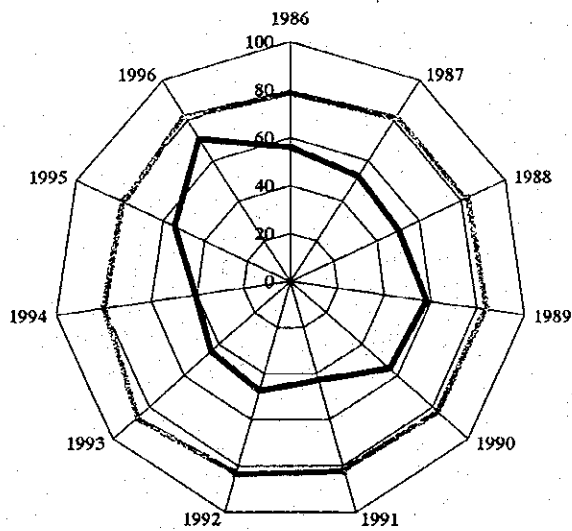
Upper East Bank Area



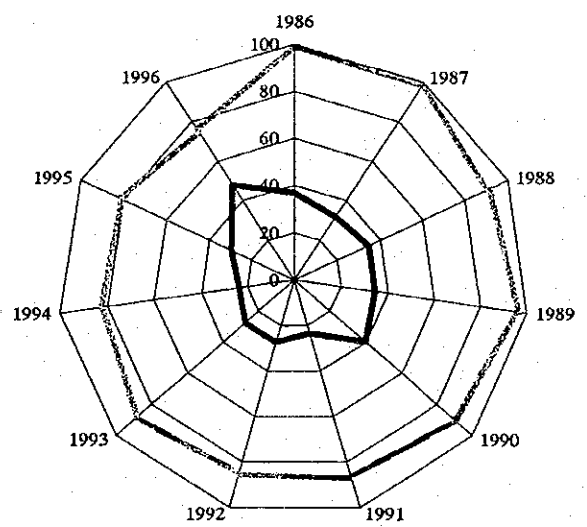
Lower West Bank Area



Lower East Bank Area

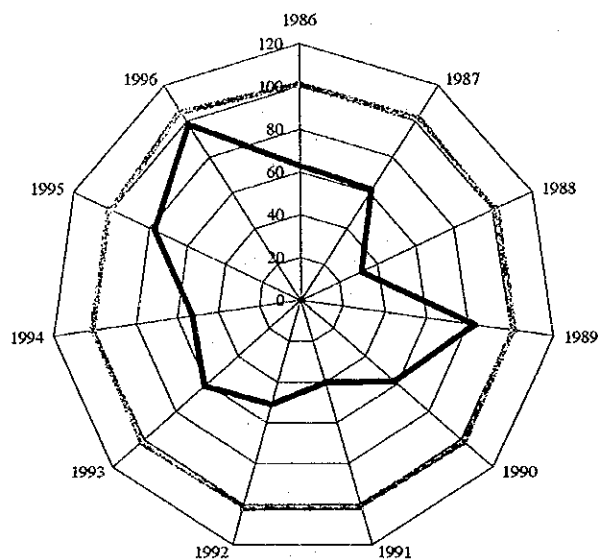


Whole West Bank Area

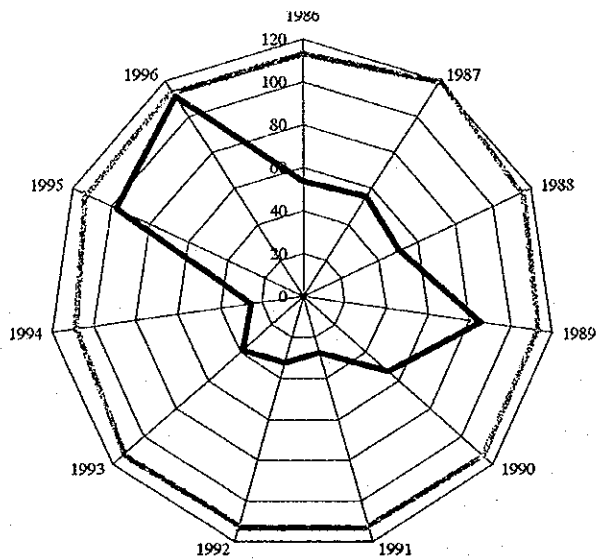


Whole East Bank Area

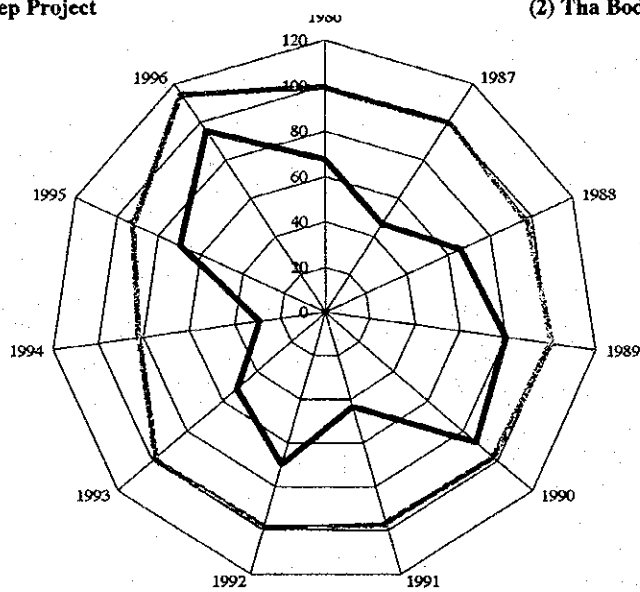
Figure 5.3.1(3) Wet Season and Dry Season Cropping Intensity in the Chao Phraya Delta (3/7)



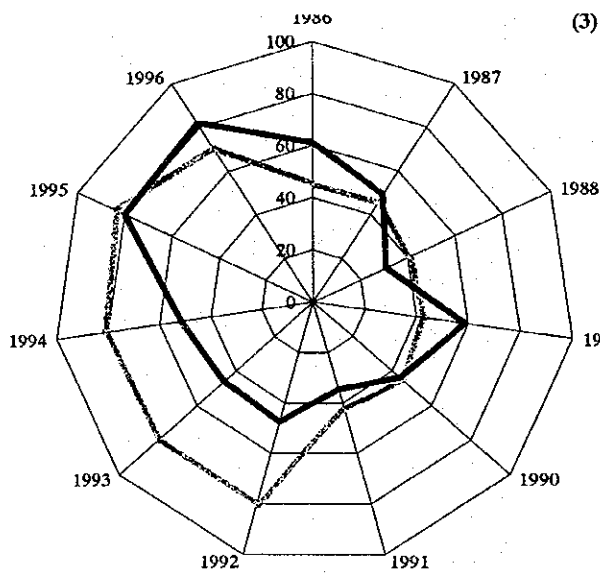
(1) Phollathep Project



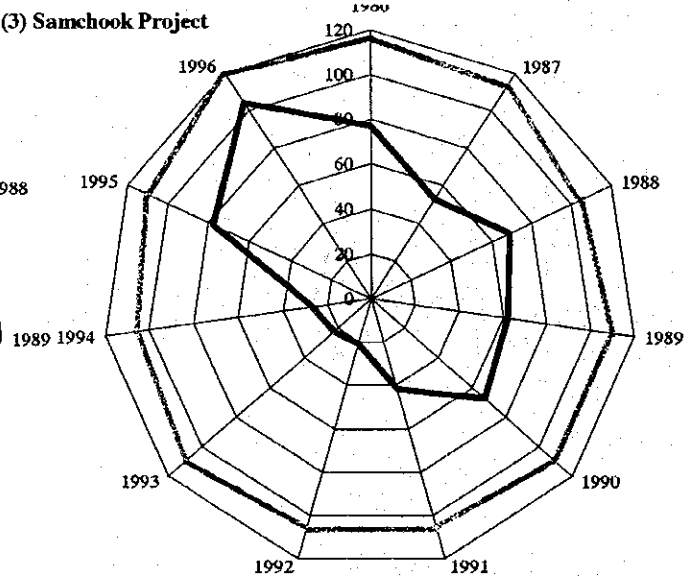
(2) Tha Bod Project



(3) Samchook Project

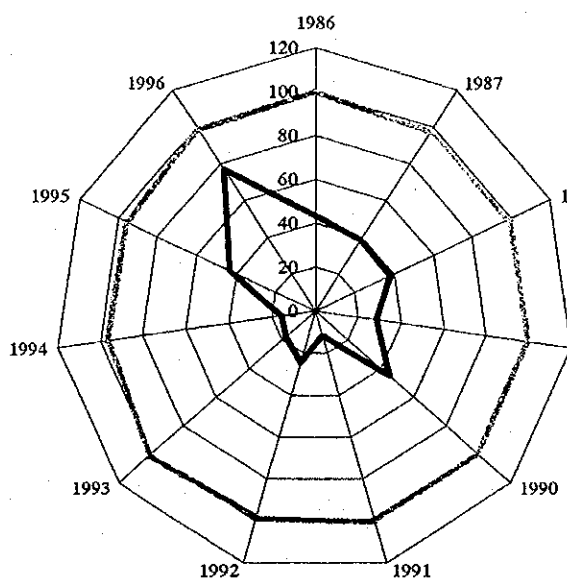


(4) Pho Phraya Project

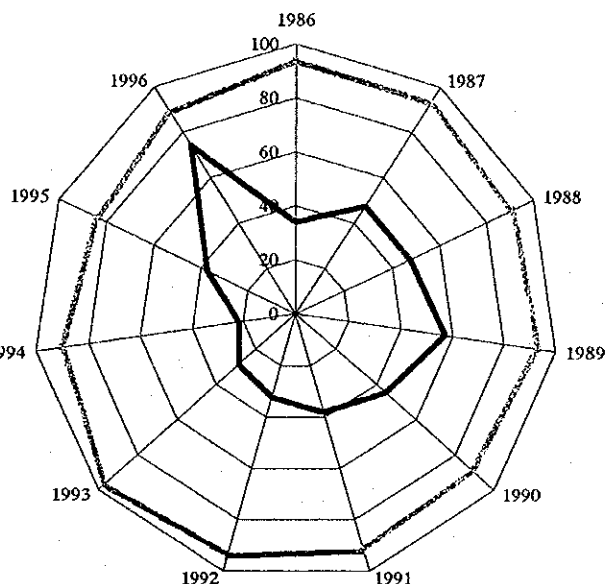


(5) Don Chedi Project

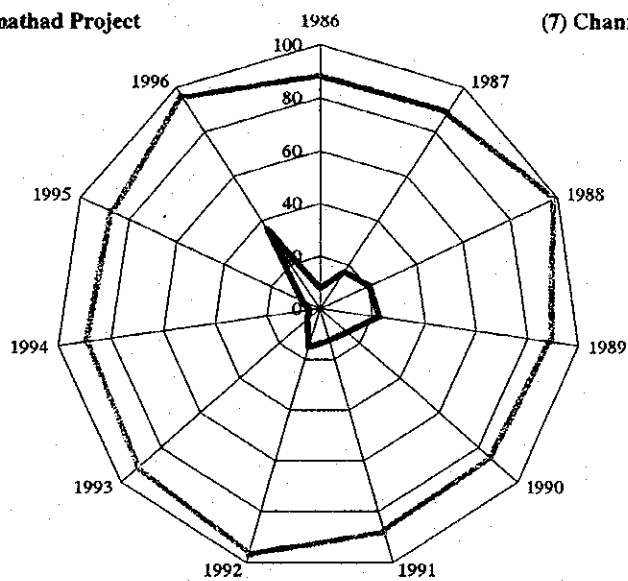
Figure 5.3.1(4) Wet Season and Dry Season Cropping Intensity in the Chao Phraya Delta (4/7)



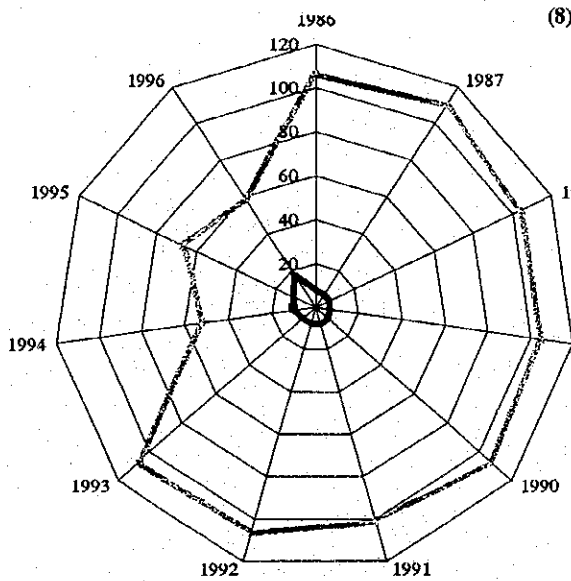
(6) Boromathad Project



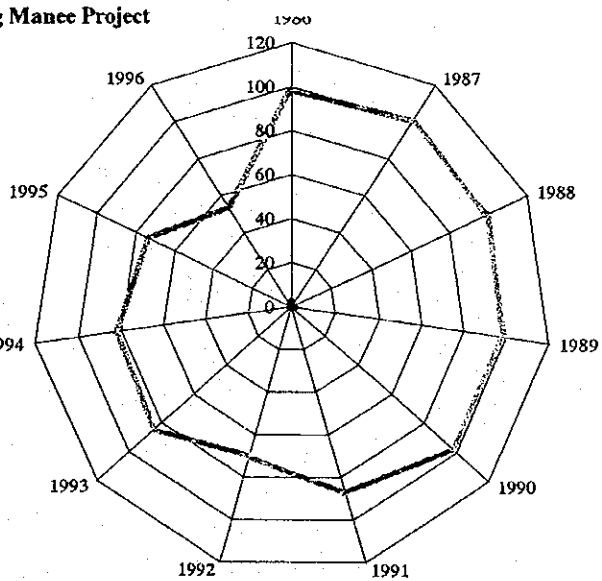
(7) Channasutr Project



(8) Yang Mance Project



(9) Phak Hai Project



(10) Bang Ban Project

Figure 5.3.1(5) Wet Season and Dry Season Cropping Intensity in the Chao Phraya Delta (5/7)

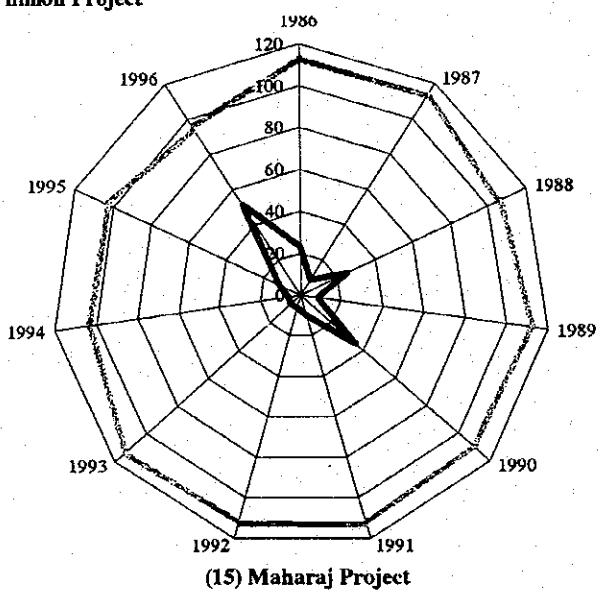
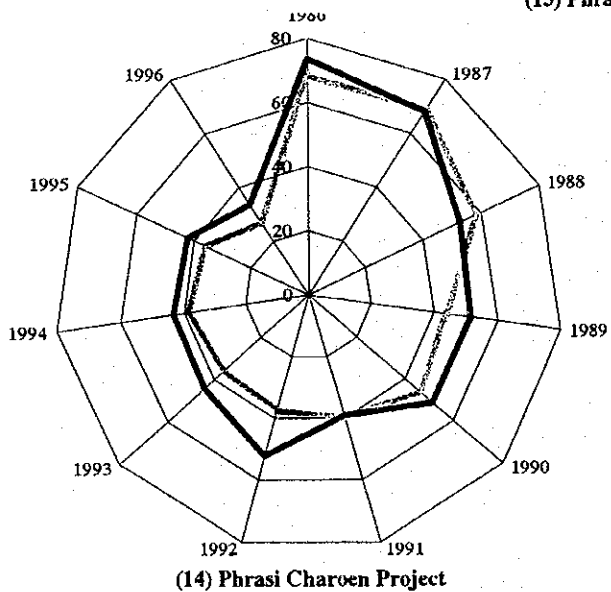
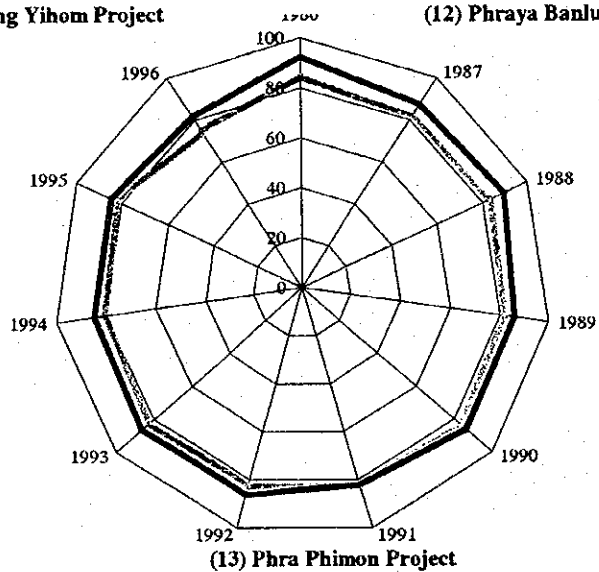
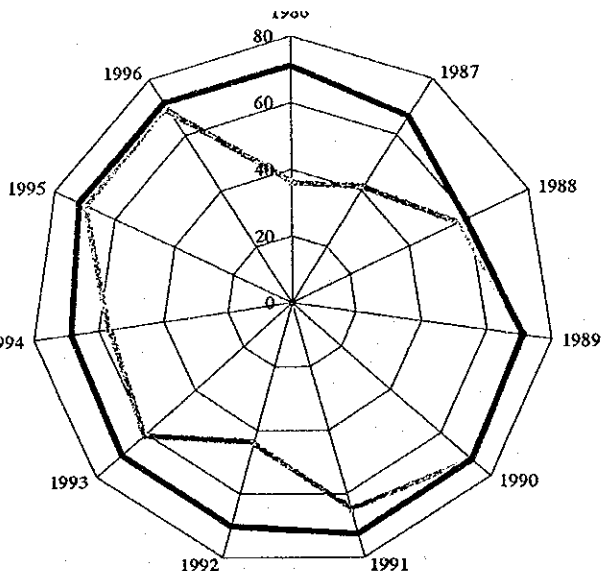
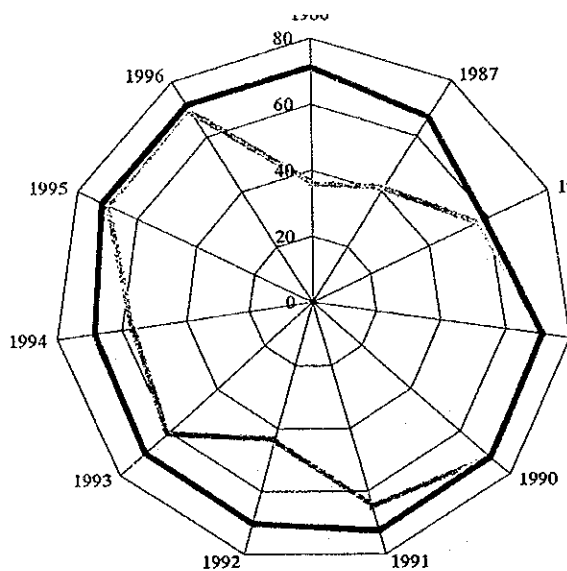
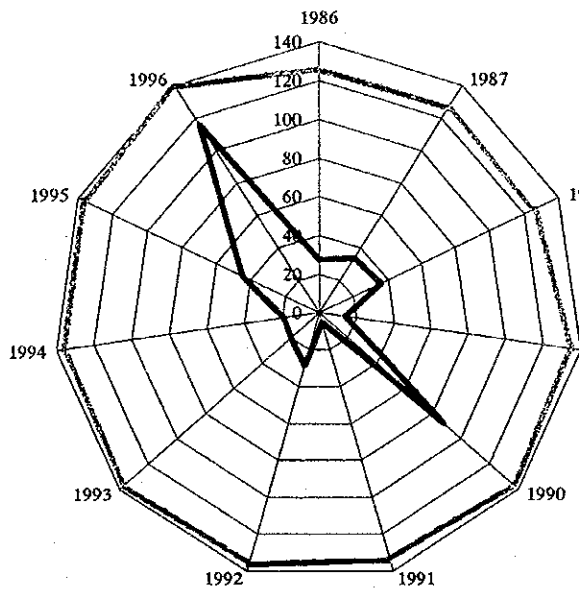
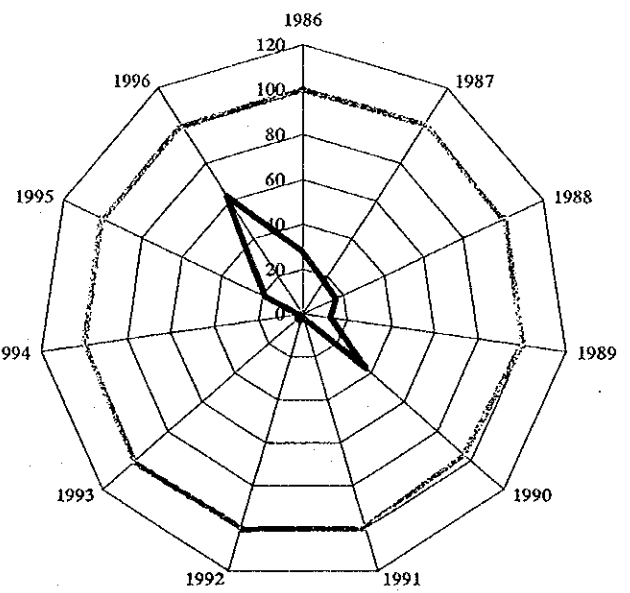


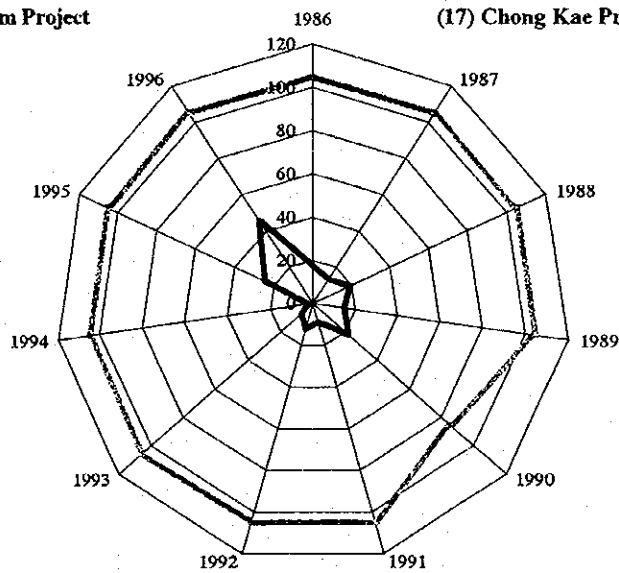
Figure 5.3.1(6) Wet Season and Dry Season Cropping Intensity in the Chao Phraya Delta (6/7)



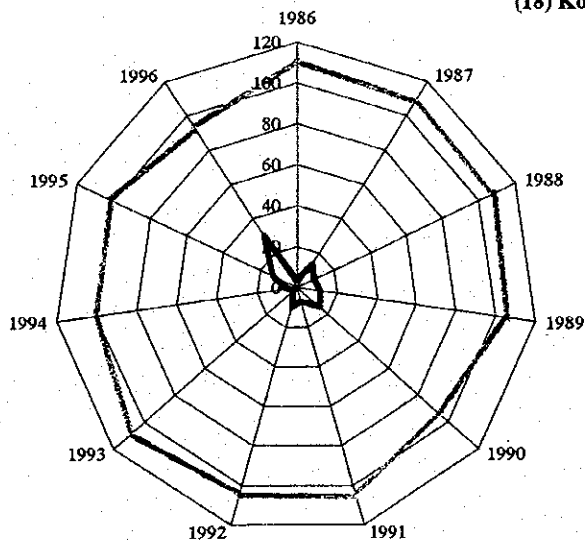
(16) Manorum Project



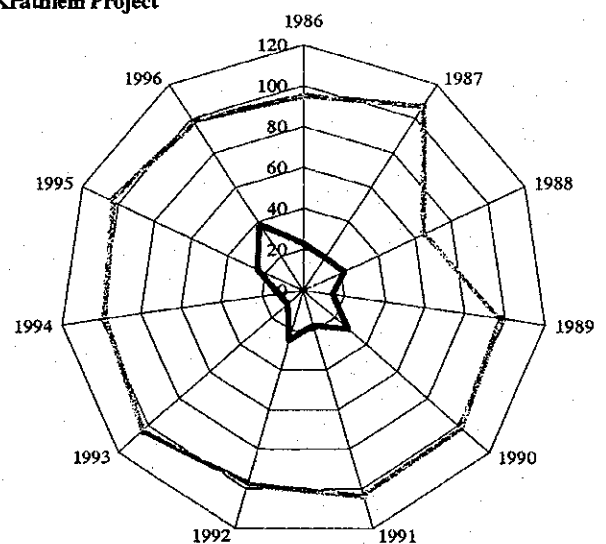
(17) Chong Kae Project



(18) Koke Krathiem Project

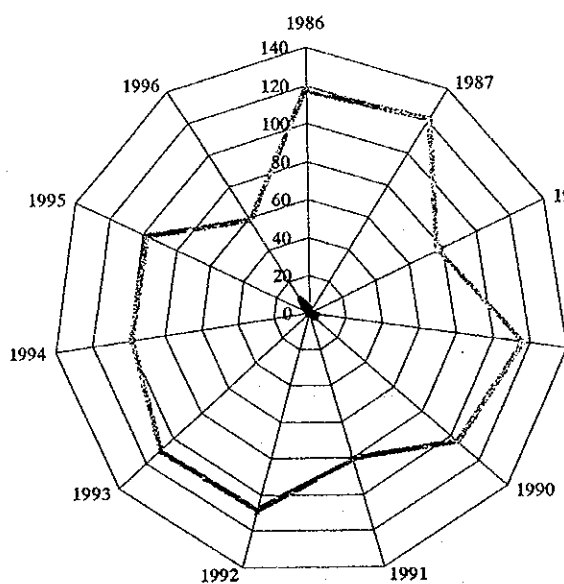


(19) Reang Rang Project

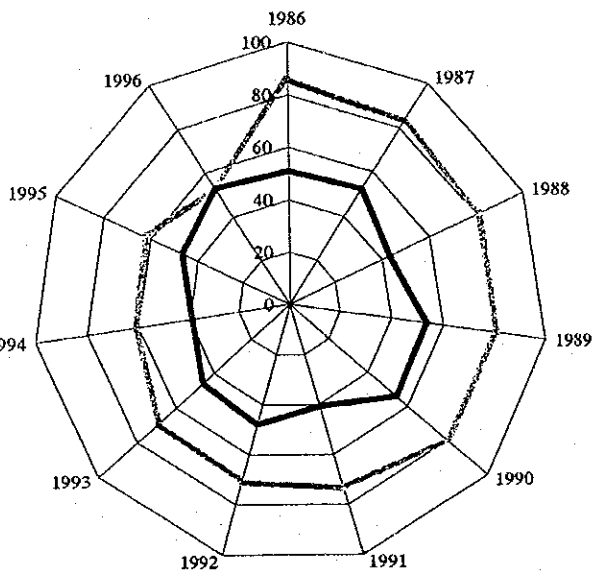


(20) Pasak Thai Project

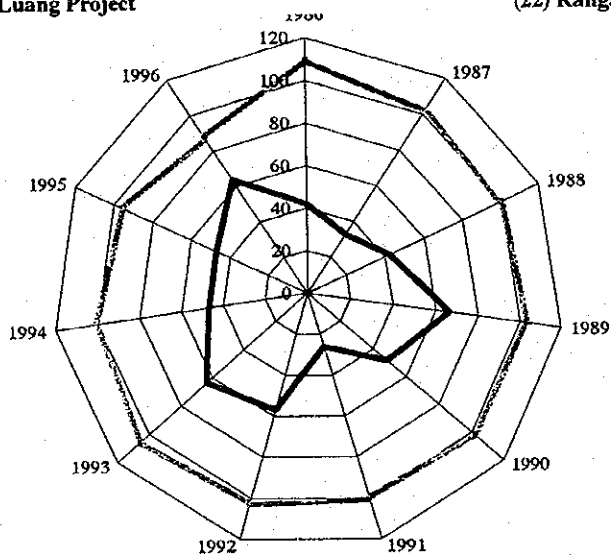
Figure 5.3.1(7) Wet Season and Dry Season Cropping Intensity in the Chao Phraya Delta (7/7)



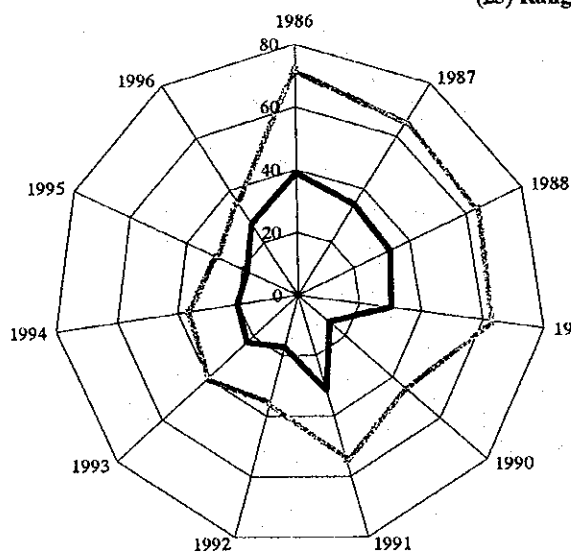
(21) Nakhon Luang Project



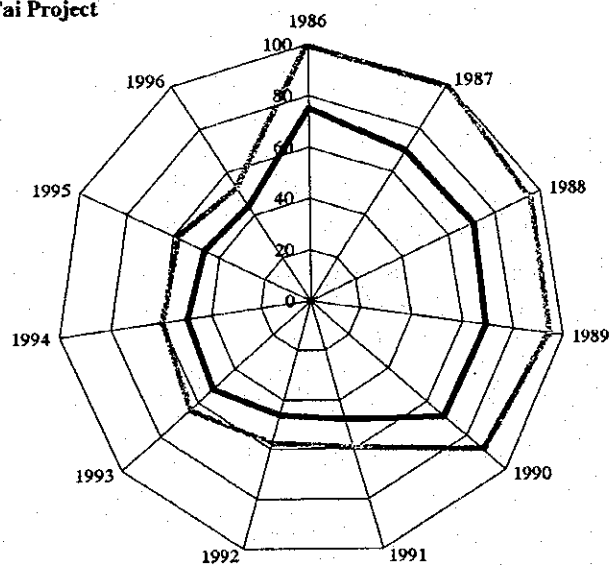
(22) Rangsit Nua Project



(23) Rangsit Tai Project



(24) Khlong Dan Project



(25) Phra Ong Chaiya Nuchit Project

**Table 5.4.1 Unit Water Demand for Irrigation in the Chao Phraya Delta
(Derived from Actual Record of Water Operation)**

(Unit = m³/rai)

Sub-Project	Minimum (Year)	Maximum (Year)	Average (1986-1996)	Mean
Upper West Bank Area				
Samchook	709 (1992)	1,807 (1987)	1,110	
Pho Phraya	1,179 (1994)	3,729 (1991)	2,417	
Channasutr	694 (1993)	2,540 (1991)	1,673	1,818
Yang Manee	1,022 (1992)	6,908 (1995)	3,424	
Upper and Lower East Bank Area				
Manorom	824 (1994)	1,496 (1995)	1,265	
Maharaj	1,559 (1990)	3,420 (1989)	2,198	1,324
Lower East Area				
Rangsit Tai	371 (1993)	1,755 (1991)	948	
Khlong Dan				981
Phra Ong Chaiyanuchit	595 (1995)	2,124 (1991)	1,014	
Whole West Bank Area	659 (1992)	1,596 (1995)	1,219	1,219
Whole East Bank Area	876 (1992)	1,630 (1986)	1,360	1,360

Table 5.4.2 Unit Irrigation Water Demand for Various Crops in the Chao Phraya Delta

	Unit	Dry Season Crops			Whole Year Crops		
		Rice	Field Crops	Vegetable	Sugar Cane	Fruit Trees	Fish Pond
Upper Delta Area	m ³ /rai	1,850	1,300	550	1,300	2,000	1,450
Lower Delta Area	m ³ /rai	1,000	900	400	875	1,250	925

Table 5.4.3 Monthly Pattern of Unit Irrigation Water Demand in the Chao Phraya Delta

(Unit = m³/rai)

	January	February	March	April	May	June	Total
1. Upper Delta Area (Upper West and Upper East)							
Dry Season Rice	241	422	519	511	146	11	1850
Field Crops	143	359	483	292	23	0	1300
Vegetable	44	255	251	0	0	0	550
Sugar Cane	210	210	220	220	220	220	1300
Fruit Trees	333	333	334	334	333	333	2000
Fish Pond	240	240	245	245	240	240	1450
2. Lower Delta Area (Lower West and Lower East)							
Dry Season Rice	130	228	281	276	79	6	1000
Field Crops	99	248	334	202	17	0	900
Vegetable	38	182	180	0	0	0	400
Sugar Cane	145	146	146	146	146	146	875
Fruit Trees	208	208	209	209	208	208	1250
Fish Pond	154	154	154	155	154	154	925

Table 5.4.4 Unit Water Demand for Irrigation in the Chao Phraya Delta

	Unit	Whole Year Crops			Dry Season Crops			Total
		Sugar Cane	Fruit Trees	Fish Pond	Rice	Field Crops	Vegetable	
1. Upper West Bank								
Cropped Area (1)	1,000 rai	161.9	39.8	12.8	712.7	22.8	4.5	954.5
Unit Water Demand (2)	m ³ /rai	1,300.0	2,000.0	1,450.0	1,850.0	1,300.0	550.0	1,738.3
(1) * (2)		210,470.0	79,600.0	18,560.0	1,318,495.0	29,640.0	2,475.0	1,659,240.0
2. Lower West Bank								
Cropped Area (1)	1,000 rai	2.3	93.5	30.4	758.4	2.2	33.5	920.3
Unit Water Demand (2)	m ³ /rai	875.0	1,250.0	925.0	1,000.0	900.0	400.0	1,000.5
(1) * (2)		2,012.5	116,875.0	28,120.0	758,400.0	1,980.0	13,400.0	920,787.5
3. Total West Bank Area								
Cropped Area (1)	1,000 rai	164.1	133.2	43.1	1,471.1	25.0	38.0	1,874.5
Unit Water Demand (2)	m ³ /rai	875.0	1,250.0	925.0	1,411.8	900.0	400.0	1,314.8
(1) * (2)		143,587.5	166,500.0	39,867.5	2,076,895.0	22,500.0	15,200.0	2,464,550.0
4. Upper East Bank								
Cropped Area (1)	1,000 rai	11.1	27.8	2.9	193.1	41.6	3.2	279.7
Unit Water Demand (2)	m ³ /rai	1,300.0	2,000.0	1,450.0	1,850.0	1,300.0	550.0	1,742.3
(1) * (2)		14,430.0	55,600.0	4,205.0	357,235.0	54,080.0	1,760.0	487,310.0
5. Lower East Bank								
Cropped Area (1)	1,000 rai	0.0	162.2	91.0	544.6	0.3	0.5	798.6
Unit Water Demand (2)	m ³ /rai	875.0	1,250.0	925.0	1,000.0	900.0	400.0	1,041.8
(1) * (2)		0.0	202,750.0	84,175.0	544,600.0	270.0	200.0	831,995.0
6. Total East Bank Area								
Cropped Area (1)	1,000 rai	11.1	190.0	93.8	737.6	41.9	3.7	1,078.1
Unit Water Demand (2)	m ³ /rai	1,300.0	1,359.7	941.2	1,222.5	1,297.1	529.7	1,223.5
(1) * (2)		14,430.0	258,350.0	88,285.9	901,712.8	54,350.0	1,960.0	1,319,088.6
7. Whole Delta Area								
Cropped Area (1)	1,000 rai	175.2	323.2	136.9	2,208.7	66.9	41.7	2,952.6
Unit Water Demand (2)	m ³ /rai	901.9	1,314.5	936.1	1,348.6	1,148.7	411.5	1,281.5
(1) * (2)		158,017.5	424,850.0	128,153.4	2,978,607.8	76,850.0	17,160.0	3,783,638.6

Table 5.4.5 Unit Water Demand for Irrigation in the Chao Phraya Delta (Evidence from Actual Record of Water Operation)

Bank	Zone	Unit Area Water Use		Remarks
		Quantity (m ³ /rai)	Depth (mm)	
West Bank Area	Upper	1,738	1,086	Analysis of operation record for Samhook, Pho Phraya, Channasri and Yang Mancee sub-projects in the Upper West Bank area, showing the average water use of 1,818 m ³ /rai. (refer to Table)
	Lower	1,000	625	Same as for the Lower East Bank area.
	Total	1,314	821	Analysis of operation record (water balance) for the whole West Bank and East Bank areas, showing the average value of 1,219 and 1,360 m ³ /rai for dry season irrigation use. (refer to Table)
East Bank Area	Upper	1,742	1,089	Same as for the Upper West Bank area.
	Lower	1,042	651	Analysis of operation record (water balance) for Rangsit Tai, Khlong Dan and Phra Ong Chaiyanuchi sub-projects in the Lower East Bank area, showing the average value of 948 and 1,014 m ³ /rai of dry season irrigation use (refer to Table).
	Total	1,224	765	Analysis of operation record (water balance) for the whole West Bank and East Bank areas, showing the average value of 1,219 and 1,360 m ³ /rai for dry season irrigation use. (refer to Table)
Entire Chao Phraya Delta Area		1,282	801	Same as above.

Table 5.4.6(1) Water Balance at Regulators in the Chao Phraya Delta

Thabot Regulator (1)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985										72	172	264		
1986	264	194	292	220	137	202	154	142	119	97	199	279	974	1258
1987	265	231	201	190	206	179	289	172	82	84	125	188	1118	1272
1988	155	178	212	221	153	129	5	40	67	114	188	214	615	942
1989	257	234	188	138	193	181	152	147	100	96	132	191	911	1195
1990	177	182	234	239	165	252	46	96	101	101	117	172	899	1012
1991	172	126	130	87	234	321	116	94	99	102	107	125	951	818
1992	98	112	34	24	190	116	173	115	135	87	88	127	753	578
1993	131	150	220	125	157	190	142	102	88	31	25	25	804	803
1994	18	157	300	198	280	434	217	231	263	148	118	122	1623	556
1995	252	347	309	257	213	194	424	238	229	196	213	337	1555	1296
1996	230	96	128	254	239	137	123	214	204	166	247	242	1171	1200
1997	209	230	171	189	228	185	191	179	181	125	120	136	1153	1265
1998	140	103	61	163	135									685
Mean													1034	994

Samchook Regulator (2)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry	(1)-(2)	AW	RateW	(1)-(2)	AD	RateD
1985										57	146	203								
1986	217	177	241	197	121	207	122	129	122	65	183	221	898	1041	76	303.9	250	217	206.1	1053
1987	204	184	159	132	151	192	238	196	98	61	99	127	1007	1016	111	303.4	366	256	141.7	1807
1988	95	135	186	203	159	281	284	21	49	82	102	158	997	703	-382	297.2	-1285	239	200.5	1192
1989	175	155	177	117	147	220	183	156	120	75	90	145	943	849	-32	306.7	-104	346	243.8	1419
1990	119	160	224	194	144	207	205	122	94	79	100	140	966	813	-67	295.9	-226	199	267.4	744
1991	158	99	128	68	182	305	177	88	80	65	84	95	900	704	51	297.4	171	114	132.1	863
1992	72	74	37	26	160	82	304	131	146	71	62	87	849	427	-96	301.9	-318	151	212.9	709
1993	109	137	192	86	104	168	112	61	57	18	13	20	588	658	216	299.8	720	145	158.0	918
1994	24	123	259	155	202	342	263	167	210	90	76	58	1339	457	284	250.3	1135	99	88.5	1119
1995	188	234	284	216	203	317	492	229	185	130	155	266	1642	950	-87	281.8	-309	346	212.8	1626
1996	210	83	136	112	233	159	336	247	139	105	197	188	1326	970	-155	349.2	-444	220	291.1	756
1997	173	190	117	143	167	231	246	138	124	75	86	92	1049	980	104			295		
1998	93	68	42	150	118									456	0			229		
Mean													1041	782	-7	298.9	-4	212	195.9	1110

Table 5.4.6(2) Water Balance at Regulators in the Chao Phraya Delta

Pho Phraya Regulator (3)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry	(2)-(3)	AW	RateW	(2)-(3)	AD	RateD
1985										39	71	83								
1986	82	99	124	112	141	196	78	58	67	48	99	113	652	498	246	168.3	1462	543	226.5	2397
1987	83	59	70	53	77	190	135	113	67	46	52	41	635	472	372	168.3	2210	544	181.6	2996
1988	26	43	77	100	104	407	545	144	74	24	60	32	1374	285	-377	151.3	-2492	418	113.8	3673
1989	28	33	120	64	76	230	139	119	107	34	11	42	735	297	208	159.0	1308	552	217.2	2541
1990	26	64	110	110	99	147	329	74	25	13	34	44	784	287	182	166.6	1092	526	163.3	3221
1991	58	34	43	0	89	267	176	29	47	37	27	26	608	226	292	158.7	1840	478	128.2	3729
1992	2	13	12	7	95	41	294	112	76	45	22	46	625	117	224	297.7	752	310	176.5	1756
1993	66	76	85	34	21	130	70	7	1	0	0	0	263	340	325	292.7	1110	318	170.1	1869
1994	15	35	182	77	115	278	257	81	93	16	8	4	901	232	438	300.4	1458	225	190.9	1179
1995	90	156	206	162	162	382	681	275	87	56	40	145	1749	480	-107	307.9	-348	470	296.0	1588
1996	122	50	72	111	157	160	484	246	104	15	79	79	1262	485	64	262.5	244	495	302.7	1635
1997	61	97	33	32	58	249	231	59	24	16	22	16	653	364	396			606		
1998	18	18	20	118	62								872	338	170	221.2	785	444	197.0	2417
Mean																				

Borommathat Regulator (4)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985										57	146	220		
1986	180	128	201	225	212	555	685	593	241	81	180	227	2511	932
1987	223	154	108	130	247	324	568	598	220	54	91	176	2087	973
1988	166	176	117	128	251	518	398	417	222	67	83	187	1934	780
1989	216	208	182	158	282	498	685	643	269	96	87	160	2535	943
1990	180	159	181	214	270	489	232	387	277	97	91	182	1869	863
1991	176	108	86	69	193	398	621	463	262	82	69	70	2006	740
1992	76	72	32	28	214	204	588	486	197	46	53	85	1717	401
1993	94	136	188	88	161	209	255	145	153	26	30	28	1011	602
1994	18	156	268	142	295	374	396	491	367	53	128	301	2065	526
1995	324	302	255	258	295	237	225	240	160	94	200	424	1415	1363
1996	345	102	114	198	233	262	360	353	189	123	164	241	1595	1279
1997	258	196	177	172	238	219	608	490	272	89	107	151	1999	1159
1998	147	118	84	150	300								1886	696
Mean														855

Table 5.4.6(3) Water Balance at Regulators in the Chao Phraya Delta

Channasutr Regulator (5)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry	(4)-(5)	AW	RateW	(4)-(5)	AD	RateD
1985										24	134	161								
1986	112	62	129	155	141	397	450	383	177	53	136	147	1703	622	808	445.9	1812	310	160.8	1928
1987	115	68	64	97	182	231	408	407	145	19	67	95	1470	583	617	440.9	1399	390	225.3	1731
1988	80	99	53	72	140	383	302	266	155	51	66	107	1318	413	616	432.6	1424	367	225.8	1625
1989	84	91	97	120	166	372	508	482	224	80	70	98	1872	496	663	444.2	1493	447	271.0	1649
1990	75	71	92	93	174	294	204	300	210	75	39	2	1275	486	594	420.8	1412	377	212.5	1774
1991	80	46	37	37	105	266	443	317	223	82	45	32	1391	279	615	437.7	1405	461	181.5	2540
1992	30	26	16	14	160	135	472	416	198	36	41	69	1395	231	322	446.9	721	170	153.7	1106
1993	76	112	174	66	105	147	172	97	122	16	18	18	709	508	302	459.4	657	94	135.4	694
1994	11	112	196	88	154	228	247	379	301	31	101	224	1397	371	668	430.1	1553	155	103.3	1500
1995	227	204	158	166	198	177	159	172	114	48	121	277	986	945	429	400.4	1071	418	176.9	2363
1996	187	66	53	90	124	154	233	235	110	52	81	140	946	752	649	420.2	1545	527	353.1	1492
1997	159	128	118	136	171	154	479	399	214	26	40	101	1553	678	446			481		
1998	96	77	56	97	225								396					300		
Mean													1315	517	571	434.5	1317	338	199.9	1673

Yang Mance Regulator (6)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry	(5)-(6)	AW	RateW	(5)-(6)	AD	RateD
1985										65	125	147								
1986	98	55	116	134	97	330	376	319	149	50	129	124	1405	606	298	185.9	1603	16	16.0	1000
1987	89	44	36	72	135	171	343	354	116	16	59	81	1191	472	279	186.6	1495	111	35.0	3171
1988	68	78	40	57	112	328	251	212	132	42	55	76	1092	342	226	205.9	1098	71	42.6	1667
1989	58	51	60	78	108	313	427	409	184	68	62	82	1519	342	353	187.4	1884	154	47.3	3256
1990	56	54	71	63	109	232	171	238	166	65	33	67	979	393	296	179.4	1650	93	28.7	3240
1991	45	18	14	15	68	201	398	262	185	80	40	24	1129	242	262	184.6	1419	37	25.9	1429
1992	23	20	11	14	139	98	412	342	162	44	42	64	1167	198	228	203.3	1121	33	32.3	1022
1993	70	86	150	44	71	104	106	48	81	18	18	14	454	456	255	191.2	1334	52	12.8	4063
1994	6	82	165	76	113	176	185	303	230	22	93	213	1083	303	314	188.5	1666	68	8.2	8293
1995	206	177	129	117	132	104	114	115	46	37	90	198	628	840	358	183.3	1953	105	15.2	6908
1996	102	25	25	46	63	93	168	191	67	22	43	94	628	477	318	200.5	1586	275	76.0	3618
1997	114	88	85	101	114	102	360	317	169	27	32	68	1163	446	390			232		
1998	60	40	23	58	157								250					146		
Mean													1025	425	290	190.6	1528	92	30.9	3424

Table 5.4.6(4) Water Balance at Regulators in the Chao Phraya Delta

Manorom Regulator (7)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry	Wet	AW	RateW	Dry	AD	RateD
1985										166	292	420								
1986	385	318	314	383	386	425	485	442	295	107	325	398	2416	1895	2416	3108.6	777	1895	1223.4	1549
1987	328	247	191	118	284	117	266	440	298	91	125	354	1523	1596	1523	3053.1	499	1596	1118.4	1427
1988	291	297	193	366	360	283	476	450	257	217	220	322	2192	1351	2192	2816.0	778	1351	1128.4	1197
1989	305	321	342	269	246	357	356	458	296	146	174	374	1982	1727	1982	2998.7	661	1727	1193.3	1447
1990	345	318	367	298	303	486	165	394	351	140	141	250	1997	1724	1997	2777.3	719	1724	1276.3	1351
1991	274	146	127	52	182	372	414	395	282	115	119	188	1697	1078	1697	2655.0	639	1078	796.6	1353
1992	181	156	61	23	364	214	528	458	312	112	129	186	1899	820	1899	2601.6	730	820	962.7	852
1993	189	171	164	151	205	359	323	178	147	31	56	81	1363	951	1363	2679.0	509	951	967.8	983
1994	54	131	330	372	449	456	532	394	317	132	211	331	2520	683	2520	2542.6	991	683	828.4	824
1995	332	288	220	256	354	218	359	300	270	282	326	453	1757	1514	1757	2475.9	710	1514	1012.2	1496
1996	489	302	327	446	472	508	421	369	348	237	291	405	2564	2179	2564	2308.5	1111	2179	1514.9	1438
1997	426	380	312	256	342	388	437	344	323	155	216	329	2090	2051	2090			2051		
1998	339	224	112	244	267								1375					1375		
Mean													1992	1411	1992	2728.8	739	1411	1092.9	1265

Maharaj Regulator (8)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry	Wet	AW	RateW	Dry	AD	RateD
1985										0	15	77								
1986	68	59	37	37	128	153	178	169	85	0	22	15	750	256	750	477.4	1571	256	97.5	2626
1987	15	18	19	54	83	152	198	176	20	0	12	47	683	89	683	477.7	1430	89	36.5	2438
1988	45	45	28	28	96	125	167	177	62	3	19	23	655	177	655	447.9	1462	177	107.6	1645
1989	31	24	18	55	116	163	184	170	25	0	11	61	713	118	713	476.3	1497	118	34.5	3420
1990	77	52	31	39	75	121	114	170	78	0	5	28	597	232	597	462.0	1292	232	148.8	1559
1991	26	14	13	10	60	108	136	123	17	0	4	10	454	86	454	477.5	951	86	41.3	2082
1992	12	11	6	2	61	83	175	157	27	3	13	10	505	43	505	475.0	1063	43	26.1	1648
1993	11	11	7	27	62	105	148	90	42	4	6	5	474	55	474	477.2	993	55	26.2	2099
1994	3	26	20	27	132	131	166	138	32	2	13	26	626	64	626	437.8	1430	64	24.5	2612
1995	28	23	23	56	85	52	1	4	2	4	45	96	200	115	200	431.2	464	115	48.7	2361
1996	100	77	48	22	69	79	93	76	27	7	25	89	366	370	366	401.1	912	370	219.1	1689
1997	94	92	81	66	82	67	138	150	65	16	16	68	568	388	568			388		
1998	68	57	47	49	73								272					272		
Mean													548	146	548	458.3	1188	146	73.7	2198

Table 5.4.7 Summary of Wet/Dry Season Water Use in Chao Phraya Delta

Summary of Wet Season Water Use in the Chao Phraya Delta Area

Irrigation Project Name	Averaged Cropped Area (A) (10 ³ rai)	Averaged Water Use (W) (m ³ /rai)	(A) x (W)
1. West Bank Area			
Samchook	298.9	-	-
Pho Phraya	221.2	785.0	173,642
Channasutr	434.5	1,317.0	572,237
Yang Manee	190.6	1,528.0	291,237
Total	1145.2	1,225.5	1,037,115
2. East Bank Area			
Manorom	2728.8	739.0	2,016,583
Maharaj	458.3	1,188.0	544,460
Total	3187.1	803.6	2,561,044
Grand Total	4332.3	892.1	3,598,159

Summary of Dry Season Water Use in the Chao Phraya Delta Area

Irrigation Project Name	Averaged Cropped Area (A) (10 ³ rai)	Averaged Water Use (W) (m ³ /rai)	(A) x (W)
1. West Bank Area			
Samchook	195.9	1,110.0	217,449
Pho Phraya	197.0	2,417.0	476,149
Channasutr	199.9	1,673.0	334,433
Yang Manee	30.9	3,424.0	105,802
Total	623.7	1,817.9	1,133,832
2. East Bank Area			
Manorom	1092.9	1,265.0	1,382,519
Maharaj	73.7	2,198.0	161,993
Total	1166.6	1,323.9	1,544,511
Grand Total	1790.3	1,496.0	2,678,343

Table 5.4.8(1) Water Balance at Regulators in the Conservation Area
Phra Thummaracha Regulator & Syphon (1)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985										25.89	9.43	109.47		
1986									28.08	9.48	34.30	77.88	330.18	340.26
1987	82.98	76.63	35.86	8.12	11.10	85.84	98.56	98.48	41.82	39.05	33.70	38.19	198.62	250.46
1988	47.33	39.31	42.16	45.79	24.80	25.75	34.47	41.82	40.44	17.45	29.20	70.33	225.39	284.13
1989	36.76	67.91	68.52	40.00	23.59	31.67	56.51	37.67	55.38	35.94	21.43	58.75	420.65	395.80
1990	89.77	91.07	97.98	90.72	76.64	79.97	80.27	37.67	61.17	27.39	10.80	24.62	88.68	281.58
1991	73.01	26.27	66.18	7.34	0.17	7.04	1.81	11.15	58.32	40.26	19.18	49.42	112.84	110.86
1992	21.95	13.31	12.79	1.56	8.90	9.68	22.72	11.66	12.87	11.23	5.01	7.95	80.26	274.83
1993	69.90	49.85	46.22	12.18	14.77	28.68	11.50	0.26	43.11	24.54	28.77	61.21	262.22	115.01
1994	2.76	27.15	60.91	44.22	44.24	59.48	61.47	9.70	59.53	0.00	0.00	0.00	291.25	355.32
1995	88.99	84.76	67.05	31.10	68.60	42.51	42.34	47.17	66.36	47.52	37.32	27.73	235.87	0.00
1996	0.00	0.00	0.00	31.79	27.48	26.70	39.74	43.80	86.14	22.38	25.14	36.81	362.50	233.88
1997	40.18	37.50	43.63	33.44	79.62	64.80	57.46	41.04						173.71
1998	46.40	17.11	25.87	0.00	0.00									240.83
Mean													224.60	

Klong 13 Tail Regulator (2)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985														
1986														
1987	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
1988	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
1989	17.00	24.00	27.69	16.40	26.46	8.61	14.35	30.14	28.11	32.15	19.32	20.97	124.07	141.13
1990	29.61	34.31	20.62	24.15	24.08	18.29	48.91	38.04	15.95	8.83	16.47	32.80	169.42	146.20
1991	33.46	19.38	24.36	12.78	12.39	31.26	15.00	9.88	31.95	n.a	n.a	n.a	113.26	135.30
1992	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	75.10	34.69	19.45	n.a	n.a
1993	11.48	18.21	19.33	12.81	8.99	21.93	13.72	5.00	0.79	0.62	0.07	1.46	63.24	178.26
1994	1.52	11.64	22.32	23.57	19.27	25.89	26.44	3.88	10.08	9.30	13.40	24.29	109.13	37.63
1995	23.49	23.37	23.50	21.88	28.57	28.20	37.42	34.02	12.75	n.a	n.a	n.a	162.84	117.35
1996	n.a	n.a	n.a	23.35	21.86	24.20	31.69	31.40	30.52	24.89	27.43	16.33	163.02	n.a
1997	20.80	10.97	4.85	6.35	10.91	20.71	16.05	12.23	6.88	4.91	18.41	16.85	73.13	105.27
1998	19.61	14.65	18.81	n.a	n.a									93.24
Mean													129.28	125.98

Table 5.4.8(2) Water Balance at Regulators in the Conservation Area

Somboon Regulator (3)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985														
1986										7.06	7.22	0.00		
1987	0.00	0.00	0.00	0.54	5.08	-1.57	0.00	0.00	0.00	0.00	23.47	0.00	4.05	14.28
1988	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.00	9.67	0.00	0.35	23.47
1989	73.17	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	77.70	0.00	0.27	82.84
1990	0.00	0.00	0.00	0.00	0.00	0.00	-0.25	0.00	0.00	0.00	0.00	0.00	-0.25	77.70
1991	0.00	0.00	0.00	0.00	0.00	0.00	10.32	-0.17	0.00	0.00	1.28	0.00	10.15	0.00
1992	0.00	0.00	0.00	0.00	-3.12	0.00	0.00	0.00	0.04	0.65	0.12	0.00	-3.08	1.28
1993	0.00	0.00	-1.82	0.24	0.02	0.19	0.00	0.00	0.20	2.81	0.01	0.00	0.65	-1.05
1994	0.00	0.15	-3.01	0.43	0.00	0.00	-0.41	0.30	0.14	0.59	1.85	0.00	0.46	-0.04
1995	0.00	2.17	0.19	-0.50	-0.54	9.91	1.12	-0.15	-1.85	n.a	n.a	n.a	7.99	4.80
1996	n.a	n.a	n.a	2.35	2.40	0.00	0.96	2.57	4.33	1.20	0.00	0.00	12.61	n.a
1997	0.00	0.00	1.68	1.06	1.02	0.00	0.00	2.11	0.01	0.96	0.00	0.00	4.20	2.88
1998	0.00	0.00	0.50	n.a	n.a								3.32	1.46
Mean														22.59

Klong 21 Regulator (4)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985														
1986										1.51	5.13	0.00		
1987	0.00	0.00	0.00	2.55	0.23	0.09	0.00	0.00	0.00	0.00	27.04	0.00	2.87	6.64
1988	0.00	-0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.21	0.00	0.00	26.19
1989	0.00	0.00	0.00	-0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	-0.76	21.21
1990	0.00	0.00	0.00	0.00	0.00	0.00	23.33	0.00	0.00	0.00	18.35	0.00	23.33	0.01
1991	0.00	0.00	0.00	0.00	0.00	0.00	9.64	-1.70	0.00	0.00	0.85	0.00	7.94	18.35
1992	0.00	0.00	0.00	3.86	-0.89	-0.55	0.00	0.00	0.00	0.18	1.26	0.00	2.42	0.85
1993	0.00	0.00	0.02	-0.11	-0.10	0.00	-0.05	0.06	0.00	0.04	0.01	0.00	-0.23	1.46
1994	0.00	0.00	-0.60	1.70	0.00	0.00	0.00	1.02	-0.03	4.70	2.95	0.00	5.46	-0.55
1995	0.00	0.00	-0.43	0.29	-0.52	0.00	0.00	-0.18	2.74	n.a	n.a	n.a	-0.31	7.22
1996	n.a	n.a	n.a	0.10	0.06	0.00	0.00	0.25	0.10	2.09	0.13	0.00	0.36	n.a
1997	0.00	0.00	0.00	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	2.22
1998	n.a	n.a	n.a	n.a	n.a									n.a
Mean													4.11	9.04

Table 5.4.8(3) Water Balance at Regulators in the Conservation Area

Klong 20 Regulator (5)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985														
1986										2.72	11.17	0.00		
1987	0.00	0.00	0.00	0.32	0.11	-1.76	0.00	0.00	0.00	0.00	29.94	0.00	-1.33	13.89
1988	0.00	-0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.39	0.00	0.00	29.70
1989	0.00	0.00	0.00	-0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.80	21.39
1990	0.00	0.00	0.00	-7.70	0.00	0.00	0.00	0.00	0.00	0.00	21.44	0.00	-7.70	0.00
1991	0.00	0.00	0.00	-0.17	0.00	0.00	6.88	-0.73	0.00	0.20	1.61	0.00	5.98	21.44
1992	0.00	0.00	0.00	0.36	-0.83	-0.51	0.00	0.00	0.00	0.10	0.82	0.00	-0.98	1.81
1993	0.00	0.00	0.33	0.99	-0.05	-0.04	-0.02	0.00	-0.05	0.09	0.00	0.00	0.83	1.25
1994	0.00	0.00	n.a	n.a	n.a	n.a	n.a	n.a	n.a	0.04	0.32	0.00	n.a	0.09
1995	0.00	0.00	0.22	0.02	-0.16	0.00	0.00	-0.12	0.30	n.a	n.a	n.a	0.04	0.58
1996	n.a	n.a	n.a	0.87	1.05	1.86	0.00	1.59	0.00	0.66	0.02	0.00	5.37	n.a
1997	0.00	0.00	0.00	2.25	-0.06	0.00	0.00	1.32	0.58	0.47	0.00	0.00	4.09	0.68
1998	0.00	0.00	1.16	n.a	n.a									1.63
Mean													0.16	10.02

Klong 19 Regulator (6)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985														
1986										0.27	0.20	0.00		
1987	0.00	0.00	0.00	0.59	-0.04	0.02	-0.24	0.00	0.00	0.00	29.94	0.00	0.33	0.47
1988	0.00	-0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	29.63	0.00	0.00	29.70
1989	0.00	0.00	2.84	-0.73	0.00	-4.41	0.00	0.00	0.00	0.00	0.00	0.00	-5.14	32.97
1990	0.00	0.00	0.00	0.00	0.00	0.00	32.94	0.00	0.00	0.00	20.27	0.00	32.94	0.00
1991	0.00	0.00	0.00	-0.72	0.15	0.00	9.78	-1.64	0.00	0.03	0.00	0.00	7.57	20.27
1992	0.00	0.00	0.00	0.68	-1.76	-0.34	0.00	0.00	-0.21	0.10	6.81	0.00	-1.63	0.03
1993	0.00	0.00	1.22	0.02	0.06	-0.08	0.00	0.00	-0.31	1.98	0.00	0.00	-0.31	8.13
1994	0.00	0.00	1.91	-0.01	0.00	0.00	0.00	0.08	0.65	1.05	0.21	0.00	0.72	3.89
1995	0.00	0.00	0.60	-1.36	-0.11	0.00	0.00	-0.09	-0.01	n.a	n.a	n.a	-1.57	1.86
1996	n.a	n.a	n.a	0.90	0.19	0.18	0.00	-0.01	-0.16	-0.11	0.00	0.00	1.10	n.a
1997	0.00	0.00	1.79	8.14	0.80	0.00	0.05	0.22	0.82	-0.11	0.00	0.00	10.03	1.68
1998	0.00	0.00	0.27	n.a	n.a									0.16
Mean													3.40	10.81

Table 5.4.9 Water Balance in Rangsit Tai project Area

Year	Wet Season Water Balance						Crop A.	Water Use
	(1)	(2)	(3)	(4)	(5)	(6)		
1985	n.a	n.a	n.a	n.a	n.a	n.a	493.3	n.a
1986	n.a	n.a	n.a	n.a	n.a	n.a	458.1	n.a
1987	330.18	n.a	4.05	2.87	-1.33	0.33	450.5	n.a
1988	198.62	n.a	0.35	0.00	0.00	0.00	465.0	204.1
1989	225.39	124.07	0.27	-0.76	-0.80	-5.14	299.55	656.5
1990	420.65	169.42	-0.25	23.33	-7.70	32.94	452.1	15.6
1991	88.68	113.26	10.15	7.94	5.98	7.57	464.4	n.a
1992	112.84	n.a	-3.08	2.42	-0.98	-1.63	474.1	37.9
1993	80.26	63.24	0.65	-0.23	0.83	-0.31	454.5	n.a
1994	262.22	109.13	0.46	5.46	n.a	0.72	428.8	313.8
1995	291.25	162.84	7.99	-0.31	0.04	-1.57	394.4	234.0
1996	235.87	163.02	12.61	0.36	5.37	1.10	n.a	n.a
1997	362.50	73.13	4.20	n.a	4.09	10.03	n.a	n.a
1998	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Mean	224.60	129.28	3.32	4.11	0.16	3.40	445.12	242.00

Year	Dry Season Water Balance						Crop A.	Water Use
	(1)	(2)	(3)	(4)	(5)	(6)		
1985	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
1986	n.a	n.a	n.a	n.a	n.a	n.a	189.5	n.a
1987	340.26	n.a	14.28	6.64	13.89	0.47	147.4	n.a
1988	250.46	n.a	23.47	26.19	29.70	29.70	190.8	n.a
1989	284.13	141.13	82.84	21.21	21.39	32.97	299.2	1007.4
1990	395.80	146.20	77.70	0.01	0.00	0.00	217.9	1502.1
1991	281.58	135.30	0.00	18.35	21.44	20.27	117.6	1754.6
1992	110.86	n.a	1.28	0.85	1.81	0.03	256.6	n.a
1993	274.83	178.26	-1.05	1.46	1.25	8.13	286.9	370.7
1994	115.01	37.63	-0.04	-0.55	0.09	3.89	211.4	382.1
1995	355.32	117.35	4.80	7.22	0.58	1.86	211.5	1193.5
1996	0.00	n.a	n.a	n.a	n.a	n.a	288.0	n.a
1997	233.88	105.27	2.88	2.22	0.68	1.68	136.07	n.a
1998	173.71	93.24	1.46	n.a	1.63	0.16	n.a	n.a
Mean	240.83	125.98	22.59	9.04	10.02	10.81	224.08	948.0

Table 5.4.10(1) Water Balance at Regulators in the Conservation Area (2)

Bang Kanak Regulator (1)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985														
1986										23.17	6.76	0.00		
1987	0.00	3.24	21.26	21.19	22.05	9.97	2.92	1.80	34.66	42.31	0.00	0.00	92.59	54.43
1988	0.00	0.00	15.72	32.76	8.98	16.48	35.96	26.41	33.64	52.01	2.02	0.00	154.23	58.03
1989	0.00	0.00	43.89	57.55	26.43	22.19	38.47	41.39	45.69	37.58	0.00	0.00	231.72	97.92
1990	0.00	0.00	30.71	45.18	14.63	0.00	0.00	0.00	23.63	44.77	15.91	0.00	83.44	68.29
1991	0.00	0.00	27.24	41.61	48.49	14.48	8.05	37.01	41.55	50.24	0.00	0.00	191.19	87.92
1992	0.00	0.00	8.23	26.54	43.36	38.04	26.00	37.40	43.32	47.84	0.00	0.00	214.66	58.47
1993	0.00	0.00	25.26	40.21	39.63	12.34	24.17	52.36	46.68	29.22	0.00	0.00	215.39	73.10
1994	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	29.22
1995	0.00	0.00	0.00	68.83	32.30	0.00	0.00	20.85	51.15	0.00	0.00	0.00	173.13	0.00
1996	0.00	0.00	0.00	38.92	33.56	14.35	0.00	19.27	50.46	47.28	0.00	0.00	156.56	0.00
1997	0.00	0.00	0.00	37.84	47.98	10.06	47.25	54.51	58.31	18.65	0.00	0.00	255.95	47.28
1998	0.00	0.00	24.41	0.00	0.00									43.06
Mean													151.29	52.74

Tha Khai Regulator (2)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985														
1986										12.56	0.00	0.00		
1987	0.00	0.00	0.00	88.56	73.47	71.11	49.07	15.26	58.02	17.47	0.00	0.00	355.49	12.56
1988	0.00	0.00	63.98	42.79	82.39	23.29	32.32	39.43	26.03	0.00	0.00	0.00	246.25	81.45
1989	0.00	0.00	23.73	71.03	50.20	53.98	10.05	61.32	58.66	0.00	0.00	0.00	305.24	23.73
1990	0.00	9.52	28.91	41.43	58.58	67.84	110.79	77.56	56.49	24.28	0.00	0.00	412.69	38.43
1991	0.00	15.33	15.53	69.40	33.50	53.22	73.69	62.36	45.97	0.00	0.00	0.00	338.14	55.14
1992	0.00	0.00	20.29	10.15	54.44	34.60	30.78	37.13	55.98	0.00	0.00	0.00	223.08	20.29
1993	0.00	0.00	9.81	50.62	51.80	64.63	54.72	53.34	41.98	0.00	0.00	0.00	317.09	9.81
1994	0.00	0.00	4.88	34.50	46.68	56.99	52.21	47.90	46.33	4.34	0.00	0.00	284.61	4.88
1995	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.27	0.00	0.00	0.00	0.00	5.27	4.34
1996	0.00	0.00	0.00	0.00	4.20	0.38	0.00	0.00	0.00	0.00	0.00	0.00	4.58	0.00
1997	0.00	0.00	0.00	0.00	7.22	37.97	25.48	41.17	42.41	0.00	0.00	0.00	154.25	0.00
1998	0.00	0.00	0.00	0.00	0.00									0.00
Mean													249.24	25.06

Table 5.4.10(2) Water Balance at Regulators in the Conservation Area (2)

Tha Thua Regulator (3)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985														
1986										0.00	0.00	0.00		
1987	0.00	0.00	0.00	90.98	40.15	83.63	60.04	78.36	71.45	0.00	0.00	0.00	424.61	0.00
1988	0.00	1.00	52.26	13.51	12.55	19.49	52.79	102.97	60.67	0.00	0.00	0.00	261.98	53.26
1989	0.00	0.00	21.00	128.48	71.78	114.24	127.31	131.99	61.49	0.00	0.00	0.00	635.29	21.00
1990	0.00	12.13	1.75	20.08	95.30	118.83	123.59	113.13	45.93	0.00	0.00	0.00	516.86	13.88
1991	0.00	0.00	0.00	76.18	87.85	107.45	132.39	140.54	38.78	0.00	0.00	0.00	583.19	0.00
1992	0.00	0.00	0.00	80.74	90.35	73.04	84.11	88.62	63.43	0.00	0.00	0.00	480.29	0.00
1993	0.00	0.00	0.00	116.38	120.04	79.20	103.84	111.84	33.93	0.00	0.00	0.00	565.23	0.00
1994	0.00	0.00	0.00	0.00	0.00	0.00	49.31	74.17	42.50	0.00	0.00	0.00	165.98	0.00
1995	0.00	0.00	0.00	94.49	129.35	125.83	104.50	74.55	64.17	0.00	0.00	0.00	592.89	0.00
1996	0.00	0.00	0.00	57.79	88.01	81.88	117.12	106.36	48.73	0.00	0.00	0.00	499.89	0.00
1997	0.00	0.00	0.00	0.00	123.07	70.25	63.34	135.95	49.73	0.00	0.00	0.00	442.34	0.00
1998	0.00	0.00	0.00	0.00	0.00									0.00
Mean													472.62	8.81

Paktakhong Regulator (4)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985														
1986										0.00	0.00	0.00		
1987	0.00	0.00	0.00	15.08	0.00	40.57	40.90	18.13	2.48	0.00	0.00	0.00	117.16	0.00
1988	0.00	9.51	29.68	43.17	33.73	15.65	43.30	41.99	0.00	0.00	0.00	0.00	177.84	39.19
1989	0.00	0.00	21.66	22.79	18.99	22.68	24.81	3.60	0.00	0.00	0.00	0.00	92.87	21.66
1990	0.00	15.47	4.66	30.70	17.10	35.57	53.24	63.38	1.65	0.00	0.00	0.00	201.64	20.13
1991	0.00	0.00	0.76	0.00	25.19	47.05	50.67	39.45	0.00	0.00	0.00	0.00	162.36	0.76
1992	0.00	0.00	2.18	9.74	17.74	24.17	39.22	26.05	6.96	0.00	0.00	0.00	123.88	2.18
1993	0.00	0.00	0.00	0.00	3.57	27.60	53.31	14.75	0.00	0.00	0.00	0.00	99.23	0.00
1994	0.00	0.00	1.92	29.83	24.49	20.94	23.81	0.00	0.00	0.00	0.00	0.00	99.07	1.92
1995	0.00	0.00	4.24	10.88	31.98	31.98	38.84	0.00	0.00	0.00	0.00	0.00	113.68	4.24
1996	0.00	0.00	0.00	13.65	36.24	28.18	48.80	61.95	0.00	0.00	0.00	0.00	188.82	0.00
1997	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
1998	0.00	0.00	0.00	0.00	0.00									0.00
Mean													137.66	9.01

Table 5.4.10(3) Water Balance at Regulators in the Conservation Area (2)
Cholahan Phichit Regulator (5)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985														
1986										-1.20	-15.01	-4.06		
1987	-7.27	-3.98	-7.48	-8.48	0.00	-146.31	-261.90	-312.01	-160.04	0.00	-15.69	-26.33	-888.74	-39.00
1988	-16.67	-118.79	-177.18	-272.69	-267.18	-271.62	-276.15	-201.76	-50.51	-2.31	0.00	-2.82	-1339.91	-354.66
1989	0.00	-3.09	-8.40	-30.75	-127.15	-180.86	-207.71	-74.09	-17.48	0.00	-1.65	-9.25	-638.04	-16.62
1990	0.00	-39.77	-13.22	-17.23	-132.61	-148.76	-237.68	-236.61	-121.73	0.00	0.00	0.00	-894.62	-63.89
1991	0.00	-4.05	-25.35	-16.82	-160.95	-248.02	-241.25	-103.68	-12.07	-5.74	0.00	0.00	-782.79	-29.40
1992	0.00	0.00	-31.46	-8.76	-238.81	-178.37	-147.83	-135.57	0.00	0.00	0.00	0.00	-709.34	-37.20
1993	0.00	0.00	0.00	0.00	0.00	-208.92	-201.75	-127.41	0.00	0.00	0.00	0.00	-538.08	0.00
1994	0.00	0.00	-145.14	-212.26	-189.37	-213.17	-151.69	-58.48	0.00	0.00	0.00	0.00	-824.97	-145.14
1995	0.00	0.00	n.a	n.a	n.a	n.a	n.a	n.a	n.a	0.00	0.00	0.00	n.a	0.00
1996	0.00	0.00	0.00	-162.39	-168.96	-151.39	-112.23	-119.49	-16.68	0.00	0.00	0.00	-731.14	0.00
1997	0.00	0.00	0.00	0.00	-32.54	-107.31	-132.40	-34.32	0.00	0.00	0.00	0.00	-306.57	0.00
1998	0.00	0.00	-84.95	0.00	0.00									-84.95
Mean													-816.40	-68.59

Klong 13 Tail Regulator (6)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985														
1986										n.a	n.a	n.a		
1987	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
1988	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	32.15	19.32	20.97	n.a	n.a
1989	17.00	24.00	27.69	16.40	26.46	8.61	14.35	30.14	28.11	22.05	10.56	29.05	124.07	141.13
1990	29.61	34.31	20.62	24.15	24.08	18.29	48.91	38.04	15.95	8.83	16.47	32.80	169.42	146.20
1991	33.46	19.38	24.36	12.78	12.39	31.26	15.00	9.88	31.95	n.a	n.a	n.a	113.26	135.30
1992	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	75.10	34.69	19.45	n.a	n.a
1993	11.48	18.21	19.33	12.81	8.99	21.93	13.72	5.00	0.79	0.62	0.07	1.46	63.24	178.26
1994	1.52	11.64	22.32	23.57	19.27	25.89	26.44	3.88	10.08	9.30	13.40	24.29	109.13	37.63
1995	23.49	23.37	23.50	21.88	28.57	28.20	37.42	34.02	12.75	n.a	n.a	n.a	162.84	117.35
1996	n.a	n.a	n.a	23.35	21.86	24.20	31.69	31.40	30.52	24.89	27.43	16.33	163.02	n.a
1997	20.80	10.97	4.85	6.35	10.91	20.71	16.05	12.23	6.88	4.91	18.41	16.85	73.13	105.27
1998	19.61	14.65	18.81	n.a	n.a									93.24
Mean													129.28	125.98

Table 5.4.11 Water Balance in Khlong Dan + Phraong Chaiyanuchit) project Area

Year	Wet Season Water Balance					
	(1)	(2)	(3)	(4)	(5)	(6)
1985	n.a	n.a	n.a	n.a	n.a	n.a
1986	n.a	n.a	n.a	n.a	n.a	n.a
1987	92.59	n.a	424.61	117.16	-888.74	885.4
1988	154.23	n.a	261.98	177.84	-1339.91	848.1
1989	231.72	305.24	635.29	92.87	-638.04	823.6
1990	83.44	412.69	516.86	201.64	-894.62	814.4
1991	191.19	338.14	583.19	162.36	-782.79	751.15
1992	214.66	n.a	480.29	123.88	-709.34	489.43
1993	215.39	317.09	565.23	99.23	-538.08	605.35
1994	0.00	284.61	165.98	99.07	n.a	587.1
1995	173.13	5.27	592.89	113.68	n.a	479.7
1996	156.56	4.58	499.89	188.82	-731.14	536.8
1997	255.95	154.25	442.34	n.a	-306.57	499.5
1998	n.a	n.a	n.a	n.a	n.a	447.1
Mean	151.29	249.24	472.62	137.66	-816.40	460.5
						611.8
						618.40
						921.66

Year	Dry Season Water Balance					
	(1)	(2)	(3)	(4)	(5)	(6)
1985	n.a	n.a	n.a	n.a	n.a	n.a
1986	n.a	n.a	n.a	n.a	n.a	n.a
1987	54.43	n.a	0.00	0.00	-39.00	189.5
1988	58.03	n.a	53.26	39.19	-354.66	147.4
1989	97.92	23.73	21.00	21.66	-16.62	190.8
1990	68.29	38.43	13.88	20.13	-63.89	299.2
1991	87.92	55.14	0.00	0.76	-29.40	217.9
1992	58.47	n.a	0.00	2.18	-37.20	117.6
1993	73.10	9.81	0.00	0.00	0.00	256.6
1994	29.22	4.88	0.00	1.92	-145.14	286.9
1995	0.00	4.34	0.00	4.24	0.00	211.4
1996	0.00	n.a	n.a	n.a	n.a	211.5
1997	47.28	0.00	0.00	0.00	0.00	288.0
1998	43.06	0.00	0.00	0.00	-84.95	152.55
Mean	52.74	25.06	8.81	9.01	-68.59	229.74
						226.62
						1013.7

Table 5.4.12(1) Water Balance for the West Bank Area in the Delta

Borommathat Regulator (1)													
	4	5	6	7	8	9	10	11	12	1	2	3	Wet Dry
1985										57	146	220	
1986	180	128	201	225	212	555	685	593	241	81	180	227	2511 932
1987	223	154	108	130	247	324	568	598	220	54	91	176	2087 973
1988	166	176	117	128	251	518	398	417	222	67	83	187	1934 780
1989	216	208	182	158	282	498	685	643	269	96	87	160	2535 943
1990	180	159	181	214	270	489	232	387	277	97	91	182	1869 863
1991	176	108	86	69	193	398	621	463	262	82	69	70	2006 740
1992	76	72	32	28	214	204	588	486	197	46	53	85	1717 401
1993	94	136	188	88	161	209	255	145	153	26	30	28	1011 602
1994	18	156	268	142	295	374	396	491	367	53	128	301	2065 526
1995	324	302	255	258	295	237	225	240	160	94	200	424	1415 1363
1996	345	102	114	198	233	262	360	353	189	123	164	241	1595 1279
1997	258	196	177	172	238	219	608	490	272	89	107	151	1999 1159
1998	147	118	84	150	300								696
Mean													1886 855

Phonlathep Regulator (2)													
	4	5	6	7	8	9	10	11	12	1	2	3	Wet Dry
1985										76	176	274	
1986	275	195	304	231	155	219	177	156	119	105	210	309	1057 1300
1987	290	250	216	199	220	180	311	182	85	89	128	193	1177 1380
1988	160	181	214	223	158	129	23	62	80	124	199	230	675 965
1989	277	244	194	149	213	177	156	162	107	103	139	199	964 1268
1990	185	186	239	256	180	271	54	105	108	113	122	177	974 1051
1991	178	133	136	94	248	347	131	105	109	112	115	133	1034 859
1992	106	118	40	30	199	127	183	128	137	89	91	135	804 624
1993	136	156	227	141	172	203	153	110	90	35	27	28	869 834
1994	20	162	310	205	295	450	230	241	272	156	131	138	1693 582
1995	262	351	310	264	225	211	447	241	235	208	229	350	1623 1348
1996	240	101	133	272	254	148	132	220	210	173	254	251	1236 1261
1997	217	234	179	198	241	192	202	190	193	140	129	146	1216 1308
1998	150	110	66	164	143								741
Mean													1101 1043

**Table 5.4.12(2) Water Balance for the West Bank Area in the Delta
Makamtao-Uthong Head Regulator (3)**

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985										23.7	31.8	51.1		
1986	66.3	62.0	77.2	39.6	51.7	61.3	77.0	73.6	56.8	25.5	21.6	45.4	360.0	312.1
1987	77.0	73.8	65.1	32.1	71.4	45.7	86.2	77.5	42.5	26.3	17.2	58.7	355.4	308.4
1988	56.6	54.4	59.0	32.1	49.6	26.4	6.9	12.9	54.5	35.2	49.1	58.9	182.4	272.2
1989	69.2	66.1	41.1	44.2	62.8	64.4	66.5	45.9	44.6	39.4	35.2	70.8	328.4	319.6
1990	67.4	55.3	52.6	71.4	66.3	68.6	19.7	48.1	39.6	15.8	37.0	68.1	313.7	320.7
1991	45.5	29.9	20.1	1.5	54.0	51.2	28.2	61.5	31.3	9.3	10.4	17.4	227.7	216.4
1992	15.6	18.7	0.0	0.0	42.4	42.2	32.9	37.4	20.9	17.4	16.7	37.8	175.8	71.4
1993	27.8	23.8	26.5	24.7	30.0	40.3	24.9	28.9	22.0	0.0	7.1	9.0	170.8	150.0
1994	7.4	30.0	33.1	42.5	61.9	56.5	22.6	54.6	44.0	26.4	25.9	58.3	282.1	86.6
1995	43.6	45.2	41.8	42.7	45.6	13.7	19.9	30.3	62.0	50.3	48.6	74.0	214.2	241.2
1996	43.6	34.6	28.9	69.2	48.4	41.4	5.0	12.0	53.2	67.7	61.7	67.9	229.2	280.0
1997	65.8	54.0	43.5	66.5	72.0	49.1	43.5	63.8	65.6	19.4	38.3	23.2	360.5	360.6
1998	24.3	36.9	34.7	55.7	45.3								258.2	234.4
Mean														

Nam Noi Right Canal No.1 (4)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985										0.0	1.4	4.3		
1986	1.8	0.0	13.5	41.2	40.3	63.5	70.4	43.5	11.1	0.0	24.6	57.1	270.0	21.0
1987	60.3	59.1	39.0	16.2	47.4	20.4	69.7	64.6	21.8	0.0	0.0	4.7	240.1	240.1
1988	4.0	16.9	7.1	1.1	36.9	31.3	42.7	55.2	15.2	0.0	14.7	42.3	182.4	32.7
1989	63.0	68.0	26.1	0.0	33.1	9.6	56.5	58.2	12.3	0.3	0.3	3.0	169.7	214.1
1990	5.2	4.8	11.9	31.0	38.4	58.6	20.6	8.8	5.4	0.0	1.5	3.5	162.8	25.5
1991	4.7	6.6	4.3	0.0	25.7	38.5	42.2	40.8	4.4	3.5	13.3	8.6	151.6	20.6
1992	8.3	6.2	0.3	0.0	22.1	25.5	29.7	26.4	0.8	0.0	6.3	7.3	104.5	40.2
1993	10.1	3.4	6.6	11.8	22.8	43.0	35.9	20.6	9.9	0.3	1.7	2.2	144.0	33.7
1994	0.5	6.5	24.6	41.4	49.4	45.8	30.0	21.6	9.2	9.6	23.2	48.2	197.4	35.8
1995	37.8	36.5	29.6	22.6	31.2	23.4	28.5	13.0	19.2	17.7	28.7	47.6	137.9	184.9
1996	34.3	4.1	0.0	20.6	37.1	40.5	33.2	16.6	9.9	11.1	39.3	42.2	157.9	132.4
1997	42.1	31.8	17.1	14.9	42.7	30.6	42.8	27.9					158.9	183.6
1998														0.0
Mean													174.4	89.2

Table 5.4.12(3) Water Balance for the West Bank Area in the Delta

Nam Noi Left Canal No.2 (5)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985										0.0	14.9	32.2		
1986	29.8	37.2	31.5	12.3	15.8	28.8	36.3	3.3	24.6	0.8	1.5	3.4	121.1	145.6
1987	1.9	0.0	0.0	3.0	24.1	14.1	37.7	30.1	16.1	0.9	1.7	27.2	125.1	7.6
1988	27.6	33.3	24.4	5.3	9.3	20.2	21.2	37.8	29.2	6.7	0.0	0.8	123.0	115.1
1989	5.9	6.8	1.0	10.9	22.3	13.6	31.8	23.5	4.8	0.0	6.6	27.0	106.9	21.2
1990	26.0	24.2	19.3	5.4	19.7	27.0	16.3	24.5	6.3	1.4	0.0	3.1	99.2	103.1
1991	2.0	4.0	0.9	0.0	14.9	26.3	29.4	24.1	7.2	0.2	2.8	2.6	101.9	11.4
1992	3.2	1.2	0.0	0.0	14.6	14.7	25.9	20.8	1.8	0.0	1.5	3.6	77.8	10.0
1993	7.0	2.3	0.5	3.3	8.3	22.6	23.8	12.8	6.5	0.0	1.7	1.8	77.3	14.9
1994	0.8	2.7	6.6	18.8	26.4	28.6	31.0	17.5	1.6	1.4	5.6	9.2	123.9	13.6
1995	8.1	4.9	3.2	16.3	21.8	20.5	20.3	2.1	9.3	10.7	20.3	31.3	90.3	32.4
1996	28.2	13.4	1.0	15.0	30.1	26.8	23.6	8.4	3.6	6.3	16.0	16.8	107.5	104.9
1997	16.8	11.3	6.9	14.3	22.8	20.7	27.7	22.9					108.4	74.1
1998														0.0
Mean													104.9	52.7

Nam Noi Left Canal No.1 (6)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985										0.0	15.1	35.9		
1986	34.2	36.8	22.5	0.0	22.2	29.5	41.9	43.1	21.7	0.9	2.3	4.0	158.4	144.5
1987	2.7	0.0	0.0	6.2	32.1	21.8	44.4	39.1	11.1	0.0	2.5	29.5	154.7	9.9
1988	37.8	43.2	22.0	0.3	14.9	26.2	36.0	48.6	31.2	1.3	1.3	0.5	157.2	135.0
1989	7.5	6.9	0.2	18.0	33.9	32.5	41.6	39.5	4.6	0.5	8.2	28.6	170.1	17.7
1990	32.1	34.9	20.1	8.3	23.8	30.8	26.9	39.1	9.9	1.4	1.5	3.0	138.8	124.4
1991	4.4	2.4	1.8	0.0	18.3	24.9	40.9	39.5	7.2	0.4	5.9	2.9	130.8	14.5
1992	3.6	2.2	0.0	0.0	19.4	21.5	36.1	40.3	6.0	0.5	3.6	3.0	123.3	15.0
1993	7.9	3.8	0.0	4.2	15.5	27.2	30.9	18.2	16.9	0.0	1.4	0.9	112.9	18.8
1994	0.7	3.1	8.3	10.5	24.9	29.3	35.5	22.5	4.1	2.0	6.3	10.7	126.8	14.4
1995	9.9	1.0	0.7	18.2	20.6	16.1	17.6	7.8	4.2	6.7	16.7	34.0	84.5	30.6
1996	31.4	15.4	10.1	19.0	19.6	29.1	19.4	10.3	7.1	6.1	21.3	17.5	104.5	114.3
1997	17.4	16.8	9.2	12.5	26.4	24.4	36.0	28.8					128.1	88.3
1998														0.0
Mean													132.9	58.1

Table 5.4.12(4) Water Balance for the West Bank Area in the Delta

Khlong Thung Raharn (Saphan Project) (7)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985										0.0	1.1	7.5		
1986	7.7	9.6	8.4	3.6	3.8	8.4	15.0	11.0	6.1	0.0	0.5	6.4	47.9	34.3
1987	6.3	6.6	6.6	0.2	5.4	4.6	11.0	13.4	5.1	0.0	0.0	0.8	39.7	26.4
1988	2.2	0.9	0.6	3.5	8.9	9.5	12.6	11.1	1.0	0.0	6.0	9.4	46.6	4.5
1989	12.2	7.9	6.5	0.3	4.8	5.8	12.4	11.7	2.6	0.0	0.0	0.0	37.6	42.0
1990	0.0	1.1	0.5	3.9	4.9	9.7	8.5	6.6	0.8	0.0	0.0	1.7	34.4	1.6
1991	1.6	0.0	0.0	0.0	4.3	8.0	9.3	7.1	2.3	0.0	1.1	1.0	31.0	3.3
1992	1.7	1.7	0.0	0.0	4.5	4.2	7.3	7.6	2.8	0.3	0.2	2.0	26.4	5.5
1993	0.2	0.5	0.0	0.0	1.4	7.6	4.9	1.9	1.5	0.0	0.9	0.5	17.3	3.2
1994	0.2	1.5	0.7	4.0	8.3	11.7	8.0	4.8	0.1	1.3	2.0	7.7	36.9	3.8
1995	7.1	4.8	0.6	1.2	5.4	6.9	5.6	1.6	1.6	3.9	6.6	11.1	22.3	23.5
1996	7.0	3.5	1.6	4.1	3.2	8.2	4.7	1.9	3.4	2.7	10.5	10.5	25.5	33.7
1997	9.3	6.4	2.4	8.3	5.5	4.0	5.0	3.7					26.5	41.8
1998														0.0
Mean													33.2	16.5

Right Land No.1 (Saphan Project) (8)

	4	5	6	7	8	9	10	11	12	1	2	3	Wet	Dry
1985										0.3	0.7	9.8		
1986	8.4	6.7	8.5	1.4	1.8	4.5	10.2	8.2	5.5	0.0	0.0	6.0	31.6	34.4
1987	6.1	5.4	5.2	0.0	4.3	2.7	6.7	8.9	2.9	0.1	0.0	1.3	25.5	22.7
1988	0.3	2.3	2.1	3.2	4.3	5.6	6.6	3.7	0.1	0.0	3.1	4.8	23.5	6.1
1989	6.2	4.2	4.1	0.2	3.3	1.7	6.6	8.1	1.4	0.0	0.0	0.0	21.3	22.4
1990	0.4	0.0	0.0	2.6	3.8	7.5	4.7	1.7	0.0	0.0	0.4	1.7	20.3	0.4
1991	0.7	0.0	0.0	0.0	2.4	2.4	3.9	4.5	0.6	0.0	0.5	0.3	13.8	2.8
1992	0.0	0.0	0.0	0.0	2.7	2.5	3.3	2.2	0.2	0.0	0.0	0.0	10.9	0.8
1993	0.4	0.0	0.0	0.0	0.1	2.4	1.3	0.4	0.0	0.0	0.2	0.4	4.2	0.4
1994	0.0	1.4	1.8	3.1	3.4	3.9	2.1	1.5	0.4	0.0	0.3	2.6	14.4	3.8
1995	2.8	2.2	1.2	1.8	3.9	1.7	1.3	1.6	2.9	2.5	3.5	5.2	13.2	9.1
1996	2.4	1.3	3.0	3.2	3.9	3.0	1.5	2.2	2.7	3.5	4.0	4.2	16.5	17.9
1997	2.2	4.0	1.8	2.6	3.4	1.1	2.8	2.6					12.5	19.7
1998														0.0
Mean													17.7	11.0