# THE KINGDOM OF THAILAND MINISTRY OF AGRICULTURE AND COOPERATIVES DEPARTMENT OF LAND DEVELOPMENT

# THE MASTER PLAN STUDY ON THE INTEGRATED RURAL DEVELOPMENT OF SALT-AFFECTED LAND IN NORTHEAST THAILAND

APPENDIX

OCTOBER 1991

TAPAN INTERNATIONAL COOPERATION AGENCY



19737

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# **APPENDIX**

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## A-1. GENERAL CLIMATE FACTOR

Table A-1 General Climate Factor

1. Climatological Data at A. Muang, Khon Kaen for the Period 1956 - 1985

											,	,	
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Pressure(+1000 or 900	mbs.)												
Mean	14. 10	11, 68	9.72	7. 97	6.48	5. 21	5. 17	5, 14	7, 23	10, 68	13, 28	14. 52	9, 27
Bxt. Max.	28. 13	24, 72	24, 74	21.68	14, 90	13, 70	12.62	13, 92	15, 46	19, 70	23, 77	25, 08	28. 13
Bxt. Min.	2,51	0, 56	99, 98	97. 40	97. 40	94, 92	95.05	95, 58	94.32	1. 87	4.18	3. 44	94. 32
Mean Daily Range	5. 57	5, 93	5, 97	5, 68	5. 12	4. 23	4, 04	4, 11	4, 56	4.71	4. 78	5. 11	4.98
Temperature(°C)		1,14									3.4.4		
Mean	22, 8	25.6	28.7	30.1	29. 2	28.6	28.0	27.6	27.0	26.5	24.8	22.8	26.8
Mean Max.	30, 3	32.7	35. 5	36.5	34.8	33. 3	32.6	32, 0	31.5	31. 3	30.8	29, 9	32.6
Mean Min	15, 7	19, 1	22.2	24.4	24.7	24.7	24, 2	24, 1	23.6	22.3	19.3	16. 3	21.7
Bxt. Max.	37. 2	41.0	41.8	42.8	41. 2	39. 4	38. 0	38.0	35. 9	35, 4	35. 4	35, 8	42.8
Ext. Min.	5. 7	10, 4	10.3	16.4	19.8	20.7	20.2	20, 8	19.3	14.0	9.4	5, 6	5.6
Relative Humidity(%)													,
Mean	63, 9	62.4	59, 3	63.0	72.0	75.4	77.4	79.7	82.0	77.1	70.5	66, 5	70.8
Mean Max	85, 9	82, 9	80.4	82, 2	88.0	89. 1	90.4	91.6	93, 5	91.4	88, 8	87. 3	87.6
Mean Min.	41.4	40.8	38.6	42.5	52.8	58.7	6l. l	64. 0	65, 6	58.3	49. 4	44. 1	51.5
Bxt. Min.	11. 0	10.0	10.0	14.0	26.0	33. 0	34.0	37.0	45. 0	26, 0	21, 0	15. 0	10.0
Dew Point(°C)		i											
Mean	15.0	17.0	19. 1	21.5	23.0	23.6	23, 5	23.6	24, 3	21.9	18.6	15.7	20.6
Evaporation(mm)								[				150.4	2222
Mean - Pan	154.2	161.4	211.7	216.6	196.5	171. 4	165. 5	150, 0	137.0	152, 3	151.0	152, 4	2020.0
Cloudiness (0-10)												0.5	ا حما
Mean	3.0	3.4	3.6	5.0	6.9	8.0	6.0	8.5	7.8	5.7	4.2	3.5	5.6
Sunshine Duration(hr)									105.0	000 0	200	000.0	0700 0
Mean	285. 5	252.8	255.2	252. 5	244.6	186. 1	182. 4	159, 5	165. 2	236.6	262.3	283, 3	2766. 0
Wind(knots)_									(m)	) hrs	, m	MD	_
Prevailing Wind	NE	- NB	NE	SW	SW	SW	SW	SW	SW	NE	NE	NE	
Mean Wind Speed	2.0	2.1	2.4	2.4	2.4	2.7	2.8	2.6	1.8	2.1	2.4	2. 4 35	55
Max. Wind Speed	. 33	33	40	46	47	49	55	40	33	34	33	35	55
Rainfall(mm)		S 1 5 5						100.7	000 n	07.0	10.0	0.0	1176.7
Mean	4.6	13.2	31. 1	60. 7	167. 7	176.9	163. 4	192.7	262 0	87. 2	13. 9	3.3	105.5
Mean Rainy Days	0.9	2.6	3.8	6. 9	13.6	14.4	15.7	17.7	18.2	9.3	1.7	0.7	146.6
Greatest in 24 hr	29. 2	63.4	51, 8	65. 7	87. 7	133. 4	92.8	134.8	146, 6	124.5	81.0	26, 6 20/71	7/82
Day/Year	24/69	3/66	2/82	6/65	5/71	26/83	26/63	12/78	7/82	26/69	10/74	20/ ()	1/04
Number of Days With					, ,			ا م ا	0.0	0.1	7.0	14.9	116. 9
llaze	22.5	23.5	26. 5	18, 3	2.4	0.0	0.1	0.0	0.2	2.1	7. 0	14. 3 0. 4	2.0
Fog	0.3	0.4	0.2	0.1	0.0	0, 0	0.0	0.1	0.0	0.4	0.1	0.4	100.2
Thunderstorm	0.2	1.7	4.8	11.8	18.6	14.7	14.0	13.1	14. 4	6.3	0.5	0. 1	100, 2
	L	L		L									

<u>Note</u>

Station: A. Muang, Khon Kaen Index Station: 48381 Latitude: 16° 26' N Longitude: 102° 50' B

Sunshine Duration 1957 - 1985 Evaporation 1962 - 1985 Evaporation

Source: Climatological Data of Thailand 30-Year Period (1956-1985)

Meteorological Department

## 2. Rainfall Data at A. Phra Yun for the Period 1983 - 1988

	Jan.	Feb.	Mar.	Арг.	Мау	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Rainfall(mm) Wean	0.0	20. 4	8. 1	70, 0	161, 0	115.8	109, 4	171.5	182, 4	87. 7	9. 4	0.0	935. 8

Blevation of Station Above MSL

Height of Raingauge

Height of Barometer Above MSL Height of Thermometer Above Ground Height of Wind Vane Above Ground

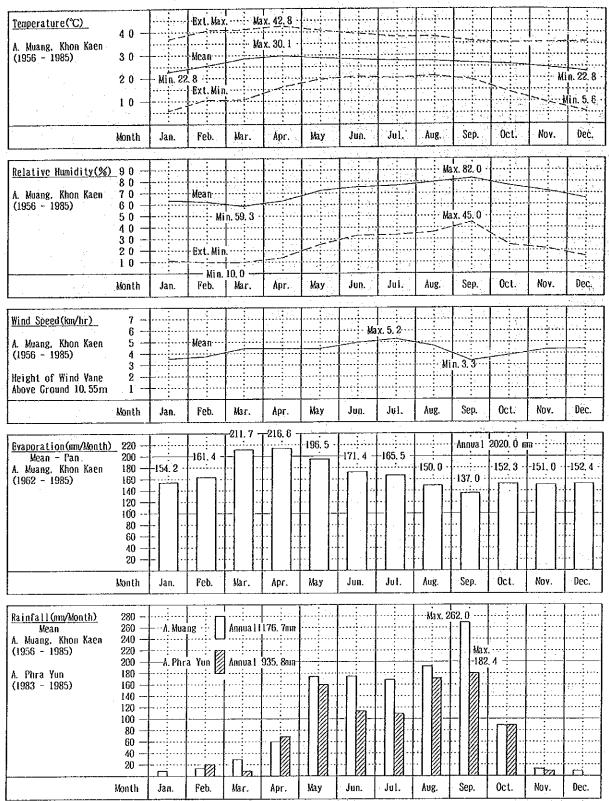
165 m

166 m 1. 25 m 10. 55 m 1, 00 m

Source: Rainfall Record Notebook

A Phra Yun Agricultural Extension Office

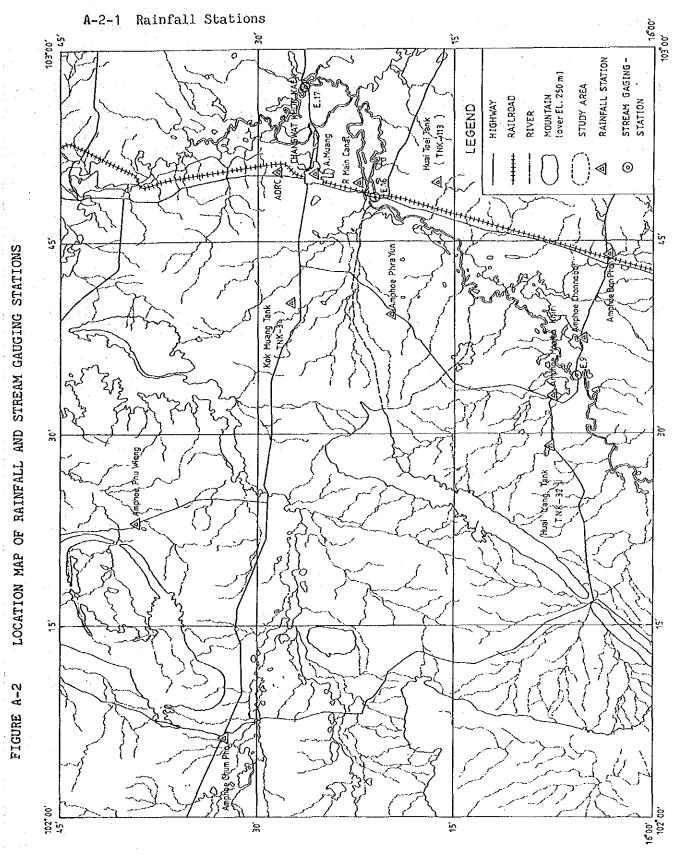
Figure A-1 Variation in General Climate Factor



Source A. Muang. Khon Kaen: Climatological Data of Thailand 30-Year Period [1956-1985], Meteorological Department

A. Phra Yun : A. Phra Yun Agricultural Extension Office

A-2. RAINFALL ANALYSIS



List of Rainfall Stations in the Vicinity of the Study Area Table A-2

Code	Station Name	Observated		Col	lected Period	
No.	and Organization	Period   and   Location	19508	19608	1970\$	1980\$ 1990\$
(1)	A. Muang,	Apr. 1952-cont.	1 2 3 4 5 6 7 8 9 Apr. 1952	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9 0 1
14013	Khon Kaen (M.D.)	Lati: 16 25 40 Long:102 50 17				
(2)	A. Mancha	Apr. 1952-cont.	Apr. 1952			Mar, 1989
14022	Khiri Khon Kaen (M.D.)	Lati: 16 07 30 Long:102 32 50				
(3)	A. Ban Phai, Khon Kaen	Apr. 1954-cont.	Apr. 1954			Mar. 1989
14042	(M. D. )	Lati: 16 03 32 Long:102 44 02	No Record Jul. 1	955 958		No Record Aug. 1986
(4)	A. Phu Wiang, Khon Kaen	Apr. 1952-cont.	Apr. 1952			Mar. 1989
14052	(M. D. )	Lati: 16 39 10 Long:102 22 52		No Record	Oct. 1977—Mar. 1978	Oct. Dec. 1983 : : : : : : : : : : : : : : : : : : :
(5)	A. Chum Phae, Khon Kaen	Apr. 1952-cont.	Apr. 1952			Mar. 1989
14073	(M. D. )	Lati: 16 32 35 Long:102 06 12		No Record	Apr. 1977 - War, 1979	
(6)	A. Chonnabot. Khon Kaen	Oct. 1966-cont.		0ct. 1966		Mar. 1989
14143	(M. D. )	Lati: 16 05 15 Long:102 37 27				
(7)	Huai Yang Tank(TNK-32)	Apr. 1957-cont.	Apr. 195	7		Mar. 1989
14170	(R. I. D.)	Lati: 16 07 50 Long:102 29 00				No Record Apr. 1987—Mar. 1988
(8)	Kok Muang Tank (TNK-34)	Apr. 1957-cont.	Apr. 195	7 :		Mar. 1989
14190	(R. I. D.)	Lati: 16 27 30 Long:102 40 10	No Record Jul	-Sep. 1957		No Record <u>Apr. 1987—Mar. 1988</u>
(9)	Huai Toei Tank(TNK113)	Apr. 1971-cont.			Apr. 1971	Mar. 1989
14320	(R. I. D.)	Lati: 16 16 15 Long:102 49 40				No Record Apr. 1987—Mar. 1988
(10)	R Main Canal	Jan. 1976-cont.			Jan. 1976	Mar. 1989
14370	(R. I. D. )	Lati: 16 22 12 Long:102 49 37			No Record Oct. Nov. 1	978
(11)	A. Phra Yun, Agricultural	Jan. 1983-cont.				Jan. 1983 : 16th Sep. 1990
	Extension Department	Lati: 16 20 Long:102 40				
(12)	ADRC	Sep. 1985-cont.				Sep. 1985 Jul. 1990
		Lati: 16 30 Long:102 50				No Record <u>Sep. Dec. 1988</u> : : : : : : : : : : : : : : : : : :

Note:

Source :

<sup>1)</sup> Recording Rain Gage (1), (5), (6), (12)

<sup>2)</sup> Standard Rain Gage (2), (3), (4), (7), (8), (9), (10), (11)

<sup>3)</sup> M.D.: Meteorological Department

<sup>1)</sup> List of Rainfall Stations in Thailand, Hydrology Division, RID
2) Daily rainfall Data, (1)—(10): Hydrology Division, RID (12): ADRC
(11): A. Phra Yun, Agricultural Extension Office

Table A-3 Monthly Rainfall at Various Stations

					• .								
		ANNUAL	1222.7 956.4 1249.2	1165.7 1067.4 1426.8 1363.8 708.1	1261.3 1247.6 1515.7 936.0	992.1 1069.7 825.6 1099.3 745.6	987.9 717.2 744.8 711.0 800.6	1111.2 854.9 1230.0 1213.0 1462.7	765.2 1158.2 905.4 863.4 778.1	589.5 905.5 767.6	1025.4	1515.7	589.5
KAEN	<b>企</b>	DEC	000	00000	00000	70000 80000	25 24 20 20 20 20 20 20	00000	00000	000	4.1	8.76	0.0
L KHON	UNIT :	80	4.05	00000	720.0 0.052.0 0.0	080000	30.00 30.00 30.70 30.70	80,800 40,800	80800 80800	36.7	13.1	144.0	0.0
A KHIRI.		100	75.7	2837.4 66.03	123.17 2217.0 36.9 36.9	165.8 42.2 75.7 75.1	39.6 95.7 10.0 124.5	154.6 11.0 12.8 141.4	59.8 104.5 111.8 111.8	40.3 60.4 215.5	89.1	258.8	0.0
MANCHA		SEP	211.1 201.4 179.6	132.6 272.6 572.6 363.4 283.5	144.0 482.4 1001.1 361.2 163.2	182.3 433.2 162.3 207.3	194.5 148.6 174.6 120.7 183.6	216.3 288.5 467.1 329.7 336.3	79.7 384.9 1115.0 271.0 207.5	47.5 203.5 49.2	247.1	572.2	47.5
(2) A.		AUG	72.0 182.7 139.4	204.3 193.3 261.0 126.6 52.7	274.6 135.8 105.1 57.7 293.3	277.9 28.4 27.2 57.2	248.8 72.6 1255.2 119.8	184.3 172.5 209.3 263.9 155.0	134.9 158.0 218.3 73.4 26.7	104.1 196.0 31.6	141.4	293.3	26.7
¥.		J00	39.6 104.6 113.8	333.7 128.7 97.4 269.8 81.0	61.1 310.4 205.0 79.3	70.7 20.2 72.0 54.0	147.7 5.8 139.0 101.9	126.1 282.8 149.3 92.8	168.2 144.0 121.5 73.4	31.3 42.2 71.5	124.2	333.7	N
RAINFALL	•	NOS	277.7 3.66 7.78.6	51.8 2173.7 217.1 109.6 10.6	2525 2535 2635 2635 2635 2635 2635 2635	282.1 282.1 173.9 190.5	94.6 119.4 192.8 106.8	81.4 99.9 162.0 538.5	32.7 58.0 236.1 130.7 46.7	30.9 75.4 133.6	137.9	538.5	0.0
MONTHLY		MAY	168.6 58.2 238.5	269.7 118.1 192.9 306.9	274.1 154.6 110.5 381.1 165.5	193.6 66.0 112.9 92.8 151.2	110.7 31.8 60.2 206.2	248.9 168.4 75.7 81.2 130.9	155.2 79.4 69.2 90.7 174.2	159.5 119.1 114.6	148.4	381.1	31.8
õ	:	APR	182.9 52.4 30.7	288.00 30.50 1.50 1.50	271.0 143.7 235.2 97.7	20.0 24.6 44.6 43.2	102.9 6.00.8 0.00.0	111.8 74.6 19.4 161.7 29.2	36.00 39.14 39.14	175.9 114.0 64.6	71.2	271.0	0.0
		MAR	52.8 31.4	2024.20	80024	400044 60044	02,230	37.72 38.00 8.00	25.05 25.05	1.2	30.6	131.9	0 1
TABLE		FEB	3.601	80440 40000	500%0 400%0	37.0	20050 20040	000%0	0000 0000 0000 0000	0.0 13.5 85.8	14.0	85.8	0 1
TAE		JAN	125.1	00000	00000	00000	00000	00,00	00000	000	4.2	125.1	0.0
		YEAR	1953 1954 1955	1956 1957 1958 1959	1961 1962 1963 1964 1965	1966 1967 1968 1969 1970	1971 1972 1973 1974 1975	1976 1977 1978 1979	1981 1982 1983 1984 1985	1986 1987 1988		MAX	MIN
	~ WH	DEC ANNUAL	0.0 1359.1 0.4 1316.6 0.0 1099.4	0.0 880.8 0.0 1108.3 0.0 1243.1 0.0 1155.2	0.0 1222.3 3.5 1232.3 0.0 1296.2 0.0 1214.0	18.4 1338.8 0.0 931.2 0.0 1146.3 0.0 1243.5 8.3 1339.8	26.8 1198.5 11.9 1077.1 0.0 778.9 0.0 1150.6 0.0 1460.0	0.0 1096.9 18.5 1216.4 0.0 1390.2 0.0 1177.2 0.0 1327.4	0.0 1063.7 9.1 1479.9 1.0 1286.7 0.0 1245.3 0.0 902.4	2.5 1085.4 0.0 1284.1 0.0 1255.1	2.8 1180.1	26.8 1479.9	0.0 778.9
KAEN	••		000	0 1108 0 1243 0 1255 0 1155	2222 2 1233 0 1296 0 1214 0 919	4 1338. 0 931. 0 1146. 3 1339.		00000	04000	.5 1085 .0 1284 .0 1255	¦ ∞	.0 26.8 1479.	.0 778.
KHON KAEN	C UNIT : MM >	DEC	24.3 2.0 2.0 4.0 0.0	00000	88.7 0.0 1223. 88.7 0.0 1296. 22.8 0.0 1214. 0.0 0.0 919.	5.2 11.3 18.4 1338. 4.3 0.0 0.0 1146. 2.0 58.6 0.0 1243. 1.9 1.6 8.3 1339.	5.3 7.7 26.8 5.8 0.1 11.9 5.6 102.0 0.0	4 W G G G	19.6 17.9 17.9 10.0 2.6 0.0 0.0 0.0	11 2.5 1085 3 0.0 1284 4 0.0 1255	88.2 13.2 2.8	26.8 1479.	.0 0.0 778.
MUANG, KHON	••	CT NOV DEC	95.8 24.3 0.0 70.0 7.8 2.9 0.0 7	24.0 0.0 0.0 1108 24.5 0.0 0.0 1108 67.1 0.0 0.0 1158 13.1 0.0 0.0 1158 77.2 0.5 0.0 961	5 195.3 0.2 0.0 1222. 5 34.5 8.3 3.5 1233. 5 167.9 82.8 0.0 1219. 1 110.1 0.0 0.0 919.	0 106.2 11.3 18.4 1338. 3 11.8 21.5 0.0 931. 3 12.3 0.0 0.0 1146. 5 152.3 36.6 0.0 1243. 41.9 1.6 8.3 1339.	58.3 7.7 26.8 164.7 61.1 11.9 3.8 0.1 0.0 90.6 102.0 0.0 74.6 0.0 0.0	73.2 2.1 0.0 73.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	25.6 27.7 27.9 2.0 2.0 2.0 2.0 2.0 2.0	145.5 58.2 0.1 2.5 1085 215.3 137.7 33.3 0.0 1284 106.9 187.3 0.4 0.0 1255	259.3 88.2 13.2 2.8	5.3 102.0 26.8 1479.	0.0 0.0 778.
KHON	••	EP OCT NOV DEC	257.7 95.8 24.3 0.0 486.7 70.0 0.0 0.4 181.3 7.8 2.9 0.0	158.6 34.0 0.0 0.0 880 272.2 24.5 0.0 0.0 1108 278.7 57.1 0.0 0.0 1155 501.8 77.2 0.5 0.0 961	195.3 0.2 0.0 1222. 34.5 5.3 3.5 1233. 167.9 88.7 0.0 1294. 186.9 22.8 0.0 1214. 110.1 0.0 0.0 919.	106.2 11.3 18.4 1338. 11.8 21.5 0.0 931. 34.3 0.0 0.0 1146. 152.0 58.6 0.0 1263. 41.9 1.6 8.3 1359.	256.2 185.9 58.3 7.7 26.8 150.9 123.3 164.7 61.1 11.9 158.2 268.4 3.8 0.1 0.0 300.5 214.6 90.6 102.0 198.7 291.5 74.6 0.0 0.0	174.2 293.1 160.4 0.8 0.0 1 207.0 403.8 9.3 2.5 18.5 1 19.9 578.4 73.2 2.1 0.0 1 212.3 249.2 0.0 0.0 0.0 1 159.4 333.4 97.6 0.0 0.0 0	173.3 29.0 139.2 19.6 0.0 175.1 15.7 9.1 175.1 15.7 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17	160,1 145,5 58,2 0,1 2,5 1085 28,4 215,3 137,7 35,3 0,0 1284 101,5 106,9 187,3 0,4 0,0 1255	189.7 259.3 88.2 13.2 2.8	384.5 593.4 195.3 102.0 26.8 1479.	76.1 29.0 0.0 0.0 0.0 778.
AT (1) A. MUANG, KHON	••	SEP OCT NOV DEC	95.8 24.3 0.0 70.0 7.8 2.9 0.0 7	185.6 166.3 158.6 34.0 0.0 0.0 880 128.9 203.3 272.2 24.5 0.0 0.0 1108 128.7 160.3 272.7 67.1 0.0 0.0 11543 128.9 106.0 501.5 13.1 0.0 0.0 1154 123.4 200.0 105.7 77.2 0.5 0.0 961	267.5 195.5 0.2 0.0 1222. 427.5 34.5 5.3 3.5 1235. 270.2 186.9 28.8 0.0 1296. 180.0 110.1 0.0 0.0 919.	124.7 228.9 167.0 106.2 11.3 18.4 1338. 149.3 211.4 285.3 11.8 21.5 0.0 931. 239.4 205.0 158.8 34.3 0.0 0.0 1146. 173.4 96.2 279.8 152.0 38.6 0.0 1243. 64.6 154.1 317.4 41.9 1.6 8.3 1339.	241.5 256.2 185.9 58.3 7.7 26.8 91.0 150.9 123.3 164.7 61.1 11.9 1714.4 186.2 268.4 3.8 0.1 0.0 151.5 300.5 251.4 0.0 10.0 0.0 253.7 198.7 291.5 74.6 0.0 0.0	178.0 174.2 293.1 160.4 0.8 0.0 1 85.6 207.0 403.8 9.3 2.5 18.5 1 86.5 219.9 378.2 73.2 2.1 0.0 38.5 212.3 249.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	246.4 173.3 29.0 139.2 19.6 0.0 1 207.3 76.1 593.4 131.1 5.7 9.1 1 275.0 11.4 207.2 96.4 5.6 0.0 1 72.2 124.3 184.8 128.2 0.2 0.0	79.4 160.1 145.5 58.2 0.1 2.5 1085 133.9 281.4 215.3 137.7 33.3 0.0 1284 302.9 101.5 106.9 187.3 0.4 0.0 1255	158.3 189.7 259.3 88.2 13.2 2.8	346.9 384.5 593.4 195.3 102.0 26.8 1479.	39.8 76.1 29.0 0.0 0.0 0.0 778.
(1) A. MUANG, KHON	••	AUG SEP OCT NOV DEC	44.7 168.9 357.7 95.8 24.3 0.0 11.7 123.4 486.7 70.0 0.0 0.0 0.4 95.4 253.4 181.3 7.8 2.9 0.0 1	104.1 185.6 166.3 158.6 34.0 0.0 0.0 880 174.2 125.9 203.3 272.2 24.5 0.0 0.0 1108 27.0 128.7 160.3 278.7 67.1 0.0 0.0 1243 20.5 192.9 106.0 501.5 13.1 0.0 0.0 11543 192.4 123.4 200.0 105.7 77.2 0.5 0.0 961	78.6 174.5 182.6 427.5 195.3 0.2 0.0 1222. 178.6 174.5 182.6 422.5 34.5 5.3 3.5 1233. 179.7 27.5 182.2 0.0 1296.5 186.9 22.8 0.0 1296. 105.8 154.2 94.3 270.2 186.9 22.8 0.0 1214.7 71.9 125.3 207.9 180.0 110.1 0.0 0.0 919.	137.1 124.7 228.9 167.0 106.2 11.3 18.4 1338. 137.3 149.3 211.4 285.3 11.8 21.5 0.0 931. 215.5 239.4 203.0 181.8 34.3 0.0 0.0 1146. 216.1 173.6 96.2 279.5 132.0 38.6 0.0 1243. 266.5 64.6 154.1 517.4 41.9 1.6 8.3 1339.	112.1 241.5 256.2 185.9 58.3 7.7 26.8 292.6 91.0 150.9 123.3 16.7 61.1 11.9 67.1 174.4 186.2 266.4 3.8 0.1 0.0 88.5 151.5 300.5 214.6 90.6 102.0 0.0 171.4 253.7 198.7 291.5 74.6 0.0 0.0	39.1 178.0 174.2 293.1 160.4 0.8 0.0 141.6 85.6 207.0 403.8 9.3 2.5 18.5 18.5 18.5 86.9 21.9 35.4 73.2 2.1 0.0 282.6 804.5 212.3 242.7 0.0 0.0 0.0 0.0 357.6 97.3 159.4 333.4 97.6 0.0 0.0 0.0	151.7 246.4 173.3 29.0 139.2 19.6 0.0 119.1 207.3 76.1 593.4 131.1 5.7 9.1 1357.1 112.5 36.5 121.1 135.1 17.9 1.0 214.4 279.0 211.4 207.2 96.4 5.6 0.0 202.4 72.2 124.3 184.8 128.2 0.2 0.0	178.5 79.4 160.1 145.5 58.2 0.1 2.5 1085 128.9 133.9 281.4 215.3 137.7 33.3 0.0 1284 200.8 302.9 101.5 106.9 187.3 0.4 0.0 1255	184.0 158.3 189.7 259.3 88.2 13.2 2.8	466.5 346.9 384.5 593.4 195.3 102.0 26.8 1479.	39.1 39.8 76.1 29.0 0.0 0.0 0.0 778.
RAINFALL AT (1) A. MUANG, KHON	••	JUL AUG SEP OCT NOV DEC	208.0 201.9 144.7 148.9 357.7 95.8 24.3 0.0 17.7 17.7 194.6 111.7 123.4 486.7 70.0 0.0 0.4 111.2 415.4 62.4 235.4 181.3 7.8 2.9 0.0 1	87.4 104.1 185.6 166.3 158.6 34.0 0.0 0.0 880 141.2 174.2 125.9 205.3 272.2 24.5 0.0 0.0 1108 155.6 277.0 128.7 160.3 278.7 677.1 0.0 0.0 11243 125.6 90.5 192.9 106.0 501.5 13.1 0.0 0.0 11543 189.0 192.4 123.4 200.0 105.7 77.2 0.5 0.0 961	141.1 121.5 39.8 295.4 367.3 195.3 0.2 0.0 1222. 235.7 78.6 174.5 182.6 422.5 34.5 5.3 3.5 1235. 265.4 103.7 248.7 715.2 200.3 167.9 88.7 0.0 1296. 265.4 103.8 154.2 94.3 270.3 186.9 22.8 0.0 1214. 82.8 71.9 123.3 207.9 180.0 110.1 0.0 0.0 919.	354.6 137.1 124.7 228.9 167.0 106.2 11.3 18.4 1338. 50.3 137.3 149.3 211.4 285.3 11.8 21.5 0.0 931. 48.4 215.5 259.4 203.0 181.8 34.3 0.0 0.0 1146. 60.0 310.1 173.6 96.2 259.5 152.0 38.6 0.0 1243. 156.2 466.5 64.6 154.1 517.4 41.9 1.6 8.3 1339.	199.2 112.1 241.5 256.2 185.9 58.3 7.7 26.8 17.5 292.6 91.0 150.9 123.3 164.7 61.1 11.9 62.5 67.1 171.4 186.2 268.4 3.8 0.1 0.0 0.0 102.7 84.5 151.5 300.5 214.6 90.6 102.0 0.0 381.1 171.4 253.7 198.7 291.5 74.6 0.0 0.0	124.6 59.1 178.0 174.2 293.1 160.4 0.8 0.0 1 258.0 141.4 85.6 207.0 403.6 9.3 2.5 18.5 1 182.1 112.9 546.9 219.9 378.4 73.2 2.1 0.0 1 243.8 282.6 80.5 212.3 249.2 0.0 0.0 0.0 1 211.1 357.6 97.3 159.4 333.4 97.6 0.0 0.0 0.0	248.2 151.7 246.4 173.3 29.0 139.2 19.6 0.0 1 128.2 19.1 207.3 76.1 593.4 131.1 5.7 9.1 106.8 357.1 113.3 38.4, 512.11 153.1 17.9 1.0 139.7 214.4 279.0 211.4 207.2 96.4 5.6 0.0 126.1 202.4 72.2 124.3 184.8 128.2 0.2 0.0	280.0 178.5 79.4 160.1 145.5 58.2 0.1 2.5 1085 143.4 128.9 133.9 281.4 215.3 137.7 33.3 0.0 1284 245.0 200.8 302.9 101.5 106.9 187.3 0.4 0.0 1255	169.0 184.0 158.3 189.7 259.3 88.2 13.2 2.8	381.1 466.5 346.9 384.5 593.4 195.3 102.0 26.8 1479.	17.5 39.1 39.8 76.1 29.0 0.0 0.0 0.0 778.
AT (1) A. MUANG, KHON	••	JUN JUL AUG SEP OCT NOV DEC	2 201.9 144.7 168.9 357.7 95.8 24.3 0.0 3 194.6 111.7 123.4 486.7 70.0 0.0 0.0 0.4 3 415.4 621.4 233.4 181.3 7.8 2.9 0.0 1	80.4 87.4 104.1 185.6 166.3 158.6 34.0 0.0 0.0 880 58.0 141.2 174.2 125.9 205.3 272.2 24.5 0.0 0.0 1108 0.0 153.2 124.5 27.0 124.5 124.5 127.0 128.7 160.2 278.7 67.1 0.0 0.0 124.3 13.3 192.6 217.0 128.7 160.0 0.0 124.5 125.6 20.0 192.4 123.4 200.0 105.7 77.2 0.5 0.0 961	60.7 141.1 121.5 39.8 295.4 367.5 195.3 0.2 0.0 1222. 64.8 235.7 78.6 174.5 182.6 422.5 34.5 5.3 3.5 1235. 47.9 105.9 195.7 248.7 215.2 201.3 167.9 88.7 0.0 1296. 87.4 269.4 103.8 154.2 94.3 270.2 186.9 22.8 0.0 1214. 111.9 82.8 71.9 123.3 207.9 180.0 110.1 0.0 0.0 919.	58.0 354.6 137.1 124.7 228.9 167.0 106.2 11.3 18.4 1338. 14.8 50.3 137.3 149.3 211.4 285.3 11.8 21.5 0.0 931.8 13.1 48.4 215.5 25.4 205.0 188.8 34.3 0.0 0.0 1146.3 34.9 6.0 0.0 1145.3 34.9 6.0 310.1 173.6 96.2 279.5 152.0 38.6 0.0 1243.1 110.8 156.2 266.5 64.6 154.1 517.4 41.9 1.6 8.3 1359.	53.0 199.2 112.1 241.5 256.2 185.9 58.3 7.7 26.8 138.6 17.5 292.6 910 150.9 123.3 16.7 61.1 11.9 14.4 62.5 67.1 171.4 186.2 268.4 3.8 0.1 0.0 6.0 6.5 18.7 18.5 268.5 151.5 190.5 86.5 121.4 90.5 10.5 0.0 6.0 0.0 6.0 381.1 171.4 253.7 198.7 291.5 74.6 0.0 0.0	75.1 124.6 59.1 178.0 174.2 293.1 160.4 0.8 0.0 170.6 258.0 141.4 85.6 207.0 403.8 9.3 2.5 18.5 18.5 18.5 18.5 18.5 18.5 18.5 18	34.0 248.2 151.7 246.4 173.3 29.0 139.2 19.6 0.0 169.4 128.2 119.1 207.3 76.1 593.4 131.1 5.7 9.1 152.0 106.8 357.1 113.3 384.5 121.1 153.1 157.9 1.0 58.3 159.7 214.4 279.0 211.4 207.2 94.4 5.6 0.0 59.2 126.1 202.4 72.2 124.3 184.8 128.2 0.2 0.0	125.7 280.0 178.5 79.4 160.1 145.5 58.2 0.1 2.5 1085 83.6 143.4 128.9 133.9 281.4 215.3 137.7 33.3 0.0 1284 67.4 245.0 200.8 302.9 101.5 106.9 187.3 0.4 0.0 1255	62.6 169.0 184.0 158.3 189.7 259.3 88.2 13.2 2.8	147.7 381.1 466.5 346.9 384.5 593.4 195.3 102.0 26.8 1479.	0.0 17.5 39.1 39.8 76.1 29.0 0.0 0.0 0.0 778.
RAINFALL AT (1) A. MUANG, KHON	••	MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	10.1 147.7 208.0 201.9 144.7 168.9 357.7 95.8 24.3 0.0 10.0 40.6 176.7 194.6 111.7 125.4 486.7 70.0 0.0 0.4 113.5 70.5 112.2 415.4 62.4 235.4 181.3 7.8 2.9 0.0 1	39.6 80.4 87.4 104.1 185.6 166.3 158.6 34.0 0.0 0.0 880 199.0 58.0 141.2 174.2 125.9 203.3 272.2 24.5 0.0 0.0 1108 1093.4 0.0 153.2 24.5 0.0 0.0 144.3 183.2 24.5 170.0 182.4 0.0 0.0 124.3 183.2 24.5 170.0 182.8 24.5 182.8 0.0 172.4 123.4 200.0 105.7 77.2 0.5 0.0 961	1.0 60.7 141.1 121.5 39.8 295.4 367.5 195.3 0.2 0.0 1222. 28.7 66.8 255.7 78.6 174.5 182.6 422.5 34.5 5.3 5.5 1235. 28.9 4.7 9 105.9 195.7 246.7 215.2 2013 167.9 88.7 0.0 12296. 12.1 87.4 266.4 105.8 154.7 24.3 270.2 186.9 22.8 0.0 1216. 27.6 111.9 82.8 71.9 123.3 207.9 180.0 110.1 0.0 0.0 919.	56.1 58.0 354.6 137.1 124.7 228.9 167.0 106.2 11.3 18.4 1338. 0.0 14.8 50.3 137.3 149.3 211.4 285.3 11.8 21.5 0.0 931. 25.0 87.3 148.4 215.5 234.7 205.0 1148.8 35.4 34.9 60.0 310.1 175.4 905.2 279.5 152.0 38.8 0.0 1243.1 17.2 110.8 156.2 266.5 64.6 154.1 517.4 41.9 1.6 8.3 1359.	20.4 53.0 199.2 112.1 241.5 256.2 185.9 58.3 7.7 26.8 20.8 138.6 17.5 222.6 91.0 150.9 123.3 16.7 61.1 11.9 5.0 14.4 62.5 67.1 171.4 186.2 288.4 3.8 0.1 0.0 56.2 6.6 12.8 102.7 86.1 11.9 5.0 5.0 5.1 171.4 186.2 28.4 3.8 0.1 0.0 5.2 6.0 381.1 171.4 253.7 198.7 291.5 74.6 0.0 0.0	46.0 75.1 124.6 59.1 178.0 174.2 293.1 160.4 0.8 0.0 19.5 70.6 258.0 141.4 85.6 207.0 403.8 9.3 2.5 18.5 12.1 55.0 18.5 112.9 345.9 219.9 578.4 73.2 2.1 0.0 0.0 8.4 24.3 282.4 80.5 212.3 249.2 0.0 0.0 0.0 21.0 46.7 211.1 357.6 97.3 159.4 333.4 97.5 0.0 0.0 0.0	14.0 34.0 248.2 151.7 246.4 173.3 29.0 139.2 19.6 0.0 190.7 69.4 128.2 119.1 207.3 76.1 593.4 131.1 5.7 9.1 10.0 55.0 108.8 357.1 13.3 344.5 121.1 135.1 17.9 1.0 10.2 58.3 159.7 214.4 279.0 211.4 207.2 76.4 3.6 0.0 18.6 39.2 126.1 202.4 72.2 124.3 184.8 128.2 0.2 0.0	55.4 125.7 280.0 178.5 79.4 160.1 145.5 58.2 0.1 2.5 1085 100.8 82.6 143.4 128.9 133.9 281.4 215.3 137.7 33.3 0.0 1284 25.4 67.4 245.0 200.8 302.9 101.5 106.9 187.3 0.4 0.0 1255	34.3 62.6 169.0 184.0 158.3 189.7 259.3 88.2 13.2 2.8	193.4 147.7 381.1 466.5 346.9 364.5 593.4 195.3 102.0 26.8 1479.	0.0 0.0 17.5 39.1 39.8 76.1 29.0 0.0 0.0 0.0 778.
E MONTHLY RAINFALL AT (1) A. MUANG, KHON	••	FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	0.0 10.1 147.7 208.6 201.9 144.7 168.9 557.7 95.8 24.3 0.0 181.8 0.0 40.6 176.7 194.6 111.7 125.4 486.7 70.0 0.0 0.4 0.0 13.5 70.5 112.2 415.4 62.4 255.4 181.3 7.8 2.9 0.0 1	24.8 39.6 80.4 87.4 104.1 185.6 166.3 158.6 34.0 0.0 0.0 0.0 880 0.0 109.0 58.0 111.2 174.2 125.9 205.3 272.2 24.5 0.0 0.0 1108 0.0 109.0 58.0 111.2 17.0 125.9 100.3 278.7 578.1 0.0 0.0 114.3 8.7 16.3 33.0 125.6 20.5 192.9 106.0 501.5 13.1 0.0 0.0 115.5 0.0 68.2 4.9 189.0 192.4 123.4 200.0 105.7 77.2 0.5 0.9 961	0.0 1.0 60.7 141.1 121.5 39.8 295.4 367.5 195.3 0.2 0.0 1222. 0.0 28.7 66.8 235.7 78.6 174.5 182.6 422.5 34.5 5.3 5.5 1233. 0.0 28.9 47.9 105.9 193.7 245.7 2512.2 2013.167.9 88.7 0.0 12296. 12.9 12.1 87.4 266.4 103.8 134.2 94.3 270.2 186.9 22.8 0.0 1214. 3.9 27.6 111.9 82.8 71.9 123.3 207.9 180.0 110.1 0.0 0.0 919.	76.5 56.1 58.0 354.6 137.1 124.7 228.9 167.0 106.2 11.3 18.4 1338.49.5 0.0 14.8 50.3 137.3 149.3 211.4 285.3 11.8 21.5 0.0 931.0 10.8 26.0 87.3 146.4 215.5 239.4 505.0 158.8 34.3 0.0 0.0 1146.0 1.3 54.9 6.0 310.1 173.6 96.2 279.5 132.0 38.6 0.0 1243.0 0.8 17.2 110.8 156.2 466.5 64.6 154.1 517.4 41.9 1.6 8.3 1359.	37.4 20.4 53.0 199.2 112.1 241.5 256.2 185.9 58.3 7.7 26.8 4.7 20.8 138.6 17.5 292.6 91.0 150.9 123.3 164.7 61.1 11.9 0.0 5.0 14.4 62.5 67.1 171.4 186.2 268.4 3.8 0.1 0.0 1.4 36.0 82.5 87.1 171.4 185.2 268.4 3.8 0.2 0.0 0.0 3.7 54.2 4.0 381.1 171.4 253.7 198.7 291.5 74.6 0.0 0.0	5.6 46.0 75.1 124.6 59.1 178.0 174.2 293.1 160.4 0.8 0.0 0.0 19.5 70.6 28.0 141.4 85.6 207.0 403.8 9.3 2.5 18.5 16.3 12.9 578.4 73.2 2.1 0.0 19.4 0.0 89.4 243.8 282.6 80.5 212.3 249.2 0.0 0.0 0.0 0.0 15.3 21.0 46.7 211.1 357.6 97.3 159.4 333.4 97.4 0.0 0.0 0.0 0.0 0.0	8.3 14.0 34.0 248.2 151.7 246.4 173.3 29.0 139.2 19.6 0.0 149.8 90.7 69.4 128.2 119.1 207.3 76.1 593.4 131.1 5.7 9.1 15.9 0.0 52.0 106.8 357.1 13.3 345.5 121.1 135.1 17.9 1.0 4.9 10.2 58.3 159.7 214.4 279.0 2114. 207.2 76.4 3.6 0.0 5.0 18.6 39.2 126.1 202.4 72.2 124.3 164.8 128.2 0.2 0.0	0.0 55.4 125.7 280.0 178.5 79.4 160.1 145.5 58.2 0.1 2.5 1085 26.8 100.8 62.6 143.4 128.9 133.9 281.4 215.3 137.7 33.3 0.0 1284 17.5 25.4 67.4 245.0 200.8 302.9 101.5 106.9 187.3 0.4 0.0 1255	13.2 34.3 62.6 169.0 184.0 158.3 189.7 259.3 88.2 13.2 2.8	81.8 193.4 147.7 381.1 466.5 346.9 384.5 593.4 195.3 102.0 26.8 1479.	0.0 0.0 0.0 17.5 39.1 39.8 76.1 29.0 0.0 0.0 0.0 778.
MONTHLY RAINFALL Af (1) A. MUANG, KHON	••	MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	10.1 147.7 208.0 201.9 144.7 148.9 357.7 95.8 24.3 0.0 3 0.0 40.4 174.7 194.6 111.7 123.4 486.7 70.0 0.0 0.0 0.4 3 13.5 70.5 112.2 415.4 62.4 233.4 181.3 7.8 2.9 0.0 1	8 39.6 80.4 87.4 104.1 185.6 166.3 158.6 34.0 0.0 0.0 880 100.0 0.0 100.	1.0 60.7 141.1 121.5 39.8 295.4 367.5 195.3 0.2 0.0 1222. 28.7 66.8 255.7 78.6 174.5 182.6 422.5 34.5 5.3 5.5 1235. 28.9 4.7 9 105.9 195.7 246.7 215.2 2013 167.9 88.7 0.0 12296. 12.1 87.4 266.4 105.8 154.7 24.3 270.2 186.9 22.8 0.0 1216. 27.6 111.9 82.8 71.9 123.3 207.9 180.0 110.1 0.0 0.0 919.	56.1 58.0 354.6 137.1 124.7 228.9 167.0 106.2 11.3 18.4 1338. 0.0 14.8 50.3 137.3 149.3 211.4 285.3 11.8 21.5 0.0 931. 25.0 87.3 148.4 215.5 234.7 205.0 1148.8 35.4 34.9 60.0 310.1 175.4 905.2 279.5 152.0 38.8 0.0 1243.1 17.2 110.8 156.2 266.5 64.6 154.1 517.4 41.9 1.6 8.3 1359.	20.4 53.0 199.2 112.1 241.5 256.2 185.9 58.3 7.7 26.8 20.8 138.6 17.5 222.6 91.0 150.9 123.3 16.7 61.1 11.9 5.0 14.4 62.5 67.1 171.4 186.2 288.4 3.8 0.1 0.0 56.2 6.6 12.8 102.7 86.1 11.9 5.0 5.0 5.1 171.4 186.2 28.4 3.8 0.1 0.0 5.2 6.0 381.1 171.4 253.7 198.7 291.5 74.6 0.0 0.0	6 46.0 75.1 124.6 59.1 178.0 174.2 293.1 160.4 0.8 0.0 19.5 70.6 258.0 141.4 85.6 207.0 403.6 9.3 2.5 18.5 13.1 55.0 182.1 112.9 54.9 519.9 578.4 73.2 2.1 0.0 10.0 59.4 25.8 282.6 80.5 212.3 249.2 0.0 0.0 0.0 10.0 57.4 57.8 282.6 80.5 212.3 249.2 0.0 0.0 0.0 10.0 57.5 27.1 1357.6 97.3 159.4 333.4 97.5 0.0 0.0 10.0 10.0 10.0 10.0 10.0 10.0	3 14.0 34.0 248.2 151.7 246.4 173.3 29.0 139.2 19.6 0.0 18 90.7 69.4 128.2 119.1 207.3 76.1 593.4 131.1 5.7 9.1 19 0.0 0.2 0.0 0.2 0.0 135.3 135	0 55.4 125.7 280.0 178.5 79.4 160.1 145.5 58.2 0.1 2.5 1085 8 100.8 82.6 143.4 128.9 133.9 281.4 215.3 137.7 33.3 0.0 1284 5 25.4 67.4 245.0 200.8 302.9 101.5 106.9 187.3 0.4 0.0 1255	.2 34.3 62.6 169.0 184.0 158.3 189.7 259.3 88.2 13.2 2.8	8 193.4 147.7 381.1 466.5 346.9 384.5 593.4 195.3 102.0 26.8 1479.	.0 0.0 0.0 17.5 39.1 39.8 76.1 29.0 0.0 0.0 0.0 778.

Monthly Rainfall at Various Stations (continued)

		ANNU	1497. 1353. 1067.	1308. 1308. 1169. 1217.	1191. 1246. 1323. 1082.	1520. 1223. 1227. 1307.	1324. 1324. 1305.	1418. **** 1141. 1781.	1041. 1141. 998. 1262.	1198. ****	1229.6	1
KAEN	AM.	DEC	000	00000	00000	%000.v	7.85 0.00 0.00 0.00	0,000	00 00	0,40	39.6	1
X NOHX	UNIT :	NOV	800 000	000044	8.000 8.000	00000	2,002 880 880 880 880 880 880 880 880 880	0,400 4,4000	8 4400 64400 *	* 0 * 0 0 * 0	13.0 03.8 0.0	i
WIANG, K	Ų	130	98.0 45.6 11.3	24, 120,8 100,8 100,8	162.1 116.9 110.3 163.8 61.5	88888 8268 8268	27.77 79.9 79.9 79.0	280.6 72.0 0.0 139.4	158.6 164.0 **** 156.4 175.5	78.2 ***** 244.9	108.7	1
PHU VI		SEP	331.3 294.7 139.4	2111.1 322.8 182.3 317.3 183.8	242.9 202.7 232.7 135.1 199.0	324.7 415.1 161.7 316.9 319.8	240.8 165.0 352.5 164.7 267.8	302.3 2 279.6 3 386.9 274.1 383.8 1	98.5 221.8 1221.4 160.9 120.9		255.4 1 415.1 2 98.5	!
(4) A,	٠.	AUG	64.3 302.8 190.7	235.9 204.5 299.7 133.6	215.0 141.4 197.4 268.1	297.3 206.0 108.7 175.0	311.4 115.3 119.7 249.4 131.6	88.63 196.92 257.23 208.72 167.43	90.22	187.7 1 ***** 1 141.4 1	311.4 4	1
רר אן		3UL	191.1	294.6 31.8 74.1	23822	253.0 21.7	57.75 27.75 27.75 27.75 27.75	234.8 110.4 110.0 174.7	24.4 52.6 27.7 29.3 1	174.81	174.5 1 393.2 3 47.5	1
RAINFAI		NOC	170.1 248.7 367.9	1175.8 1775.8 28.7 28.7 28.7 28.7	268.3 2 203.7 1 74.3 2	1114 126.8 1726.8 1771.7 295.1	225.4 203.8 315.6 73.6 148.6	124.8 204.2 200.2 200.5 200.5	22230	87.9 ****	175.1 1 400.4 3 28.1	[, ] ] ]
		MAY	314.8 260.8 126.0	227.5 151.0 258.3 332.0	191.0 250.7 329.9 189.9	295. 111. 133.6 133.6	148.7 37.5 142.6 118.1	183.9 192.2 154.3 390.0	143.9 132.0 137.9 176.7 176.7	290.0 *****	194.0 1 390.0 4 37.5	F
MON		APR	88.58 83.9	737.3 73.0 73.0 73.0 8	24.5 54.5 54.3 54.3 54.3 54.3	74.3 67.2 64.7	062.4 08.2 32.6 5.9	132.3 135.8 110.4 80.9	52.2 82.2 97.8 92.6	216.4 **** 59.1	216.4 2	1
		MAR	19.6	47.20	26.0 26.0 116.9 15.9	507.7 50.00	2007 2007 2007 2007	#### 47.24 47.24 47.24 47.24	222.41 0.02.0 0.00.0	135.6 3	35.1	1
Щ		9 8 8	69.9 12.4 0.0	0.9300	6.50 13.00 7.00 7.00 7.00	W000V	5002.8 2005.8	70 27 20 20 20 20 20 20 20 20 20 20 20 20 20	40000	17.0	14.4	1
TABL		JAR	20.0 20.0 20.0	oonoo	04004	00000	00008	00*00	00000	* 00 *	4.8 73.3 0.0	1
		EAR	952	999848 998848 99984	962 963 965 965	965 967 970	971 972 973 974 975	976 977 978 979 980	981 982 984 985 985	986 987 988	MEAN MAX MIN	1
			444	eedee.	त्त्वल्ल	सल्लल्ल	~~~~	наны	ललललल		EEE	'
											7	
		ANNUAL	***************************************	1242-1 1333-4 ***** 1048-0 970-9	1134.8 1182.3 1191.6 940.1	1506.7 1025.5 1382.4 1006.2	1203.6 854.9 721.9 873.8 1039.9	1211.7 1496.9 1213.5 1360.7	855.1 1098.8 794.6 844.6 1063.9	***** 1189.0 1304.0	1090.3 1506.7 721.9	1
z.	~ WW	DEC ANNUAL	**************************************	0.0 1242.1 0.0 1333.4 0.0 1048.0 0.0 970.9	3.5 1200.4 1.3 1182.3 0.0 1191.6 9.0.1	27.8 1506.7 0.0 746.5 0.0 1025.5 0.0 1382.4 0.0 1006.2	19.5 1203.6 44.5 854.9 0.0 721.9 0.0 873.8 0.0 1039.9	0.0 1211.7 0.0 1496.9 0.0 1213.5 0.0 1313.5	0.0 855.1 15.2 1098.8 8.3 794.6 0.0 844.6	0.0 ****** 0.0 1189.0 0.0 1304.0		1 1 1
ION KAEN	UNIT : MM >	S	#00	1333	1134. 1182. 1182. 1191.	1506- 1025- 1006-	1203. 5 854. 0 721. 0 1039.	1211 1211 1213 1213 1360	2 1098. 2 794. 0 1063.	.0 1189. .0 1304.	7 1090. 5 1506.	
L KHON	••	v DEC	*****	00 00 1242. 00 00 1333. 00 0 1333. 00 0 1048.	00.00 1134. 00.00 11820. 00.00 11911.	36.6 27.8 1506. 16.5 0.0 746. 0.0 0.0 1025. 0.0 0.0 1382. 0.0 0.0 1006.	24.5 1203. 24.5 854. 20.0 721. 0.0 1039.	2 0.0 0.0 1211. 3 23.4 0.0 1496. 0 0.0 0.0 1213. 2 1.8 0.0 1360.	16.1 0.0 855. 3.3 15.2 1098. 12.1 8.3 794. 18.4 0.0 844. 11.6 0.0 1063.	7 0.0 1189.	11.9 3.7 1090. 87.8 44.5 1506. 0.0 0.0 721.	
BAN PHAL, KHON KAEN	••	NOV DEC	* ***** ****** ******	74.8 0.0 0.0 1242. 89.9 0.0 0.0 1335. 65.8 0.0 0.0 ***** 34.2 1.4 0.0 1048. 104.5 2.0 0.0 970.	2 259.8 0.0 0.0 1134. 1 91.8 0.0 3.5 1200. 12 106.6 87.8 1.3 1182. 1 46.4 0.0 0.0 940.	9 89.3 36.6 27.8 1506. 103.6 103.0 726. 1 126.2 0.0 0.0 1382. 6 9.5 0.0 0.0 1006.	53.9 0.0 19.5 1203. 123.8 31.0 44.5 854. 142.0 38.2 0.0 721. 83.7 0.0 0.0 1039.	28.5 0.0 0.0 1211. 28.5 20.0 10.9 741. 24.3 23.4 0.0 1496. 220.2 1.8 0.0 1360.	59.2 16.1 0.0 855. 130.7 3.3 15.2 1096. 114.9 12.1 8.3 794. 59.1 18.4 0.0 844. 243.1 11.6 0.0 1063.	05.8 47.8 0.0 0.0 ***** 779.0 76.4 72.7 0.0 1189. 88.0 299.5 0.0 0.0 1504.	.47.6 105.3 11.9 3.7 1090. .82.1 299.5 87.8 44.5 1506. 52.2 0.0 0.0 721.	
A. BAN PHAL KHON	••	EP OCT NOV DEC	292.7 54.5 0.0 0.0 287.0 75.5 5.5 0.0	153.4 74.8 0.0 0.0 1242. 309.0 89.9 0.0 0.0 1335. 286.3 34.2 1.4 0.0 1048. 211.9 104.5 2.0 0.0 970.	259.8 0.0 0.0 1134. 91.8 0.0 3.5 1200. 180.6 87.8 1.3 1182. 198.1 38.3 0.0 940.	89.3 36.6 27.8 1506. 103.6 0.0 1025. 256.2 0.0 0.0 1382. 9.5 0.0 0.0 1006.	31.0 44.5 854. 0.0 0.0 721. 38.2 0.0 873. 0.0 0.0 1039.	235.1 203.7 0.0 0.0 1211. 187.1 28.3 5.0 10.9 7611. 280.9 24.5 23.0 0.0 12496. 285.1 0.0 0.0 1213. 276.2 220.2 1.8 0.0 1360.	5 55.2 59.2 16.1 0.0 855. 5 55.8 130.7 5.3 15.2 1098. 10.2.2 114.9 12.1 8.3 794. 5 250.7 59.1 11.6 0.0 1065.	**** 105.8 47.8 0.0 0.0 ***** 90.3 379.0 76.6 72.7 0.0 1189. 53.4 88.0 299.5 0.0 0.0 1304.	36.2 247.6 105.3 11.9 3.7 1090. 87.7 482.1 299.5 87.8 44.5 1506. 21.3 52.2 0.0 0.0 0.0 723.	
AT (3) A. BAN PHAL, KHON	••	G SEP OCT NOV DEC	***** **** **** **** ***** 143.9 292.7 54.5 0.0 0.0 147.8 287.0 75.5 5.5 0.0	201.1 153.4 74.8 0.0 0.0 1242. 170.0 309.0 89.9 0.0 0.0 1353. 223.0 459.4 65.8 0.0 0.0 ****** 117.5 286.3 34.2 1.4 0.0 1048. 78.3 211.9 104.5 2.0 0.0 970.	2 150.8 471.1 91.8 0.0 0.0 1134. 141.4 140.2 160.8 7.5 1200. 141.4 140.2 160.8 7.8 1.3 1182. 92.6 259.1 198.1 38.3 0.0 1192. 1 181.4 125.4 46.4 0.0 0.0 940.	160.0 216.9 89.3 36.6 27.8 1506. 21.3 405.0 42.7 16.5 0.0 746. 150.0 204.6 103.4 0.0 0.0 1025. 59.7 482.1 256.2 0.0 0.0 1382. 75.1 257.6 9.5 0.0 0.0 1006.	206.8 156.7 53.9 0.0 19.5 1203. 22.7 254.7 123.8 31.0 44.5 854. 98.5 21.8 19.1 0.0 0.0 721. 108.3 139.0 42.0 82.2 0.0 1039.	224.9 235.1 203.7 0.0 0.0 1211. 221.0 187.1 28.3 0.0 10.9 7611. 165.4 280.9 24.5 23.4 0.0 1496. 2035.2 285.1 0.0 0.0 1213. 120.8 276.2 220.2 1.8 0.0 1360.	143.2 52.2 59.2 16.1 0.0 855. 118.5 555.8 130.7 5.3 15.2 1098. 164.4 102.2 114.9 12.1 8.3 794. 101.6 250.7 59.1 18.4 0.0 844. 45.5 210.3 243.1 11.6 0.0 1063.	75.5 ***** 105.8 47.8 0.0 0.0 ***** 59.5 190.3 379.0 76.6 72.7 0.0 1189. 74.7 53.4 88.0 299.5 0.0 0.0 1304.	.41.8 136.2 247.6 105.3 11.9 3.7 1090. 18.0 287.7 482.1 299.5 87.8 44.5 1506. 17.2 21.3 52.2 0.0 0.0 0.0 723.	
AT (3) A. BAN PHAL, KHON	••	AUG SEP OCT NOV DEC	***** **** **** **** **** **** ****	319.3 201.1 153.4 74.8 0.0 0.0 1242. 103.1 170.0 399.0 89.9 0.0 0.0 1335. ****** 225.0 459.4 65.8 0.0 0.0 ****** 275.4 117.5 286.3 34.2 1.4 0.0 1048. 158.3 78.3 211.9 104.5 2.0 0.0 970.	72.9 287.7 163.2 259.8 0.0 0.0 1134. 257.2 150.8 471.1 91.8 0.0 3.5 1200. 225.1 141.4 160.2 160.6 87.8 1.3 1182. 213.6 92.6 259.1 198.1 38.3 0.0 1191. 91.1 181.4 125.4 46.4 0.0 0.0 940.	172.4 160.0 216.9 89.3 36.6 27.8 1506. 35.5 21.3 405.0 42.7 16.5 0.0 1025. 185.8 169.0 204.6 103.6 0.0 0.0 1025. 89.8 9.7 482.1 256.2 0.0 0.0 1382. 210.3 75.1 257.6 9.5 0.0 0.0 1006.	150.8 204.8 156.7 53.9 0.0 19.5 1203. 17.2 22.7 254.7 133.8 31.0 44.5 854. 150.1 98.0 23.8 19.1 0.0 0.0 721. 142.5 108.3 139.0 142.8 32.2 0.0 873. 160.0 53.3 249.0 83.7 0.0 0.0 1039.	184.6 224.9 235.1 203.7 0.0 0.0 1211. 23.4 231.0 187.1 28.3 0.0 10.9 761. 418.0 105.4 380.9 44.3 23.4 0.0 14.96. 76.3 203.2 285.1 0.0 0.0 0.0 1213. 90.8 120.8 276.2 220.2 1.8 0.0 1360.	173.1 143.2 52.2 59.2 16.1 0.0 855. 131.4 118.5 355.8 150.7 3.3 15.2 1598. 94.0 164.4 102.2 144.9 12.1 8.3 794. 74.7 101.6 250.7 3.9.1 18.4 0.0 844. 114.7 45.5 210.3 243.1 11.6 0.0 1063.	33.0 75.5 ***** 105.8 47.8 0.0 0.0 ***** 43.5 59.5 190.3 379.0 76.6 72.7 0.0 1189.118.3 174.7 55.4 88.0 299.5 0.0 0.0 1304.		
RAINFALL AT (3) A. BAN PHAL, KHON	••	JUL AUG SEP OCT NOV DEC	***** **** **** **** **** **** ***** ****	61.2 319.3 201.1 153.4 74.8 0.0 0.0 1242. 265.3 ***** 23.0 459.4 65.8 0.0 0.0 1333. 76.1 279.4 117.5 266.3 34.2 1.4 0.0 1042. 191.5 158.3 78.3 211.9 104.5 2.0 0.0 970.	83.6 72.9 287.7 163.2 259.8 0.0 0.0 1134. 158.2 207.2 150.8 471.1 91.8 0.0 3.5 1200. 154.8 225.1 141.4 140.2 160.6 87.8 1.3 1182. 38.4 213.6 92.6 259.1 198.1 38.3 0.0 1191. 87.6 91.1 181.4 125.4 46.4 0.0 0.0 940.	105.7 172.4 160.0 216.9 89.3 36.6 27.8 1506. 115.3 35.5 21.3 405.0 42.7 16.5 0.0 726. 115.1 135.4 149.0 204.6 103.6 0.0 0.0 1025. 196.2 89.8 59.7 482.1 256.2 0.0 0.0 1382. 264.9 210.3 75.1 257.6 9.5 0.0 0.0 1006.	156.9 150.8 206.8 156.7 53.9 0.0 19.5 1203. 203.8 17.2 22.7 254.7 133.8 31.0 44.5 854. 38.1 150.1 98.0 231.8 19.1 0.0 0.0 721. 30.6 142.5 108.3 139.0 142.0 38.2 0.0 873. 156.8 160.0 53.3 249.0 83.7 0.0 0.0 1039.	33.6 184.6 224.9 235.1 203.7 0.0 0.0 1211. 61.6 23.4 211.0 187.1 28.3 0.0 10.9 761. 18.8 418.0 165.4 580.9 24.5 25.4 0.0 14.96. 265.6 76.3 203.2 285.1 0.0 0.0 0.0 1216. 408.9 90.8 120.8 276.2 220.2 1.8 0.0 1360.	34.3 173.1 143.2 52.2 59.2 16.1 0.0 855. 29.9 131.4 118.5 355.8 130.7 3.3 15.2 1098. 20.7 94.0 164.4 102.2 14.9 12.1 8.3 794. 85.3 74.7 101.6 250.7 59.1 18.4 0.0 844. 70.0 114.7 45.5 210.3 243.1 11.6 0.0 1063.	5 33.0 75.5 ***** 105.8 47.8 0.0 0.0 ***** 3 145.3 59.5 190.3 379.0 76.6 72.7 0.0 1189. 5 218.3 174.7 53.4 88.0 299.5 0.0 0.0 1304.	147.2 141.8 136.2 247.6 105.3 11.9 3.7 1090. 432.7 418.0 287.7 482.1 299.5 87.8 44.5 1506. 30.6 17.2 21.3 52.2 0.0 0.0 0.0 723.	
AT (3) A. BAN PHAL, KHON	••	JUN JUL AUG SEP OCT NOV DEC	***** **** **** **** **** **** ****	319.3 201.1 153.4 74.8 0.0 0.0 1242. 103.1 170.0 399.0 89.9 0.0 0.0 1335. ****** 225.0 459.4 65.8 0.0 0.0 ****** 275.4 117.5 286.3 34.2 1.4 0.0 1048. 158.3 78.3 211.9 104.5 2.0 0.0 970.	72.9 287.7 163.2 259.8 0.0 0.0 1134. 257.2 150.8 471.1 91.8 0.0 3.5 1200. 225.1 141.4 160.2 160.6 87.8 1.3 1182. 213.6 92.6 259.1 198.1 38.3 0.0 1191. 91.1 181.4 125.4 46.4 0.0 0.0 940.	67.0 427.9 105.7 172.4 160.0 216.9 89.3 36.6 27.8 1506. 14.4 50.9 152.3 35.5 21.3 405.0 42.7 16.5 0.0 726. 172.1 124.5 115.1 135.6 149.0 204.6 103.6 0.0 0.0 1025. 46.0 137.9 196.2 89.8 89.8 427.4 82.1 256.2 0.0 0.0 1382. 51.2 130.6 264.9 210.3 75.1 257.6 9.5 0.0 0.0 1006.	150.8 204.8 156.7 53.9 0.0 19.5 1203. 17.2 22.7 254.7 133.8 31.0 44.5 854. 150.1 98.0 23.8 19.1 0.0 0.0 721. 142.5 108.3 139.0 142.8 32.2 0.0 873. 160.0 53.3 249.0 83.7 0.0 0.0 1039.	115.8 33.4 184.6 224.9 235.1 203.7 0.0 0.0 1211. 135.0 41.6 23.4 211.0 187.1 28.3 0.0 10.9 741. 159.7 189.8 418.0 105.4 380.9 24.3 23.4 0.0 14.96. 254.4 265.6 76.3 203.2 285.1 0.0 0.0 0.0 1213. 138.8 408.9 90.8 120.8 276.2 220.2 1.8 0.0 1360.	173.1 143.2 52.2 59.2 16.1 0.0 855. 131.4 118.5 355.8 150.7 3.3 15.2 1598. 94.0 164.4 102.2 144.9 12.1 8.3 794. 74.7 101.6 250.7 3.9.1 18.4 0.0 844. 114.7 45.5 210.3 243.1 11.6 0.0 1063.	96.2 144.6 33.0 75.5 ***** 105.8 47.8 0.0 0.0 ***** 14.8 112.8 145.3 59.5 190.3 579.0 76.6 72.7 0.0 1189. 14.1 192.5 218.3 174.7 53.4 88.0 299.5 0.0 0.0 1304.	73.6 154.9 147.2 141.8 136.2 247.6 105.3 11.9 3.7 1090. 741.0 427.9 432.7 418.0 287.7 482.1 299.5 87.8 44.5 1506. 7.4 12.1 30.6 17.2 21.3 52.2 0.0 0.0 0.0 723.	t I
RAINFALL AT (3) A. BAN PHAL, KHON	••	R MAY JUN JUL AUG SEP OCT NOV DEC	***** **** ***** **** **** **** **** ****	33.4 259.8 61.2 319.3 201.1 153.4 74.8 0.0 0.0 1242. 129.7 97.6 172.0 103.1 170.0 359.0 89.9 0.0 0.0 1333. 49.4 359.7 255.3 ***** 223.0 459.4 65.8 0.0 0.0 ***** 57.9 13.7 2 76.1 279.4 117.5 286.3 34.2 1.4 0.0 1048. 12.3 199.0 191.5 158.3 78.3 211.9 104.5 2.0 0.0 970.	38.7 200.9 83.6 72.9 287.7 163.2 259.8 0.0 0.0 1134. 15.3 71.3 180.3 207.2 150.8 471.1 91.8 0.0 3.5 1200. 44.4 134.4 134.8 225.1 141.4 140.2 160.6 87.8 1.3 1182. 86.1 189.1 38.4 213.6 92.6 259.1 198.1 38.3 0.0 1191. 163.2 151.6 87.6 91.1 181.4 125.4 46.4 0.0 0.0 940.	67.0 427.9 105.7 172.4 160.0 216.9 89.3 36.6 27.8 1506. 172.5 124.5 115.1 135.6 150.0 20.6 103.6 0.0 0.0 1025. 46.0 127.5 196.2 89.8 59.7 482.1 256.2 0.0 0.0 1382. 51.2 130.6 264.9 210.3 75.1 257.6 9.5 0.0 0.0 1006.	211.0 156.9 150.8 206.8 156.7 53.9 0.0 19.5 1203. 12.1 205.8 17.2 22.7 224.7 123.8 31.0 44.5 854.8 80.4 98.1 150.1 96.0 231.8 19.1 0.0 0.0 721.1 15.0 30.6 142.5 108.3 139.0 142.0 30.6 142.5 160.0 53.3 249.0 83.7 0.0 0.0 1039.	115.8 33.4 184.6 224.9 235.1 203.7 0.0 0.0 1211. 136.0 41.6 23.4 211.0 187.1 28.3 0.0 10.9 741. 136.7 189.8 418.0 165.4 380.9 24.3 23.4 0.0 1496. 254.4 265.6 76.3 203.2 285.1 0.0 0.0 0.0 1218.3 408.9 90.8 120.8 276.2 220.2 1.8 0.0 1360.	81.2 245.0 34.3 173.1 143.2 52.2 59.2 16.1 0.0 855. 24.2 94.7 92.9 131.4 118.5 355.8 130.7 3.3 15.2 1098. 25.6 33.5 209.7 94.0 164.4 102.2 144.9 12.1 8.3 794. 13.1 224.6 70.0 114.7 45.5 210.3 243.1 11.6 0.0 1065.	0.0 96.2 144.6 33.0 75.5 ***** 105.8 47.8 0.0 0.0 ***** 27.7 114.8 112.8 143.3 59.5 190.3 379.0 76.6 72.7 0.0 1189. 19.5 116.1 192.5 218.3 174.7 53.4 88.0 299.5 0.0 0.0 1304.	47.5 73.6 154.9 147.2 141.8 136.2 247.6 105.3 11.9 3.7 1090. 157.6 241.0 427.9 432.7 418.0 287.7 482.1 299.5 87.8 44.5 1506. 0.0 7.4 12.1 30.6 17.2 21.3 52.2 0.0 0.0 0.0 723.	t I
MONTHLY RAINFALL AT (3) A. BAN PHAI, KHON	••	APR MAY JUN JUL AUG SEP OCT NOV DEC	***** 11.0 128.6 102.6 57.1 143.9 292.7 54.5 0.0 0.0 79.4 25.7 76.8 632.7 ***** 147.8 287.0 75.5 5.5 0.0	259.8 61.2 319.3 201.1 153.4 74.8 0.0 0.0 1242. 97.6 172.0 103.1 170.0 359.0 89.9 0.0 0.0 1333. 309.7 265.3 ****** 223.0 459.4 65.8 0.0 0.0 ****** 172.7 76.1 279.4 117.5 266.3 34.2 1.4 0.0 1046. 199.0 191.5 158.3 78.3 211.9 104.5 2.0 0.0 970.	38.7 200.9 83.6 72.9 287.7 163.2 259.8 0.0 0.0 1134. 15.3 71.3 180.3 207.2 150.8 471.1 91.8 0.0 3.5 1200. 44.4 134.4 134.8 225.1 141.4 140.2 160.6 87.8 1.3 1182. 86.1 189.1 38.4 213.6 92.6 259.1 198.1 38.3 0.0 1191. 163.2 151.6 87.6 91.1 181.4 125.4 46.4 0.0 0.0 940.	67.0 427.9 105.7 172.4 160.0 216.9 89.3 36.6 27.8 1506. 14.4 50.9 152.3 35.5 21.3 405.0 42.7 16.5 0.0 726. 172.1 124.5 115.1 135.6 149.0 204.6 103.6 0.0 0.0 1025. 46.0 137.9 196.2 89.8 89.8 427.4 82.1 256.2 0.0 0.0 1382. 51.2 130.6 264.9 210.3 75.1 257.6 9.5 0.0 0.0 1006.	241.0 211.0 156.9 150.8 206.8 156.7 53.9 0.0 19.5 1203. 98.9 12.1 205.8 17.2 22.7 254.7 123.8 51.0 44.5 854. 74. 80.4 98.1 150.1 98.0 231.8 19.1 0.0 0.0 721. 86.1 145.0 30.4 142.5 108.3 139.0 142.0 38.2 0.0 873. 62.7 169.5 156.8 160.0 53.3 249.0 83.7 0.0 0.0 1039.	122.0 115.8 33.6 184.6 224.9 235.1 203.7 0.0 0.0 1211. 71.7 136.0 61.6 23.4 211.0 187.1 28.3 0.0 10.9 761.9 761.2 18.2 18.4 0.0 14.96. 80.9 254.4 265.6 76.3 203.2 285.1 0.0 0.0 0.0 1215.4 134.4 138.8 408.9 90.8 120.8 276.2 220.2 1.8 0.0 1360.	81.2 24.5 0 34.3 173.1 143.2 52.2 59.2 16.1 0.0 855. 26.2 94.7 92.9 131.4 118.5 355.8 130.7 3.3 15.2 1098. 20.6 35.5 20.9 94.7 92.0 194.4 102.2 114.9 12.1 8.3 794. 113.7 0.5 859.7 59.1 18.4 0.0 844. 83.1 224.6 70.0 114.7 45.5 210.3 243.1 11.6 0.0 1063.	0.0 0.0 96.2 144.6 33.0 75.5 ***** 105.8 47.8 0.0 0.0 ***** 12.3 27.7 114.8 112.8 143.3 59.5 190.3 379.0 76.6 72.7 0.0 1189.42.0 119.5 116.1 192.5 218.3 174.7 53.4 88.0 299.5 0.0 0.0 1304.	16.2 47.5 73.6 154.9 147.2 141.8 136.2 247.6 105.3 11.9 3.7 1090. 92.1 257.6 241.0 427.9 432.7 418.0 287.7 482.1 299.5 87.8 44.5 1506. 0.0 0.0 7.4 12.1 30.6 17.2 21.3 52.2 0.0 0.0 0.0 723.	t I
MONTHLY RAINFALL AT (3) A. BAN PHAI, KHON	••	B MAR APR MAY אווי אווי MOV DEC	***** **** ***** **** **** **** **** ****	1 47.0 33.4 259.8 61.2 319.3 201.1 153.4 74.8 0.0 0.0 1242. 2 557.6 129.7 97.6 172.0 103.1 170.0 359.0 89.9 0.0 0.0 1333. 2 15.8 49.4 309.7 26.53 ****** 223.0 459.4 65.8 0.0 0.0 ****** 2 43.5 75.9 137.2 76.1 279.4 117.5 264.3 34.2 1.4 0.0 1048. 1 3.0 12.3 199.0 191.5 158.3 78.3 211.9 104.5 2.0 0.0 970.	1 19.9 38.7 200.9 83.6 72.9 287.7 163.2 259.8 0.0 0.0 1134. 0 7.4 15.3 71.3 180.3 207.2 150.8 471.1 91.8 0.0 3.5 1200. 0 112.3 44.4 134.4 128.4 223.1 141.4 140.2 160.6 87.8 1.3 1182. 0 46.3 86.1 181.4 138.4 213.6 92.6 259.1 198.1 38.3 0.0 1199.1 88.7 153.5 0.0 1191.4 125.4 46.4 0.0 0.0 940.	9 170.2 67.0 427.9 105.7 172.4 160.0 216.9 89.3 36.6 27.8 1506. 8 0.1 14.4 50.9 152.3 35.5 21.3 465.0 42.7 16.5 0.0 1025. 10 13.6 172.1 214.1 151.1 153.1 1670 204.6 1031.6 0.0 0.0 1025. 5 48.1 46.0 137.9 196.2 89.8 59.7 4821.256.2 0.0 0.0 1382. 0 7.0 51.2 130.6 264.9 210.3 75.1 257.6 9.5 0.0 0.0 1006.	0 7.0 241.0 211.0 156.9 150.8 206.8 156.7 53.9 0.0 19.5 1203. 0 46.2 98.9 12.1 205.8 17.2 22.7 254.7 123.8 31.0 44.5 854.0 37.0 37.0 721.8 19.1 0.0 0.0 721.4 34.7 86.1 142.5 108.3 139.1 42.0 36.8 142.5 108.3 139.1 42.0 38.2 0.0 1039.1 52.0 62.7 169.5 156.8 160.0 53.3 249.0 83.7 0.0 0.0 1039.	54.5 122.0 115.8 33.4 184.6 224.9 235.1 203.7 0.0 0.0 1211. 22.0 96.2 159.7 136.0 41.4 23.4 221.0 187.1 28.5 0.0 10.9 741. 0.0 80.9 254.4 1865.6 76.3 203.2 285.1 0.0 0.0 1213. 59.9 41.4 138.8 408.9 90.8 120.8 276.2 220.2 1.8 0.0 1360.	50.3 81.2 24.5 0 34.3 173.1 143.2 52.2 59.2 16.1 0.0 855. 80.3 24.2 94.7 92.9 131.4 118.5 355.8 130.7 3.3 15.2 1098. 0.0 20.6 33.5 209.7 94.0 164.4 102.2 114.9 12.1 8.3 794. 30.7 135.7 64.5 85.3 74.7 101.6 250.7 59.1 18.4 0.0 844. 7.6 83.1 224.6 70.0 114.7 45.5 210.3 243.1 11.6 0.0 1063.	0.0 0.0 96.2 144.6 33.0 75.5 ***** 105.8 47.8 0.0 0.0 ***** 12.3 27.7 114.8 112.8 143.3 59.5 190.3 379.0 76.6 72.7 0.0 1189.42.0 119.5 116.1 192.5 218.3 174.7 53.4 88.0 299.5 0.0 0.0 1304.	47.5 73.6 154.9 147.2 141.8 136.2 247.6 105.3 11.9 3.7 1090. 257.6 241.0 427.9 432.7 418.0 287.7 482.1 299.5 87.8 44.5 1506. 0.0 7.4 12.1 30.6 17.2 21.3 52.2 0.0 0.0 0.0 723.	t I

Monthly Rainfall at Various Stations (continued)

		ANNUAL	****	*****	*****	***** 905.2 795.6 1376.1 859.5	1219-1 1101-5 665-0 926-9 1021-5	1221.2 1020.9 1389.7 1197.2 1556.4	848.6 1171.7 931.2 861.2 880.5	814.7 1069.3 983.3	1037.1	1556.4	665.0
KAEN	. MM ∶	) DEC	****	* * * * * * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * *	%0000 40000	410000	0,000	0.000	400	6.9	75.1	0
KHUN KA	UNIT :	VON	*****	* * * * * * * * * * * * * * * * * * *	****	78.7 76.5 0.0 0.0	29.5 29.5 47.8	10.00 20.00	7247 24749	63.4	7.27	8.27	0
		DCT	****	*****	*****	28.7 87.1 10.0 149.1 59.8	1522.9 252.9 253.9 253.9 253.9 253.9	187.5 15.2 18.3 168.2	63.8 1117.1 117.1 95.4	59.9 59.9 248.8	96.3		0.0
CHONNABOT		S	****	* * * * * * * * * * * * * * * * * * *	****	**** 372.7 211.3 415.0	112.6 258.8 187.4 128.8 207.7	291.1	20.8 2249.3 203.1	72.3 242.7 55.3	232.8	ų.	50.8
(6) A.		AUG	****	*****	*****	84.3 92.6 74.9 214.6	251.4 87.9 62.8 143.7 69.8	185.3 192.1 166.8 205.4	253.2 1119.4 220.1 54.5 24.8	217.5	144.7	N.	24.8
Ą		퀽	***	****	****	**************************************	148.3 28.0 167.7 93.4	73.9 359.1 89.8 89.8	161.8 126.5 129.8 76.6	126.5 77.9 172.8	125.1	7	28.0
RAINFALL		NO.	***	**************************************	****	137.2 137.2 139.0	219.8 97.1 11.2 100.5	80.6 62.9 114.8 164.6 537.8	19.1 91.9 244.0 1110.3	99.2 135.7 114.3	141.3	537.8	11.2
THLY		MAY	***	*****	* * * * * * * * * * * * * * * * * * *	30.00 30.00 30.00 30.00 30.00 30.00	332.4 28.9 106.3 99.4 241.9	162.4 241.6 100.7 216.0 153.2	115.3 44.4 52.4 52.4 234.3	183.2 163.9 130.9	137.7		28.9
MCN		APR	***	***** **** **** ****	* * * * * * * * * * * * * * * * * * *	**** 38.7 722.3 73.7 55.6	1,58 1,53 1,83 1,83 1,83 1,83 1,83 1,83 1,83 1,8	98.8 47.4 163.6 61.7	25.6 22.6 22.6 22.6	107.2 67.2 56.4	71.2		5.4
*		MAR	***	****	* * * * * * * * * * * * * * * * * * *	* 01122 * 01122	35.00	118.5 28.4 56.5 56.5 29.1	90.7 105.8 32.1 10.0	0.40	37.5		0.0
ш		FE8	***	* * * * * * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * *	# 4000 W	20020 20024	2000 2000 2007 2007	22.00 23.00 20.00 20.00	0.0 17.1 104.9	20.0		0
IABL.		ad?	* * * * * * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *	*****	*0000 0000 0000 0000	0.000.00	00.200	11.20	000	6.7	57.5	0 i 0   1
		YEAR	1953 1954 1955	1956 1958 1958 1959	1961 1962 1963 1964	1966 1967 1968 1969 1970	1971 1972 1973 1974 1975	1976 1977 1978 1979 1980	1981 1983 1984 1984	1986 1987 1988	MEAN	Æ X	NIK.
TABLE MONTHLY RAINFALL AT (5) A. CHUM PHAE, KHON KAEM	C WW = LIND >	JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC ANNUAL	0.0 0.0 4.6 109.7 201.8 141.2 175.9 35.3 155.0 90.9 63.9 0.0 978.3 3.8 0.0 1.0 39.6 171.9 126.7 132.6 161.7 370.8 118.7 0.0 0.0 1126.8 0.0 0.0 0.0 126.8 0.0 0.0 0.0 126.8 0.0 0.0 0.0 0.0 941.4	0.0 42.1 102.0 66.7 66.8 118.5 220.5 128.5 256.1 12.3 0.0 0.0 1013.5 0.0 0.0 107.5 50.1 151.9 101.6 309.8 115.1 353.3 93.6 6.5 0.0 1259.4 6.5 90.0 107.5 50.1 151.9 101.6 102.4 258.8 355.1 78.5 0.0 0.0 1149.8 0.0 0.0 18.8 27.3 39.3 508.3 125.4 187.6 118.2 353.6 0.0 0.0 1115.5 0.0 0.0 1115.5 0.0 0.0 115.5 177.9 49.6 58.7 96.2 0.0 0.0 825.0	0.0 9.5 24.9 101.0 195.1 103.8 174.4 136.5 135.2 267.1 3.4 0.0 1150.9 0.0 0.0 70.5 82.9 197.9 67.5 132.4 145.8 428.3 111.5 0.0 0.0 1236.8 0.0 0.0 97.8 49.1 164.5 129.2 135.4 156.9 221.9 145.9 45.7 0.0 1142.4 0.0 4.3 18.5 56.5 260.4 122.6 149.0 115.1 350.7 265.4 13.7 0.0 1356.2 0.0 0.5 5.8 8.3 10.5 122.0 43.2 59.2 156.2 171.8 52.2 1.7 0.0 640.6	0.0 0.0 64.1 57.6 223.6 129.9 175.9 159.3 269.9 214.2 19.0 58.3 1381.8 0.0 1.2 1.5 108.4 41.5 111.5 116.0 63.4 44.6 41.7 14.5 0.0 914.3 10.0 7.4 46.6 50.7 15.6 68.5 126.1 174.0 55.5 0.0 0.0 848.1 15.8 0.0 50.7 54.1 10.1 126.1 127.1 127.0 55.5 0.0 0.0 948.1 16.8 0.0 50.7 54.1 10.1 127.1 127.1 43.6 501.2 59.7 18.0 0.0 960.0 2.2 0.0 25.9 148.3 188.7 174.1 51.8 76.0 255.5 110.9 3.2 3.7 1040.3	0.0 0.0 0.8 77.4 165.4 127.7 101.2 157.6 211.2 163.8 9.3 36.0 1050.4 0.0 21.0 21.7 81.7 25.6 135.4 28.9 108.8 154.4 130.4 21.9 107.5 837.3 0.0 0.0 0.0 14.8 14.0 182.1 80.4 182.4 96.1 540.8 12.7 0.0 0.0 1136.5 6.3 31.3 17.9 563 155.3 58.8 75.4 119.6 146.3 138.3 58.3 0.0 873.8 36.2 64.3 67.0 12.9 161:0 167.1 115.2 70.0 106.5 176.9 0.0 0.0 971.1	0.0 35.5 18.8 99.1 66.9 68.0 138.2 137.0 172.0 212.9 7.1 0.0 953.5 0.0 0.0 45.0 жжжж жжжж жжжж жжжж жжжж жжжж жжжж ж	0.0 0.0 10.5 14.0 45.0 78.5 78.4 50.1 135.4 156.9 20.0 0.0 586.8 0.0 0.0 24.7 51.3 182.6 109.2 122.1 99.3 297.1 175.7 0.0 28.7 1090.7 11.4 0.0 0.0 0.0 161.1 349.4 141.4 282.2 151.8 142.1 7.9 0.0 1447.3 154.1 141.4 282.2 151.8 142.1 7.9 0.0 1447.3 154.2 144.2 54.2 145.0 149.6 81.0 1491. 252.1 138.2 0.0 0.0 995.8 2.6 10.0 0.0 35.4 217.1 68.7 146.1 96.5 207.1 207.0 2.1 0.0 992.6	0.0 0.0 10.8 45.4 184.4 95.7 82.3 71.4 176.6 56.9 4.2 9.1 77 0.0 28.4 108.5 47.2 122.9 61.0 44.6 294.5 253.6 37.4 38.8 0.0 100 0.0 24.3 1.3 127.2 194.6 132.7 150.2 170.2 166.2 396.0 0.0 0.0 13	2.7 11.2 34.1 58.6 158.0 134.3 125.5 130.2 247.7 120.3 11.2 7.2 1039.9	.2 64.3 108.5 148.3 265.9 349.4 309.8 294.5 540.8 396.0 63.9 107.5 1382	0.0 0.0 0.0 0.0 25.6 43.2 15.9 35.3 58.7 0.0 0.0 0.0 586.8

Monthly Rainfall at Various Stations (continued)

	· 	ANNUAL	* * * * * * * * * * * * * * * * * * * *	***** ***** 363.9 1010.6 1155.2	1034.3 1449.0 961.0 1200.7 984.9	1062.5 890.7 1096.3 1310.5 1217.7	1595.3 975.5 905.7 950.4 1364.6	1204.3 1109.7 1416.0 1017.7 1461.3	973.5 1099.7 1558.7 1188.8 768.3	1219.7 *****	1122.3	363.9
24.)	WH :	DEC	* * * * * * * * * * * * * * * * * * *	#0000 #0000	00000		7,000 vivooo	00000	07.000 07.000	2.6 0.0	52.3	0.0
CINK-54	UNIT :	, 0	* * * * * * * * * * * * * * * * * * * *	1000° 1000° 1000°	00%00 40480	0,000 0,000 0,000	20048 20054	00,000	6,40,40 6,40,40	17.1	12.0	
MUANG TANK	~	00.	****	**************************************	222 952.7 153.0 80.8 80.8	179.6 24.6 66.1 67.0 43.3	26.2 93.7 18.7 88.4	4.0004	84.1 205.9 273.5 50.5 50.5	100.4 ***** 3 229.5	104.5	
		SEP	****	1758 * * * * * * * * * * * * * * * * * * *	255.0 231.6 211.1 259.4	350.2 350.2 147.9 315.7 322.1	306.6 200.0 359.6 359.6	355.3 373.1 278.9 465.4	140.0 338.3 200.2 94.2	72.3	255.9	
(8) KCK		AUG	***	***** 49.8 126.9 57.4	25.55 25.55 25.55 25.55 25.55 25.55	3,146.9 3,13.0 3,13.0	125 125 125 125 125 125 125 125 125 125	100.8 289.7 162.3 120.4	125.4 61.3 375.6 185.0	125.7 ***** 52.1	160.9	.00
4		_18L	***	**** 20.0 1187.6 396.7	221.5 221.5 168.8 143.9	47.0 85.7 214.9 75.1	280 277 277 278 278 278 278 278 278 278 278	207 361.9 73.2 73.2	218.2 140.3 248.0 35.9	128.9 **** 198.0	160.1	20.02
RAINFALL		NOC	***	8250 8250 8250 8250 8250 8250 8250 8250	52.22	108.4 224.0 282.8 262.3	207.3 11.2 11.2	244 244 244 244 244 244 244 244 244 244	233.2 56.7 149.9 164.8	115.7	157.8	11.2
MONTHLY	÷	MAY	***	24.5 24.5 264.6	138.1 124.3 124.5 216.5	310.8 42.4 1185.2 170.9	219.8 56.3 109.1 223.1	212.1 141.7 2653.7 148.1 230.1	27.0 27.0 27.0 27.0 27.0	324.4 **** 176.7	144.6 324.4	0
Ñ.		APR	****	85.00* 7.800*	186.7 22.5 61.4	13.88.2 13.45.5 113.5 5.55 5.55 5.55 5.55 5.55 5.55	W 0000	121.6 116.8 95.9	27.0 52.0 112.4 0.0	258.1 **** 31.9	67.8	0
		MAR	* * * *	**** 35.0 35.0	525 626 626 626 626 626 626 626 626 626	25.00 25.00 25.00	00000	8007 63.07 63.9	7.00 8.00 0000	85.8 85.8 *****	25.6	0.0
Ë.		FEB B	* * * *	* # ONO	20044 2006	% % % % % % % % % %	98000 88000	100180 20010	27.9 13.0 13.0	39.1	10.5	0
TABLE		JAN	***	* # 0 0 0 * * * 0 0 0 * * *	00000	၀၀၀မ္က၀	00044 377 377 377	00400	00%00	00 # # 00 #	33.8	0.0
		YEAR	1953 1954 1955	1956 1957 1958 1959 1959	199621 19963 19963 19963	1966 1967 1968 1969	1971 1972 1973 1974 1975	1976 1977 1978 1979 1980	1981 1982 1983 1984	1986 1987 1988	MEAN	NIN
		ANNUAL	***************************************	1000 K K K K K K K K K K K K K K K K K K	889.9 1328.7 1160.1 1624.6 997.7	12222 4 12240 8 1449 5 865 7	925.9 924.7 661.9 1184.3	11438.9 11304.0 1058.7	12559 10688 10688 7674 4674	809. 8 # # # # # # # # # # # # # # # # # # #	1084.4	509.2
		DEC ANNUAL	***	0.0 1043.2 0.0 1043.2 0.0 1090.9 0.0 673.9	0.0 889.9 0.0 1328.7 0.0 1160.1 0.0 997.7	9.8 1222.4 0.0 1240.8 0.0 1001.8 0.0 1449.5 6.4 865.7	55.5 65.2 0.0 661.9 0.0 1006.6 0.0 1184.3	0.0 1438.9 0.0 1304.0 0.0 1058.7 0.0 1658.7	0.01259	0.0 809.9 8***** 0.0 9.0 ******	3.8 1084.4	0.0 609.2
(TNK-32)	UNIT : MM >	ANN	***	*0000	0 1328 0 1160 0 1624	80004	wwooo	0 1304 0 1304 0 1505 0 1605	0.01259	0 * 0	3.8	.0 609
TANK	••	/ DEC ANN	***************************************	#0000 *	74.0 0.0 0.0 889. 74.0 0.0 0.0 1328. 18.6 60.9 0.0 1160. 14.6 30.5 0.0 1624. 55.8 0.0 0.0 997.	13.2 2.0 2.0 2.0 2.0 2.0 2.0 3.0 3.0 4.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	23.8 55.5 0.0 35.5 100.0 0.0 1	11.9 0.0 10.5 10.5 0.0 13.8 6 5 6 6 7 6 7 6 7 6 7 6 7 7 7 8 7 8 7 8 7 8	12.5 2.0 2.0 37.5 15.0 10.0 10.0 10.0 10.0 10.0 10.0 10	* * O * O * O * O * O * O * O * O * O *	3 11.9 3.8	609 0.0 0.
YANG TANK	••	NOV DEC ANN	计 计流光系统 计计算计算 计计算计算	***** ***** ***** ******	146.0 0.0 0.0 889. 74.0 0.0 0.0 1128. 218.6 60.9 0.0 1160. 314.8 30.5 0.0 1624. 55.8 0.0 0.997.	132.1 13.2 9.8 43.8 18.0 0.0 21.4 0.0 0.0 207.5 7.9 0.0 63.3 0.0 6.4	98.5 0.0 35.5 51.0 0.0 0.0 98.4 100.0 0.0 125.1 18.1 0.0 1	276.7 11.9 0.0 1438 38.2 0.0 0.4 1186 23.5 10.0 0.0 1058 20.0 0.0 0.0 1058 227.4 6.5 0.0 1605	293.5 2.0 0.0 1259 293.5 3.0 0.0 1259 79.7 37.5 0.0 1068 161.5 0.0 0.0 1068 213.5 0.0 0.0 767	61.0 0.0 0.0 4.8.8.8.8.8.8.8.8.8.8.8.8.8.8.8.8.8.8.8	314.6 100.0 65.2	0.0 0.0 609
HUAL YANG IANK	••	EP OCT NOV DEC ANN	计 计分类形式 计计算计算 计计算计算 计数据设计	4 307.8 7.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	205.0 146.0 0.0 0.0 1328. 430.9 74.0 0.0 0.0 1328. 425.9 314.6 60.9 0.0 1160. 425.9 314.6 0.0 0.0 1624. 263.8 55.8 0.0 0.0 997.	170.3 132.1 13.2 9.8 1 594.5 43.8 18.0 0.0 1 599.9 21.4 0.0 1 491.4 207.5 7.9 0.0 1 265.3 63.3 0.0 6.4	109.3 98.5 0.0 35.5 206.0 125.4 23.8 65.2 144.3 95.1 00 0.0 220.0 98.4 100.0 0.0 257.5 125.1 18.1 0.0	275.6 276.7 11.9 0.0 1438 377.7 38.2 0.0 0.4 1186 277.7 23.5 10.5 0.0 1058 306.2 0.0 0.0 0.0 1058 417.9 227.4 6.5 0.0 1605	187.0 47.0 12.5 0.0 609 359.7 293.5 2.0 0.0 1259 212.0 157.7 37.5 0.0 1068 181.6 213.5 0.0 0.0 767	.65.1 53.4 61.0 0.0 0.0 0.0 (************************	43.5 278.1 112.3 11.9 3.8	0.0 0.0 0.0 609
AT (7) HUAL YANG TANK	••	SEP OCT NOV DEC ANN	计 化苯基苯基 法未来法法 医苯基苯基 计算机 计多数分类 计多数分类 计多数分类 计多数分类 计多数分类 化苯基苯基 化苯基苯基 化二苯基苯基 化二苯基苯基苯基 化二苯基苯基苯基苯基苯基苯基苯基苯基苯基苯基苯基苯基苯基苯基苯基苯基苯基苯基苯基	28.3 279.0 44.7 0.0 0.0 38.3 279.0 44.7 0.0 0.0 38.3 279.0 44.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	59.3 174.3 205.0 146.0 0.0 0.0 889. 185.6 182.9 430.9 74.0 0.0 0.0 1328. 225.1 141.9 187.8 218.6 60.9 0.0 1160. 222.5 59.5 425.9 514.6 50.9 0.0 1624. 108.0 252.4 263.8 55.8 0.0 0.0 997.	213.7 170.3 132.1 13.2 9.8 1 90.3 594.5 43.8 18.0 0.0 1 94.6 291.4 207.5 7.9 0.0 1 114.9 265.3 63.3 0.0 6.4	215.8 109.3 98.5 0.0 35.5 48.8 206.0 125.4 23.8 65.2 135.3 144.3 5.1 0.0 0.0 106.7 220.0 98.4 100.0 0.0 77.1 257.5 125.1 18.1 0.0	201.1 275.6 276.7 11.9 0.0 1438 219.9 377.7 38.2 0.0 0.4 1186 185.2 457.7 23.5 10.5 0.0 1058 241.1 304.2 0.0 0.0 0.0 1058 204.4 417.9 227.4 6.5 0.0 1605	66.5 187.0 47.0 12.5 0.0 609 167.5 349.7 283.5 2.0 0.0 1259 228.0 1259.7 27.5 37.5 0.0 1048 99.7 212.0 147.6 15.0 0.0 1068 36.0 181.6 213.5 0.0 0.0 767	41.0 165.1 53.4 61.0 0.0 0.0 0.0 km.xxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxx	41.2 143.5 278.1 112.3 11.9 3.8 5.28.7 279.0 594.5 314.6 100.0 65.2	4 53.4 0.0 0.0 0.0 609
(7) HUAL YANG TANK	••	. AUG SEP OCT NOV DEC ANN	计 化苯基苯基 法未提出的 化苯基苯基 化苯基苯基 计多数分类 计	***** **** **** **** **** **** *	59.3 174.3 205.0 146.0 0.0 0.0 889. 185.6 182.9 430.9 74.0 0.0 0.0 1328. 225.1 141.9 187.8 218.6 60.9 0.0 1160. 222.5 59.5 425.9 514.6 50.9 0.0 1624. 108.0 252.4 263.8 55.8 0.0 0.0 997.	169.6 213.7 170.3 132.1 13.2 9.8 1 128.7 90.3 594.5 43.8 18.0 0.0 1 148.1 94.6 29.9 21.4 00.0 1 196.5 84.0 491.4 207.5 7.9 0.0 1 85.2 114.9 265.3 63.3 0.0 6.4	171.2 215.8 109.3 98.5 0.0 35.5 30.9 48.8 206.0 125.4 23.8 65.2 13.3 13.3 146.3 5.1 0.0 0.0 172.7 105.7 200.0 98.4 100.0 0.0 1202.0 77.1 257.5 125.1 18.1 0.0 1	146.0 201.1 275.6 276.7 11.9 0.0 1438 38.6 219.9 377.7 38.2 0.0 0.4 1186 38.7 185.2 457.7 23.5 10.5 0.0 1058 348.4 241.1 306.2 0.0 0.0 0.0 1058 91.0 204.4 417.9 227.4 6.5 0.0 1605	164.1 66.5 187.0 47.0 12.5 0.0 609 160.8 167.5 329.7 293.5 2.0 0.0 1259 8 100.0 228.0 196.7 79.7 37.5 0.0 1048 6 95.1 22.0 164.7 15.0 0.0 1068 130.6 36.0 181.6 213.5 0.0 0.0 767	48.0 41.0 165.1 53.4 61.0 0.0 0.0 xxxxx xxxxx xxxxx xxxxx xxxx xxxx xxxx xxxx	32.0 141.2 143.5 278.1 112.3 11.9 3.8 .1.6.1 328.7 279.0 594.5 314.6 100.0 65.2	.9 12.4 53.4 0.0 0.0 0.0 609
RAINFALL AT (7) HUAL YANG TANK	••	JUL AUG SEP OCT NOV DEC ANN	法 法法律证据 计计算程序 计计算计算 计计算计算 法法律法律 法法律法律 法法法法法 法 计多元元素 医多种性 医多种性 医多种性性 医多种性 医多种	***** **** **** **** **** **** **** ****	62.8 59.3 174.3 205.0 146.0 0.0 0.0 889. 24.3 185.4 182.9 240.9 74.0 0.0 0.0 1328. 24.7 8 257.1 141.9 187.8 218.6 6.0 0.0 1360. 134.4 222.5 59.5 425.9 344.6 30.5 0.0 1624. 65.6 108.0 252.4 263.8 55.8 0.0 0.0 997.	105.8 169.6 213.7 170.3 132.1 13.2 9.8 18.5 18.5 18.5 18.5 18.5 18.5 18.5 18	215.8 109.3 98.5 0.0 35.5 48.8 206.0 125.4 23.8 65.2 135.3 144.3 5.1 0.0 0.0 106.7 220.0 98.4 100.0 0.0 77.1 257.5 125.1 18.1 0.0	201.1 275.6 276.7 11.9 0.0 1438 219.9 377.7 38.2 0.0 0.4 1186 185.2 457.7 23.5 10.5 0.0 1058 241.1 304.2 0.0 0.0 0.0 1058 204.4 417.9 227.4 6.5 0.0 1605	160.8 167.5 359.7 293.5 20 609 1559 160.8 167.5 359.7 293.5 2.0 0.0 1259 163.8 259.0 283.0 1296.7 79.7 37.5 0.0 1648 150.6 35.0 181.6 213.5 0.0 0.0 767	48.0 41.0 165.1 53.4 61.0 0.0 0.0 xxxxx xxxxx xxxxx xxxxx xxxx xxxx xxxx xxxx	149.3 132.0 141.2 143.5 278.1 112.3 11.9 3.8 316.6 416.1 328.7 279.0 894.5 314.6 100.0 65.2	30.9 12.4 53.4 0.0 0.0 0.0 609
AT (7) HUAL YANG TANK	••	JUN JUL AUG SEP OCT NOV DEC ANN	计 化苯甲基苯基 计多数形式 计多数形式 计多数形式 计多数形式 计多数形式 计多数形式 医多种性 医多种性 医甲基甲基 医二甲基甲基 医二甲基苯酚 医二甲基甲基 医二甲基苯酚 医二甲基甲基 化二甲基苯酚 医二甲基甲基 化二甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基	**** **** **** **** **** **** **** **** ****	59.3 174.3 205.0 146.0 0.0 0.0 889. 185.6 182.9 430.9 74.0 0.0 0.0 1328. 225.1 141.9 187.8 218.6 60.9 0.0 1160. 222.5 59.5 425.9 514.6 50.9 0.0 1624. 108.0 252.4 263.8 55.8 0.0 0.0 997.	169.6 213.7 170.3 132.1 13.2 9.8 1 128.7 90.3 594.5 43.8 18.0 0.0 1 148.1 94.6 29.9 21.4 00.0 1 196.5 84.0 491.4 207.5 7.9 0.0 1 85.2 114.9 265.3 63.3 0.0 6.4	12.2 174.9 171.2 215.8 109.3 98.5 0.0 35.5 99.1 102.3 30.9 48.8 206.0 125.4 23.8 65.2 88.4 67.0 133.3 1343.3 144.3 5.1 0.0 0.0 185.4 106.1 27.0 172.7 106.7 220.0 98.4 106.0 0.0 0.0 65.0 172.0 202.0 77.1 257.5 125.1 18.1 0.0 1	97.2 48.4 146.0 201.1 275.6 276.7 11.9 0.0 1438 25.4 116.3 38.6 219.9 377.7 38.2 0.0 0.4 1186 90.6 139.6 327.7 185.2 457.7 23.5 10.5 0.0 1058 39.8 79.2 148.4 241.1 306.2 0.0 0.0 0.0 1058 85.6 416.1 91.0 204.4 417.9 227.4 6.5 0.0 1605	86.6 57.0 166.1 66.5 187.0 47.0 12.5 0.0 609 86.6 57.0 160.8 167.5 349.7 283.5 2.0 0.0 1259 86.4 599.8 103.0 98.7 198.7 79.7 37.5 0.0 1048 88.8 123.5 89.1 98.7 212.0 141.6 15.0 0.0 1068 22.7 50.5 130.6 36.0 181.6 213.5 0.0 0.0 767	26.6 214.8 48.0 41.0 165.1 53.4 61.0 0.0 0.0 xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxx	73.8 149.3 132.0 141.2 143.5 278.1 112.3 11.9 3.8 128.4 316.6 416.1 328.7 279.0 594.5 314.6 100.0 65.2	4 34.0 30.9 12.4 53.4 0.0 0.0 0.0 609
RAINFALL AT (7) HUAL YANG TANK	••	R MAY JUN JUL AUG SEP OCT NOV DEC ANN	计 化二甲基苯甲基 化苯甲苯苯 化苯甲苯苯 化苯甲苯苯 化苯苯苯苯 化苯苯苯苯 化苯苯苯苯 医苯甲基苯苯 医苯甲基苯苯 计算机	***** 64.5 90.7 229.4 196.1 125.4 307.8 7.1 0.0 0.0 3.0 14.8 8.0.0 11.9 97.1 97.1 98.1 25.4 279.0 44.7 0.0 71.1 0.0 0.0 0.0 14.8 253.6 100.8 250.4 183.3 258.0 0.0 0.0 0.0 220.9 48.1 108.5 43.9 180.1 72.4 0.0 0.0 0.0	201.0 62.8 59.3 174.3 205.0 146.0 0.0 0.0 889. 156.7 40.3 183.6 182.9 450.9 74.0 0.0 0.0 1328. 30.4 42.7.8 257.1 141.9 181.8 218.6 6.0 0.0 1146. 30.4 43.4 222.5 59.5 425.9 314.6 30.5 0.0 1624. 167.9 65.6 108.0 252.4 263.8 55.8 0.0 0.0 997.	316.6 105.8 169.6 213.7 170.3 132.1 13.2 9.8 13.1 26.1 26.3 6 128.7 90.3 594.5 43.8 18.0 0.0 13.1 15.1 15.1 15.1 15.1 15.1 15.1 15.1	112.2 174.9 171.2 215.8 109.3 98.5 0.0 35.5 99.1 102.3 50.9 48.8 206.0 125.4 23.8 65.2 81.0 20.1 13.3 13.3 144.3 5.1 0.0 0.0 126.5 67.0 172.7 106.7 20.0 98.4 100.0 0.0 126.5 0 172.0 202.0 77.1 257.5 125.1 18.1 0.0 1	197.2 48.4 146.0 201.1 275.6 276.7 11.9 0.0 1438 229.4 116.3 38.6 219.9 377.7 38.2 0.0 0.4 1186 90.6 118.5 38.8 79.5 185.2 457.7 23.5 10.5 0.0 1058 28.8 79.2 148.4 241.1 306.2 0.0 0.0 0.0 1058 28.6 416.1 91.0 204.4 417.9 227.4 6.5 0.0 1605	52.6 34.0 164.1 66.5 187.0 47.0 12.5 0.0 609 86.6 57.0 160.3 167.5 349.7 293.5 2.0 0.0 1259 46.5 299.8 103.0 228.0 198.7 79.7 37.5 0.0 1048 122.7 50.5 130.6 36.0 181.6 213.5 0.0 0.0 767	5 214.8 48.0 41.0 165.1 53.4 61.0 0.0 0.0 c. exxxx xxxx xxxx xxxx xxxx xxxx xxxx	25.8 73.8 149.3 132.0 141.2 143.5 278.1 112.3 11.9 3.8 110.9 226.6 316.6 416.1 328.7 279.0 594.5 314.6 100.0 65.2	30.4 34.0 30.9 12.4 53.4 0.0 0.0 0.0 609
MONTHLY RAINFALL AT (7) HUAL YANG TANK	••	APR MAY JUN JUL AUG SEP OCT NOV DEC ANN	法 法法律证法 计连续设计 计分类计算 计分类分类 计分类分类 计分类分类 计对象分类 计数据设计 计分类分类 计多数分类 计多数 计多数分类 计多数	**** **** **** **** **** **** **** **** ****	41.5 201.0 62.8 59.3 174.3 205.0 146.0 0.0 0.0 889. 209.2 184.7 40.3 183.4 182.9 450.9 74.0 0.0 0.0 1323. 14.0 30.4 427.8 237.1 141.9 187.8 218.6 0.0 0.0 1360. 64.4 31.4 134.4 222.5 59.5 425.9 314.6 30.5 0.0 1624. 73.3 167.9 65.6 108.0 252.4 263.8 55.8 0.0 0.0 997.	33.2 316.6 105.8 169.6 213.7 170.3 132.1 13.2 9.8 15.5 35.1 263.6 128.7 90.3 594.5 43.8 18.0 0.0 116.4 101.5 183.9 148.1 94.6 299.9 21.4 0.0 0.0 159.7 154.1 201.6 196.5 84.0 491.4 207.5 7.9 0.0 130.4 100.3 190.9 85.2 114.9 265.3 63.3 0.0 6.4	80.4 122.8 99.1 102.3 30.9 48.8 206.0 155.4 23.8 65.2 5.4 122.8 99.1 102.3 30.9 133.3 143.8 155.2 5.2 48.2 86.0 155.4 23.8 65.2 5.3 48.2 88.4 62.0 133.3 133.3 144.3 5.0 0.0 0.0 13.3 123.5 106.7 220.0 98.4 106.0 0.0 10.3 18.0 93.2 65.0 172.0 202.0 77.1 257.5 125.1 18.1 0.0 1	164.0 197.2 48.4 146.0 201.1 275.6 276.7 11.9 0.0 1438 155.5 229.4 116.3 38.6 219.9 377.7 38.2 0.0 0.4 1186 17.1 90.0 39.8 155.5 259.4 116.3 38.2 457.7 28.2 0.0 0.0 1058 39.0 28.8 79.2 148.4 241.1 306.2 0.0 0.0 0.0 1058 92.8 83.6 416.1 91.0 264.4 417.9 227.4 6.5 0.0 1605	41.0 52.6 34.0 164.1 66.5 187.0 47.0 12.5 0.0 609 60.7 86.6 57.0 160.8 167.5 34.9 7.293.5 2.0 0.0 1259 136.0 66.6 299.8 103.0 228.0 196.7 79.7 37.5 0.0 1048 150.0 128.9 123.5 69.1 97.7 212.0 161.6 15.0 0.0 1068 0.0 122.7 50.5 130.6 36.0 181.6 213.5 0.0 0.0 767	0.0 0.0 226.6 214.8 48.0 41.0 165.1 53.4 61.0 0.0 0.0 35.5 35.5 39.5 xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxx	5.9 25.8 73.8 149.3 132.0 141.2 143.5 278.1 112.3 11.9 3.8 35.5 110.9 226.6 316.6 416.1 328.7 279.0 594.5 314.6 100.0 65.2	.0 0.0 30.4 34.0 30.9 12.4 53.4 0.0 0.0 0.0 609
RAINFALL AT (7) HUAL YANG TANK	••	3 MAR APR MAY JUN JUL AUG SEP OCT NOV DEC ANN	计 化二甲基苯甲基 化苯甲苯苯 化苯甲苯苯 化苯甲苯苯 化苯苯苯苯 化苯苯苯苯 化苯苯苯苯 医苯甲基苯苯 医苯甲基苯苯 计算机	***** 64.5 90.7 229.4 196.1 125.4 307.8 7.1 0.0 0.0 3.0 14.8 8.0.0 11.9 97.1 97.1 98.1 25.4 279.0 44.7 0.0 71.1 0.0 0.0 0.0 14.8 253.6 100.8 250.4 183.3 258.0 0.0 0.0 0.0 220.9 48.1 108.5 43.9 180.1 72.4 0.0 0.0 0.0	0 0.0 41.5 201.0 62.8 59.3 174.3 205.0 146.0 0.0 0.0 889. 0 23.1 209.2 184.7 40.3 183.6 182.9 430.9 74.0 0.0 0.0 1323. 0 21.6 14.0 30.4 247.8 257.1 141.9 187.8 218.6 60.9 0.0 1160. 9 44.5 64.4 311.4 134.4 222.5 59.5 425.9 314.6 30.9 0.0 1624. 0 1.9 73.3 167.9 65.6 108.0 252.4 263.8 55.8 0.0 0.0 997.	58.1 33.2 316.6 105.8 169.6 213.7 170.3 132.1 13.2 9.8 1 10.0 53.5 33.1 263.6 128.7 90.3 564.5 43.8 18.0 0.0 1 11.0 116.4 101.5 183.9 148.1 94.6 299. 21.4 0.0 0.0 1 25.1 57 154.1 201.6 196.5 84.0 471.4 207.5 7.9 0.0 1 9.0 30.4 100.3 190.9 85.2 114.9 265.3 63.3 0.0 6.4	0 8.5 0.0 0.0 112.2 174.9 171.2 215.8 109.3 98.5 0.0 35.5 0.0 6.0 80.4 142.8 99.1 102.3 30.9 48.8 206.0 125.4 23.8 65.2 0.0 54.3 48.2 81.0 62.0 133.3 133.3 133.3 133.3 10.0 0.0 0.0 0.0 33.3 133.5 133.3 133.3 103.7 85.4 67.0 172.7 106.7 200.0 98.4 100.0 0.0 135.2 18.0 9.3 265.0 172.0 202.0 77.1 257.5 125.1 18.1 0.0 1	7.1 110.9 164.0 197.2 48.4 146.0 201.1 275.6 276.7 11.9 0.0 1438 0.0 10.0 155.5 279.4 116.3 38.6 219.9 377.7 38.2 0.0 0.4 1186 0.0 49.1 17.1 90.5 159.5 328.7 185.2 457.7 23.5 10.5 0.0 1594 0.0 0.0 159.0 239.8 79.2 148.4 241.1 306.2 0.0 0.0 0.0 1058 0.0 65.5 92.8 83.6 416.1 91.0 204.4 417.9 227.4 6.5 0.0 150.8	5 75.0 60.7 86.6 57.0 164.1 66.5 187.0 47.0 12.5 0.0 609 0.0 50.0 66.2 87.0 160.8 167.5 359.7 293.5 2.0 0.0 1259 0.0 50.0 66.4 299.8 163.0 228.0 196.7 79.7 37.5 0.0 1048 5 35.0 190.0 122.7 50.5 130.6 36.0 181.6 213.5 0.0 0.0 767	0.0 0.0 226.6 214.8 48.0 41.0 165.1 53.4 61.0 0.0 0.0 35.5 39.5 ***** ***** ***** ***** ***** ***** ****	.1 5.9 25.8 73.8 149.3 132.0 141.2 143.5 278.1 112.3 11.9 3.8 .0 35.5 110.9 226.6 316.6 416.1 328.7 279.0 594.5 314.6 100.0 65.2	0.0 0.0 30.4 34.0 30.9 12.4 53.4 0.0 0.0 0.0 609

Monthly Rainfall at Various Stations (continued)

TABLE MONTHLY RAINFALL AT (10) R MAIN CANAL	C DNIT : MM )	YEAR JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC ANNUAL	1951 - ***** ***** ***** ***** ***** ***** ****	1956 KERNE KERKE KERKE KRESE KRESE KERTE KERTE KRESE KRESE KRESE KRESE KRESE KRESE KRESE KRESE ESPECIE 1957 KERTE KRESE K	1961 arran arran arran karan karan karan arran karan karan karan karan arran arran arran arran arran 1962 arran erran erran karan arran ar	1966 **** aluka karak karak karak karak karak karak karak karak karak alarak alakak alakak 193, karak karak karak karak karak karak 1967 *** karak karak karak karak karak karak 1968 *** karak kar	1971 KRAKK KREK KREK KREK KREK KREK KERK KER	1976 0.0 2.4 52.6 18.0 207.6 74.4 140.0 137.1 145.2 159.8 0.0 0.0 937.1 1978 0.0 0.0 4.3 53.2 166.2 108.2 60.1 555.7 262.4 10.3 0.0 56.9 969.3 1978 15.0 5.2 10.5 111.9 202.0 197.8 171.0 214.7 226.0 828.2 269.5 354.8 0.0 0.0 10.1 0.0 133.6 144.3 2.2 260.5 354.8 0.0 0.0 1224.4 176.0 0.0 0.0 1224.4 176.0 0.0 0.0 1224.4 176.0 0.0 0.0 1224.4 176.0 0.0 0.0 1224.4 176.0 0.0 0.0 1224.4 176.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1981 0.0 6.0 8.0 15.7 203.3 145.4 211.2 59.5 56.1 86.0 18.7 0.0 809.9 1982 0.0 41.5 106.9 55.2 154.7 80.2 152.8 67.0 438.2 60.4 0.0 3.2 1088.9 1983 0.0 0.0 0.0 1.7 35.8 64.6 725.1 159.8 114.0 12.9 0.0 842.3 1984 0.0 22.7 18.8 122.0 208.2 197.4 231.1 208.8 47.8 5.7 0.0 135.1 1985 0.0 5.5 16.2 74.3 210.8 135.5 163.8 102.4 186.8 75.8 0.0 0.0 969.1	0.0 20.0 111.2 187.4 183.2 72.6 97.7 66.1 59. 31.2 18.6 49.8 143.2 82.3 20.8 178.4 237.1 91. 13.8 18.0 17.2 216.7 290.7 116.4 75.0 141.4 241.	MAX 15 0 21 3 105 9 133 6 2 2 20 7 37 1 0 260 5 222 6 85 2 2 6 6 13 13 2 7 2 2 2 2 2 2 1 1 1 2 2 2 2 2 2 2 2 2	0.0 0.0 0.0 0.0 1.7 32.8 74.4 20.8 59.5 56.1 0.0 0.0 0.0 803
TABLE MONTHLY RAINFALL AT (9) HUAI TOEI TANK (THK-113)	< MM : LING >	JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC ANNUAL	计多数形式 计多数形式 计多数形式 计多数形式 化苯甲基 医神经神经 化异苯甲基 计多数形式 计数据系统 计数据系统 计数据设计 计数据设计 计多数计算 医乳腺性炎 化苯甲基苯酚 医水杨二醇 医水杨二醇 医二甲基甲基 计多数形式 计图像形式 图像形式 图像形式 图像形式 图像形式 图像形式 图像形式 图像形式	计算法转换 计分类转换 计连续分类 计连续分类 计分类分类 计分类分类 计可存储器 使开始的 医水体性 经分类分类 医水体性 医水体性 医水体性 医水体性 医水体性 医水体性 医水体性 医水体性	法国外诉讼 医环状试验 经有效证据 医水油洗涤 医电影电话 化环状溶液 法法法法法 法公司的法 经非过法的 经非过法的 医克里氏征炎 法法法法法 医外外外外 医环状试验 医生物性 医皮肤性的 医皮肤性的 计设计算法 医外外外的 医外外外的 医皮肤性的 医皮肤的 医皮肤的 医皮肤的 医皮肤的 医皮肤的 医皮肤的 医皮肤的 医皮肤	计设计设计 计电影设计 计连续设计 计连续设计 计设计设计 计设计设计设计 计设计设计设计 计设计设计设计 计设计设计设计 计设	***** ***** ***** 86.4 321.2 94.2 129.3 575.3 109.8 0.0 0.0 0.0 0.0 ****** 0.0 0.0 41.0 45.1 0.0 105.6 47.0 65.1 65.1 163.8 39.0 59.5 631.2 0.0 0.0 0.4 1.5 67.0 112.7 206.5 140.0 255.3 15.6 9.0 0.0 856.0 0.0 0.0 41.5 67.4 118.5 18.5 116.0 150.5 194.7 124.2 47.9 0.0 879.0 54.5 0.0 100.5 0.0 278.6 197.1 161.3 94.8 238.9 121.1 0.0 0.0 1226.6	0.0 0.0 50.0 82.4 117.3 64.1 106.0 204.1 151.0 116.8 0.0 0.0 851.7 0.0 0.0 0.0 43.0 72.6 581.7 72.6 116.8 265.4 45.4 0.0 0.0 669.9 0.0 0.2 2.0 0.0 81.8 1.8 72.6 67.7 80.6 152.4 460.5 480.0 0.0 1567.5 0.0 0.0 5.2 0.0 105.3 156.7 590.6 152.4 460.5 480.0 0.0 1567.5 0.0 0.0 0.0 1567.5 0.0 0.0 0.0 1567.5 0.0 0.0 0.0 1567.5 0.0 0.0 0.0 1567.5 0.0 0.0 0.0 1567.5 0.0 0.0 0.0 1567.5 0.0 0.0 0.0 1567.5 0.0 0.0 0.0 1567.5 0.0 0.0 0.0 1567.5 0.0 0.0 0.0 1567.5 0.0 0.0 0.0 1567.5 0.0 0.0 0.0 1567.5 0.0 0.0 0.0 1567.5 0.0 0.0 0.0 1567.5 0.0 0.0 0.0 1567.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	0.0 0.0 14.1 72.0 111.6 264.7 274.0 110.0 226.7 127.1 43.0 0.0 1263.2 0.0 65.6 88.5 26.0 88.2 90.0 72.0 164.0 565.0 214.9 0.0 10.0 1552.2 8.0 0.0 0.0 0.0 245.3 264.2 10.1 0.0 117.6 0.0 87.0 84.3 10.5 118.2 169.0 124.2 10.1 0.0 117.6 0.0 28.0 27.1 35.8 87.5 84.3 129.5 178.2 169.0 122.4 0.0 0.0 869.8 0.0 32.7 0.0 110.9 94.1 91.6 179.6 156.2 254.1 137.6 6.1 0.0 1042.9	0.0 0.0 0.0 135.0 150.0 132.7 62.1 138.3 111.0 111.5 22.0 0.0 862. 0.0 62.7 4.1 ***** ***** ***** ***** ***** ***** ****	2.6 12.1 22.3 63.1 133.7 136.0 144.9 161.9 237.6 117.5 10.4 4.1 1030.0 xx x x x x 100 s xx c x x 7 20.6 375.3 515.0 246.6 47.9 59.5 1509.7	0.0 0.0 0.0 18.5 47.0 56.3 65.1 0.0 0.0 0.0
•	,	YEAR	1953 1954 1955	1956 1957 1958 1959	1961 1962 1963 1964 1965	1966 1967 1968 1969 1970	1972 1972 1973 1974 1975	1976 1978 1978 1979 1980	1981 1982 1983 1984 1985	1986 1987 1988	MEAN MAX	MIM

TABLE MONTHLY KAINFALL AT (12) ADRC	C UNIT : MM >	JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC ANNUAL	**************************************	****** ***** ***** ****** ***** ***** ****	**************************************	**************************************	**************************************	**************************************	0.0 0.0 112.0 0.10 114.0 111.7 70.2 025.0 253.1 144.5 21.0 0.0 0.0 0.0 19.0 115.0 45.0 192.1 135.0 188.0 73.0 ****** 181.5 0.0 ****** 207.5 79.0 239.0 ****** 242.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 23.1 51.8 79.2 160.5 150 0.0 76.5 112.0 131.5 192.5 207 0.0 0.0 15.0 45.0 114.0 111
		YEAR	1956 1957 1958 1959	1961 1963 1963 1965	1966 1967 1968 1970	1971 1973 1973 1974	1976 1977 1978 1979 1980	1981 1984 1985 1985	1988	
IABLE MONINLY RAINPALE AT (11) A. PHRA YUN	( MM : INM )	YEAR JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC ANNUAL	1966 - Xeren renen renen renen keren keren keren keren keren keren keren keren keren 1987 - Xeren keren keren keren keren keren keren 1985 - Xeren keren ker	1971	1976 жажар жажар жажар жакар балар мажан жакар какар какар жакар жакар жакар бакак бакаж 1977 жакар жакар жакар жакар жакар жакар жакар какар какар мажар жакар жакар 1978 жакар жакар жакар жакар жакар жакар жакар какар жакар жака	1981 ***** ***** ***** ***** ***** ***** ****	0.0 0.0 18.2 160.7 161.1 83.1 74.9 130.8 117.0 8.0 0.0 0.0 73 0.0 30.1 20.0 64.8 28.1 104.2 91.1 256.1 216.1 63.2 43.9 0.0 113.0 0.0 92.2 15.2 15.3 15.8 118.7 92.0 72.8 181.4 128.8 0.0 0.0 99.0 0.0 13.2 55.8 118.7 34.3 169.1 0.0 0.0 93.0 0.0 13.8 62.0 76.0 282.7 145.7 93.3 245.9 CONTINUE	3 1988) 13 10.0 20.4 8.1 70.0 161.0 115.8 109.4 171.5 182.4 87.7 9.4 0.0 935 0.0 92.3 20.0 160.7 281.1 171.0 180.9 329.3 216.1 132.7 43.9 0.0 1140 0.0 0.0 0.0 0.0 76.9 79.8 74.9 72.6 117.0 8.0 0.0 0.0 753	(1983 - 1990) MEAN 0.0 21.4 15.7 69.0 170.2 109.3 112.4 167.8 175.3 104.2 8.0 0.0 912.2 MAX 0.0 92.3 62.0 160.7 282.7 171.0 180.9 329.3 216.1 203.4 43.9 0.0 1140.6	MIN 0.0 0.0 0.0 0.0 76.9 34.3 74.9 67.6 117.0 8.0 0.0 0.0 753.8

### A-2-2 Complement of Rainfall Data

Daily rainfall data for 12 rain gauging stations, in and around the Study area were collected from the Meteorological Department, RID, Agricultural Extension Department and ADRC. Location of the stations are shown in Figure A-2. Name of the stations, sources and data period are shown in Table A-2.

There were suite a few stations which did not have enough length of data period for a good statistical analysis. Therefore, to generate the missing daily rainfall data a correlation study and a regression analysis were done. In the analysis monthly data were used as shown in Table A-4. The equations and procedures followed are given below;

a) Equation of linear regression obtained through the correlation study is expressed as;

Y = aX + b

where X: monthly rainfall at the key station which keeps
perfect daily record of rainfall during period under
consideration

Y: expected monthly rainfall at the object station which involves missing data

a.b.: coefficient and constant

b) Applying the ratio of the monthly amount of rainfall between stations X and Y. Showing the highest correlation, the daily rainfall at the object station was generated by the following equation:  $y = (Y/X) \cdot x$ 

where x : daily rainfall actually measured at the key station

y : synthetic daily rainfall at the object station

Shown below are the regression equations developed and used in the completion of daily rainfall for different stations.

Regression Equations for Daily Rainfall

Key Station (X)	Object Station (Y)	Equation
- ( 2) A. Mancha Khiri	( 1) A. Muang ( 2) A. Mancha Khiri ( 3) A. Ban Phai	Perfect Record Observed Data - do - Y = 0.865X + 18.614 (R:90.4%) y = 1.036x
( 1) A. Muang	(4) A. Phu Wiang	$Y \approx 0.884X + 19.083 (R:89.1%)$ y = 1.044x
( 1) A. Muang ( 2) A. Muncha Khiri	( 5) A. Chum Phae ( 6) A. Chonnabot	Y = 0.857X + 13.345 (R:86.2%) y = 0.982x Y = 0.929X + 15.351 (R:93.0%)
( 2) A. Muncha Khiri	( 7) TNK-32	y = 1.071x Y = 0.943X + 15.168 (R:91.0%) y = 1.074x
( 1) A. Muang	(8) TNK-34	Y = 0.919X + 7.327 (R:90.9%) y = 0.980x
( 1) A. Muang	( 9) TNK-113	Y = 0.853X + 14.087 (R:87.2%) y = 0.974x
( 1) A. Muang	(10) R Main Canal	Y = 0.866X + 5.128 (R:88.6%) y = 0.910x
(1) A. Muang	(11) A. Phra Yun	Y = 0.731X + 14.797 (R:81.7%) y = 0.845x

Note R: Correlation Coefficient

Annual rainfalls and mean monthly rainfalls of 11 stations for the period of 36 years (1953-1988) are shown in Table A-7 and A-8. Mean annual rainfall at A. Phra Yun in the central part of the study area is 970 mm. And the same at the stations of A. Muang and A. Mancha Khiri are 1,180 mm and 1,030 mm, respectively. The former locates in the northeast of the study area and the latter locates in the south of the study area.

Table A-4 The Correlation Coefficient and Regression Line of Monthly Rainfall

( 1953 ---> 1988 : 36YEARS / UNIT : MM/MONTH )

STA	ΤI	ОN	 > -	Χ

Y	A.MUANG A	( 2) MANCHA KHIRI	( 3) A.BAN PHAI	( 4) A.PHU A WIANG	( 5) A. CHUM / PHAE	( 6) CHON- NABOT	( 7) TNK-32 T	(8) NK-34 1	( 9) NK-113	(10) R MAIN A CANAL	(11) LPHRA YUN
A.MUANG	R 1.000 A 1.000 B 0.000 Q 1.000 N *****	0.854 23.352 1.079	0.888 0.915 12.207 1.032 272	0.891 0.898 7.503 0.958 271	0.862 0.866 15.824 1.018 264	0.869 0.937 9.056 1.033 185	0.888 0.859 18.013 1.020 224	0.909 0.901 14.054 1.021 236	0.872 0.893 15.146 1.027 116	0.886 0.905 20.382 1.098 108	0.817 0.914 29.461 1.183 41
	R 0.859 A 0.864 B 7.059 Q 0.927 N 253	1.000 0.000 1.000	0.904 0.945 2.245 0.965 259	0.862 0.910 -4.639 0.874 233	0.860 0.890 7.502 0.957 240	0.930 0.931 0.257 0.933 179	0.910 0.878 6.530 0.931 227	0.834 0.841 9.753 0.931 187	0.811 0.789 17.020 0.938 115	0.863 0.775 23.298 0.976 96	0.812 0.911 3.045 0.940 42
( 3) A.BAN PHAI	R 0.888 A 0.863 B 11.430 Q 0.969 N 272	0.865 18.614 1.036	1.000 1.000 0.000 1.000 *****	0.871 0.865 4.314 0.900 240	0.858 0.865 13.527 0.987 250	0.905 0.903 6.249 0.965 188	0.896 0.848 14.195 0.969 229	0.868 0.861 10.182 0.951 208	0.846 0.811 14.912 0.945 121	0.890 0.817 20.076 0.996 103	0.695 0.722 27.807 0.981 39
( 4) A.PHU WIANG		0.815 36.894 1.144	0.871 0.878 26.328 1.111 240	1.000 1.000 0.000 1.000 *****	0.883 0.951 18.542 1.120 248	0.872 0.888 24.063 1.104 156	0.881 0.851 30.813 1.102 213	0.889 0.862 25.375 1.064 219	0.830 0.775 39.425 1.093 109	0.871 0.850 29.879 1.078 80	0.746 0.648 64.099 1.193 31
( 5) A.CHUM PHAE	R 0.862 A 0.857 B 13.345 Q 0.982 N 264	0.831 22.840 1.044	0.858 0.851 17.616 1.013 250	0.883 0.819 9.085 0.893 248	1.000 1.000 0.000 1.000 *****	0.792 0.831 16.810 1.004 163	0.855 0.771 24.024 0.984 210	0.853 0.791 16.325 0.933 202	0.780 0.810 16.574 0.961 107	0.868 0.878 16.867 1.038 78	0.794 0.855 27.181 1.100 44
	R 0.869 A 0.806 B 15.797 Q 0.968 N 185	0.929 15.351 1.071	0.905 0.906 12.706 1.036 188	0.872 0.855 6.147 0.906 156	0.792 0.754 23.719 0.996 163	1.000 1.000 0.000 1.000 *****	0.888 0.841 15.036 0.983 174	0.851 0.846 15.054 0.988 156	0.875 0.826 17.238 0.973 124	0.870 0.787 26.519 1.030 106	0.806 0.865 20.398 1.055 40
( 7) TNK-32	R 0.888 A 0.918 B 7.130 Q 0.980 N 224	0.943 15.168 1.074	0.896 0.947 9.600 1.031 229	0.881 0.912 -0.621 0.908 213	0.855 0.948 7.613 1.016 210	0.888 0.938 8.324 1.018 174	1.000 1.000 0.000 1.000 *****	0.879 0.906 8.651 0.982 211	0.855 0.850 16.750 0.992 117	0.892 0.826 12.743 0.937 73	0.711 0.929 17.895 1.094 30
( 8) TNK-34	R 0.909 A 0.919 B 7.327 Q 0.980 N 236	0.826 24.941 1.074	0.868 0.876 18.711 1.051 208	0.889 0.917 2.938 0.939 219	0.853 0.920 16.276 1.071 202	0.851 0.855 16.402 1.012 156	0.879 0.854 18.428 1.019 211	1.000 1.000 0.000 1.000 *****	0.887 0.840 18.632 0.996 110	0.887 0.854 24.384 1.073 ,86	0.756 0.788 49.921 1.208 26
( 9) TNK-113	R 0.872 A 0.853 B 14.087 Q 0.974 N 116	0.833 24.866 1.066	0.846 0.882 18.504 1.058 121	0.830 0.890 3.433 0.915 109	0.780 0.751 30.525 1.041 107	0.875 0.928 11.312 1.027 124	0.855 0.861 17.141 1.008 117	0.887 0.936 7.967 1.004 110	1.000 1.000 0.000 1.000 *****	0.878 0.836 18.970 0.989 84	0.772 0.725 39.930 1.057 32
CANAL	R 0.886 A 0.866 B 5.128 Q 0.910 N 108	0.960 7.358 1.025	0.890 0.970 3.805 1.004 103	0.871 0.892 5.018 0.928 80	0.868 0.859 11.312 0.963 78	0.870 0.961 1.112 0.971 106	0.892 0.963 11.148 1.067 73	0.887 0.921 1.276 0.932 86	0.878 0.922 10.885 1.011 84	1.000 1.000 0.000 1.000 *****	0.837 0.832 16.639 0.980 42
(11) A.PHRA YUN	R 0.817 A 0.731 B 14.797 Q 0.845 N 41	0.724 33.813 1.064	0.695 0.668 37.064 1.020 39	0.746 0.858 -2.721 0.838 31	0.794 0.737 20.946 0.909 44	0.806 0.752 22.267 0.948 40	0.711 0.544 43.796 0.914 30	0.756 0.725 14.799 0.828 26	0.772 0.822 15.708 0.946 32	0.837 0.842 19.719 1.021 42	1.000 1.000 0.000 1.000 *****

NOTE R:CORRELATION COEFICIENT
REGRESSION LINE:Y=A·X+B

Q:TOTAL RAINFALL RATIO (Y/X)

N:SAMPLE SIZE

Table A-5 Complemented Monthly Rainfall at Various Stations

		ANNGAL	1497.5 1353.7 1067.4	1300.4 1308.0 1169.8 1017.4	1191.3 1246.0 1323.7 1286.2 1082.8	1520.9 1093.0 1218.4 1327.3	1324.8 965.8 1105.0 1305.4	1418.1 1023.4 1536.0 1141.8 1781.9	1041.9 1141.8 1292.7 998.4 1262.7	1198.3 1360.1 1111.7		965.8
	Æ	DEC	000	00000	00000	8000N 80008	285.7 29.0 0.0 0.0 0.0	00000 0000	00000	000	3.3	0
KAEN	UNIT	NOV	200	00004	44 800 9 8 8 0 0	0.000	88.00 80 80 80 80 80 80 80 80 80 80 80 80 8	0,000 4,000 0	0 2 4 4 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.70		0 1 0 1
KHON K	<b>U</b> .	OCT	98 11.3 5.6	24.1 42.0 220.8 10.0	162.1 110.3 163.8 61.5	22.25 20.25 82.55 82.55	81.0 174.1 10.9 79.0	280.6 72.0 0.0 139.4	158.6 171.0 175.5 175.5	78.2 143.8 244.9	so vo e	0,   0,
WIANG,	•	SEP	331.3 294.7 139.4	211.1 322.8 182.3 317.3	242.9 202.7 232.7 155.1	324.7 415.1 161.7 316.9 319.8	260.8 352.5 267.8	302.3 279.6 386.9 383.8	281.8 221.8 240.9 240.9	193.3 224.8 171.3	ا بن جا ا	88.5
H DH M	-	AUG	64.3 302.8 190.7	235.9 299.7 286.6 133.6	215.0 141.4 197.4 268.1	297.3 1118.9 206.0 108.7	311.4 1115.3 1119.7 131.6	88.6 196.9 257.2 208.7 167.4	160.9 70.2 160.0 133.7	187.7 293.8 141.4	0 4	2, 1 1, 1
(4) A.		ากา	191.1 101.2 131.1	2229.4 2229.4 2331.8 274.1	70.1 189.0 223.6 93.4	144.8 263.4 253.0 121.7	166.8 157.5 157.6 154.2	234.8 110.4 393.2 110.0	204 162.6 197.7 139.3	143.0 139.8 174.8		47.5
₹	٠.	Š	170.1 248.7 367.9	136.7 1425.8 142.2 142.2 143.2 143.2 143.2	2033.3 74.3 174.3	114.0 126.8 192.5 177.7 295.1	225.4 203.8 315.6 73.0	124.8 204.2 240.5 240.5	2323.8 2324.3 212.4 24.3	87.9 134.6 121.9		28.1
RAINFALL		MAY	314.8 260.8 126.0	227.5 131.0 107.2 258.3 332.0	191.0 250.7 156.0 329.9 189.9	295.3 98.9 1114.5 133.6	148.7 37.5 142.6 1118.1 282.7	183.9 192.2 177.1 390.0	143.9 132.0 137.9 176.7 227.3	290.0 149.7 153.5	192.	37.5
MONTHLY	•	APR	98.3 83.9	200000 20000	87.22 27.22 20.02	74.3 67.2 64.7	108.2 2.2 32.9 32.9	135.3 135.8 110.4 80.9	52.25 92.25 92.85 92.85	216.4 86.2 59.1	77.	1 & 1 0 1
		MAR	19.6	115.9 37.2 4.7	26.0 26.0 26.0 26.0 25.0 25.0 25.0	107.7 51.3 6.13	07.050	44000 44000	02040 40000	135.6	34.	0   0   
COMPLEMENTED		83 83	69.9 12.4 0.0	23.25.0	2.005 2.005 7.005	H040W	28.05 20.05 20.13	\$0.05 40.00 0.00	40000	12.0	. 4 % «	0. I
3		JAN	39.6 20.7 0.0	00000	04004	00000	00008	00000	00000	000		1 0 1
		YEAR	1953 1954 1955	1956 1957 1958 1959	1961 1962 1963 1964 1965	1966 1967 1968 1969	1971 1972 1973 1974 1975	1976 1977 1978 1979 1980	19987 19987 19987 1984 1985	1986 1987 1988	MEAN MAX	ا ا ع ا ع
			ထုတ်ဆု	44,466	. જંત્ર <i>ખે</i> લ્લ	เก่งเล่น	00000	V09WV	୷ଊଡ଼ଡ଼ଢ଼	<b>100</b>	י אי אי	· - 1
		ANNUA	1266.8 801.5 1269.8	1242. 1333. 1547. 1048.	1134. 1200. 1182. 1191.	1506. 746. 1025. 1382. 1006.	1203.6 854.9 721.9 873.6	1211.7 761.0 1496.9 1213.5 1360.7	855. 1098. 794. 1063.	610. 1189. 1304.	1091.	910.   910. 
	£	DEC	~~~									o i
	••	ລ	000	00000	04400	80000	84 84 80 80 80 80	00000	0,000	000		; ;
رة 2	: TIND :	2000		00040	000 000 000 000 000 000	84000 64000	04080 00000	00%04 00408			11.7 3. 87.8 44.	)    -  -
CHON KAEN	: LIND >		000 000	74.8 89.9 65.8 65.8 74.2 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4	259.8 0.0 0.140.6 87.8 1.198.1 38.3 0.0	89.3 4.42.7 103.6 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6	00000	283.7 28.3 24.3 23.4 0.0 0.0 220.2 1.8	29.2 16.1 0.114.9 12.1 8.2 15.1 18.4 0.2 22.3 11.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	47.8 0.0 0. 76.6 72.7 0. 299.5 0.0 0.	104.5 11.7 3. 299.5 87.8 44.	0.0 0.0
KHON	: LIND >	SEP OCT NOV	218.8 78.4 5.3 0. 292.7 54.5 0.0 0. 287.0 73.5 5.5 0.	00040	59.8 60.6 87.8 78.1 78.1 0.0 0.0	216.9 89.3 36.6 27.205.0 42.7 16.5 0.204.6 103.6 0.0 0.482.1 256.2 0.0 0.257.6 9.5 0.0 0.0 0.257.6	156.7 53.9 0.0 254.7 125.8 31.0 231.8 19.1 0.0 159.0 142.0 38.2 249.0 83.7 0.0	235.1 203.7 0.0 187.1 28.3 0.0 380.9 24.3 23.4 285.1 0.0 0.0 276.2 220.2 1.8	52.2 59.2 16.1 0. 355.8 130.7 3.3 15. 102.2 114.9 12.1 8. 250.7 59.1 18.4 0. 210.3 243.1 11.6 0.	105.8 47.8 0.0 0. 379.0 76.6 72.7 0. 88.0 299.5 0.0 0.	246.8 104.5 11.7 3. 482.1 299.5 87.8 44.	25.5 0.0 0.0
	: UNIT	OCT NOV	74.6 218.8 78.4 5.3 0.143.9 292.7 54.5 0.0 0.147.8 287.0 73.5 5.5 0.0	201.1 153.4 74.8 0.0 0. 170.0 359.0 89.9 0.0 0. 253.0 458.4 65.8 0.0 0. 117.5 286.3 54.2 1.4 0. 78.3 211.9 104.5 2.0 0.	287.7 165.2 259.8 0.0 0. 150.8 471.1 91.8 0.0 3. 141.4 140.2 160.8 87.8 1.92.6 259.1 1981.4 38.3 181.4 125.4 46.4 0.0 0.0	140.0 216.9 89.3 36.6 27. 21.3 205.0 42.7 16.5 0 142.9 204.6 103.6 0.0 0 75.1 257.6 256.2 0.0 0	206.8 156.7 53.9 0.0 22.7 254.7 125.8 31.0 98.0 231.8 19.0 108.3 139.0 142.0 38.2 53.3 249.0 83.7 0.0	224.9 235.1 203.7 0.0 211.0 187.1 28.3 0.0 155.4 280.9 24.3 23.4 203.2 285.1 0.0 0.0 120.8 276.2 220.2 1.8	143.2 52.2 59.2 16.1 0. 118.5 555.8 130.7 3.3 15. 101.6 102.2 114.9 13.1 8.4 101.6 520.7 59.1 18.4 0.	107.8 105.8 47.8 0.0 0. 190.3 379.0 76.6 72.7 0. 53.4 88.0 299.5 0.0 0.	133.7 246.8 104.5 11.7 3. 287.7 482.1 299.5 87.8 44.	2773 2674 0.0 0.0
(3) A. BAN PHALZ KHON	: UNIT	JUL AUG SEP OCT NOV	41.1 74.6 218.8 78.4 5.3 0. 57.1 145.9 292.7 54.5 0.0 0. 123.2 147.8 287.0 73.5 5.5 0.	319.3 201.1 153.4 74.8 0.0 0. 103.1 170.0 309.0 89.9 0.0 0. 170.1 223.0 459.4 65.8 0.0 0. 170.4 117.5 286.3 54.2 0.0 0. 158.3 78.3 211.9 104.5 2.0 0.	72.9 287.7 163.2 259.8 0.0 0. 207.2 150.8 471.1 91.8 0.0 3. 225.1 141.4 140.2 160.6 87.8 1. 213.6 92.6 259.1 198.1 38.8 0. 91.1 181.4 125.4 46.4 0.0 0.	35.5 21.3 605.0 216.9 89.3 36.6 27. 35.5 21.3 605.0 42.7 16.5 0 135.4 149.0 204.6 103.6 0.0 0 89.8 59.7 482.1 256.2 0.0 0 210.3 75.1 257.6 9.5 0.0 0	150.8 206.8 156.7 53.9 0.0 17.2 22.7 254.7 125.8 31.0 10.0 198.0 231.8 19.1 0.0 142.5 108.3 159.0 142.0 38.2 160.0 53.3 249.0 83.7 0.0	184,6 224,9 235,1 203,7 0.0 23,4 2110, 187,1 28,3 0.0 188,0 188,0 188,0 24,3 23,4 24,5 23,4 28,5 1,0 0.0 0.9,8 120,8 276,2 220,2 1.8	173.1 143.2 52.2 59.2 16.1 0. 131.4 118.5 555.8 130.7 3.3 15. 94.0 164.4 102.2 114.9 12.1 6. 74.7 101.6 250.7 59.1 18.4 0. 114.7 45.5 210.3 243.1 11.6 0.	75.5 107.8 105.8 47.8 0.0 0. 59.5 190.3 379.0 76.6 72.7 0. 174.7 53.4 88.0 299.5 0.0 0.	137.4 133.7 246.8 104.5 11.7 3. 418.0 287.7 482.1 299.5 87.8 44.	17.2 21.3 52.4 0.0 0.0
AT (3) A. BAN PHALZ KHON	: LIND >	JUN JUL AUG SEP OCT NOV	253.4 41.1 74.6 218.8 78.4 5.3 0. 102.6 57.1 143.9 292.7 54.5 0.0 0. 432.7 123.2 147.8 287.0 73.5 5.5 0.	61.2 319.3 201.1 153.4 74.8 0.0 0. 172.0 103.1 170.0 309.0 89.9 0.0 0. 26.3 100.0 223.0 459.4 65.8 0.0 0. 76.1 279.4 117.5 286.3 54.2 0.0 191.5 158.3 78.3 211.9 104.5 2.0 0.	83.6 72.9 287.7 163.2 259.8 0.0 0. 180.3 207.2 150.8 471.1 91.8 0.0 3. 152.8 252.1 141.4 140.2 160.6 87.8 153.4 29.4 188.1 181.4 125.4 46.4 0.0 0.	105.7 172.4 160.0 216.9 89.3 36.6 27. 125.3 35.5 21.3 405.0 42.7 16.5 0 1171 135.4 149.0 204.4 103.4 0.0 0 196.2 88.8 8.9 27. 482.1 256.2 0.0 0 264.9 210.3 75.1 257.6 9.5 0.0 0	156.9 150.8 206.8 156.7 53.9 0.0 203.8 17.2 22.7 254.7 125.8 31.0 98.1 150.1 98.0 251.8 19.1 0.0 30.6 142.5 108.3 159.0 142.0 38.2 156.8 160.0 53.3 249.0 83.7 0.0	33.6 184.6 224.9 235.1 203.7 0.0 61.6 23.4 2110 187.1 28.3 0.0 189.8 18.0 165.4 380.9 24.3 23.4 265.6 76.3 203.2 285.1 0.0 0.0 408.9 90.8 120.8 276.2 220.2 1.8	34.3 173.1 143.2 52.2 59.2 16.1 0. 92.9 131.4 118.5 355.8 130.7 3.3 15. 209.7 164.4 102.2 114.9 12.1 8. 85.3 74.7 101.6 250.7 59.1 18.4 0. 70.0 114.7 45.5 210.3 243.1 11.6 0.	33.0 75.5 107.8 105.8 47.8 0.0 0. 143.5 59.5 190.3 379.0 76.6 72.7 0. 218.3 174.7 53.4 88.0 299.5 0.0 0.	150.2 137.4 133.7 246.8 104.5 11.7 3.432.7 418.0 287.7 482.1 299.5 87.8 44.	50.6 17.2 21.3 52.4 0.0 0.0
RAINFALL AT (3) A. BAN PHAI, KHON	: UNIT	MAY JUN JUL AUG SEP OCT NOV	174.7 253.4 41.1 74.6 218.8 78.4 5.3 0. 138.6 102.6 57.1 143.9 222.7 54.5 0.0 0. 76.8 432.7 123.2 147.8 287.0 73.5 5.5 0.	259.8 61.2 319.3 201.1 153.4 74.8 0.0 0. 97.6 172.0 103.1 170.0 309.0 89.9 0.0 0. 359.7 255.3 100.2 225.0 459.4 65.8 0.0 0. 137.2 76.1 279.4 117.5 286.3 54.2 0.4 0. 199.0 191.5 158.3 78.3 211.9 104.5 2.0 0.	200.9 83.6 72.9 287.7 163.2 259.8 0.0 0. 71.3 180.3 207.2 150.8 471.1 91.8 0.0 3. 134.4 134.8 225.1 141.4 140.2 160.6 87.8 1. 159.1 38.4 213.4 92.6 259.1 198.1 38.8 1. 151.6 87.6 91.1 181.4 125.4 46.4 0.0 0.	50.9 152.7 172.4 160.0 216.9 89.3 36.6 27. 50.9 152.5 152.5 21.3 405.0 42.7 16.5 0 124.5 1151.1 133.6 149.0 24.6 103.6 0.0 0 137.9 196.2 89.8 89.8 48.1 256.2 0.0 0 130.6 264.9 210.3 75.1 257.6 9.5 0.0 0	211.0 156.9 150.8 206.8 156.7 53.9 0.0 12.1 203.8 17.2 22.7 254.7 125.8 31.0 98.1 150.1 98.0 231.8 19.1 0.0 142.0 36.1 142.5 108.3 139.0 142.0 38.2 169.5 156.8 160.0 53.3 249.0 83.7 0.0	115.8 33.6 184.6 224.9 235.1 203.7 0.0 136.0 61.6 23.4 211.0 187.1 28.3 0.0 159.7 189.8 418.0 165.4 380.9 24.3 23.4 254.4 265.6 76.3 203.2 285.1 0.0 0.0 138.8 408.9 90.8 120.8 276.2 220.2 1.8	245.0 34.3 173.1 143.2 52.2 59.2 16.1 0. 94.7 92.9 131.4 118.5 535.8 130.7 3.3 15. 35.5 209.7 164.4 102.2 114.9 12.1 8. 104.5 85.3 74.7 101.6 250.7 59.1 18.4 0. 224.6 70.0 114.7 45.5 210.3 245.1 11.6 0.	144.6 33.0 75.5 107.8 105.8 47.8 0.0 0. 112.8 143.3 59.5 190.3 379.0 76.6 72.7 0. 192.5 218.3 174.7 53.4 88.0 299.5 0.0 0.	155.4 150.2 137.4 133.7 246.8 104.5 11.7 3. 427.9 432.7 418.0 287.7 482.1 299.5 87.8 44.	75.1 30.0 17.2 51.3 35.5 0.0 0.0
RAINFALL AT (3) A. BAN PHAI, KHON	C UNIT :	APR MAY JUN JUL AUG SEP OCT NOV	189-4 174.7 253.4 41.1 74.6 218.8 78.4 5.3 0. 11.0 138.6 102.6 57.1 143.9 292.7 54.5 0.0 0. 25.7 76.8 432.7 123.2 147.8 287.0 75.5 5.5 0.	33.4 259.8 61.2 319.3 201.1 153.4 74.8 0.0 0. 129.7 97.6 172.0 103.1 170.0 309.0 89.9 0.0 0. 49.4 309.7 261.0 103.1 10.9 23.0 428.4 65.8 0.0 0. 57.9 137.7 76.1 279.4 117.5 286.3 34.2 0.0 0. 12.3 199.0 191.5 158.3 78.3 211.9 104.5 2.0 0.	38.7 200.9 83.6 72.9 287.7 163.2 259.8 0.0 0. 15.3 71.3 180.3 207.2 150.8 471.1 91.8 0.0 3. 44.4 134.4 134.4 134.1 141.4 140.4 140.2 160.8 7.8 1.0 163.2 191.6 87.6 92.6 259.1 198.1 38.7 165.2 151.6 87.6 91.1 181.4 125.4 46.4 0.0 0.	67.0 427.9 105.7 172.4 160.0 216.9 89.3 36.6 27. 16.5 0.7 172.5 121.5 12	241.0 211.0 156.9 150.8 206.8 156.7 53.9 0.0 98.9 12.1 203.8 17.2 22.7 254.7 125.8 31.0 74.4 80.4 80.1 981.151.1 981.1 981.1 97.1 142.1 90.1 98.1 142.1 142.0 30.6 142.5 108.3 139.0 142.0 38.2 62.7 169.5 156.8 160.0 53.3 249.0 83.7 0.0	122.0 115.8 33.6 184.6 224.9 235.1 203.7 0.0 71.7 136.0 61.6 23.4 211.0 187.1 28.3 0.0 96.2 159.7 189.8 418.0 165.4 280.9 24.3 23.4 80.9 254.4 265.6 76.3 203.2 285.1 0.0 0.0 41.4 138.8 408.9 90.8 120.8 276.2 220.2 1.8	8 81.2 245.0 34.3 173.1 143.2 52.2 59.2 16.1 0. 5 24.2 94.7 92.9 131.4 118.5 355.8 130.7 3.3 15. 0 130.4 35.5 293.7 74.0 164.4 102.2 114.9 12.1 8. 1 130.7 104.5 85.3 74.7 101.6 250.7 59.1 18.4 0. 8 83.1 224.6 70.0 114.7 45.5 210.3 243.1 11.6 0.	96.2 144.6 33.0 75.5 107.8 105.8 47.8 0.0 0. 114.8 112.8 143.3 59.5 190.3 379.0 76.6 72.7 0. 116.1 192.5 218.3 174.7 53.4 88.0 299.5 0.0 0.	76.8 155.4 150.2 137.4 133.7 246.8 104.5 11.7 3. 241.0 427.9 432.7 418.0 287.7 482.1 299.5 87.8 44.	7.4 12.1 30.0 17.2 21.3 32.2 0.0 0.0
MONTHLY RAINFALL AT (3) A. BAN PHAI, KHON	: LIND >	MAR APR MAY JUN JUL AUG SEP OCT NOV	54.7 189.4 174.7 253.4 41.1 74.6 218.8 78.4 5.3 0. 1.5 11.0 138.6 102.6 57.1 143.9 292.7 54.5 0.0 0. 79.4 25.7 76.8 432.7 123.2 147.8 287.0 73.5 5.5 0.	47.0 33.4 259.8 61.2 319.3 201.1 153.4 74.8 0.0 0. 257.6 129.7 97.6 172.0 103.1 170.0 309.0 89.9 0.0 0. 15.8 49.4 207.7 285.3 100.2 223.0 459.4 65.8 0.0 0. 45.5 57.9 137.2 76.1 279.4 117.5 286.3 34.2 1.4 0. 3.0 12.3 199.0 191.5 158.3 78.3 211.9 104.5 2.0 0.	19,9 38,7 200,9 83,6 72,9 287,7 163,2 259,8 0.0 0. 7,4 15,3 71,3 180,3 207,2 150,8 471,1 91,8 0.0 3. 12,3 4,4 154,4 154,8 223,1 141,4 140,2 140,2 87,8 1. 16,3 86,1 159,1 38,4 213,6 92,6 259,1 198,1 38,3 82,7 163,2 151,6 87,6 91,1 181,4 125,4 46,4 0.0 0.	170.2 67.0 427.9 105.7 172.4 160.0 216.9 89.3 36.6 27.0.1 14.4 50.9 152.3 35.5 21.3 405.0 42.7 16.5 0.1 13.6 172.2 149.0 204.6 103.6 0.0 0.1 14.6 137.9 196.2 88.8 85.7 482.1 256.2 0.0 0.7 0.0 51.2 130.6 264.9 210.3 75.1 257.6 9.5 0.0 0.0	7.0 241.0 211.0 156.9 150.8 206.8 156.7 53.9 0.0 46.2 98.9 12.1 203.8 17.2 22.7 254.7 125.8 31.0 37.0 74.80.4 98.1 150.1 99.0 231.8 19.1 0.0 34.7 84.1 142.0 30.4 142.5 108.3 139.0 142.0 38.2 52.0 62.7 169.5 156.8 160.0 53.3 249.0 83.7 0.0	54.5 122.0 115.8 33.6 184.6 224.9 235.1 203.7 0.0 31.0 71.7 136.0 61.6 23.4 211.0 187.1 28.3 0.0 22.0 96.2 159.7 189.8 418.0 165.4 380.9 24.3 23.4 0.0 0.0 90.9 254.4 265.7 76.3 203.2 285.1 0.0 0.0 59.9 41.4 138.8 408.9 90.8 120.8 276.2 220.2 1.8	50.3 81.2 245.0 34.3 173.1 143.2 52.2 59.2 16.1 0. 80.3 24.2 94.7 92.9 131.4 118.5 555.8 130.7 3.3 15. 0.0 20.2 35.5 292.7 131.4 118.5 255.8 130.7 3.3 15. 30.7 13.7 104.5 85.3 74.7 101.6 250.7 59.1 18.4 0. 7.6 83.1 224.6 70.0 114.7 45.5 210.3 243.1 11.6 0.	0.0 96.2 144.6 33.0 75.5 107.8 105.8 47.8 0.0 0. 27.7 114.8 112.8 143.3 59.5 190.3 579.0 76.6 72.7 0. 119.5 116.1 192.5 218.3 174.7 53.4 88.0 299.5 0.0 0.	46.4 76.8 155.4 150.2 137.4 133.7 246.8 104.5 11.7 3. 257.6 241.0 427.9 432.7 418.0 287.7 482.1 299.5 87.8 44.	0.0
MONTHLY RAINFALL AT (3) A. BAN PHAI, KHON	: LINI )	FEB MAR APR MAY JUN JUL AUG SEP OCT NOV	46.8 54.7 189.4 174.7 253.4 41.1 74.6 218.8 78.4 5.3 0.0 0.0 1.5 11.0 138.6 102.6 57.1 145.9 292.7 54.5 0.0 0.18.2 79.4 25.7 76.8 432.7 123.2 147.8 287.0 73.5 5.5 0.0	92.1 47.0 33.4 259.8 61.2 319.3 201.1 153.4 74.8 0.0 0. 4.5 257.6 129.7 97.6 172.0 103.1 170.0 309.0 89.9 0.0 0. 41.2 15.8 49.4 29.7 26.3 100.9 89.4 65.8 0.0 0. 14.5 15.8 77.9 137.2 76.1 279.4 117.5 286.3 54.2 1.4 0. 10.1 3.0 12.3 199.0 191.5 158.3 78.3 211.9 104.5 2.0 0.	8.1 19.9 38.7 200.9 83.6 72.9 287.7 163.2 259.8 0.0 0.0 0.0 7.4 15.3 71.3 180.3 207.2 150.8 471.1 91.8 0.0 3.0 0.0 12.3 44.4 134.4 134.8 225.1 92.6 46.2 160.8 87.8 1.0 0.0 46.3 84.1 199.1 38.4 233.4 92.6 259.1 198.1 38.8 0.0 82.7 163.2 151.6 87.6 91.1 181.4 125.4 46.4 0.0 0.0	32.9 170.2 67.0 427.9 105.7 172.4 160.0 216.9 89.3 36.6 27.7 8 0.1 14.4 50.9 152.3 35.5 21.3 405.0 42.7 16.5 0.0 0.0 13.6 172.5 124.5 115.1 135.4 149.0 204.6 103.6 0.0 0.0 11.5 45.0 137.9 196.2 89.8 52.7 482.1 256.2 0.0 0.0 0.0 7.0 51.2 130.6 264.9 210.3 75.1 257.6 9.5 0.0 0.0	0.0 7.0 241.0 211.0 156.9 150.8 206.8 156.7 53.9 0.0 0.0 46.2 98.9 12.1 203.8 17.2 22.7 254.7 125.8 31.0 0.0 37.0 7.4 80.4 98.1 150.1 80.0 231.8 191.1 0.0 9.4 34.7 86.1 143.0 30.6 142.5 108.3 139.0 142.0 38.2 8.1 52.0 62.7 169.5 156.8 160.0 53.3 249.0 83.7 0.0	37.5 54.5 122.0 115.8 33.6 184.6 224.9 235.1 203.7 0.0 0.0 31.0 71.7 156.0 61.4 23.4 211.0 187.1 28.3 0.0 0.0 22.0 96.2 554.7 189.8 418.0 1654.2 88.7 1 28.3 2.4 48.0 0.0 80.9 254.4 2851.6 76.3 203.2 285.1 0.0 0.0 1.9 59.9 41.4 138.8 408.9 90.8 120.8 276.2 220.2 1.8	0.5 50.3 81.2 245.0 34.3 173.1 143.2 52.2 59.2 16.1 0.5 51.8 80.3 24.2 54.7 52.9 131.4 118.5 535.8 130.7 3.3 15.3 15.3 15.3 15.3 15.3 15.3 15.3	0.0 0.0 96.2 144.6 33.0 75.5 107.8 105.8 47.8 0.0 0. 12.3 27.7 114.8 112.8 143.5 59.5 190.3 379.0 76.6 72.7 0. 42.0 119.5 116.1 192.5 218.3 174.7 55.4 88.0 299.5 0.0 0.	16.6 46.4 76.8 155.4 150.2 137.4 133.7 246.8 104.5 11.7 3. 92.1 257.6 241.0 427.9 432.7 418.0 287.7 482.1 299.5 87.8 44.	0.0 0.0 7.4 12:1 30:0 17:2 21:3 52:4 0.0 0.0
RAINFALL AT (3) A. BAN PHAI, KHON	C UNIT :	B MAR APR MAY JUN JUL AUG SEP OCT NOV	8 54.7 189.4 174.7 253.4 41.1 74.6 218.8 78.4 5.3 0. 0. 1.5 11.0 138.6 102.6 57.1 143.9 292.7 54.5 0.0 0. 2.7 79.4 25.7 76.8 432.7 123.2 147.8 287.0 73.5 5.5 0.	47.0 33.4 259.8 61.2 319.3 201.1 153.4 74.8 0.0 0. 257.6 129.7 97.6 172.0 103.1 170.0 309.0 89.9 0.0 0. 15.8 49.4 207.7 285.3 100.2 223.0 459.4 65.8 0.0 0. 45.5 57.9 137.2 76.1 279.4 117.5 286.3 34.2 1.4 0. 3.0 12.3 199.0 191.5 158.3 78.3 211.9 104.5 2.0 0.	19,9 38,7 200,9 83,6 72,9 287,7 163,2 259,8 0.0 0. 7,4 15,3 71,3 180,3 207,2 150,8 471,1 91,8 0.0 3. 12,3 4,4 154,4 154,8 223,1 141,4 140,2 140,2 87,8 1. 16,3 86,1 159,1 38,4 213,6 92,6 259,1 198,1 38,3 82,7 163,2 151,6 87,6 91,1 181,4 125,4 46,4 0.0 0.	9 170.2 67.0 427.9 105.7 172.4 160.0 216.9 89.3 36.6 27. 8 0.1 14.4 50.9 152.3 35.5 21.3 405.0 42.7 16.5 0. 10 13.6 172.5 124.5 115.1 133.6 149.0 24.4 103.4 0.0 0. 2 48.1 46.0 137.9 196.2 89.8 89.7 487.1 256.2 0.0 0. 2 7.0 51.2 130.6 264.9 210.3 75.1 257.6 9.5 0.0 0.	0 7.0 241.0 211.0 156.9 150.8 206.8 156.7 53.9 0.0 6.2 98.9 12.1 203.8 17.2 22.7 254.7 125.8 31.0 6.3 77.0 74.4 90.4 90.1 150.1 98.0 231.8 19.1 0.0 17.4 34.7 86.1 14.3 0.0 142.5 142.5 142.5 142.5 142.5 150.8 150.0 53.3 249.0 83.7 0.0	54.5 122.0 115.8 33.6 184.6 224.9 235.1 203.7 0.0 31.0 71.7 136.0 61.6 23.4 211.0 187.1 28.3 0.0 22.0 96.2 159.7 189.8 418.0 165.4 380.9 24.3 23.4 0.0 0.0 90.9 254.4 265.7 76.3 203.2 285.1 0.0 0.0 59.9 41.4 138.8 408.9 90.8 120.8 276.2 220.2 1.8	50.3 81.2 245.0 34.3 173.1 143.2 52.2 59.2 16.1 0. 80.3 24.2 94.7 92.9 131.4 118.5 555.8 130.7 3.3 15. 0.0 20.2 35.5 292.7 131.4 118.5 255.8 130.7 3.3 15. 30.7 13.7 104.5 85.3 74.7 101.6 250.7 59.1 18.4 0. 7.6 83.1 224.6 70.0 114.7 45.5 210.3 243.1 11.6 0.	0 0.0 96.2 144.6 33.0 75.5 107.8 105.8 47.8 0.0 0.3 27.7 114.8 112.8 145.3 59.5 190.3 579.0 76.6 72.7 0.0 119.5 116.1 192.5 218.3 174.7 53.4 88.0 299.5 0.0 0.	46.4 76.8 155.4 150.2 137.4 133.7 246.8 104.5 11.7 3. 257.6 241.0 427.9 432.7 418.0 287.7 482.1 299.5 87.8 44.	.0 0.0 0.0 7.4 12.1 30.0 17.2 21.3 52.2 0.0 0.0
MONTHLY RAINFALL AT (3) A. BAN PHAI, KHON	: LINI )	FEB MAR APR MAY JUN JUL AUG SEP OCT NOV	. 46.8 54.7 189.4 174.7 253.4 41.1 74.6 218.8 78.4 5.3 0.0 0.0 1.5 11.0 138.6 102.6 57.1 143.9 292.7 54.5 0.0 0.0 18.2 79.4 25.7 76.8 432.7 123.2 147.8 287.0 73.5 5.5 0.0	0 92.1 47.0 33.4 259.8 61.2 319.3 201.1 153.4 74.8 0.0 0. 4.5 257.6 129.7 97.6 112.0 103.1 170.0 309.0 89.9 0.0 0. 41.2 15.8 42.4 399.7 253.3 100.9 223.0 459.4 65.8 0.0 0. 14.5 43.5 57.9 137.2 76.1 279.4 11.5 286.3 54.2 1.4 0. 10.1 3.0 12.3 199.0 191.5 158.3 78.3 211.9 104.5 2.0 0.	8.1 19.9 38.7 200.9 83.6 72.9 287.7 163.2 259.8 0.0 0. 7.4 15.3 71.3 180.3 207.2 150.8 471.1 91.8 0.0 3. 0.0 17.3 44.4 134.4 134.8 2251.1 141.4 140.2 160.8 16.8 7.0 3. 0.0 46.3 86.1 199.1 384. 213.4 92.4 259.1 198.1 38.8 0.0 0.0 82.7 163.2 151.6 87.6 91.1 181.4 125.4 46.4 0.0 0.	32.9 170.2 67.0 427.9 105.7 172.4 160.0 216.9 89.3 36.6 27.7 8 0.1 14.4 50.9 152.3 35.5 21.3 405.0 42.7 16.5 0.0 0.0 13.6 172.5 124.5 115.1 135.4 149.0 204.6 103.6 0.0 0.0 11.5 45.0 137.9 196.2 89.8 52.7 482.1 256.2 0.0 0.0 0.0 7.0 51.2 130.6 264.9 210.3 75.1 257.6 9.5 0.0 0.0	0.0 7.0 241.0 211.0 156.9 150.8 206.8 156.7 53.9 0.0 0.0 46.2 98.9 12.1 203.8 17.2 22.7 254.7 125.8 31.0 0.0 37.0 7.4 80.4 98.1 150.1 80.0 231.8 191.1 0.0 9.4 34.7 86.1 143.0 30.6 142.5 108.3 139.0 142.0 38.2 8.1 52.0 62.7 169.5 156.8 160.0 53.3 249.0 83.7 0.0	37.5 54.5 122.0 115.8 33.6 184.6 224.9 235.1 203.7 0.0 0.0 31.0 71.7 136.0 61.6 23.4 211.0 187.1 28.3 0.0 2 0.0 21.0 96.2 159.7 189.8 418.0 165.4 280.9 24.3 23.4 0.0 0.0 0.0 80.9 254.4 265.6 76.3 203.2 285.1 0.0 0.0 0.1.9 59.9 41.4 138.8 408.9 90.8 120.8 276.2 220.2 1.8	0 0.5 50.3 81.2 245.0 34.3 173.1 143.2 52.2 59.2 16.1 0.5 51.8 80.3 24.2 94.7 92.9 131.4 118.5 555.8 130.7 3.3 15.1 15.1 0.5 51.8 80.3 24.2 94.7 92.9 131.4 118.5 555.8 130.7 3.3 15.1 0.5 5.9 30.7 133.7 104.5 85.3 74.7 101.6 250.7 59.1 18.4 0.7 35.7 7.6 83.1 224.6 70.0 114.7 45.5 210.3 243.1 11.6 0.	.0 0.0 0.0 96.2 144.6 33.0 75.5 107.8 105.8 47.8 0.0 0.0 12.3 27.7 114.8 112.8 143.3 59.5 190.3 379.0 76.6 72.7 0.0 42.0 119.5 116.1 192.5 218.3 174.7 53.4 88.0 299.5 0.0 0.	129.6 92.1 257.6 241.0 427.9 432.7 418.0 287.7 482.1 299.5 87.8 44.	0.0 0.0 0.0 0.7 7:1 30.0 1/2 7:13 32:4 0.0 0.0

Complemented Monthly Rainfall at Various Stations (continued)

		ANNUAL	1309.5 1024.6 1337.9	1248.5 1143.0 1528.2 1460.7 758.5	1500.8 1350.9 1525.1 1002.2	935.5 905.2 795.6 1376.1 859.5	1219.1 1101.5 665.0 926.9 1021.5	1221.2 1020.9 1389.7 1197.2	848.6 1171.7 931.2 861.2 880.5	814.7 1069.3 983.3	1	1124.3	1623.1	665.0	1
	AW :	DEC	000	00000	00000	20000 40000	7.000 4.4000	0,000 0,000	0.000	400	1	7.7	75.1	0.0	1
KAEN	UNIT	NOV	NON	00000	7,77 3,00 3,00 0,00 0,00	78.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05	20.0	2.00 2.00 2.00 2.00 4.00 4.00 4.00 4.00	27.3 15.7 2.3 2.3	4.00 1.4.0	1	17.5	154.1	0.0	1
KHUN X	J	120	81.0 40.4 49.8	72.3 27.0 30.3 70.7	209 t	28.7 87.3 10.0 149.1 59.8	152.9 25.9 25.9 143.5 143.3	187.5 18.3 18.3 168.2	63.8 113.1 117.1 130.4	59.9 59.9 248.8	!	98.1	2.775	0.0	
		S	225.9 430.1 192.3	141.9 291.8 612.8 389.1	154.1 516.7 107.2 386.8 174.8	195.2 372.7 211.3 415.0	112.6 258.8 187.4 128.8	291.1 267.2 487.3 331.3	50.8 417.0 109.1 249.3 203.1	242.7	i	256.7	612.8	50.8	!
CHOMNABOL		AUG	77.1 195.7 149.3	218.6 207.1 279.5 135.6 56.5	294.2 1145.4 112.6 61.8 61.8	190.5 84.3 92.6 72.9 214.6	251.4 87.9 62.8 62.8 69.8	185 192 166 166 166 166 166 166 166 166 166 16	253.2 119.4 220.1 54.5 24.8	217.5 99.9	1	156.2	314.0	24.8	i i i
(6) A.		JUL	42.4 112.0 127.1	357.5 137.7 104.4 289.1 86.8	2322.7 2332.7 219.5 84.9	75.7 1115.8 170.1	1483.3 187.7 93.7	3599.1 855.1 89.8 89.8	161.8 136.5 129.8 76.6 117.4	126.5 77.9 172.8	1	138.8	359.1	28.0	1
4		NOL	262.2 106.4 480.6	2325.9 117.4 117.4	27.1 27.1 27.1 102.8 92.1	141.5 157.2 179.6 139.0	219.8 97.1 11.2	80.6 62.9 114.8 164.6 537.8	244.0 21.9 110.3 55.9	99.2 135.7 114.3	1	147.4	537.8	11.2	
RAINFALL		MAY	180.5 62.4 255.5	289.0 126.6 206.7 328.7 175.7	293.5 165.6 1118.3 408.0	207 24.7 26.0 26.2 26.2 26.2	332.4 28.9 106.3 99.4 241.9	162.4 241.6 100.7 216.0 153.2	1115.3 44.4 52.4 52.4 234.3	183.2 163.9 130.9	!	167.4	0.804	28.9	! !
MONIHLY		APR	195.9 56.1 32.8	23775 24775 24775 24775	290.3 153.8 26.9 104.6	222.24 722.24 722.24 5.75.70	25. 20. 20. 20. 20. 20. 20. 20. 20. 20. 20	98.8 47.4 163.6 61.7	75.1 72.1 72.6 72.6	107.2 67.2 56.4	; 	75.1	290.3	4,3	1
		MAR	56.6 11.5	204.8 504.8 50.1 21.5	18 0.04 15.95 0.05	23 200 811 811 815 815 815	77.7 29.00 39.00	2005 2005 2005	90.7 105.8 32.1 10.0	0.00	!	37.5	118.5	0.0	1
COMPLEMEN! ED		FEB	4.00 4.00 9.00	38 111 122 8 0 0	10080 10080	0 10 0 0 u	2000 2000 2000 24	70004 80054	0.7.2 0.0.4.8 6.6.6	17.1 104.9	1	17.3	104.9	0.0	1
พื้อว		JAN	137 000 000	00000	00000	002250	0000%	00,400	1000	000	i	7.3	134.0	0.0	 
		YEAR	1953 1954 1955	1956 1957 1958 1959	1962 1963 1963 1964	1966 1967 1968 1969 19791	1971 1972 1973 1974 1975	1976 1977 1978 1979 1980	1981 1982 1983 1984 1984	1986 1987 1988	; ! !	MEAN	MAX	Z .	1
		ANNUAL	978.3 1126.8 941.4	1013.5 1259.4 1149.8 1115.5 825.0	1150.9 1236.8 1142.4 1356.2 640.6	1381.8 914.3 848.1 960.0 1040.3	1050 837.3 1136.5 873.8 873.8	953.5 1220.9 1366.2 1343.0	586.8 1090.7 1247.3 995.8 992.6	736.8 1036.9 1382.7	; ;	1054.2	1382.7	586.8	1
	< www.	DEC ANNUAL	0.0 978.3 0.0 1126.8 0.0 941.4	0.0 1013.5 0.0 1259.4 0.0 1149.8 0.0 1115.5	0.0 1150.9 0.0 1236.8 0.0 1142.4 0.0 1356.2	58.3 1381.8 0.0 914.3 0.0 848.1 0.0 960.0 3.7 1040.3	36.0 1050.4 07.5 837.3 0.0 1136.5 0.0 873.8 0.0 971.1	0.0 953.5 0.0 1366.2 0.0 1366.2 0.0 1069.1	NOVNO		-	7.3 1054.2	٠.		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
ien	UNIT : MM >	EC ANNU	978 0 1126 0 941	00 1013 00 1149 00 1115 00 1115	1150 1236 1142 0 1142 0 640	m000r	0,000	owooo	586 1090 1247 995 995	.0 1036. .0 1382.	! ! !			.0 586.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
CHUN KAEN	,,	DEC ANNU	.9 0.0 978 .0 0.0 1126 .0 0.0 941	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 11736	8000W	28. 0.00. 0.00. 0.00.	0%000 0%000	28.7 1090 9 28.7 1090 9 0.0 1247 0 0.0 995	.2 9.1 736. .8 0.0 1036. .0 0.0 1382.	! ! !	.7 7.3	107.5	0 0.0 586.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
KHCN	,,	NOV DEC ANNU	5.0 90.9 63.9 0.0 978 5.8 118.7 0.0 0.0 1126 1.1 12.7 0.0 0.0 941	5.1 12.3 0.0 0.0 1013 5.3 93.6 6.5 0.0 1259 5.1 78.5 0.0 0.0 1149 5.6 0.0 0.0 0.0 1145 5.7 96.2 0.0 0.0 825	67.1 3.4 0.0 1150. 11.5 6.0 0.0 1336. 43.9 43.7 0.0 1342. 65.4 13.7 0.0 1356. 52.2 1.7 0.0 640.	269.9 214.2 19.0 58.3 414.6 41.7 14.5 0.0 174.0 86.5 0.0 0.0 301.2 59.5 18.0 0.0 255.5 110.9 3.2 3.7	847.29 847.29 850.29 860.20 860.00	2.9 2.3 2.5 2.5 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	20.0 0.0 586 7 0.0 28.7 1090 1 7.9 0.0 1247 2 0.0 0.0 995 0 2:1 0.0 995	76.6 56.9 4.2 9.1 736. 153.6 57.4 58.8 0.0 1036. 66.2 396.0 0.0 0.0 1382.	! ! !	.8 10.7 7.3	6.0 63.9 107.5	.0 0.0 0.0 586.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Š	,,	EP OCT NOV DEC ANNU	.0 90.9 63.9 0.0 978 .8 118.7 0.0 0.0 1126 .1 12.7 0.0 0.0 941	12.3 0.0 0.0 1013 93.6 6.5 0.0 1129 0.0 0.0 0.1149 96.2 0.0 0.0 1115 96.2 0.0 0.0 825	136.5 135.2 267.1 3.4 0.0 1150. 145.8 428.3 111.5 0.0 0.0 1236. 115.1 25.1.9 143.7 0.0 1156.2 1155.1 256.4 43.7 0.0 1156.2 156.2 156.2 171.8 52.2 1.7 0.0 640.	2 54.7 14.5 0.0 5 56.5 0.0 0.0 2 59.5 18.0 0.0 5 110.9 3.2 3.7	157.6 211.2 163.8 9.3 36.0 108.8 154.4 130.4 21.9 107.5 96.1 146.8 12.7 0.0 0.0 119.6 146.3 138.3 58.3 0.0 70.0 106.5 176.9 0.0 0.0	137.0 172.0 212.9 7.1 0.0 20.5 556.5 596.5 72.0 2.5 18.2 18.2 18.2 18.2 18.2 18.2 18.2 18.2	50.1 133.4 156.9 20.0 0.0 586 99.3 297.1 175.7 0.0 28.7 1990 92.2 151.8 142.1 7.9 0.0 1247 119.1 232.1 138.2 0.0 0.0 992 96.5 207.1 207.0 2.1 0.0 992	71.4 176.6 56.9 4.2 9.1 736. 294.5 253.6 37.4 38.8 0.0 1036. 170.2 166.2 396.0 0.0 0.0 1382.	! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! !	134.6 255.2 115.8 10.7 7.3	294.5 540.8 396.0 63.9 107.5	35.3 58.7 0.0 0.0 0.0 586.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
PHAE, KHON	,,	G SEP OCT NOV DEC ANNU	55.5 155.0 90.9 63.9 0.0 978 61.7 570.8 118.7 0.0 0.0 1126 54.3 241.1 12.7 0.0 0.0 941	28.5 256.1 12.3 0.0 0.0 1013 15.1 225.3 93.6 6.5 0.0 1159 58.8 555.1 78.5 0.0 0.0 1149 18.2 383.6 0.0 0.0 1145 49.6 58.7 96.2 0.0 0.0 825	5 135.2 267.1 3.4 0.0 1150. 8 428.3 111.5 0.0 0.0 1236. 221.9 143.9 43.7 0.0 1356. 1 350.7 265.4 13.7 0.0 1356. 2 171.8 52.2 1.7 0.0 640.	175.9 159.3 269.9 214.2 19.0 58.3 116.0 63.4 41.6 41.7 14.5 0.0 125.2 125.1 174.0 56.5 0.0 0.0 127.1 43.6 174.0 59.5 18.0 0.0 51.8 76.0 255.5 110.9 5.2 3.7	101.2 157.6 211.2 163.8 9.3 36.0 26.9 108.8 154.4 150.4 21.9 107.5 185.4 96.1 16.8 12.7 0.0 0.0 75.4 119.6 146.3 188.3 58.3 0.0 115.2 70.0 106.5 176.9 0.0 0.0	138.2 137.0 172.0 212.9 7.1 0.0 84.2 203.5 396.5 9.2 2.5 18.2 18.2 18.0 8.16.8 216.7 72.0 2.1 0.0 15.9 178.4 297.2 0.0 0.0 0.0 153.4 175.7 297.3 118.4 15.4 0.0 0.0	78.4 50.1 133.4 156.9 20.0 0.0 586 122.1 99.3 287.1 175.7 0.0 28.7 1990 141.4 282.2 151.8 142.1 7.9 0.0 1247 81.0 119.1 232.1 138.2 0.0 0.0 992 146.1 96.5 207.1 207.0 2.1 0.0 992	82.3 71.4 176.6 56.9 4.2 9.1 736. 44.6 294.5 233.6 37.4 38.8 0.0 1036. 150.2 170.2 166.2 396.0 0.0 0.0 1382.	! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! !	130.3 134.6 255.2 115.8 10.7 7.3	340.8 294.5 540.8 396.0 63.9 107.5	15.9 35.3 58.7 0.0 0.0 0.0 586.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Af (5) A. CHUM PHAEZ KHUN	,,	AUG SEP OCT NOV DEC ANNU	5.5.5 155.0 90.9 63.9 0.0 978 51.51.7 570.8 118.7 0.0 0.0 1126 1154.3 241.1 12.7 0.0 0.0 941	118.5 220.5 128.5 256.1 12.3 0.0 0.0 1013 101.6 309.8 115.1 323.3 93.6 6.5 0.0 1159 115.1 0102.4 258.8 355.1 78.5 0.0 0.0 1149 125.4 187.6 118.2 383.6 0.0 9.0 0.0 1115 115.5 177.9 49.6 58.7 96.2 0.0 0.0 825	103.8 174.4 136.5 135.2 267.1 3.4 0.0 1150. 67.5 132.4 145.8 428.3 111.5 0.0 0.0 1236. 125.2 135.4 135.9 145.9 43.7 0.0 11542. 122.6 145.4 115.1 350.7 265.4 13.7 0.0 1356. 43.2 59.2 156.2 171.8 52.2 1.7 0.0 640.	128-9 175-9 159.3 269-9 214.2 19.0 58.3 111.5 116.0 63.4 414.6 41.7 14.5 0.0 98.5 125.2 125.1 174.0 56.5 0.0 0.0 126.7 127.1 43.6 301.2 59.5 18.0 0.0 174.1 51.8 76.0 255.5 110.9 5.2 3.7	127.7 101.2 157.6 211.2 163.8 9.3 36.0 155.4 28.9 108.8 154.4 150.4 21.9 107.5 90.6 24.9 107.5 88.8 75.4 119.6 146.3 188.3 58.3 0.0 167.1 115.2 70.0 106.5 176.9 0.0 0.0	68.0 138.2 137.0 172.0 212.9 7.1 0.0 138.9 84.2 205.5 396.5 9.2 2.5 18.2 111.1 360.8 216.8 27.7 2.0 2.1 0.0 259.2 15.9 178.4 297.2 0.0 0.0 0.0 287.4 155.4 175.7 297.3 118.4 15.4 0.0 0.0	78.5 78.4 50.1 133.4 156.9 20.0 0.0 586 109.2 122.1 99.3 297.1 175.7 0.0 28.7 1990 349.4 141.4 282.2 151.8 142.1 7.9 0.0 1247 168.6 81.0 119.1 232.1 138.2 0.0 0.0 992 68.7 146.1 96.5 207.1 207.0 2.1 0.0 992	95.7 82.3 71.4 176.6 56.9 4.2 9.1 736. 61.0 44.6 294.5 253.6 37.4 38.8 0.0 1036. 152.7 150.2 170.2 166.2 396.0 0.0 0.0 1382.	:	133.8 130.3 134.6 255.2 115.8 10.7 7.3	349.4 340.8 294.5 540.8 396.0 63.9 107.5	43.2 15.9 35.3 58.7 0.0 0.0 0.0 586.	
( (5) A. CHUM PHAEZ KHUN	,,	JUL AUG SEP OCT NOY DEC ANNU	2 175.9 35.3 155.0 90.9 63.9 0.0 978 7 152.6 161.7 570.8 118.7 0.0 0.0 1126 4 46.5 154.3 241.1 12.7 0.0 0.0 941	66.8 118.5 220.5 128.5 256.1 12.3 0.0 0.0 1013 151.9 101.6 599.8 115.1 525.3 93.6 6.5 0.0 1559 69.5 161.0 102.4 258.8 855.1 78.5 0.0 0.0 1149 265.5 125.4 187.6 118.2 383.6 0.0 9.0 0.0 1152 265.9 115.5 177.9 49.6 58.7 96.2 0.0 0.0 825	8 174.4 136.5 135.2 267.1 3.4 0.0 1150. 5 132.4 145.8 428.3 111.5 0.0 0.0 1236. 2 135.4 156.9 251.9 143.9 43.7 0.0 11542. 2 59.2 115.1 350.7 265.4 13.7 0.0 1354. 2 59.2 156.2 171.8 52.2 1.7 0.0 640.	233.6 129.9 175.9 159.3 269.9 214.2 19.0 58.3 15.5 111.5 116.0 63.4 414.6 41.7 14.5 0.0 156.0 156.0 156.0 156.1 174.0 56.5 0.0 0.0 168.0 126.7 127.1 43.6 301.2 59.5 18.0 0.0 188.7 174.1 51.8 76.0 255.5 110.9 5.2 3.7	165.4 127.7 101.2 157.6 211.2 163.8 9.3 36.0 125.6 135.4 28.9 108.8 154.4 130.4 21.9 107.5 182.1 90.6 185.4 9.1 154.5 127 0.0 0.0 165.3 58.8 75.4 119.4 146.3 138.3 58.3 0.0 161.0 167.1 115.2 70.0 106.5 176.9 0.0 0.0	66.9 68.0 136.2 137.0 172.0 212.9 7.1 0.0 253.5 138.9 86.2 205.5 396.5 9.2 2.5 18.2 111.1 340.8 216.0 27.2 0.0 0.0 161.7 259.5 15.9 178.4 297.2 0.0 0.0 0.0 249.0 287.4 155.4 175.7 297.3 118.4 15.4 0.0 0.0	45.0 78.5 78.4 50.1 133.4 156.9 20.0 0.0 586 182.6 109.2 122.1 99.3 297.1 175.7 0.0 28.7 1090 18.6 10.1 349.4 141.4 282.2 151.8 142.1 7.9 0.0 1247 145.0 146.9 81.0 1091.2 232.1 138.2 0.0 0.0 992 217.1 68.7 146.1 96.5 207.1 207.0 2.1 0.0 992	184.4 95.7 82.3 71.4 176.6 56.9 4.2 9.1 736. 122.9 61.0 44.6 294.5 253.6 37.4 38.8 0.0 1036. 194.6 152.7 150.2 170.2 166.2 396.0 0.0 0.0 1382.	; 	161.2 133.8 130.3 134.6 255.2 115.8 10.7 7.3	265.9 349.4 340.8 294.5 540.8 396.0 63.9 107.5	25.6 43.2 15.9 35.3 58.7 0.0 0.0 0.0 586.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
HLY RAINFALL AF (5) A. CHUM PHAE, KHUN	,,	APR MAY JUL AUG SEP OCT NOY DEC ANNU	109.7 201.8 141.2 175.9 35.3 155.0 90.9 63.9 0.0 978 35.6 171.9 126.7 132.6 161.7 570.8 118.7 0.0 0.0 1126 62.7 84.7 289.4 46.5 154.3 241.1 12.7 0.0 0.0 941	66.7 66.8 118.5 220.5 128.5 256.1 12.3 0.0 0.0 1013 50.4 151.9 101.6 509.8 115.1 525.3 93.6 6.5 0.0 1559 50.4 151.9 101.6 509.8 115.1 525.3 93.6 6.5 0.0 1149 52.5 265.9 115.5 177.9 49.6 58.7 96.2 0.0 0.0 115.5 265.9 115.5 177.9 49.6 58.7 96.2 0.0 0.0 825	101.0 195.1 103.8 174.4 136.5 135.2 267.1 3.4 0.0 1150. 82.9 197.9 67.5 132.4 145.8 428.3 111.5 0.0 0.0 1236.49.1 164.5 125.2 125.1 164.5 42.1 154.5 42.1 154.5 125.6 125.6 149.0 1151.3 30.7 265.4 13.7 0.0 1154.5 125.0 43.2 59.2 156.2 171.8 52.2 1.7 0.0 640.0 640.0 125.5 125.0 43.5 125.0 45.2 125.5 125.0 45.5 125.0 45.5 125.0 45.0 125.5 125.0 45.5 125.0 45.0 125.5 125.0 45.5 125.0 45.0 125.0 125.0 1	57.6 233.6 129.9 175.9 159.3 269.9 214.2 19.0 58.3 108.4 41.5 111.5 116.0 63.4 414.6 41.7 14.5 0.0 50.2 156.6 98.5 372.2 126.1 174.0 56.5 0.0 0.0 54.4 162.0 126.7 127.1 43.6 201.2 59.5 18.0 0.0 148.3 188.7 174.1 51.8 76.0 255.5 110.9 3.2 3.7	77.4 165.4 127.7 101.2 157.6 211.2 163.8 9.3 36.0 81.7 25.6 135.4 28.9 108.8 154.4 130.4 21.9 107.5 14.0 182.1 90.6 185.4 96.1 540.8 12.7 0.0 0.0 56.3 165.3 58.8 75.4 119.6 146.3 138.3 58.3 0.0 12.9 161.0 167.1 115.2 70.0 106.5 176.9 0.0 0.0	99.1 66.9 68.0 138.2 137.0 172.0 212.9 7.1 0.0 68.4 253.5 138.9 86.2 203.5 596.5 9.2 2.5 18.2 54.0 179.7 111.1 240.8 216.0 278.4 297.2 0.0 0.0 117.7 259.3 15.9 178.4 297.2 0.0 0.0 0.0 40.7 249.0 287.4 155.4 175.7 297.3 118.4 15.4 0.0 0.0	14.0 45.0 78.5 78.4 50.1 133.4 156.9 20.0 0.0 586 51.3 182.6 109.2 122.1 59.3 257.1 175.7 0.0 28.7 1090 0.0 161.1 349.4 141.4 28.2 15.18 142.1 7.9 0.0 1247 54.2 143.0 169.6 81.0 119.1 232.1 138.2 0.0 0.9 992 35.4 217.1 68.7 146.1 96.5 207.1 207.0 2.1 0.0 992	45.4 184.4 95.7 82.3 71.4 176.6 56.9 4.2 9.1 736. 47.2 122.9 61.0 44.6 294.5 253.6 37.4 38.8 0.0 1036. 127.2 194.6 152.7 150.2 170.2 166.2 396.0 0.0 0.0 1382.	*	58.8 161.2 133.8 130.3 134.6 255.2 115.8 10.7 7.3	148.3 265.9 349.4 340.8 294.5 540.8 396.0 63.9 107.5	0.0 25.6 43.2 15.9 35.3 58.7 0.0 0.0 0.0 586.	1 1 1 1 1 1 1 1
ED MONTHLY RAINFALL Af (5) A. CHUM PHAE, KHUN	,,	MAY JUN JUL AUG SEP OCT NOV DEC ANNU	7. 201.8 141.2 175.9 35.3 155.0 90.9 63.9 0.0 978 6 171.9 126.7 132.6 161.7 370.8 118.7 0.0 0.0 1126 7. 84.7 289.4 46.5 154.3 241.1 12.7 0.0 0.0 941	7 66.8 118.5 220.5 128.5 256.1 12.3 0.0 0.0 1013 151.9 101.6 309.8 115.1 325.3 93.6 6.5 0.0 1259 2 69.5 161.0 102.4 258.8 355.1 78.5 0.0 0.0 1149 3 208.3 125.4 187.6 118.2 383.6 0.0 9.0 0.0 1115 5 265.9 115.5 177.9 49.6 58.7 96.2 0.0 0.0 825	0 195.1 103.8 174.4 136.5 135.2 267.1 3.4 0.0 1150. 9 197.9 67.5 132.4 145.8 428.3 111.5 0.0 0.0 1236.5 126.4 122.2 135.4 145.9 25.19 145.9 43.7 0.0 1154.5 122.0 43.2 59.2 155.2 171.8 52.2 1.7 0.0 640.5 122.0 43.2 59.2 156.2 171.8 52.2 1.7 0.0 640.	64,1 57,6 233.6 129,9 175.9 159.3 269.9 214.2 19.0 58.3 1.5 108.4 41.5 111.5 116.0 63.4 44.6 41.7 14.5 0.0 46.6 50.2 156.6 98.5 372.2 128.1 174.0 56.5 0.0 0.0 55.7 54.4 162.0 126.7 127.1 43.6 301.2 59.5 18.0 0.0 55.9 148.3 188.7 174.1 51.8 76.0 255.5 110.9 3.2 3.7	0.8 77.4 165.4 127.7 101.2 157.6 211.2 163.8 9.3 36.0 21.7 81.7 25.6 135.4 28.9 108.8 154.4 130.4 21.9 107.5 14.8 14.0 152.1 90.6 14.9 15.1 12.7 0.0 0.0 17.9 56.3 165.3 58.8 755.4 119.4 146.3 138.3 58.3 0.0 67.0 12.9 161.0 167.1 115.2 70.0 106.5 176.9 0.0 0.0	18.8 99.1 66.9 68.0 138.2 137.0 172.0 212.9 7.1 0.0 45.0 69.4 235.5 138.9 86.2 203.5 396.5 9.2 2.5 18.2 11.9 54.0 147.2 149.8 216.0 216.0 57.7 72.0 2.1 0.0 0.0 117.5 59.3 15.9 178.4 287.2 0.0 0.0 0.0 5.7 40.7 269.2 887.4 155.4 175.7 287.3 118.4 15.4 0.0 0.0	10.5 14.0 45.0 78.5 78.4 50.1 133.4 156.9 20.0 0.0 586 22.7 51.3 182.6 109.2 122.1 99.3 297.1 175.7 0.0 28.7 1090 0.0 161.1 349.4 141.4 28.2 15.18 142.1 7.9 0.0 124.7 42.2 34.2 143.0 189.6 81.0 119.1 232.1 138.2 0.0 0.9 992 0.0 55.4 217.1 68.7 146.1 96.5 207.1 207.0 2.1 0.0 992	10.8 45.4 184.4 95.7 82.3 71.4 176.6 56.9 4.2 9.1 736. 108.5 47.2 122.9 61.0 44.6 294.5 253.6 57.4 38.8 0.0 1036. 1.3 127.2 194.6 152.7 150.2 170.2 166.2 396.0 0.0 0.0 1382.		32.5 58.8 161.2 133.8 130.3 134.6 255.2 115.8 10.7 7.3	108.5 148.3 265.9 349.4 340.8 294.5 540.8 396.0 63.9 107.5	0.0 0.0 25.6 43.2 15.9 35.3 58.7 0.0 0.0 0.0 586.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
PLEMENTED MONTHLY RAINFALL AT (5) A. CHUM PHAES KHUN	: LIND >	FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC ANNU	0.0 4.6 109.7 201.8 141.2 175.9 35.3 155.0 90.9 63.9 0.0 978 0.0 1.0 59.6 171.9 126.7 132.6 161.7 570.8 118.7 0.0 0.0 1126 0.0 50.0 62.7 84.7 289.4 46.5 154.3 241.1 12.7 0.0 0.0 941	42.1 102.0 66.7 66.8 118.5 220.5 128.5 256.1 12.3 0.0 0.0 1013 0.0 107.5 50.1 151.9 101.6 309.8 115.1 325.3 93.6 6.5 0.0 1559 50.5 37.7 101.6 309.8 115.1 325.3 93.6 6.5 0.0 1169 50.5 37.7 35.9 50.5 125.4 187.6 118.2 385.1 78.5 0.0 0.0 114.8 10.6 28.7 35.9 265.9 115.5 177.9 49.6 58.7 96.2 0.0 0.0 825	9.5 24.9 101.0 195.1 103.8 174.4 136.5 135.2 267.1 3.4 0.0 1150. 0.0 70.5 82.9 197.9 67.5 132.4 145.8 428.3 111.5 0.0 0.0 1236. 0.0 978.4 42.1 144.5 129.2 135.4 156.9 25.1 141.5 43.7 0.0 1142. 43.7 85.5 265.4 122.4 122.4 149.0 115.1 350.7 265.4 13.7 0.0 1150.7 265.4 122.0 43.2 59.2 156.2 171.8 52.2 1.7 0.0 640.	0.0 64.1 57.6 233.6 129.9 175.9 159.3 269.9 214.2 19.0 58.3 7.4 66.5 50.2 15.6 111.5 116.0 63.4 416.6 41.7 14.5 0.0 0.0 0.0 50.7 44.6 162.0 158.6 158.2 126.1 174.0 56.5 0.0 0.0 0.0 50.7 44.1 62.0 15.0 174.7 14.5 301.2 59.5 18.0 0.0 0.0 25.9 148.3 188.7 174.1 51.8 76.0 255.5 110.9 5.2 3.7	0.0 0.8 77.4 165.4 127.7 101.2 157.6 211.2 163.8 9.3 36.0 21.0 21.7 81.7 25.6 155.4 28.9 108.8 154.4 150.4 21.9 107.5 0.0 148 14.0 182.1 90.6 185.4 96.1 150.8 12.7 0.0 0.0 31.3 17.9 54.3 165.3 165.3 87.5 75.4 179.6 146.3 138.3 58.3 0.0 64.3 57.0 12.9 161.0 167.1 115.2 70.0 106.5 176.9 0.0 0.0	33.5 18.8 99.1 66.9 68.0 138.2 137.0 172.0 212.9 7.1 0.0 0.0 45.0 69.4 255.5 138.9 84.2 203.5 356.5 9.2 2.5 18.2 6.2 11.9 54.0 177.7 111.1 340.8 2140. 2740. 277.7 72.0 2.1 0.0 19.1 0.0 117.2 141.7 259.3 15.9 178.4 257.2 0.0 0.0 0.0 0.0 0.0 5.7 40.7 249.0 287.4 153.4 175.7 297.3 118.4 15.4 0.0 0.0	0.0 10.5 14.0 45.0 78.5 78.4 50.1 133.4 156.9 20.0 0.0 586 0.0 24.7 51.3 182.6 109.2 122.1 99.3 297.1 175.7 0.0 28.7 1090 0.0 0.0 0.0 161.1 349.4 141.4 28.2 151.8 142.1 7.9 0.0 124.7 21.4 44.2 54.2 145.0 165.6 81.0 115.1 532.1 138.2 0.0 0.0 992 10.0 0.0 55.4 217.1 68.7 146.1 96.5 207.1 207.0 2.1 0.0 992	0.0 10.8 45.4 184.4 95.7 82.3 71.4 176.6 56.9 4.2 9.1 736. 28.4 108.5 47.2 122.9 61.0 44.6 294.5 253.6 37.4 38.8 0.0 1036. 24.3 1.3 127.2 194.6 152.7 150.2 170.2 166.2 396.0 0.0 0.0 1382.		11.3 32.5 58.8 161.2 133.8 130.3 134.6 255.2 115.8 10.7 7.3	64.3 108.5 148.3 265.9 349.4 340.8 294.5 540.8 396.0 65.9 107.5	0.0 0.0 0.0 25.6 43.2 15.9 35.3 58.7 0.0 0.0 0.0 586.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
ED MONTHLY RAINFALL Af (5) A. CHUM PHAE, KHUN	: LIND >	EB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC ANNU	0 4.6 109.7 201.8 141.2 175.9 35.3 155.0 90.9 63.9 0.0 978 0 1.0 35.6 171.9 126.7 132.6 141.7 570.8 118.7 0.0 0.0 1126 0 50.0 62.7 84.7 289.4 46.5 154.3 241.1 12.7 0.0 0.0 941	1 102.0 66.7 66.8 118.5 220.5 128.5 256.1 12.3 0.0 0.0 1013 107.5 50.1 151.9 101.6 309.8 115.1 323.3 93.6 6.5 0.0 1259 2 37.7 19.5 69.5 161.0 102.4 258.8 355.1 78.5 0.0 0.0 1149 8 27.3 39.3 28.3 125.4 187.6 118.2 383.6 0.0 9.0 0.0 115 5 28.7 32.5 265.9 115.5 177.9 49.6 58.7 96.2 0.0 0.0 825	0 9.5 24.9 101.0 195.1 103.8 174.4 136.5 135.2 267.1 3.4 0.0 1150.0 0.0 70.5 82.9 197.9 67.5 132.4 145.8 428.3 111.5 0.0 0.0 1236.0 0.0 97.8 49.1 164.5 125.2 155.4 116.9 522.9 143.7 4.5 0.0 1154.2 0.0 4.5 18.5 56.5 260.4 122.6 149.0 115.1 350.7 265.4 13.7 0.0 1154.2 0.1 15.5 8.3 10.5 122.0 43.2 59.2 156.2 171.8 52.2 1.7 0.0 640.0	0 64.1 57.6 233.6 129.9 175.9 159.3 269.9 214.2 19.0 58.3 15.0 15.1 15.1 15.1 15.0 63.4 414.6 41.7 14.5 0.0 0.0 1.5 15.2 15.0 15.2 15.1 17.0 56.5 0.0 0.0 0.0 56.5 0.5 54.4 152.0 126.7 127.1 124.0 56.5 0.0 0.0 0.0 0.0 56.5 15.1 174.0 15.1 15.1 15.1 15.1 15.0 15.5 110.9 3.2 3.7 15.1 14.3 188.7 174.1 51.8 76.0 255.5 110.9 3.2 3.7	0.08 77.4 165.4 127.7 101.2 157.6 211.2 163.8 9.3 36.0 217.7 81.7 25.6 135.4 28.9 108.8 154.4 130.4 21.9 107.5 14.0 185.1 90.6 185.4 96.1 150.8 12.7 0.0 0.0 17.5 17.9 54.3 165.3 165.3 87.7 179.6 146.3 138.3 58.3 0.0 5.0 12.9 161.0 167.1 115.2 70.0 106.5 176.9 0.0 0.0	5 18.8 99.1 66.9 68.0 138.2 137.0 172.0 212.9 7.1 0.0 45.0 69.4 253.5 138.9 84.2 205.5 396.5 9.2 2.5 18.2 11.9 45.0 179.1 111 3408 216.0 216.7 72.0 2.1 0.0 10.0 10.0 117.2 161.7 259.3 15.9 178.4 297.2 0.0 0.0 0.0 0.0 5.7 40.7 249.0 287.4 155.4 175.7 297.3 118.4 15.4 0.0 0.0	10.5 14.0 45.0 78.5 78.4 50.1 133.4 156.9 20.0 0.0 586 22.7 51.3 182.6 109.2 122.1 99.3 297.1 175.7 0.0 28.7 1090 0.0 161.1 349.4 141.4 28.2 15.18 142.1 7.9 0.0 124.7 42.2 34.2 143.0 189.6 81.0 119.1 232.1 138.2 0.0 0.9 992 0.0 55.4 217.1 68.7 146.1 96.5 207.1 207.0 2.1 0.0 992	0 10.8 45.4 184.4 95.7 82.3 71.4 176.6 56.9 4.2 9.1 736. 4 108.5 47.2 122.9 61.0 44.6 294.5 233.6 37.4 38.8 0.0 1036. 3 1.3 127.2 194.6 152.7 150.2 170.2 166.2 396.0 0.0 0.0 1382.		.3 32.5 58.8 161.2 133.8 130.3 134.6 255.2 115.8 10.7 7.3	.3 108.5 148.3 265.9 349.4 340.8 294.5 540.8 396.0 63.9 107.5	0.0 0.0 0.0 25.6 43.2 15.9 35.3 58.7 0.0 0.0 0.0 586.	

at Various Stations (continued) Complemented Monthly Rainfall

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(8) KOK

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RAINFALL

MONTHLY

(1NK-52)

1262.2 1210.2 1210.2 1210.2 1262.2 1262.2 1364.6 1364.6 80008 00000 27,000 พก่อออ 낊 000 Ε 6.000 6.000 6.000 800 0000% 7.00.48 2.00.048 00000 δV 93.9 7.6 119.6 24.6 65.1 43.3 126.2 93.7 18.7 176.3 ដូ 8 307.3 280.2 272.2 306.6 12 3 221.9 63.3 188.2 214.1 9 1151.3 153.8 155.9 20.6 2 11.2 139.6 199.8 200.0 1 191.2 179.2 115.3 559.6 17 320.1 330.2 347.9 315.7 322.1 128.9 125.7 72.3 131.1 275.8 210.9 198.0 52.1 97.4 144.3 164.4 154.2 166.1 258.8 1117.8 68.7 142.0 2 131.3 201.0 243.2 4, 16.9 221.5 126.5 2 153.2 168.8 98.7 2 5 4.5 143.9 235.1 II 102.1 181.8 163.0 1 65.6 123.4 199.2 2 52.0 20.0 49.8 1 82.0 187.6 126.9 5 146.3 396.7 57.4 1 108.4 47.0 164.6 1 157.5 85.7 116.5 3 224.0 152.3 164.9 1 280.8 214.9 114.0 3 262.3 75.1 313.2 3 83.3 212.1 11.5 207.6 100.8 121.6 141.7 94.1 84.2 289.7 43.7 263.7 149.3 361.9 428.3 148.1 266.6 70.2 148.6 95.9 230.1 299.3 73.0 120.6 165.7 121.0 228.8 126.5 57.3 219.8 3 97.6 56.3 2 0.0 109.1 1 100.2 65.2 9.5 223.1 1 24.5 19.8 264.6 310.8 42.4 185.2 170.9 81.3 324.4 140.5 176.7 144.8 39.8 69.2 160.7 32.7 51.5 61.4 28.2 24.5 24.5 24.5 24.5 24.5 258.1 81.0 31.9 312.9 58.9 0.0 22.00 25.00 25.00 00000 00000 39 8 27.03 43.90 74.5 85.8 24.9 35.24.05 35.00.08 62.0 0.0 0.0 0.0 880 880 80 80 80 80 27.00 13.00 10.00 00000 ဝဝဝဗ္ဗဝ JAN 925.9 924.7 661.9 1006.6 1184.3 00000 9000A 80004 88.000 0.000 0.000 250 Σ 00000 00000 110000 80808 12.5 37.5 15.0 N8000 N0000 ĕ 205.0 146.0 430.9 74.0 187.8 218.6 425.9 314.6 263.8 55.8 288.5 55.4 128.5 128.4 128.4 276.7 238.2 23.5 27.5 4.72 29.0 75.2 154.0 141.1 140.7 147.3 273.1 105.9 81.4 60.5 49.9 132.1 43.8 207.5 63.3 SCT COMPLEMENTED MONTHLY RAINFALL AT (?) HUAL YANG TANK 299.9 299.9 291.4 265.3 226.7 431.3 192.7 174.9 171.2 215.8 1 102.3 30.9 48.8 2 62.0 133.3 133.3 1 67.0 172.7 106.7 2 172.0 202.0 77.1 2 166.8 167.5 103.0 228.0 69.1 99.7 130.6 36.0 174.3 182.9 141.9 252.5 213.7 96.3 84.0 114.9 164.0 197.2 48.4 146.0 201.1 155.5 229.4 116.3 38.6 219.9 17.1 90.6 139.6 288.7 185.2 39.0 239.8 79.2 148.4 241.1 92.8 83.6 416.1 91.0 204.4 201.0 62.8 59.3 11 184.7 40.3 183.6 11 30.4 247.8 237.1 1 311.4 134.4 222.5 167.9 65.6 108.0 2 55.6 358.4 229.4 196.1 67.1 58.3 100.8 230.4 48.1 108.5 169.6 128.7 148.1 196.5 85.2 2012.8 283.6 190.6 90.6 48.0 31.1 160.2 262.8 106.8 481.6 289.7 90.7 2 117.9 233.6 1 316.4 100.1 100.3 100.3 265.0 265.0 265.0 52.6 86.6 122.7 214.8 128.0 207.0 MAY 209.2 14.0 73.3 1 196.4 56.3 33.0 8 30.57 20.05 20.45 20.05 20.05 142.8 48.2 121.7 ono APP 200 200 200 200 200 804% 40040 33.73.40 133.73.40 133.73 20.50 20.00 80000 80000 0 11 4 0 0 0 10 0 0 000%0 8000H 800 K 00000 00040 00047 00000 ZA T 1956 1957 1959 1960 EAR

Complemented Monthly Rainfall at Various Stations (continued)

C UNIT : MM >

COMPLEMENTED MONTHLY RAINFALL AT (10) R MAIN CANAL

C UNIT : MM >

COMPLEMENTED MONTHLY RAINFALL AT (9) HUAL TOEL TANK (TINK-113)

ANNUAL	1236.8 1198.1 1000.5	801.5 1008.6 1131.2 1051.2 874.8	1112.3 1122.3 1179.5 1104.7	1218.3 847.4 1043.1 1131.6 1219.2	1090.6 980.2 708.8 1047.0 1328.6	937.1 969.3 1522.6 1160.9	809.9 1089.9 842.3 1151.1	803.5 911.5 1131.1	1049.9
250	000	00000	00000	50000 70000 8	70000 48000	0,000	0,000	000 000	3.6
NOV	22.1 2.6 2.6	00000	20.00	35.05 25.05 25.05 25.05	08087 081180	00400	80.52 5.00 5.00 5.00	080	92.8
100	87.2 63.7 7.1	30.9 22.3 61.1 71.9	177.7 31.4 152.8 170.1	96.6 10.7 31.2 38.3	53.1 3.5 67.9 67.9	159.8 56.53 75.20 75.20	25.00 114.00 75.8 75.8	59.7 91.3 241.9	76.3
SEP	325.5 442.9 165.0	144.3 247.7 255.6 456.4 96.2	334.2 384.5 183.2 245.9	2559.6 259.6 254.3 254.3 288.8	169.2 244.2 195.3	262.4 262.4 326.0 354.8 316.6	256.1 159.8 202.8 186.8	66.1 237.1 141.4	233.9
AUG	153.7 112.3 212.4	185.0 145.9 96.5	200 200 200 200 200 200 200 200 200 200	208.3 192.4 184.7 87.5 140.2	233.1 137.3 169.4 180.8	253.7 214.7 260.5 211.2	59.5 67.0 253.1 102.4	97.7 178.4 75.0	273.5
305	131.7 101.6 56.8	168.9 114.6 117.1 175.5	1222 1228 1120 1228 1228 1228 1228 1238 1238 1238 1238	1135.9 125.9 158.0 58.8	219.8 82.8 156.0 137.9 230.9	140.0 60.1 43.2 48.8	211.2 122.8 46.7 197.4 163.8	72.6 20.8 116.4	132.7 371.0 20.8
NO.	183.7 177.1 378.0	158.5 197.5 175.1	2717 2717 2715 2715 65.53	1224 1224 1966 1966 1967 1282 1282 1282 1282 1282 1282 1282 1382 13	266.3 61.1 78.7 156.0	74.4 198.2 197.8 236.2 236.2	2522 2522 2522 2523 2523 2523 253 253 25	183.2 82.3 290.7	166.1
MAY	189.3	79.5 128.5 1775.3	128.4 214.5 94.5 245.2 75.3	322.7 45.8 135.0 54.6 142.1	181.3 15.9 56.9 346.8	207.6 202.0 202.0 226.3 226.3	203.3 134.7 32.8 2102.0	187.4	152.5
APR	36.9	73 523 520 54 54 54	55.5 50.2 50.5 50.5 50.5 50.5 50.5 50.5	23.73.8 23.25.8 23.28 8.24.88	22.58 83.45 83.5 83 83 83 83 83 83 83 83 83 85 85 85 85 85 85 85 85 85 85 85 8	111.2 111.9 111.9 89.9 89.9	35.7 25.2 27.2 24.3	111.2	57.2 : 134.4 : 0.0
MAR.	9.2	36.0 99.2 176.0 15.1	25.1	\$1.1 32.7 32.4 15.7	881484 8724 8728 8788	52.40 19.00 10.00	106.9 10.0 14.2	238 28 28 0 0 0	28.7
я. 83	0.77	%0.00 \$0.00	000011 000072	45.00 45.00 45.00 45.00	7,404. 0,406.4	40000 40040	27.03.0 N.703.0	0.151 0.45 0.48	74.4
SAN	27.0	00400	00000	2000 27.00 27.00	000047	00000 00000	00000	000	5.0
YEAR	1953 1954 1955	1957 1957 1958 1958	1961 1962 1964 1965	1966 1967 1968 1970	1971 1972 1974 1974	1976 1976 1978 1979 1980	15982 15982 16987 2887 2887	1986 1987 1988	MEAN MAX MIN
긡	41.0								
- 3		. 4 NW ∞	0.00000	OWYNO	NN000	4000×	2000	27.0	1 4 7 4 1
ANNUA	1324. 1282. 1071.	858.4 1079.5 1211.3 1125.1	1191.0 1201.4 1182.8 1182.9 895.9	1304.6 907.3 1116.7 1211.5 1304.9	1172.5 631.2 856.0 879.0 1226.6	851.7 669.9 1367.5 1000.0 1509.7	1243.2 1322.2 1117.6 869.8 1042.9	5,5,5	1095.
DEC ANN	0.0 1324. 0.4 1282. 0.0 1071.	0.0 1079.5	04000	6000m	59.5 631.2 0.0 856.0 0.0 856.0 0.0 879.0	851.7 0.0 0.0 1367.8 0.0 1000.0 1509.0	0.0 1243.2 10.0 1322.2 0.0 1117.6 0.0 869.8 0.0 1042.9	5,5,5	
	.0 1324 .4 1282 .0 1071	00000	04000	00004	onooo	00000	00000	0 862. 0 1193. 0 1158.	.8 1095. .5 1509. .0 631.
DEC	23.7 0.0 1324 0.0 0.4 1282 2.9 0.0 1071	00000 00000	0.888.0 5.87.0 0.80.0 0.40.0 0.40.0	6000m	00000	00000	00000	0.0 862. 0.0 1193. 0.0 1158.	2.8 1095. 59.5 1509. 0.0 631.
T NOV DEC.	4 93.4 23.7 0.0 1324 2 68.2 0.0 0.4 1282 5 7.6 2.9 0.0 1071	00000 00000 00000	257.8 190.3 0.2 0.0 1.1 196.1 163.5 86.4 0.0 196.1 183.5 86.4 0.0 175.5 182.2 22.2 175.5 107.3 0.0 0.0	162.6 103.4 11.0 17.9 1 278.1 11.5 21.0 0.0 154.7 35.4 0.0 272.3 148.2 37.6 0.0 308.9 40.8 1.6 8.1 1	1 163.8 39.0 59.5 2 15.6 0.0 0.0 7 124.2 47.9 0.0	131.0 116.8 0.0 0.0 265.4 43.4 0.0 0.0 285.5 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	7 127.1 43.0 0.0 214.9 0.0 10.0 214.2 10.1 0.0 132.4 0.0 0.0	111.0 111.5 22.0 0.0 862. 209.7 154.2 32.5 0.0 1199. 143.7 246.6 0.0 0.0 1158.	.0 11.7 2.8 1095. .6 86.4 59.5 1509. .0 0.0 0.0 631.
EP OCT NOV DEC.	348.4 93.4 23.7 0.0 1324 474.2 68.2 0.0 0.4 1282 176.6 7.6 2.9 0.0 1071	154.6 33.2 0.0 0.0 265.0 23.9 0.0 0.0 271.5 65.6 0.0 0.0 163.1 75.3 0.5 0.0	257.8 190.3 0.2 0.0 1.1 196.1 163.5 86.4 0.0 196.1 183.5 86.4 0.0 175.5 182.2 22.2 175.5 107.3 0.0 0.0	162.6 103.4 11.0 17.9 1 278.1 11.5 21.0 0.0 154.7 35.4 0.0 272.3 148.2 37.6 0.0 308.9 40.8 1.6 8.1 1	109.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	131.0 116.8 0.0 0.0 265.4 43.4 0.0 0.0 285.5 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 0.0 155.0 180.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	226.7 127.1 43.0 0.0 505.0 214.2 10.1 0.0 132.0 214.2 10.1 0.0 169.0 132.4 0.0 0.0 254.1 137.6 6.1 0.0	58.3 111.0 111.5 22.0 0.0 862. 74.3 229.7 134.2 52.5 0.0 1193. 56.3 143.7 246.6 0.0 0.0 1158.	72.0 253.1 98.0 11.7 2.8 1095. 157.3 515.0 246.6 86.4 59.5 1509. 56.3 65.1 0.0 0.0 0.0 631.
SEP OCT NOV DEC	164.9 348.4 93.4 23.7 0.0 1324 2120.2 474.2 68.2 0.0 0.4 1282 3 227.5 176.6 7.6 2.9 0.0 1071	6 33.2 0.0 0.0 5 65.6 0.0 0.0 5 12.8 0.0 0.0 7 75.3 0.5 0.0	2 287.7 357.8 190.3 0.2 0.0 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	11.5 21.0 17.9 1 23.4 0.0 0.0 1 24.8 2 37.6 0.0 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3 375.3 109.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	6 114.8 265.4 43.4 0.0 0.0 0.0 114.8 265.4 43.4 0.0 0.0 0.0 114.8 265.4 43.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	274.0 110.0 226.7 127.1 43.0 0.0 72.0 164.0 505.0 214.9 0.0 10.0 204.2 254.2 127.0 214.2 10.1 0.0 129.5 178.2 178.0 137.4 0.0 0.0 179.6 136.2 254.1 137.6 6.1 0.0	1 158.3 111.0 111.5 22.0 0.0 862. 5 274.3 209.7 154.2 32.5 0.0 1193. 0 56.3 143.7 246.6 0.0 1158.	.\$ 172.0 253.1 98.0 11.7 2.8 1095\$ 375.3 515.0 246.6 86.4 59.5 15099 56.3 65.1 0.0 0.0 0.0 631.
AUG SEP OCT NOV DEC.	140.9 164.9 346.4 93.4 23.7 0.0 1324 108.9 120.2 474.2 68.2 0.0 0.4 1282 60.8 227.5 176.6 7.6 2.9 0.0 1071	180.8 162.1 154.6 33.2 0.0 0.0 123.7 198.0 265.0 23.9 0.0 0.0 123.5 152.2 271.5 65.6 0.0 0.0 187.2 103.2 488.5 123.0 0.0 0.0 120.1 194.9 103.1 75.3 0.5 0.0	38.9 287.7 357.8 190.3 0.2 0.0 170.2 177.9 411.5 33.7 5.2 3.4 17.5 411.5 33.7 5.2 3.4 115.0 150.2 91.9 263.3 182.2 22.2 0.0 120.1 202.5 175.5 107.3 0.0 0.0	121.6 223.0 162.6 103.4 11.0 17.9 145.4 203.7 278.1 11.5 21.0 0.0 123.2 1977 154.7 35.4 0.0 0.0 169.1 93.6 223.3 148.2 37.6 0.0 163.0 150.1 308.9 40.8 1.6 8.1 1	129.3 375.3 109.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	106.0 204.1 131.0 116.8 0.0 0.0 72.4 114.8 265.4 43.4 0.0 0.0 72.4 114.8 265.4 48.0 8.0 0.0 72.4 1259.1 282.5 0.0 0.0 104.0 206.6 515.0 180.9 0.0 0.0 1	274.0 110.0 226.7 127.1 43.0 0.0 72.0 164.0 505.0 214.9 0.0 10.0 204.2 254.2 127.0 214.2 10.1 0.0 129.5 178.2 178.0 137.4 0.0 0.0 179.6 136.2 254.1 137.6 6.1 0.0	132.7 62.1 158.3 111.0 111.5 22.0 0.0 862. 125.5 130.5 274.5 209.7 154.2 32.5 0.0 1193. 197.9 130.0 56.3 143.7 246.6 0.0 0.0 1158.	18.5 38.9 56.3 65.1 0.0 0.0 0.0 631.
JUL AUG SEP OCT NOV DEC.	5 196.8 140.9 164.9 348.4 93.4 23.7 0.0 1324 5 189.6 108.9 120.2 474.2 68.2 0.0 0.4 1283 5 404.6 60.8 227.5 176.6 7.6 2.9 0.0 1071	1.101.4 180.8 162.1 154.6 33.2 0.0 0.0 169.7 122.7 198.0 265.0 23.9 0.0 0.0 2.1.5 125.5 154.2 271.5 65.6 0.0 0.0 0.0 180.2 187.9 103.2 488.5 12.8 0.0 0.0 0.0 187.5 120.1 194.9 103.1 75.3 0.5 0.0	118.4 38.9 287.7 357.8 190.3 0.2 0.0 1 2 76.7 170.2 177.9 411.5 33.7 5.2 3.4 1 8 188.7 24.3 5.0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7 153.7 121.6 223.0 162.6 103.4 11.0 17.9 1 153.8 145.4 205.7 278.1 11.5 21.0 0.0 0.0 200.9 233.2 173.7 273.4 0.0 0.0 15 300.1 169.1 93.6 272.3 143.2 37.6 0.0 15 454.3 63.0 150.1 308.9 40.8 1.6 8.1 1	94.2 129.3 375.3 109.8 0.0 0.0 0.0 0.0 1103.6 47.0 65.1 65.1 163.8 39.0 59.5 112.7 26.5 140.0 235.3 15.6 0.0 0.0 0.0 112.7 150.1 150.0 150.3 154.7 124.2 47.9 0.0 197.1 161.3 94.8 238.9 121.1 0.0 0.0	6 114.8 265.4 43.4 0.0 0.0 0.0 114.8 265.4 43.4 0.0 0.0 0.0 114.8 265.4 43.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	0 110.0 226.7 127.1 43.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	50.0 132.7 62.1 158.3 111.0 111.5 22.0 0.0 862. 59.7 125.5 150.5 274.5 209.7 154.2 32.5 0.0 1193. 57.9 197.9 150.0 56.3 143.7 246.6 0.0 0.0 1158.	160.4 141.5 172.0 253.1 98.0 11.7 2.8 1095. 454.3 590.6 375.3 515.0 246.6 86.4 59.5 1509. 18.5 38.9 56.3 65.1 0.0 0.0 0.0 631.
Y JUN JUL AUG SEP OCT NOV DEC	196.8 140.9 146.9 348.4 93.4 23.7 0.0 1324 189.6 108.9 120.2 474.2 68.2 0.0 0.4 1282 404.6 60.8 227.5 176.6 7.6 2.9 0.0 1071	101.4 180.8 162.1 154.6 33.2 0.0 0.0 169.7 122.7 198.0 265.0 23.9 0.0 0.0 211.5 125.5 125.5 125.2 271.5 55.6 0.0 0.0 88.2 187.9 103.2 488.5 12.8 0.0 0.0 187.5 120.1 194.9 103.1 75.3 0.5 0.0	118.4 38.9 287.7 357.8 190.3 0.2 0.0 176.7 170.2 177.9 411.5 33.7 5.2 3.4 178.1 24.1 163.5 86.4 0.0 101.1 150.2 91.9 263.3 182.2 22.2 0.0 70.0 120.1 202.5 175.5 107.3 0.0 0.0	133.7 121.6 223.0 162.6 103.4 11.0 17.9 133.8 145.4 203.7 278.1 11.5 21.0 0.0 0.0 0.0 9 233.2 197.7 157.7 33.4 0.0 0.0 1502.1 169.1 93.6 272.3 148.2 37.6 0.0 454.3 63.0 150.1 308.9 40.8 1.6 8.1 1	94.2 129.3 375.3 109.8 0.0 0.0 0.0 105.6 47.0 65.1 65.1 163.8 39.0 59.5 112.7 206.5 140.0 135.3 15.6 0.0 0.0 185.1 16.0 150.3 194.7 124.2 47.9 0.0 197.1 161.3 94.8 238.9 121.1 0.0 0.0	117.3 64.1 106.0 204.1 131.0 116.8 0.0 0.0 72.4 58.1 72.6 118.8 265.4 43.4 0.0 0.0 187.5 67.5 72.7 122.4 43.4 0.0 0.0 187.5 156.7 390.6 122.4 282.5 0.0 0.0 1755.3 136.5 78.1 259.1 282.5 0.0 0.0 0.0 1221.4 251.2 106.0 206.6 515.0 180.9 0.0 0.0 1	2 90.0 72.0 164.0 505.0 124.9 0.0 2 90.0 72.0 164.0 505.0 214.9 0.0 10.0 5 84.3 129.0 132.4 0.0 0.0 132.4 0.0 0.0 191.6 179.6 136.2 254.1 137.6 6.1 0.0	35.0 150.0 132.7 62.1 138.3 111.0 111.5 22.0 0.0 862. 80.5 139.7 123.5 130.5 274.3 209.7 134.2 32.5 0.0 1193. 904.5 237.9 197.9 130.0 56.3 143.7 246.6 0.0 0.0 1158.	62.2 144.5 160.4 141.5 172.0 253.1 98.0 11.7 2.8 1095. (43.9 345.7 454.3 590.6 375.3 515.0 246.6 86.4 59.5 1509. 0.0 0.0 18.5 38.9 56.3 65.1 0.0 0.0 0.0 631.
MAY JUN JUL AUG SEP OCT NOV DEC	202.6 196.8 140.9 146.9 348.4 93.4 23.7 0.0 1324 172.0 189.6 108.9 120.2 474.2 68.2 0.0 0.4 1282 109.2 404.6 60.8 227.5 176.6 7.6 2.9 0.0 1071	78.4 85.1 101.4 180.8 162.1 154.6 33.2 0.0 0.0 56.5 137.5 169.7 122.7 198.0 265.0 23.9 0.0 0.0 0.0 149.6 211.5 125.5 156.2 271.5 65.6 0.0 0.0 32.4 187.4 187.4 882 187.9 103.2 488.5 12.8 0.0 0.0 4.8 184.2 187.5 120.1 194.9 103.1 75.3 0.5 0.0	137.6 118.4 38.9 287.7 357.8 190.3 0.2 0.0 1 20.5 3 76.7 170.2 177.9 411.5 33.7 5.2 3.4 1 10.1 188.7 24.2 3 20.9 7 196.1 163.5 86.4 0.0 1 20.2 91.9 263.3 182.2 22.2 0.0 80.7 70.0 120.1 202.5 175.5 107.3 0.0 0.0	345.7 135.7 121.6 223.0 162.6 103.4 11.0 17.9 14.1 133.8 145.4 205.7 278.1 11.5 21.0 0.0 144.6 209.9 233.2 197.7 135.4 0.0 0.0 158.5 502.1 169.1 93.6 272.3 148.2 37.6 0.0 155.2 454.3 63.0 150.1 308.9 40.8 1.6 8.1 1	321.2 94.2 129.3 375.3 109.8 0.0 0.0 0.0 0.0 0.0 10.0 105.6 47.0 65.1 65.1 163.8 39.0 59.5 87.0 112.7 206.5 140.0 39.3 15.6 0.0 0.0 118.5 18.5 116.0 150.3 194.7 124.2 47.9 0.0 278.6 197.1 161.3 94.8 238.9 121.1 0.0 0.0	5 64.1 106.0 204.1 121.0 116.8 0.0 0.0 58.1 72.6 114.8 255.4 43.4 0.0 0.0 0.0 15.6 122.4 460.5 48.0 0.0 0.0 15.5 78.1 259.1 282.5 0.0 0.0 0.0 15.5 126.7 206.6 515.0 180.9 0.0 0.0 0.0 15.5 126.7 206.6 515.0 180.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	111.6 264.7 274.0 110.0 226.7 127.1 43.0 0.0 88.2 90.0 72.0 164.0 505.0 214.9 0.0 10.0 67.0 245.8 204.2 236.3 136.3 11.0 0.0 87.5 84.3 129.5 178.2 169.0 132.4 0.0 0.0 94.1 91.6 179.6 136.2 254.1 137.6 6.1 0.0	0.0 135.0 150.0 132.7 62.1 138.3 111.0 111.5 22.0 0.0 862. 4.1 80.5 159.7 125.5 130.5 274.3 209.7 134.2 32.5 0.0 1193. 24.7 104.5 237.9 197.9 130.0 56.3 143.7 246.6 0.0 0.0 1158.	29.7 62.2 144.5 160.4 141.5 172.0 253.1 98.0 11.7 2.8 1095. 88.3 143.9 345.7 454.3 590.6 375.3 515.0 246.6 86.4 59.5 1509. 0.0 0.0 0.0 18.5 38.9 56.3 65.1 0.0 0.0 0.0 631.
APR MAY JUN JUL AUG SEP OCT NOV DEC	8 143.9 202.6 196.8 140.9 164.9 348.4 93.4 23.7 0.0 1324 0 59.6 172.0 189.6 108.9 120.2 474.2 68.2 0.0 0.4 1282 1 68.7 109.2 404.6 60.8 227.5 176.6 7.6 2.9 0.0 1071	85.1 101.4 180.8 162.1 154.6 33.2 0.0 0.0 137.5 169.7 122.7 198.0 265.0 23.9 0.0 0.0 140.4 211.5 125.5 155.2 271.5 55.6 0.0 0.0 187.4 88.2 187.9 103.2 488.5 128 0.0 0.0 184.2 187.5 120.1 194.9 103.1 75.3 0.5 0.0	59.1 137.6 118.4 38.9 287.7 357.8 190.3 0.2 0.0 1 64.9 229.5 76.7 170.2 177.9 411.5 33.7 5.2 3.4 1 64.6 101.1 188.7 24.3 24.3 20.9 7 196.1 113.5 86.4 0.0 1 150.2 91.9 263.3 182.2 22.2 0.0 109.1 80.7 70.0 120.1 202.5 175.5 107.3 0.0 0.0	56.5 345.7 133.7 121.6 223.0 162.6 103.4 11.0 17.9 14.4 49.1 133.8 145.4 205.7 278.1 11.5 21.0 0.0 36.0 14.4 209.9 233.2 197.7 157.7 33.4 0.0 0.0 34.0 28.5 302.1 169.1 93.6 272.3 148.2 37.6 0.0 107.9 152.2 454.3 65.0 150.1 308.9 40.8 1.6 8.1 1	86.4 321.2 94.2 129.3 375.3 109.8 0.0 0.0 0.0 6.5 15.1 16.2 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10	0 82.4 117.3 64.1 106.0 204.1 131.0 116.8 0.0 0.0 0.0 43.0 72.6 58.1 72.6 114.8 265.4 43.4 0.0 0.0 0.0 16.8 72.5 135.5 39.6 112.4 460.5 48.0 8.0 0.0 0.0 105.5 135.5 136.5 78.1 259.1 282.5 0.0 0.0 0.0 0.0 105.6 221.4 251.2 104.0 206.6 515.0 180.9 0.0 0.0 0.0	72.0 111.6 264.7 274.0 110.0 226.7 127.1 43.0 0.0 26.0 88.2 90.0 72.0 164.0 505.0 214.9 0.0 10.0 0.0 67.0 246.2 90.2 26.1 137.0 6.0 914.2 10.1 0.0 33.8 87.5 84.3 129.5 1782 169.0 132.4 0.0 0.0 110.9 94.1 91.6 179.6 136.2 254.1 137.6 6.1 0.0	0.0 0.0 155.0 150.0 132.7 62.1 138.3 111.0 111.5 22.0 0.0 862.7 62.7 4.1 80.5 139.7 125.5 150.5 274.5 209.7 134.2 32.5 0.0 1195.11.2 4.7 104.5 237.9 197.9 150.0 56.3 143.7 246.6 0.0 0.0 1158.	14.4 29.7 62.2 144.5 160.4 141.5 172.0 253.1 98.0 11.7 2.8 1095. 79.7 188.3 143.9 345.7 454.3 590.6 375.3 515.0 246.6 86.4 59.5 1509. 0.0 0.0 0.0 0.0 18.5 38.9 56.3 65.1 0.0 0.0 0.0 631.
MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	9.8 143.9 202.6 196.8 140.9 164.9 348.4 93.4 23.7 0.0 1324 0.0 39.6 172.0 189.6 108.9 120.2 474.2 68.2 0.0 0.4 1282 13.1 68.7 109.2 404.6 60.8 227.5 176.6 7.6 2.9 0.0 1071	38.6 78.4 85.1 101.4 180.8 162.1 154.6 33.2 0.0 0.0 106.2 56.5 137.5 169.7 122.7 198.0 265.0 23.9 0.0 0.0 188.3 0.0 149.6 211.5 125.5 156.2 271.5 65.6 0.0 0.0 18.3 32.4 187.4 82.1 87.7 105.2 88.5 1.5 0.0 0.0 66.4 4.8 184.2 187.5 120.1 194.9 105.1 75.5 0.5 0.0	1.0 59.1 137.6 118.4 38.9 287.7 357.8 190.3 0.2 0.0 128.0 64.9 229.5 76.7 170.2 177.9 411.5 33.7 5.2 3.4 128.2 46.6 101.3 184.7 24.3 509.7 196.1 163.5 86.4 0.0 126.1 180.2 91.9 263.3 182.2 22.2 0.0 126.9 19.9 263.3 182.2 22.2 0.0 0.0 126.9 109.1 80.7 70.0 120.1 202.5 175.5 107.3 0.0 0.0	54.6 56.5 345.7 153.7 121.6 223.0 162.6 103.4 11.0 17.9 10.0 14.4 49.1 135.8 145.4 205.7 278.1 11.5 21.0 0.0 0.0 15.8 55.0 146.2 25.2 17.8 33.4 0.0 0.0 0.0 15.8 149.2 37.4 0.0 0.0 15.8 17.8 149.2 37.4 0.0 0.0 15.8 107.9 152.2 454.3 63.0 150.1 308.9 40.8 1.6 8.1 1	19.9 86.4 321.2 94.2 129.3 375.3 109.8 0.0 0.0 0.0 41.0 45.1 10.0 10.0 10.0 45.1 65.1 165.8 39.0 59.5 10.4 58.5 870 112.7 204.5 140.0 235.3 15.6 0.0 0.0 41.5 67.4 148.5 181.5 116.0 150.3 194.7 124.2 47.9 0.0 100.5 0.0 278.6 197.1 161.3 94.8 238.9 121.1 0.0 0.0	30.0 82.4 117.3 64.1 106.0 204.1 131.0 116.8 0.0 0.0 0.0 0.0 43.0 72.6 58.1 72.4 114.8 265.4 43.4 0.0 0.0 0.0 81.6 81.3 72.4 112.4 265.4 43.4 0.0 0.0 0.0 116.8 135.7 390.6 122.4 269.4 43.0 0.0 0.0 105.5 135.3 136.7 78.1 259.1 282.5 0.0 0.0 0.0 10.0 20.6 221.4 251.2 104.0 206.6 515.0 180.9 0.0 0.0 1	14.1 72.0 111.6 264.7 274.0 110.0 226.7 127.1 43.0 0.0 88.5 26.0 88.2 90.0 72.0 164.0 505.0 214.9 0.0 10.0 0.0 0.0 67.0 27.8 204.2 236.3 112.0 014.2 10.1 0.0 27.1 33.6 87.5 84.3 129.0 178.2 169.0 132.4 0.0 0.0 0.0 110.9 94.1 91.6 179.6 136.2 254.1 137.6 6.1 0.0	0.0 135.0 150.0 132.7 62.1 138.3 111.0 111.5 22.0 0.0 862. 4.1 80.5 139.7 125.5 130.5 274.3 209.7 134.2 32.5 0.0 1193. 24.7 104.5 237.9 197.9 130.0 56.3 143.7 246.6 0.0 0.0 1158.	14.4 29.7 62.2 144.5 160.4 141.5 172.0 253.1 98.0 11.7 2.8 1095. 79.7 188.3 143.9 345.7 454.3 590.6 375.3 515.0 246.6 86.4 59.5 1509. 0 0.0 0.0 0.0 0.0 18.5 38.9 56.3 65.1 0.0 0.0 0.0 631.

Table A-6 Complemented Monthly Rainfall at (11) A. Phra Yun (Monthly Areal Rainfall of the Study Area)

( UNI : MM )

		1. 1.		1					
OCT-APR	234.8 188.7 79.9	146.9 161.7 225.7 60.7 127.4	217.4 282.0 272.1 200.6	257.6 82.6 153.2 274.0 153.3	172.3 330.2 19.6 138.2	231.9 100.6 126.3 91.9	171.2 300.9 145.0 145.0	186.9 222.0 369.4	179.9 369.4 19.6
MAY-SEP	580.0 911.3 848.1	570.4 750.9 790.6 911.5 683.4	771.9 902.6 804.0 748.2 556.6	850.1 686.1 771.2 950.5	795.2 565.2 630.6 687.9	681.8 1041.5 852.6 965.6	692.3 948.5 767.4 756.8	566.9 918.6 584.3	788.6
ANNUAL	1114.8 1100.0 928.0	717.3 912.6 1016.3 972.2 810.8	989.3 1017.6 1086.0 1020.3 757.2	1107.7 768.7 952.0 1045.2 1103.8	967.5 895.4 650.2 931.5 1116.9	913.7 1021.6 1167.8 944.5 1108.3	863.5 1249.4 875.7 898.7	753.8 1140.6 953.7	968.5 1249.4 650.2
DEC	000	00000	00000	70000	22.000 0.000 0.000	0.000 0.000	07000	000	2.2
Š	20.6 20.0 20.0	00000	24.7 19.3 19.3 0.0	32.26	86.27.5 0.02.27.5	001100 71800	16.6 0.0 0.0	040 000	11.486.2
0CT	80.9 59.1 6.6	28.7 20.7 56.7 111.2 65.2	165.1 29.2 141.9 157.9 85.9	84.6 10.0 128.5 35.5	139.1 7.83.2 63.0 63.0	125.4 61.9 61.9 82.7	117.7 110.8 132.7 69.3 124.0	8.0 63.2 128.8	71.1
SEP	302.4 411.3 153.0	134.2 229.9 2355.4 423.8 89.4	310.3 357.1 170.1 152.1	141.2 241.1 134.4 236.2 268.2	157.0 104.2 227.0 181.5 246.3	247.7 341.1 319.9 210.6 281.6	24.7 501.4 190.6 176.9 212.4	117.0	226.5 501.4 24.7
AUG	109.7 104.3 197.2	1119.8 134.3 89.4 168.9	206.0 152.1 174.2 76.1	189.4 160.1 171.6 81.4 128.0	172.0 127.3 157.0 222.2 167.8	147.2 170.3 185.3 179.4	135.6 62.8 329.3 88.1	130.8 226.1 72.6	151.7 329.3 62.8
Jul	121.6 90.1 53.0	154.6 103.3 107.6 162.1 102.8	33.7 210.2 128.6 103.7	105.3 126.3 202.4 146.6 52.0	203.1 75.1 137.1 125.7 158.2	288.0 68.1 82.3	196.7 175.2 79.5 180.9	74.9 91.1 89.0	126.1 288.0 33.7
SUN	170.7 164.5 351.1	88 147 183 762 5	102.7 66.3 87.8 87.8 60.7	115.9 116.2 182.1 262.1 394.1	24.8 247.1 56.7 73.1 144.7	33.0 1119.3 238.5 302.2	128.2 100.7 171.0 129.2 79.8	83.1 104.2 127.4	145.1 394.1 33.0
МАХ	175.6 141.1 93.8	1130.02 1159.0 1159.8 159.8	1119.2 1779.6 85.7 227.5 69.9	298.3 42.4 108.3 108.2	168.3 52.8 85.8 261.7	205.2 218.0 152.8 155.6 178.2	207.1 108.4 76.9 88.0 235.3	161.1 281.1 113.9	139.1 298.3 11.5
APR	124.8 34.3 59.6	67.7 48.9 28.1 4.1	27.55 27.55 27.55 27.55	22.5 23.5 23.5 23.7	1127.2 112.2 54.0 3.4	253.7 25.7 39.5 4.5 5.5 5.5	28.8 58.8 39.0 17.9	160.7 64.8 137.8	54.6 160.7 0.0
MAR	8.5 11.3	29.5 163.1 163.3 57.7	0.44 8.4.46 8.4.8	33.9 20.0 80.04 80.14	17 24 42 45 45 45 45 45 45 45 45 45 45 45 45 45	37.0 10.2 17.8 17.8	1.42	18.2 20.0 10.5	23.9
н В	69.1	21 00.0 00.7 00.4 0	0000 0000w	64.8 411.8 90.2 00.7	24001K	400.50 700.48	7,4000 04000	30.1	13.2 92.3 0.0
NAS	0.00	00000	00000	00.00 00.00 00.00 00.00	0000%	00000	00000	000	52.9
YEAR	1953 1954 1955	1956 1957 1958 1959 1960	1961 1962 1963 1964	1966 1967 1968 1969 1970	1971 1972 1973 1974 1975	1976 1977 1978 1979 1980	1981 1982 1983 1984	1986 1987 1988	MEAN MAX Min

Table A-7 Annual Rainfall in the Vicinity of the Study Area

(Unit: mm)

									( 0111	: mm/	
Year	( 1) A. Muang	(2) A.Mancha Khiri	(3) A. Ban Phai	( 4) A. Phu Wiang	( 5) A. Chum Phae	( 6) A. Chon- nabot	( 7) TNK-32	( 8) TNK-34	( 9) TNK-113	(10) R Main Canal	(11) A. Phra Yun
1953	1359	1223	(1267)	1498	978	(1310)	(1313)	(1332)	(1324)	(1237)	(1115)
1954	1317	956	( 802)	1354	1127	(1025)	(1027)	(1291)	(1283)	(1198)	(1100)
1955	1099	1249	(1270)	1067	941	(1338)	(1342)	(1078)	(1071)	(1001)	( 928)
1956	881	1166	1242	1300	1014	(1249)	(1252)	( 863)	( 858)	( 802)	( 717)
1957	1108	1067	1333	1308	1259	(1143)	(1126)	( 795)	(1080)	(1009)	( 913)
1958	1243	1427	1548	1170	1150	(1528)	1043	364	(1211)	(1131)	(1016)
1959	1155	1364	1048	1017	1116	(1461)	1091	1011	(1125)	(1051)	( 972)
1960	961	708	971	1217	825	(759)	674	1155	( 937)	( 875)	( 811)
1961	1222	1495	1135	1191	1151	(1601)	890	1034	(1191)	(1112)	( 989)
1962	1233	1261	1200	1246	1237	(1351)	1329	1449	(1202)	(1122)	(1018)
1963	1296	1248	1182	1324	1142	(1336)	1160	961	(1263)	(1180)	(1086)
1964	1214	1516	1192	1286	1356	(1623)	1625	1201	(1183)	(1105)	(1020)
1965	919	936	940	1083	641	(1002)	998	985	(896)	(837)	( 757)
1966	1339	992	1507	1521	1382	( 936)	1222	1063	(1305)	(1218)	(1108)
1967	931	1070	747	1093	914	905	1241	891	( 907)	( 847)	( 769)
1968	1146	826	1026	1218	848	796	1002	1096	(1117)	(1043)	( 952)
1969	1244	1099	1382	1227	960	1376	1450	1311	(1212)	(1132)	(1045)
1970	1340	746	1006	1307	1040	860	866	1218	(1305)	(1219)	(1104)
1971	1199	988	1204	1325	1050	1219	926	1595	(1173)	(1091)	( 968)
1972	1077	717	855	966	837	1102	925	976	631	( 980)	( 895)
1973	779	745	722	1105	1137	665	662	906	856	( 709)	( 650)
1974	1151	711	874	1004	874	927	1007	950	879	(1047)	( 932)
1975	1460	801	1040	1306	971	1022	1184	1365	1227	(1329)	(1117)
 1976	1097	1111	1212	1418	954	1221	1439	1204	852	937	( 914)
1977	1216	855	761	(1023)	(1221)	1021	1186	1110	670	969	(1022)
1978	1390	1230	1497	(1536)	(1366)	1390	1304	1416	1358	(1523)	(1168)
1979	1177	1213	1214	1142	(1049)	1197	1059	1018	1000	1161	( 945)
1980	1327	1463	1361	1782	1343	1556	1605	1461	1510	1224	(1108)
1981	1064	765	855	1042	587	849	609	974	1243	810	( 864)
1982	1480	1158	1099	1142	1091	1172	1259	1100	1322	1090	(1249)
1983	1287	905	795	(1293)	1247	931	1049	1559	1118	842	992
1984	1245	863	845	998	996	861	1069	1189	870	1151	876
1985	902	778	1064	1263	993	881	767	768	1043	969	899
1986	1085	590	( 611)	1198	.737	815	810	1220	863	804	754
1987	1284	906	1189	(1360)	1037	1069	( 985)	(1258)	(1194)	912	1141
1988	1255	768	1304	(1112)	1383	983	(101 <i>2</i> )	(1025)	(1159)	1131	954
Mean	1180	1025	1092	1235	1054	1124	1097	1116	1096	1050	969
Max.	1480	1516	1548	1782	1383	1623	1625	1595	1510	1523	1249
Min.	779	590	611	966	587	665	609	364	631	709	

( ): Complemented Data Note 1)

2)

- Station Name (1) A. Muang, Khon Kaen (2) A. Mancha Khiri, Khon Kaen (3) A. Ban Phai, Khon Kaen

  - (3) A. Ban Phai, Khon Kaen
    (4) A. Phu Wiang, Khon Kaen
    (5) A. Chum Phae, Khon Kaen
    (6) A. Chonnabot, Khon Kaen
    (7) Huai Yang Tank (TNK-32), A. Mancha Khiri. Khon Kaen
    (8) Kok Muang Tank (TNK-34), A. Muang, Khon Kaen
    (9) Huai Toei Tank (tnk-113), A. Muang, Khon Kaen
    (10) R Main Canal, A. Muang, Khon Kaen
    (11) A. Phra Yun, Khon Kaen

Table A-8 Mean Monthly Rainfall in the Vicinity of the Study Area

			<del></del>	· ·	11		ſ	Γ.	T	T 0		<u> </u>	1	T	To:
	Jan.	Feb.	Маг.	Apr.	May	Jun.	Júl.	Aug.	Sep.	Oct.	Nov.	Dec.	Annua 1	MAY Sep.	Oct Apr.
( 1) A. Muang	( 1)	13	34 (3)	63 ( 5)	169 (14)	184 (16)	158 (13)	190 (16)	259 (22)	88 ( 7)	13 (1)	3 (1)	1180 (100)	960 (81)	220 (19)
( 2) A.Mancha Khiri	4 (1)	14 (1)	31 (3)	71 (7)	149 (15)	138 (13)	124 (12)	141 (14)	247 (24)	89 (8)	13 (1)	4 (1)	1025 (100)	799 (78)	226 (22)
(3) A. Ban Phai	(1)	17 (1)	46 (4)	77 (7)	155 (14)	150 (14)	137 (12)	134 (12)	247 (23)	105 (10)	12 (1)	4 (1)	1092 (100)	823 (75)	269 (25)
(4) A. Phu Wiang	5 (1)	14	34 (3)	77 ( 8)	193 (15)	174 (14)	174 (14)	185 (15)	255 (21)	108 ( 8)	13 (1)	3 (1)	1235 (100)	981 (79)	254 (21)
( 5) A. Chum Phae	3 (1)	11 (1)	32 (3)	59 (5)	161 (15)	134 (13)	130 (12)	135 (13)	255 (24)	116 (11)	11 (1)	7 (1)	1054 (100)	815 (77)	239 (23)
( 6) A. Chon- nabot	8 (1)	17 (1)	38 (3)	75 ( 7)	167 (15)	147 (13)	139 (12)	156 (14)	257 (23)	98 (9)	18 ( 1)	4 (1)	1124 (100)	866 (77)	258 (23)
( 7) TNK-32	6 (1)	10 (1)	29 ( 2)	75 ( 7)	154 (14)	141 (13)	141 (13)	147 (13)	273 (25)	106 ( 9)	12 ( 1)	3 (1)	1097 (100)	856 (78)	241 (22)
( 8) TNX-34	5 (1)	12 ( 1)	27 ( 2)	70 (6)	144 (13)	164 (14)	154 (14)	166 (15)	259 (23)	99 ( 9)	12 (1)	(1)	1116 (100)	. 887 (79)	229 (21)
(9) TNK-113	5 (1)	14 (1)	30 (2)	62 ( 5)	145 (13)	160 (15)	142	172 (16)	253 (23)	98 ( 9)	12 (1)	3 (1)	1098 (100)	872 (80)	224 (20)
(10) R Main Canal	5 (1)	12 (1)	29 (3)	57 ( 5)	152 (14)	166 (16)	133 (13)	169 (16)	234 (22)	76 ( 7)	13 ( 1)	4 (1)	1050 (100)	854 (81)	196 (19)
(11) A. Phra Yun	3 (1)	13 ( 1)	24 ( 2)	55 ( 6)	139 (14)	145 (15)	126 (13)	152 (16)	227 (23)	71 ( 7)	12 ( 1)	(1)	969 (100)	789 (81)	180 (19)

Note

Mean Monthly Rainfall (mm)
( ) Ratio (%) to Annual Rainfall

### A-2-3 Areal Rainfall

Areal rainfall of the study area was estimated using the rainfall of A. Phra Yun Station by Thiessen method as shown in Appendix Figure 1-3. Monthly areal rainfall is shown in Appendix Table A-6. Mean monthly areal rainfall is shown below;

Monthly Areal Rainfall of the Study Area

(Unit: mm)

(19)

(81)

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.
3 (1)	13 (1)	2 <sup>4</sup> (2)	55 (6)	.139 (14)	145 (15)	126 (13)	152 (16)
Sep.	Oct.	Nov.	Dec.	Annual	ual Wet		Dry
227	227 71		2	969	i	89	180

Note Wet: Wet Season (May - Sept.)

Dry: Dry Season (Oct.- Apr.)

( ): Ratio to Annual Rainfall %

The results of the analysis for probable rainfalls are presented in Table A-9 only 2 years, 3 years, 5 years and 10 years probable rainfalls are presented below;

(100)

Probable Areal Rainfalls of the Study Area

Probable	Approximate	Annual			
Years	Year	Rainfall mm			
1/2	1988	954			
1/3	1984	876			
1/5	1981	864			
1/10	1960	811			

Areal ratio by Thiessen method and mean areal rainfall in the upperreach of Huai Yai outside of the study area is as follows;

Areal Ratio by Thiessen

Station	Drainage Area	Areal Ratio
(8) TNK-34	57.6 km <sup>2</sup> 60.4 km <sup>2</sup>	47.4%
(11) A. Phra Yun Total	121.6 km <sup>2</sup>	<u>52.6%</u> 100.0%

# Monthly Areal Rainfall in the Upperreach of Huai Yai Outside of the Study Area

(Unit: mm)

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.
4	13	25	62	142	154	139	159
Sep.	Oct.	Nov.	Dec.	Annual	We		Dry
242	84	12	3	1039	; 8;	36	203

Note Wet: Wet Season (May - Sept.)
Dry: Dry Season (Oct. - Apr.)

Areal rainfall in the upperreach of Huai Yai outside of the study area is shown in Table A-10.

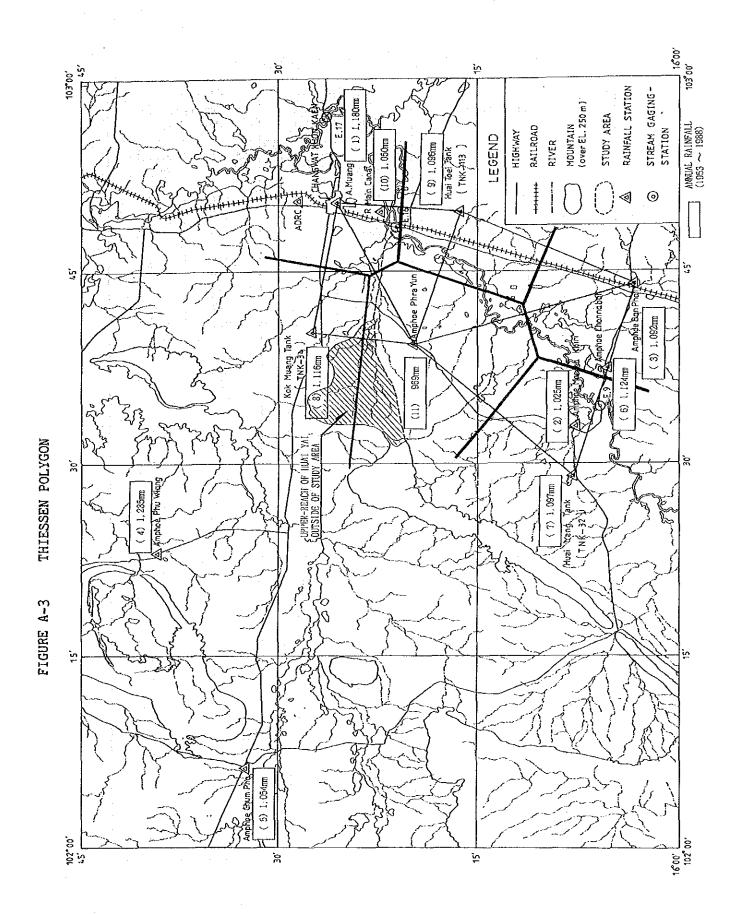


Table A-9 The Result of Probable Rainfall Analysis

	Annual R	ainfall	Wet Season (May		Dry Season (Oct	
	Rainfall (mm)	Probable Year	Rainfall (mm)	Probable Year	Rainfall (mm)	Probable Year
1953 1954 1955	1115 1100 928	2. 5	880 911 848		235 189 80	11.5
1956 1957 1958 1959 1960	717 913 1016 972 811	39. 7 2. 8 7. 8	570 751 791 912 683	26. 4 2. 5 4. 4	147 162 226 61 127	2. 7 2. 2 24. 5 3. 6
1961 1962 1963 1964 1965	989 1018 1086 1020 757	18. 0	772 903 804 748 557	2, 1 2, 5 36, 3	217 115 282 272 201	4.5
1966 1967 1968 1969 1970	1108 769 952 1045 1104	14. 7 2. 1	850 686 799 771 951	4. 3 2. 1	258 83 153 274 153	10. 5 2. 5 2. 5
1971 1972 1973 1974 1975	968 895 650 932 1117	3. 1 232, 4 2. 5	795 565 631 688 979	29. 7 8. 7 4. 2	172 330 20 244 138	327. 6 3. 0
1976 1977 1978 1979 1980	914 1022 1168 945 1108	2. 8 2. 2	682 921 1042 853 966	4. 5	232 101 126 92 143	6. 2 3. 6 7. 9 2. 8
1981 1982 1983 1984 1985	864 1249 992 876 899	4. 2 3. 7 3. 0	692 949 847 767 757	4, 0 2, 2 2, 4	171 301 145 108 142	2. 7 5. 2 2. 8
1986 1987 1988	754 1141 954	. 19. 1 2. 1	567 919 584	28. 6 19. 7	187 222 369	

Table A-10 Areal Rainfall in Upper-Reach of Huai Yai Outside of the Study

	٠			1								
."	OCT-APR	252.5 203.0 85.9	150 135 135 142 142 142 142 142 142 142 143 143 143 143 143 143 143 143 143 143	262.4 196.8 272.0 179.1	274.0 1185.6 185.8 245.7	285.6 20.1.6 20.1.6 213.3	272.3 146.3 116.8 112.4 205.1	178.5 360.3 193.0 270.2 142.8	313.0 294.0 338.1	203.0	360.3	30.1
~ ₩ :	MAY-SEP (	964.7 986.6 912.5	625.7 716.9 572.4 914.1	748.0 1025.2 755.0 831.0 686.4	813.1 708.1 834.6 925.5	1075.1 649.9 741.5 653.6 1021.4	779.7 917.7 1169.0 866.7	737.6 818.5 1067.6 754.1 694.7	662.0 902.4 649.4	835.7	1169.0	572.4
C UNIT	ANNUAL	1217.2 1189.6 998.4	785.7 856.6 707.5 990.2 974.2	1010.4 1222.0 1027.0 1106.0 865.5	1087.1 826.7 1020.4 1171.2	1264.9 933.5 771.6 940.4 1234.7	1052.0 1064.0 1285.8 979.1 1276.1	916.1 1178.8 1260.6 1024.3 837.5	975.0 1196.4 987.5	1038.7	1285.8	707.5
	DEC	000	00000	00000	7000r	6,000 9,000 9,000	00000 04000	0,000	400	2.9	33.1	0.0
	NOV	22.1 2.6 2.6	00000	0.020	19.8 26.7 0.7 7.0	27.0 70.73 80.8 80.8	01.00 45.00	7,000 4,100 6,000	38.1	12.7	80.2	0.0
	OCT	87.0 63.6 7.0	30.8 14.9 70.0 79.8	192.1 60.8 137.8 158.1 83.6	101.2 16.9 46.7 99.3 39.2	85.9 117.5 10.5 82.2 116.7	147.6 14.9 43.5 107.1	101.9 172.2 167.8 126.2	51.9 97.4 176.5	84.5	192.1	0.0
	SEP	325.0 442.4 164.8	144.1 247.2 213.0 469.9	284.0 392.6 189.5 242.8 165.6	283.3 283.3 140.8 273.8 293.9	228.1 156.4 258.6 190.1 300.1	298.8 323.4 345.2 228.7 368.9	79.6 424.1 195.4 137.8	95.8 213.7 141.6	241.8	6.694	9.62
	AUG	136.2 112.2 211.8	140 174 174 107 116 116	175.7 195.2 151.2 201.1	177.9 139.4 168.5 96.9 215.8	219.5 156.4 147.1 143.1	125.4 226.9 174.3 126.8	130.7 62.0 351.1 183.6	128.6 249.7 63.0	158.6	351.1	62.0
	JUL	131.1 99.0 56.9	167.3 112.7 174.0 242.2	50.3 172.8 215.8 147.8	77.8 107.1 178.7 179.1 63.1	239.5 69.6 154.7 132.4 168.1	176.7 78.1 323.0 69.1 78.1	207.1 158.8 145.1 212.7 91.3	100.5	139.4	323.0	50.3
	N N N	183.7 176.8 377.6	94.6 108.4 121.3 79.0 155.0	109.9 97.0 94.1 118.9 57.7	1112.4 135.8 202.0 270.9 331.7	195.4 235.0 101.6 43.7 166.7	22.9 107.3 121.0 252.2 300.3	177.9 79.8 288.5 139.1 120.1	98.5 114.6 160.8	154.2	377.6	22.9
	MAY	188.7 156.2 101.4	79.4 74.5 77.7 84.1 205.3	128.1 167.6 104.1 234.6 139.2	304.3 42.5 144.6 104.8 95.5	192.6 32.5 79.5 75.9 243.4	155.9 182.0 205.5 202.8	142.3 93.8 87.5 80.9	238.6 214.4 143.6	141.6	304.3	32.5
	APR	134.2 37.0 64.1	55052 88046	105 8 25 9 25 9 78 8 78 8	34.5 34.5 102.6 103.1	76.07	85.08 86.08 86.08 86.08 86.08	23.55 23.56 23.56 23.56	207.0 72.5 87.6	61.9	207.0	0.0
<b>ದ</b>	MAR	9.2	33.8 99.0 102.1 7.4	27.5 17.1 33.0 8.9	62.1 27.7 27.7 62.1	4134.9 31.154.3 31.3 51.3	38.7 7.9 18.5 30.2	400wo	51.2	25.2	102.1	0.0
ягеа	FEB	0.00	%00.00 00.40	42.00 72.8 8.8 8.8	47.7 47.7 4.0 4.0 4.0	17.7	12.7 0.0 3.3 17.4	44.7 40.01 6.22	34.4	12.7	74.3	0.0
	JAN	0.080	00000	00000	0.000	27.1	00,000	00420	000	4.0	43.8	0.0
	YEAR	1953 1954 1955	1956 1957 1958 1959 1960	1961 1962 1963 1964 1965	1966 1967 1968 1969 1970	1971 1972 1973 1974 1974	1976 1977 1978 1979 1980	1981 1982 1984 1984	1986 1987 1988	MEAN	MAX	NIM

#### A-3 HYDROLOGICAL CONDITION

## A-3-1 Study Area

#### 1) Drainage Area

Basin	In the Study Area km2)	Out of the Study Area (km2)	Total (km2)	
Huai Yai Basin	101.0	126.8	227.8	
Huai Yang Basin	80.3	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	80.3	
Huai Phra Nao Basin	79.4	_ 1	79.4	
Swamp	70.1	-	70.1	
Chi River Basin	<u>10.7</u>	<del></del>	10.7	
Total	341.5	126.8	468.3	

## 2) Stream Gradient

River	Upper Stream	Middle Stream	Down Stream	Mean
Huai Yai	1/370	1/570	1/680	1/590
Huai Yang	1/350	1/630	1/620	1/520
Huai Phra Nao	1/320	1/380	1/320	1/340

## 3) Installation and Observation of Staff Gauges

20 staff gauges were installed in the study area as shown in Table A-11. The location is shown in Figure A-4. After the installation, the water level at 11 points of the rivers and 9 points of the points were observed a few times and the observation will be continued to the next dry season at intervals of one time of every week.

The results of the observation are shown in Table A-12 and A-13.

## 4) Existing Ponds

21 existing ponds in the Study area were investigated for surface area, mean water depth and reservoir capacity in dry and wet seasons. Location of these ponds are presented in Figure A-4. Only total amount of these data are presented below:

Results of the Investigation of Ponds

	Total Surface Area	Mean Wat	-	Total Reservoir Capacity (MCM)		
	(km <sup>2</sup> )	Dry	Wet	Dry	Wet	
Swamp in Lower-reach	12.6	1.9	2.6	23.5	32.7	
Pond	1.1	1.7	2.4	1.4	2.6	
Total	13.7	1.8	2.6	24.9	35.3	

Average discharge loss is estimated at about 10 mm/day according to observed records of staff gauges and water depth in dry and wet season as shown in Table A-14.

#### 5) Existing Diversion Structures

In the study area, there are many existing diversion structures. Existing S.S.I.P. project in Changwat Khon Kaen is presented in Table A-16. According to the data, irrigable area per the watershed area is  $6 \text{ rai/km}^2$  (1 ha/km²), and average irrigable area per structure is about 300 rai (48 ha).

Therefore, irrigable areas covered by the existing diversion structures of Huai Yai with 5,400 rai (864 ha). Huai Yang with 1,500 rai (240 ha) and Huai Phra Nao with 3,000 rai (480 ha) are estimated as follows;

Estimation of the Exiting Irrigable Area and Pond Reservoir Capacity of 3 Rivers Basin

Basin		ge Area <sub>m</sub> 2	Number of Structures	Estima Irrigabl		,	servoir ty MCM
	Section	Total	bot acoures	rai	ha	Dry	Wet
Huai Yai Basin		(227.8)	(18)(Weirs)	(5,400)	(864)	(0.014)	(0.145)
Upper-stream in study area	47.6	169.2	(10) 10	(3,000) 3,000	(480) 480	(0.008) 0.008	(0.054) 0.054
out of study area	121.6	. <b>.</b>		, . <del>-</del>	_	. <del>-</del>	
Middle-stream Huai Si Phung Down-stream	14.1 17.0 27.5	183.3 227.8	2 - 6	600 - 1,800	96 - 288	0.005 - 0.001	0.068 - 0.023
Huai Yang Basin		(80.3)	(5)(Weirs)	(1,500)	(240)	(1.141)	(1.891)
Upper-stream Middle-stream Huai Wang Hin Down-stream	23.6 32.5 7.7 16.5	23.6 56.1 - 80.3	1 3 - 1	300 900 - 300	48 144 - 48	0.008 0.484 - 0.649	0.079 1.116 - 0.696
Huai Phra Nao Basin		(79.4)	(10)(Weirs)	(3,000)	(480)	(0.075)	(0.182)
Upper-stream Middle-stream Down-stream	30.1 49.3 14.0	30.1 65.4 79.4	2 6 2	600 1,800 600	96 288 96	- 0.075	- - 0.182

Note: Irrigable Area = Number of Structures × 300 rai (or 48 ha)

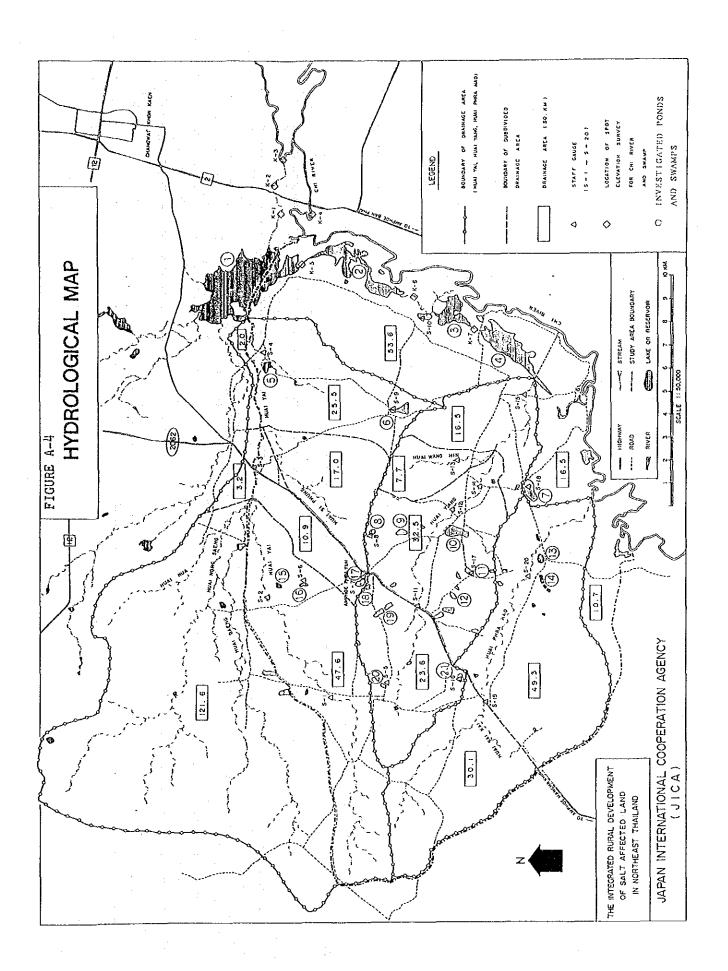


FIGURE A-5 LONGITUDINAL PROFILE OF HUAI YAI

	LONGITUDINAL PROFILE HUAI YAI	GWCK.	WEIN OWER	STA 9 + 650 WERP GWEIN	STABLES PROME OF STATE HOLD OF STATE OF	OWER OWER OWER	$\frac{\overline{z}}{z}$	05.551 05.051 05.051 05.051 05.051	61.251 62.251 62.251 63	000 62 000 62 000 62 000 62 000 63 000 63	1000 1 10	5 - AT2  6 - AT2  7 - AT2  7 - AT2  7 - AT2  6 - AT2  6 - AT2  11 - AT2  12 - AT3  13 - AT4  15 - AT5  15 - AT6  15 - AT7  16 - AT7  17 - AT7  18 - AT7  19 - AT7  10 - AT7  10 - AT7  11 - AT7	
67 - 67 - 67 - 67 - 67 - 67 - 67 - 67 -	<u>m</u>	•			12.4.84.12. JAJAC. 12.4.12. JAJAC.	OWER OWER	TOTT FOR CASILIES	05.581 05.581 05.681	97.001 97.001 97.001 97.001 97.001 97.001 97.001 97.001 97.001 97.001	6699 6009 6005 6004 6005 6005 6693	669 569 901 907 909 909 961 0001 101 669 669 669 669 669 669 669 66	> - AT2 C - AT2 AT2	

182,42 183,40 0<del>81</del> 771 (04.EBI 22121 à: χ. 181 86 4 183 00 16 520 250 0 1=1/350,H=1194m 99.671 00091 000 I 91-V1S 69,871 12000 0001 SI-AT2 M-AT2 000 I 98.571 000 11 (P) [7] 9b '141 13 000 009 £l-AT2 ZI "OZI 15400 00Þ 86 791 15 000 **∞**₽ SI-AT2 11 600 11 600 11 600 66 791 10 891 78 991 07 991 \$00 \$00 \$00 \$00 FIGURE A-6 LONGITUDINAL PROFILE OF HUAI YANG II-AT2 LONGITUDINAL PROFILE HUAI YANG 100 28 000001 1000 QI-AT2 07 <del>43</del>1 0006 867 e-AT2 & WEIR @ WEIR 8 S S S 00.431 | 59.531 SSS 163,34 00₺ 8-AT2 7547 0097 162.08 161.20 591 163 £6.131 £6.131) 0007 000 i Y-AT2 ¥ E B 68.681 58.681 847.8 000.8 S2S a-AT2 STA 4+ 300 HUAI WANG HIN 08.661 847 0 128 SO 2000 1000 2-AT2 TIE1/620,H=11.37m7 ₽-AT2 95.951 000₺ 582 ⊕ WEIR 122, 13 155, 13 3515 3515 512 1000 00, 781 E- ATS 123.94 2000 1000 S-AT2 152.34 1000 400 I-AT2 11.6+1 49.151 865 609 10S (30.02) 120,56 0-AT2 (W 7SW) (W 7SW) ( w ) ( W ) 8 8 9 яізw qot мопаvэлэ DINAL SLOPE D.EVATION BED TOTAL DISTANCE DISTANCE

A-31

FIGURE A-7 LONGITUDINAL PROFILE OF HUAI PHRA NAO

<u> </u>		T	· ·	1 .		Γ	Ι	(20120)	802.50	201.20	19, 055	655	I GN3	
Øwerr /	<b>\</b>									16 861	004,71	001		
♦	\									100	000'21		1 √1 ~ ATZ	
								<u> </u>						
								H=13.980		13.00	000 101			
	∝ /							뵈		193.27	000,91	"	  -AT2	
	¥ein —			<u> </u>		<u>                                     </u>		11.320	194.02		EÞS 'SI	5+3		
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<u> </u>	'									180 24	009 61	500 400		
		<b>\</b>								187 25	1		PI - ATZ	
		# <u> </u>						(55.781)		SS 781 87 881	13, 600 14, 000	200 200		
		5 <u></u>	<del>:</del>						₽0.881	95.58 l	000 E1	200 200	EI - AT2	
		<u>a</u> (								59.581	1008.51	60£	FILATS	
		8						٠	67.281	1 1	12,491			
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NAO	]	!	<u>~</u>							69941	000,01		OI –AT2	
			E						5S .771	1 1	159,6	759		
PHRA			® <u>~</u> \			<u>.</u>					anala			
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			WE	1				1	81. 691	70.891	000,7 862,7	1,000	S -AT2	
PROFI			6	1		į		1,06	-					
					Ì			1 12:01 = H - 10:55 /1 = 1		6£ 991	000'0	<b>508</b>	a -AT2	
										1 or 991	1000 3	1008	13 -412	
TUDINAL				¥ER FIR					- 48.89I	06.491	961'9	961		
				@ \				(e. 43)		Ĉ£.₽91	000,8	000'1	c -AT2	
1 11		] 		\										
LONG	İ			<u>«</u>					} }	18.031	000 ₺	282	P - ATS	
		<u> </u> 			<i></i>			l la	162.02	91.091	817,5	817		
					\			1=V320,H=14.57m		06.821	2,000	000'1	€ -AT2	
				•	\									
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								7=1	1 1	94.661	2,000	0'1	S - ATE	
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					[ <del>a</del> ]	<b>)</b>		(81 epl)	] .	87.641	00Þ.	200		
					ਰ (					27.341 26.031 87.641	500 0	500 0	0 - ATE	
		1:							(W 7SW)	[(W3FW)]	(w)	(W)		
E 002	0 6	80	170	09	150	140			NOTTAV3.13	ELEVATION	DISTANCE			
(MSL m )						-,		LONGITY- DINAL	WEIR TOP	RIVER BED	JATOT	DISTANCE	NOITATE	
₹							'							

Table A-11 List of 20 Staff Gauges

NAME OF STATION	NAME OF RIVER OR POND	NAME OF VILLAGE	NUMBER OF STAFF GAUGE	ZERO GAUGE AT BOTTOM BLEVATION (MSL rn)	NAME OF STATION	NAME OF RIVER OR POND	NAME OF VILLAGE	NUMBER OF STAFF GAUGE	ZERO GAUGE AT BOTTOM ELEVATION (MSL m)
S-1	UPSTREAM OF HUAL YAI	BAN NONS KHU	2	184, 608	S-11	MIDDLE-STREAM OF HUA! YANG	Ban Bo kae	1	173. 830
s – 2	MIDDLE-STREAM OF HUAI YAI	BAN NON BO	1	165. 527	s-12	MIDDLE-STREAM OF HUAI YANG	ban kham POM	-	163. 073
S – 3	MIDDLE-STREAM OF HUAI YAI	BAN THONG LANG	2	158.833	8-13	MIDDLE-STREAM OF HUAI YANG	BAN JOTYAI	1	161. 737
S 4	DOWNSTREAM OF HUAI YAI	Ban don Chang	2	147.651	S-14	DOWNSTREAM OF IUAL YANG	BAN PHO	<b></b>	157. 327
S - 5	NONG KAM	BAN PA MO	П.	187.016	s-15	DOWNSTREAM OF IIUAL YANG	BAN TON	1	151.964
s – 6	NONG BO YAI	BAN NON BO	₩	162. 000	S - 1 6	NONG LAT KHWA!	BAN PA SAN		184, 936
5-2	NONG PHRA YUN	BAN PHRA YUN	1	171, 728	5-17	NONG KHONG	BAN BO KAE	Ţ	170.415
S   S	NONG BUA	BAN PHRA YUN		164. 128	S – 1 8	NONG PHRA BU	BAN PHRA BU	Ţ	159. 034
S – 9	NONG WAENG HI	BAN NONG WAENG HI		170.811	S-19	MIDDLE-STREAM OF HUAI PHRA NAO	BAN THA SALA	, , , , , , , , , , , , , , , , , , ,	189. 807
S-10	NONG YA KHAD NOK	BAN NONG YA KHAD NOK	<del>,</del>	151. 015	S - 2 0	MIDDLE-STREAM OF HUAI PHRA NAO	BAN NON NIGIU		163. 965

Table A-12 The Observated Records of Staff Gauges

( Unit : m )

Staff Gauge No.		20th Aug, 1990	21st Aug, 1990	22nd Aug, 1990	23rd Aug, 1990	24th Aug, 1990	27th Aug, 1990	30th Aug, 1990	31st Aug, 1990	4th Sep, 1990	5th Sep. 1990	7th Sep. 1990	10th Sep, 1990	11th Sep, 1990	14th Sep. 1990	15th Sep. 1990	16th Sep, 1990
S-1 S-2 S-3 S-4	River -do- -do- -do-	* * *	0, 60 0, 86 0, 39 *	* * 0.93	* * *	* * * 1,12	* * *	* * *	0. 72 1. 32 0. 37 *	* * 0.50 *	0, 56 1, 17 0, 44 0, 97	0, 66 1, 19 0, 30 0, 98	0, 58 0, 98 0, 65 0, 97	0, 57 0, 91 0, 48 1, 08	* * *	* * * 1,40	* * *
S-5 S-6 S-7 S-8 S-9 S-10	Pond -do- -do- -do- -do- -do-	* * * * * *	0, 48 0, 79 0, 80 0, 75 0, 95 1, 18	* * * * *	0.48 * * * *	* 0.79 * *	* 0.79 * *	* 0.84 * *	0.57 0.74 0.84 0.60 *	* * * * *	0. 62 0. 74 0. 96 0. 88 1. 01 1. 43	0. 63 0. 70 0. 96 0. 87 0. 99 1. 41	0. 64 0. 74 0. 99 0. 90 1. 11 1. 65	0. 65 0. 72 1. 00 0. 90 1. 10 1. 65	0.70 0.99 * *	* 0.70 * 0.94 1.09 *	0.79 * 1.03 * *
S-11 S-12 S-13 S-14 S-15	Ri ver -do- -do- -do- -do-	* * * 1.14	0. 58 1. 05 0. 55 1. 09 1. 14	* * * *	* 1.04 * *	* * * *	* 1.01 0.63 * *	* 0.64 1.14 *	****	0.63 * * *	0, 63 1, 19 1, 11 0, 71 1, 59	0.56 1.15 0.69 0.77 1.51	0. 60 0. 96 0. 75 1. 05 1. 57	0. 55 1. 08 0. 75 1. 08 1. 69	0.59 * * *	0.62 * * *	* * * *
\$-16 \$-17 \$-18	Pond -do- -do-	* *	1, 04 0, 91 1, 21	* * *	1.01 0.90 *	* * *	* 0,93 *	* 1.01 *	1.11 1.05 *	* * *	0. 98 1. 26 1. 18	0. 95 1. 29 1. 14	1, 12 1, 51 1, 27	1, 10 1, 49 1, 34	1.14 * *	* 1.56 1.02	* * *
S-19 S-20	River -do-	*	0. 67 0. 51	*	*	*	*	*	1, 41 0, 52	1. 40 0. 53	1.40 0.54	1. 39 0. 52	1. 45 0. 63	1. 44 0. 56	*	1.56 *	*
Staff	D	4.0							A							<u> </u>	
Gauge No.		18th Sep, 1990	25th Sep. 1990	5th Oct. 1990	14th Oct. 1990	21st Oct. 1990	28th Oct, 1990	7th Nov, 1990	13th Nov. 1990	23rd Nov, 1990	5th Dec. 1990	11th Dec, 1990	25th Dec. 1990	8th Jan, 1991	25th Jan, 1991	10th Feb. 1991	26th Feb, 1991
Gauge	or	Sep,	Sep.	Oct.	Oct.	Oct.	0ct.	Nov.	Nov.	Nov,	Dec.	Dec.	Dec.	Jan,	Jan,	Feb.	Feb.
S-1 S-2 S-3	or Pond River -do- -do-	Sep, 1990 0. 62 1. 17 1. 01	Sep. 1990 0. 55 0. 98 0. 48	0ct. 1990 0. 69 0. 99 0. 95	0ct. 1990 0.54 1.03 0.49	0ct, 1990 0, 70 1, 13 1, 00	0ct, 1990 0, 50 1, 07 0, 55	Nov, 1990 0. 78 1. 15 0. 41	Nov. 1990 0. 83 1. 10 0. 24	Nov, 1990 0. 75 1. 18 0. 04	Dec. 1990 0. 68 1. 16	Dec, 1990 0. 65 1. 10	Dec, 1990 0, 58 0, 96	Jan, 1991 0, 45 0, 97	Jan, 1991 0, 40 0, 79	Feb. 1991 — 0. 72 —	Feb, 1991 — 0. 35
S-1 S-2 S-3 S-4 S-5 S-6 S-7 S-8 S-9	Pond  River -dodododododododo	Sep. 1990 0. 62 1. 17 1. 01 1. 33 0. 86 0. 73 1. 12 1. 00 1. 13 1. 63	Sep. 1990 0. 55 0. 98 0. 48 1. 25 1. 06 0. 72 1. 13 1. 20 1. 12 1. 67 0. 47 0. 75	0ct. 1990 0.69 0.99 0.95 1.75 1.47 0.73 1.29 1.32 1.25 1.78	0ct. 1990 0.54 1.03 0.49 1.48 * 0.77 1.45 1.33 1.30 1.68	0.70 1.13 1.00 1.78 * 0.82 1.54 1.34 1.42 1.76 * 1.35	0ct, 1990 0.50 1.07 0.55 1.35 * 0.75 1.54 1.42 1.67 * 0.79	Nov. 1990 0. 78 1. 15 0. 41 1. 21 * 0. 74 1. 60 1. 14 1. 42 1. 58 * 0. 85 0. 75 0. 73	Nov. 1990 0. 83 1. 10 0. 24 0. 95 * 0. 72 1. 61 1. 12 1. 40 1. 55	Nov. 1990 0. 75 1. 18 0. 04 0. 70 * 0. 64 1. 57 1. 08 1. 36 1. 48	Dec. 1990 0. 68 1. 16 	Dec. 1990 0. 65 1. 10 - 0. 63 * 0. 59 1. 50 1. 03 1. 29 1. 42	Dec. 1990 0. 58 0. 96 - 0. 55 * 0. 55 1. 45 0. 98 1. 24 1. 35	Jan. 1991 0. 45 0. 97  0. 48 * 0. 47 1. 41 0. 93 1. 18 1. 32  1. 58  0. 48	Jan. 1991 0. 40 0. 79  0. 40 * 0. 40 1. 34 0. 87 1. 12 1. 25	Feb. 1991 - 0, 72 - 0, 36 * 0, 35 1, 27 0, 79 1, 29 1, 20	Feb, 1991 
Gauge No. S-1 S-2 S-3 S-4 S-5 S-6 S-7 S-8 S-9 S-10 S-11 S-12 S-13 S-14	or Pond  River -dodododododododo-	Sep. 1990  0. 62 1. 17 1. 01 1. 33  0. 86 0. 73 1. 12 1. 00 1. 13 1. 63  0. 67 1. 28 0. 84 1. 62	Sep. 1990 0. 55 0. 98 0. 48 1. 25 1. 06 0. 72 1. 13 1. 20 1. 12 1. 67 0. 47 0. 75 0. 78 0. 75	0ct. 1990 0.69 0.99 0.95 1.75 1.47 0.73 1.29 1.32 1.25 1.78 0.59 1.04 0.89 1.87	0.54 1.03 0.49 1.48 * 0.77 1.45 1.33 1.30 1.68 * 0.80 0.87 0.56	0.70 1.13 1.00 1.78 * 0.82 1.54 1.34 1.42 1.76 * 1.35 0.92 0.95	0. 50 1. 07 0. 55 1. 35 * 0. 75 1. 54 1. 24 1. 42 1. 67 * 0. 79 0. 82 0. 71	Nov. 1990 0. 78 1. 15 0. 41 1. 21 * 0. 74 1. 60 1. 14 1. 42 1. 58 * 0. 75 0. 75 0. 73 1. 33	Nov. 1990 0. 83 1. 10 0. 24 0. 95 * 0. 72 1. 61 1. 12 1. 40 1. 55 * 0. 82 0. 70 0. 76 1. 30 0. 93	Nov. 1990 0. 75 1. 18 0. 04 0. 70 * 0. 64 1. 57 1. 08 1. 36 1. 48 * 0. 62 0. 37 0. 86	Dec. 1990 0. 68 1. 16 	Dec, 1990 0. 65 1. 10 	Dec, 1990 0. 58 0. 96 - 0. 55 1. 45 0. 98 1. 24 1. 35 - 0. 49 - 0. 59	Jan. 1991 0. 45 0. 97  0. 48 * 0. 47 1. 41 0. 93 1. 18 1. 32  1. 58  0. 48	Jan. 1991 0. 40 0. 79 0. 40 * 0. 40 1. 34 0. 87 1. 12 1. 25 - 0. 59 - 0. 38	Feb. 1991 - 0, 72 - 0, 36 * 0, 35 1, 27 0, 79 1, 29 1, 20 - 0, 50 - 0, 37	Feb, 1991 

Remarks

Amounts in this table are reading of staff gauges

\* : no reading

zero gauge (no water)

Table A-13 Condition of the river Flow by Observated Records of Staff Gauges

(Unit:m)

Staff Gauge		w		1 9	9 0	· 		·
No.	18th. Sep.	25th. Sep.	5th. Oct.	14th. Oct.	21st. Oct.	28th. Oct.	7th. Nov.	13th. Nov.
Huai Yai								
<b>S-1</b>			0. 42m³/sec	slightly fl	low	! !	non flow -	·
S-2	447		non flow	1	1	) 	l	1 
S-3	7.56m³/sec		2.16m³/sec			0. 68m/sec		
S-4		2.64 m³/sec	6. 37m³/sec		8. 90 m³/sec	4. 91 m³/sec	4. 40m³/sec	
Huai Yang								
S-11	1. 28m³/sec	non flow	1. 13m³/sec				slightly fl	0₩ ·····→
S-12		slightly fl	OM		1	1	<u> </u>	! <b>&gt;</b> !
S-13	1.09m³/sec		slightly fl	OM	T.	l	) 	1 ·····→ 上
S-14	3. 57㎡/sec	slightly fl	0W		1		non flow -	l → l
S-15	7.00m³/sec		2. 10m/sec		2. 26 m/sec		slightly fl	0.M ·····→
Huai Phra Nao								
S-19	1. 92 m³/sec		slightly	non flow	→	slightly fl	OW	····
\$-20	5. 00 m³/sec	slightly fl	OW	1	1	t	L	l

Staff Gauge		199	9 0			19	9 1	
No.	23rd. Nov.	5th. Dec.	lith. Dec.	25th. Dec.	8th. Jan.	25th. Jan.	10th. Feb.	26th. Feb.
Huai Yai								
- S-1	non flow	1	 	[  ]	 	! 	l ····-→ 	no water
S-2	non flow.		·	<b>i</b> 	1	! 	l	i 
\$-3·	non flow	no water			1	I	l	·····
S-4	non flow ·					1		I. →
Huai Yang								
S-11	non flow ·		· · · · · · · · · · · · · · · · · · ·	no water ·		I	l	<del></del>
S-12	non flow		1			1	I	l
S-13	non flow			no water	1	l	l	
S-14	non flow					1	I	1
S-15	non flow			•		1		
Huai Phra Nac	) )							
S-19	slightly fl	low			l	f	l	·····
S-20	slightly fl	OW		·····	non flow ·			· · · · · · · · · · · · · · · · · · ·

Table A-14 Lossed Discharge of Existing Ponds

Pond	Staff		٨	ugust	199	9 0			Se	ptembe	r 1	90	
No.	Gauge No.	Staff	Gauge	Read	( m )	Loss		Staff	Staff Gauge Read ( m )			Loss	
		21st	22nd	23rd	24th	(nm)	(mm/day)	4th	5th	6th	7th	(mm)	(mm/day)
20	S-5	0, 48		0.48		0.0	0.0	_	0, 62	:	0. 63	10.0	5. 0
(16)	S-6	0, 79		-	_	-	÷ .	-	0. 74	-	0. 70	40.0	20. 0
00	S-7	0. 80	-	=	0. 79	10.0	3. 3		0, 96	 	0. 96	0.0	0.0
8	S-8	0. 75	-	_	· -	-			0, 88	_	0.87	10.0	5. 0
6	S-9	0.95	-			-	, . <u></u> :	_	1. 01	-	0. 99	20.0	10. 0
	S-10	1. 18	-		-	-	_	-	1, 43	: . – .	1.41	20.0	10.0
21)	S-16	1.04	-	1.01	-	30. 0	15.0		0. 98	-	0. 95	30.0	15.0
1	S-17	0. 91	-	0. 90	-	10.0	5.0	-	1. 26		1, 29	-	_
7	S-18	1, 21	-	_	-	_		_	1. 18	-	1, 14	40.0	20. 0
AVAVER/	GE LOSS	10. 8	mm/da	у				+: 1					

Pond	Mean Dep	th(m)	Loss (n	m/day)	-	Mean Dep	th(m)	Loss (r	m/day)
No.	Dry season /Wet	Balance	Oct-Jan 90days	Oct-Feb 120days		Dry season /Wet	Balance	Oct-Jan 90days	Oct-Feb 120days
(5)	0.4 / 1.5	1.1	12. 2	9, 2	4	0.0 / 2.0	2.0	22. 2	16. 7
0	1.0 / 2.0	1, 0	11.1	8.3	(15)	0.0 / 1.2	1.2	13. 3	10.0
8	0.0 / 1.0	1. 0	11.1	8. 3	(16)	0.8 / 2.0	1. 2	13. 3	10.0
9	3.0 / 4.0	1. 0	11.1	8.3	17	0.5 / 2.0	1.5	16.7	12.5
(10)	0.6 / 2.0	1. 4	15. 6	11.7	(18)	3.0 / 5.0	2. 0	22. 2	16.7
(1)	0.5 / 2.0	1.5	16.7	12. 5	(19	1.0 / 2.5	1.5	16.7	12.5
(12)	0.5 / 2.0	1, 5	16.7	12.5	20	0.5 / 2.0	1.5	16.7	12.5
(13)	1.5 / 3.0	1. 5	16. 7	12. 5	<b>(1)</b>	0.6 / 1.5	0.9	10.0	7.5
			<u> </u>			Average L	0SS	15. 1	11.4

Table A-15 Water Balance Study of Existing Ponds

		Pond No.	8 Sta	ff Gauge S	S-8	Pond No.	1 6 Sta	ff Gauge	S - 6
Date of Staff Gauge Observation	(days)	② Staff Gauge Reading (m)	③ Balance of Water Level (mm/day)	④ Bvapo- ration (mm/day)	(5) Total Balance (mm/day)	② Staff Gauge Reading (m)	③ Balance of Water Level (mm/day)	Ø Evapo- ration (mm/day)	⑤ Total Balance (nm/day)
7th Nov. 1990		1, 14		·		0, 74			
13th Nov. 1990	6	1. 12	3, 3	3, 5	0.2	0.72	3.3	3. 5	- 0.2
23rd Nov. 1990	10	1. 08	4.0	3, 5	0, 5	0.64	8.0	3. 5	4.5
5th Dec. 1990	12	1. 04	3.3	3.5	- 0.2	0, 60	3.3	3. 5	- 0.2
11th Dec. 1990	6	1, 03	1.7	3.4	- 1.7	0. 59	1.7	3, 4	- 1.7
25th Dec. 1990	14	0. 98	3.6	3. 4	0.2	0. 55	2 9	3, 4	- 0.5
8th Jan. 1991	14	0. 93	3.6	3.5	0.1	0. 47	5, 7	3, 5	2.2
25th Jan. 1991	17	0. 87	3, 5	3. 5	0.0	0. 40	4.1	3, 5	0.6
10th Feb. 1991	16	0.79	5. 0	3.8	1. 2	0.35	3. 1	3. 8	- 0.7
26th Feb. 1991	16	0.72	4. 4	4. 0	0.4	0, 20	9. 4	4. 0	5. 4

		Pond No.	1·7 Sta	ff Gauge	S-7	Pond No.	2 1 Sta	ff Gauge	S-16
Date of Staff Gauge Observation	① Inter- val (days)	② Staff Gauge Reading (m)	③ Balance of Water Level (mm/day)	④ Evapo- ration (mm/day)	(5) Total Balance (mm/day)	② Staff Gauge Reading (m)	③ Balance of Water Level (mm/day)	⊕ Evapo- ration (mm/day)	⑤ Total Balance (mm/day)
7th Nov. 1990		1.60				0. 98			
13th Nov. 1990	6	1.61	- 1.7	3.5	- 5.2	0, 93	8, 3	3.5	4.8
23rd Nov. 1990	10	1. 57	4.0	3. 5	0.5	0. 88	5.0	3, 5	1. 5
5th Dec. 1990	12	1. 53	3, 3	3.5	- 0.2	0.81	5. 8	3, 5	2,3
11th Dec. 1990	6	1. 50	5.0	3. 4	1.6	0.80	1.7	3. 4	- 1.7
25th Dec. 1990	14	1, 45	3.6	3. 4	0. 2	0.74	4. 3	3. 4	0.9
8th Jan. 1991	14	1. 41	2.9	3. 5	- 0.6	0, 67	5. 0	3, 5	1.5
25th Jan. 1991	17	1. 34	4. 1	3. 5	0.6	0.63	2.4	3. 5	- 1.1
10th Feb. 1991	16	1. 27	4. 4	3. 8	0.6	0, 51	7, 5	3, 8	3.7
26th Feb. 1991	16	1, 19	5. 0	4. 0	1.0	0. 45	3. 8	4. 0	- 0.2

Note (5) = (3) - (4)

 $\textcircled{4} : E \times 0.70$ 

E: Monthly Mean Evaporation at A. Muang, Khon Kaen for the Period 1962 - 1985 as Shown in Table A-1

Table A-16 List of Existing S.S.I.P. Project in changwat Khon Kaen

Project ID	Project Name	Type	Purpose	Watershed Area (km²)	Storage Capacity (m³)	Irrigable Area (Rai)
22042208	Ban Non Tun Res.	1-C T	2345	8, 00	20, 000	200
24042202	Weir at B. Kra Duang	2-D(Weir)	0234	37. 10		300
25042207	Weir at Ban Lao	2-D(Weir)	①23	94, 50		300
25042210	Res. at B. Nong Waeng	2-D(Weir)	①②	40. 70		500
28042208	Huai Yai Weir	2-D(Weir)	1)2334	171.00		1,000
28042214	Sok Khum Pun Res.	1-C 긔	1)2/3/4/3	5) 0.30	60, 000	200
29042202	Ban Tao Weir	2-D(Weir)		(195.00)		
29042213	Ban Khuen Weir	2-D(Weir)	2	51. 00		300
30042202	Ban Pa Ma Nao Weir	2-D(Weir)	①②	25. 00		200
31042250	Nong Khwai Yai Res.	4-E(Others)	235	1.00	116,000	50
31042251	Nong Khlong Noi Res.	4-E(Others)	235	1.00	22, 000	45
31042253	Nong Hai Res.	4-E(Others)	①235	5, 00	64,000	65
31042254	Nong Pra Yuen Res.	4-E(Others)	0235	1.00	100,000	30
3205	Nong Soke Kha Res.	1-C -1	2345	2, 20	18,000	150
2301	Nong Kud Kwang Res.	1-C -2J	3	774	500,000	
2901	Ban Wha Weir		24	72		300
3236	Huai Lao Weir		234	42. 50		. 1
Average	of 2-D(Weir)	2-D(Weir)	:	70.0 km²		430 Rai (6 Rai/km²) (1 ha/km²)

 ☐ Reservoir with Irrigable Area and Outlet Note

²√ Reservoir with Irrigable Area

① Irrigation ② Domestic Water Use ③ Live-stock Water Use ④ Irrigation for Garden Crops to Consume

<sup>(5)</sup> Fish Catch / Culture

#### A-3-2 Chi River

Daily runoff discharges and water levels data for 4 hydrological stations, on the main course of the Chi River were collected from RID. Names of the stations and data period are shown in Table A-17. Location of the stations are shown in Figure A-2.

At E.16A Station of the Chi River which is nearest to the study area, the mean annual runoff discharge is 1,400 MCM and mean annual runoff coefficient is between 6% and 18%. They are estimated for 7 years from 1967 to 1973 as shown in Table A-18.

At E.16A Station, the river bed elevation is 141m above MSL and the bank top elevation is 153m in 1988. Annual maximum water level is MSL 154m in 1969 and 1980 as shown in Table A-19.

Table A-17 List of Hydrological Stations of Chi River

Code No.	Station Name		Collected Period
River Stream	Drainage Area (k.m), Organization	Period and Location	1950\$ 1960\$ 1970\$ 1980\$ 1990\$
( 1) E. 9 Chi Chi	Ban Tha Nang Luan 11,020km (R. I. D.)	Apr. 1967-cont. Lati: 16 05 49 Long: 102 34 23	Apr. 1967 Mar. 1988
( 2) E. 16	Ban Tha Phra	Jun. 1954- 1962	Jun. 1954   Mar. 1958
Chi	13,172km	Lati: 16 21 13	
Chi	(R. 1. D. )	Long:108 48 35	
( 3) E. 16A	Ban Tha Phra	Apr. 1957-cont.	Apr. 1966 Mar. 1975 Apr. 1979 Mar. 1989
Chi	13, 171km	Lati: 16 21 14	
Chi	(R. 1. D. )	Long:102 45 09	
( 4) E. 17	Ban Tha Hin	Apr. 1965-cont.	Apr. 1965: Mar. 1974
Chi	14,426km	Lati: 16 26 20	
Nam Phong	(R. l. D.)	Long:102 56 52	

Note:

1) Vertical Staff Gauge (1), (2), (4)1965-1974 2) Recorder, Float Gauge (3)

Source :

List of Stream Gaging Stations in Thailand, R. I. D.
 Daily Water Level and Discharge Data: Hydrology Division. RID

Table A-18 Runoff Coefficient of Chi River

Water Year	① Ban Tha Hin E. 17 D. A=14, 426 km²	② Ban Tha Phra E. 16A D. A=13, 171 km²	③ Ban Tha Nang Luan E.9 D. A=13,171 km²	A. Muang Rainfall
	(MCM)	(MCM)	(MCM)	(mn)
1967	1,679	1,093	840	941
1968	1, 188	505	487	1, 185
1969	1,942	3, 562	3, 491	1, 163
1970	2, 338	1,419	1, 172	1, 379
1971	2,803	1,742	1,433	1, 166
1972	968	778	661	1,057
1973	687	756	795	812
Mean	1,658	1, 408	1, 268	1,100

- 1) Chi River Basin between ① and② (Drainage Area 1,255km)

  Runoff Discharge(①—②)= 250 MCM = 199 mm

  Runoff Coefficient = 199mm/1,100mm = 18%
- 2) Chi River Basin between ② and③ (Drainage Area 2,151km)

  Runoff Discharge(②—③)= 140 MCM = 65 mm

  Runoff Coefficient = 65mm/1,100mm = 6 %
- 3) Chi River Basin between ① and③ (Drainage Area 3.406km²)

  Runoff Discharge(①—③)= 390 MCM = 115 mm

  Runoff Coefficient = 115mm/1.100mm = 10%

Table A-19 Water Level at E. 16A Station of Chi River

Water Year	Annual Max Gauge Heig		entary	Annual Min Gauge Heig		ly Mean	River Bed Blevation	Left Bank Blevation	Right Bank Elevation
	Blevation (MSL m)	Depth (m)	Date	Elevation (MSL m)	Depth (m)	Date	(MSL m)	(MSL m)	(MSL m)
1966 1967 1968 1969 1970	152, 12 151, 06 145, 92 153, 80 149, 21	10, 30 9, 24 4, 10 11, 98 7, 39	SEP. 29 OCT. 4 AUG. 3 SEP. 27 OCT. 3	142. 94 142. 88 142. 71 142. 68 142. 90	1, 12 1, 06 0, 89 0, 86 1, 08	APR. MAR. 31 MAR. 14 MAY 6 MAR. 30	141. 82 141. 82 141. 82 141. 82 141. 82	153, 65 153, 65 153, 65 153, 65 153, 65	151. 49 151. 49 151. 49 151. 49 151. 49
1971 1972 1973 1974 1975	150. 27 147. 36 147. 87 146. 74	8. 45 5. 54 6. 05 4. 92	OCT. 12 OCT. 23 OCT. 2 OCT. 18	142, 89 142, 87 142, 90 142, 80	1. 07 1. 05 1. 08 0. 98	APR. 4 MAR. 22 MAY 1 JUL. 25	141. 82 141. 82 141. 82 141. 82	153, 65 153, 65 153, 65 153, 65	151. 49 151. 49 151. 49 151. 49
1976 1977 1978 1979	- - - 149. 86	  8, 83	OCT. 1	- - 142, 80	- - 1. 77	MAR. 7	141. 03	157. 77	157. 80
1980 1981 1982 1983 1984 1985	153, 70 145, 46 151, 56 149, 20 147, 72 147, 31	12. 67 4. 43 10. 53 10. 46 10. 32 9. 91	JUL. 23 OCT. 8 AUG. 14 NOV. 4 OCT. 13	142, 81 142, 67 142, 76 142, 70 142, 84 142, 80	1. 78 1. 64 1. 73 3. 96 5. 44 5. 40	APR. 17 MAR. 17 AUG. 23 APR. 23 APR. 22 APR. 6	141, 03 141, 03 141, 03 138, 74 137, 40 137, 40	154, 46 157, 77 158, 26 158, 26 156, 03 156, 05	151. 15 157. 77 158. 28 158. 28 156. 15 156. 15
1986 1987 1988	145, 49 149, 58 148, 36	6, 88 10, 88 7, 67	MAY 18 OCT, 23 OCT, 31	142, 59 142, 36 142, 43	3. 98 3. 66 1. 74	MAR. 19 AUG. 15 MAR. 29	138. 61 138. 70 140. 69	158, 03 153, 67 152, 69	157. 97 152. 83 152. 29

	Apr.	May	Jun.	Jul.	Aug.	Sep.	0ct.	Nov.	Dec.	Jan.	Feb.	Mar.
Mean 1	143, 00	143. 46	144. 18	144. 17	144. 55	146. 27	147. 61	145. 20	143, 77	143. 32	143. 07	142. 92
Max. <sup>1</sup> (Year)	143, 93 (1973)	147. 25 (1966)	150. 56 (1980)	150. 18 (1980)	149, 19 (1983)		153, 69 (1980)	151. 14 (1980)				143, 52 (1968)

Note

Stream : Chi River : Chi

Station : Ban Tha Phra, Muang, Khon Kaen (B. 16A) Drainage Area ; 13,171 km²

1975 - 1978 ; No Record

Source: Hydrology Division, R. I.D.

 $<sup>^{\</sup>scriptscriptstyle 1}$  ; Data Period 1966 – 1974, 1979 – 1988 Daily Mean Gauge Height

#### A-4 RUNOFF ANALYSIS

#### A-4-1 Runoff Coefficient

No discharge observations are available for Huai Yai, Huai Yang and Huai Phra Nao. In this study, runoff discharges were observated a few times as shown in Table A-20. According to the results of the observation and the rainfall records of A. Phra Yun Station, runoff coefficient for the period from 1st August to 18th September in 1990 is estimated that between 14.4% and 35.1%.

On the one hand, Runoff Estimation Chart in Thailand was collected by RID as shown Figure A-8. In this chart, the study area falls into the D-type terrain with the equation expressed as;

$$C = 0.13R - 3.12$$

where C: monthly runoff coefficient (%)

R: monthly rainfall (mm)  $R \ge 24.0$  mm

Monthly rainfall of A. Phra Yun Station in August 1990 is 245.9 mm.

$$C = 0.13 \times 245.9 \text{ mm} - 3.12$$

= 38.8%

The runoff coefficient of 28.8% falls between 14.4% and 35.1% from the observed. And the runoff coefficient is between 6% and 18% from the analysis of the Chi River.

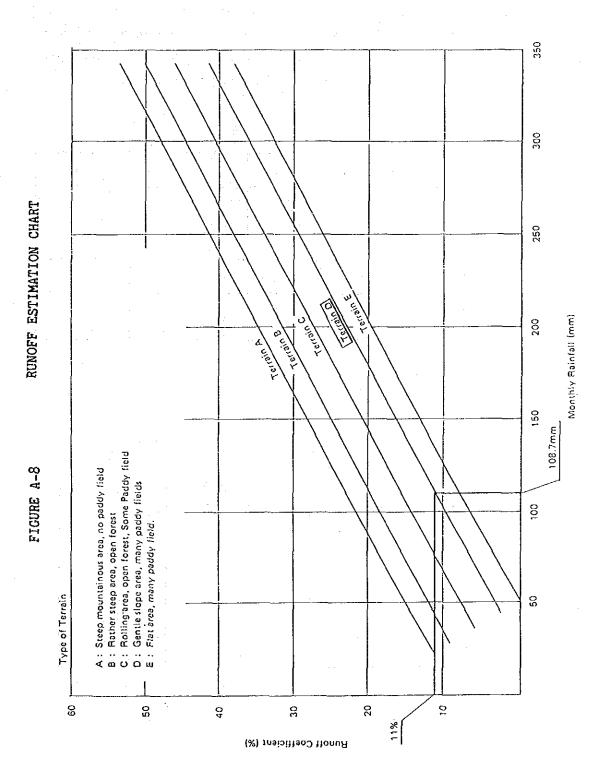
Therefore, runoff discharges is computed with Runoff Estimation Chart in Thailand by RID.

Table A-20 Runoff Discharge and Runoff Coefficient

Location	River Name	Drainage	Runoff D	ischarge	Applied Perio	d	Total	Runoff
		Area km²	Date	m³/sec	Period	Days	m³/sec	Coefficient
S-3	Huai Yai	180. 4	Aug. 10 Aug. 21 Sep. 3 Sep. 18	1, 12 1, 91 2, 82 7, 56	Aug. 1- Aug. 16 Aug. 17- Aug. 28 Aug. 29- Sep. 11 Sep. 12- Sep. 18	16 12 14 7	17. 92 22. 92 39. 48 52. 92	Q=133, 24 m³/s =63, 8 mm Rai n=444, 2mm C=63, 4/444, 2
					Total	49	133. 24	=14.4 %
S-19	Huai Phra Nao	30, 1	Aug. 11 Aug. 21 Sep. 4 Sep. 18	0. 20 0. 32 0. 64 1. 92	Aug. 1- Aug. 16 Aug. 17- Aug. 28 Aug. 29- Sep. 11 Sep. 12- Sep. 18	16 12 14 7	3, 20 3, 84 8, 96 13, 44	Q= 29.44 m³/s =84.5 mm Rain=444.2nm C=84.5/444.2
					Total	49	29.44	=19.0 %
Under- stream of S-20	Huai Phra Nao	70.6	Aug. 10 Aug. 21 Sep. 4 Sep. 18	0. 50 0. 63 0. 82 5. 00	Aug. 1- Aug. 16 Aug. 17- Aug. 28 Aug. 29- Sep. 11 Sep. 12- Sep. 18	16 12 14 7	8. 00 7. 56 11. 48 35. 00	Q= 62.04 m³/s =75.9 mm Rain=444.2mm
,		-			Total	49	62. 04	C=75. 9/444. 2 =17. 1 %
S-11	Huai Yang	23. 6	Aug. 11 Aug. 21 Sep. 3 Sep. 18	0. 16 0. 24 0. 49 1. 28	Aug. 1- Aug. 16 Aug. 17- Aug. 28 Aug. 29- Sep. 11 Sep. 12- Sep. 18	16 12 14 7	2. 56 2. 88 6. 86 8. 96	Q= 21.26 m³/s =77.8 mm Rain=444.2mm C=77.8/444.2
					Total	49	21. 26	=17.5 %
S-13	Huai Wang Hin (Huai Yang)	7.7	Aug. 11 Aug. 21 Sep. 4 Sep. 18	0. 10 0. 18 0. 18 1. 09	Aug. 1- Aug. 16 Aug. 17- Aug. 28 Aug. 29- Sep. 11 Sep. 12- Sep. 18	16 12 14 7	1. 60 2. 16 2. 52 7. 63	Q= 13. 91 m³/s =156. 1 mm Rain=444. 2mm C=156. 1/444. 2 =35. 1 %
S-14	Huai Yang	53. 1	Aug. 11 Aug. 21 Sep. 4 Sep. 18	0. 22 0. 37 0. 89 3. 57	Aug. 1- Aug. 16 Aug. 17- Aug. 28 Aug. 29- Sep. 11 Sep. 12- Sep. 18	16 12 14 7	3. 52 4. 44 12. 46 24. 99	Q= 45.41 m³/s =73.9 mm Rain=444.2mm
			OCh. 10	0. 01	Total	49	45. 41	C=73. 9/444. 2 =16. 6 %
S-15	Huai Yang	78. 2	Aug. 11 Aug. 21 Sep. 4 Sep. 18	1. 21 0. 81 2. 50 7. 00	Aug. 1- Aug. 16 Aug. 17- Aug. 28 Aug. 29- Sep. 11 Sep. 12- Sep. 18	16 12 14 7	19, 36 9, 72 35, 00 49, 00	Q=113. 08m³/s =124. 9 mm Rain=444. 2mm
					Total	49	113. 08	C=124. 9/444. 2 =28. 1 %

Note Period : 1st Aug. 1990 — 18th Sep. 1990 (49 Days)

Rainfall : by A. Phra Yun Agricultural Extension Office (Total Rainfall 444.2 mm)



Source : Project Planning Section, RID

## A-4-2 Runoff Discharge

Monthly unit runoff discharges of the study area and the upper-reach of Huai Yai outside of the study area are shown from Table A-21 to A-24. Average annual runoff discharges and subdivided drainage area are shown Figure A-9. Average, and 2 years, 3 years, 5 years and 10 years probable runoff discharges of the study area are presented below:

Monthly Average Runoff Discharges of the study Area

(Unit: MCM)

Jan	. Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.
0.0	0.2	0.4	1.4	9.1	10.7	7.0	9.8
(0)	(0)	(1)	(2)	(14)	(16)	(11)	(15)

Sep.	Oct.	Nov.	Dec.	Annual	Wet	Dry	
24.6 (37)	2.6 (4)	0.1 (0)	0.0 (0)	65.9 (100)	61.2 (93)	4.7 (7)	

Note Wet: Wet Season (May - Sept.)

Dry : Dry Season (Oct. - Apr.)

( ): Ratio to Annual Amount %

Average Annual Runoff Discharges of the Study Area

Basin	In the Study Area (MCM)	Out of the Study Area (MCM)	Total (MCM)
Huai Yai Basin	19.49	27.47	46.96
Huai Yang Basin	15.50	_	15.50
Huai Phra Nao Basin	15.32	<del>-</del>	15.32
Swamp	13.52	- -	13.52
Chi River Basin	2.07	<del></del>	2.07
Total	65.90	27.47	93.37

Probable Runoff Discharges of the Study Area

Probable	Approximate	Annual Runoff
Years	Year	Discharge MCM
1/2	1988	42.9
1/3	1984	48.3
1/5	1981	49.5
1/10	1960	38.7

Table A-21 Monthly Runoff Discharge in the Study Area (D.A.=341.5km2)

							4	1		•			
Km7)		OCT-APR	22.3	38.75 0.00 0.00	32.22 32.25 13.25 15.25	400000	25.044 28.0044	2004.27 4840.1	14.5 18.7 16.1	28.5	13.8	1.97	0   0
347.5百		MAY-SEP C	204.1 277.0 229.6	72.4 135.4 151.4 290.1	189.7 243.4 153.7 75.4	193.4 128.0 176.3 305.5	147.7 104.5 111.5 122.4 233.5	131.1 247.1 294.9 184.4 260.6	130.4 270.3 215.5 136.6	225.9 79.6	179.2	370.3	72.3
(D.A.≃3		ANNUAL	226.4 284.2 232.4	76.6 145.1 183.3 113.3	221.8 246.0 181.3 182.8	205.5 128.9 153.3 197.0	150.8 141.3 111.5 136.7 238.0	151.5 249.8 299.3 189.5 267.7	144.9 391.7 234.2 141.4 167.3	100.8 233.9 125.7	193.0	391.7	76.6
- ർ	, MM .	DEC	000	00000	00000	00000	00000	00000	00000	000	0	0.0	0.0
dy Ar	LIND	NOV	000	00000	00000	00000	04070	00000	00000	이번이   이번이	7.0	7.0	0.0
nio B	Ü	100	0.20	00000 00000	30.3 27.72 6.9	6.7 0.0 17.4 0.5	1000k 2005k	2000 2000 2000 2000	14.3 18.7 4.1 16.1	17.50	7.5	30.3	0.0
Ĭ		SEP	109.3 206.9 25.6	19.2 61.5 64.6 7.6	1115.4 154.5 32.3 60.5 25.3	21.5 68.0 19.3 65.1	27.1 10.9 59.8 37.1 71.1	72.0 140.5 122.9 51.0 94.2	310.9 41.2 35.1 52.0	53.9 37.1	72.0	310.9	0.0
יים ט		AUG	12.2 10.9 44.4	25.1 19.2 37.6 31.8	35.37 35.37 35.10 35.10	28.3 32.9 17.3	33.1 27.1 27.1 31.3	23.23 23.25 24.88 25.25 25.25 25.25	130.6 37.5 7.3	18.1 4.6 4.6	28.6	130.6	3.2
4		JUL	15.4	28.2 20.6 20.1 10.5 10.5	23.7 20.8 10.7 10.7	246.8 246.8 24.9 24.9	47.2 5.0 20.1 16.6 27.6	24.88.50 4.00.50 2.00.50	34.12 35.74 21.59 21.5	0.6.6	20.4	98.7	9.0
		NOC	32.5 30.0 149.1	23.53	29.55 29.55 29.55 29.55	13.8 13.9 37.4 81.0	71.6 2.4 4.7 22.7	14.8 8.9 86.7 109.2	17.3 10.0 32.6 17.7 5.8	10.9	31.5	189.4	4.0
		MAY	24.6 81.5 8.5	4.8 17.9 28.2 28.2	36.3 6.9 6.3 4.2	106.3 11.9 11.8	27.00 20.00 8.00 8.00 8.00	25.6 25.6 35.7	2011 111.0 2013 4.49	28.7 93.9 13.3	26.8	106.3	0.0
		APR	16. 20.5 8.5 8.5	w4000 80040	4.0048 4.0048 7.894	40408 40808	440000	WW400 WW408	00000	28.5	4.0	28.5	0.0
		MAR	000	08800 0400	99999	00000 40000	0000m	00000	0,000	000	1.3	29.5	0.0
		83	040	00000	00000	W4000 40000	m0000	00000	00000	800	0.5	8.2	0.0
		JAN	000	00000	00000	00000	00000	00000	00000	000	0.1	2.0	0.0
		YEAR	1953 1954 1955	1956 1957 1958 1959 1960	1961 1962 1963 1964 1965	1966 1967 1968 1969 1970	1971 1972 1973 1974 1975	1976 1977 1978 1979 1980	1981 1982 1983 1984 1985	1986 1987 1988	MEAN	MAX	MIN

Table A-22 Monthly Runoff discharge in the Study Area (D.A.=341.5km2)

(:		OCT-APR	0.27	4W0000	21.00 LT 0.00	40048	7 12.1 12.6 1 00.0 1 1.5 1 1.5	8 7.0 7.0 0.9 0 1.5 0 0.4 0 0.5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NN 8 8 8 NN 8 8 8 NN 8 4 8 NN 8 NN 8 8 NN 8 NN 8 8 NN 8 NN 8 NN 8 NN 8 8 NN 8 NN 8 8 NN 8 NN 8 NN 8 8 NN 8 8 NN 8 8 NN 8 8 NN 8 8 NN 8 NN 8 8 NN 8 8 NN 8 NN	.1 2.7	2 4.7	.5 15.7	.7 0.0
		MAY-SEP	69 7 94 6 78 4	24 24 25 25 25 25 25 25 25 25 25 25 25 25 25	2888 2888 2528 848 848 848	66.0 50.6 50.6 104.3	3350 338.7 74.88 74.88 74.88	44.8 84.4 100.7 63.0 89.0	1244 733 54 51	24 27 27	61.	126	57
. H. = 54	_	ANNUAL	77.3 97.1 79.4	26.2 49.6 99.1 38.7	75.7 84.0 61.9 62.4 31.1	70.2 44.0 52.3 67.3	8482 8483 877 877 877 877 877 877 877 877	51.7 85.3 102.2 64.7	49.5 133.8 80.0 48.3 57.1	34.4 79.9 42.9	65.9	133.8	26.2
9	Σ Σ	DEC	000	00000	00000	00000	00000	00000	00000	000	0.0	0,0	0.0
Hrea	UNIT:	NOV	000	00000	00400	००००० ०००५०	00000	00000	00000	000	0.1	2.4	0.0
Scuay	J	oct	0.00	00000	00 20 20 20 20 20 20 20 20 20 20 20 20 2	90000 80406	0.0 1.1 1.8	2000 2000 2000 2000 2000	4484N 9W44N	04.0	2.6	10.3	0.0
rue r		SEP	37.3 70.6 8.8	21.0 22.1 75.1 75.1	20.7 8.6.7 8.6.7	23.25 29.26 29.26 29.26	2003 2004 2004 2004 2004	24.6 42.0 32.4 32.2	106.2 14.1 17.7	4.8 18.4 12.7	24.6	106.2	0.0
EI		AUG	3.7	2000 2000 2000 2000	3.851.11 3.866.6 3.866.0	80 11 00 00 00 00 00 00 00 00 00 00 00 00	11.001 18.001	8454 000,44	7444 7444 7448 888	20.2	9.8	44.6	7.1
scnarge		JUL	25.3 26.3	9W49W 04094	1.0 1.77 1.0 5.0 7.5	87.000 87.000	51.52.0 1.02.0	81.84.9 82.64.9	17.71 17.71 1.60 1.60 1.60	42.22	7.0	33.7	0.1
ดารด		NOC	11.1	νωμ+6 νοοωο	84.044 844.00 844.00	4.7 12.8 27.7 64.7	8.40 4.864 7.664	000000 40000	8.50.5 4.4.00.5	53.2	10.7	64.7	0.1
Kunoli		MAY	11.8	40488	2022 2024 2034	80404 wwo40	10.00 2.25 2.53	28.88 27.75	16.12 3.22 22.12	32.1 4.5	9.1	36.3	0.0
		APR A	0.20	40000 WN040	0004u 88480	0040%	04000	40040	00000	7.0.7	1.4	9.7	0.0
мопситу		MAR	000	0.000 48409	00000	00000	00000	00000	04000	000	0.5	10.1	0.0
u .		ភ ស	040	00000	00000	40000 MW000	00000	00000	00000	0.00	0.2	2.8	0.0
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FIGURE A-9 DRAINAGE AREA AND ANNUAL RUNOFF (AVERAGE YEAR) Chi River 0ther 20 A 121.6 3.2 Huai Yai Basin Basin Q 0.62 Q 0, 39 26.46 A 227.8 200.3 183. 3 169.2 (101.0)(47.6)(58.5)(75.5)46.96 Q 38, 37 Q 41.65 Q 35, 65 (19.49) 1 (11, 29) (14, 57) (9, 19)t 10.9 47.6 Á 17.0 25.5 Q 2.10 Q 9.19 3, 28 Q Q 4.92 : Swamp Huai Si Phung 53.6 Huai Wang Hin 2062 Q Α 32.5 A 16.5 10.34 Q Q Q 3.19 Huai Yang Basin 6.27 1.49 63.8 A 56.1 A 80.3 23.6 Q 15.50 12.31 4.55 Huai Yang 10.82 ↑ Study Area (341, 5 k m²) (65, 90 MCM ) 16.5 Huai Phra Nao 49.3 3, 18 Basin 9.51 30.1 79.4 **LEGEND** Huai Phra Nao 15.32 Drainage Area (k m²) 5.81 Q Annual Runoff (MCM) Q ( ) in The Study Area Study Area 341.5k m² A 10.7 Huai Yai Basin Huai Yang Basin Q 2.07 Huai Phra Nao Basin

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APPENDIX B HYDROGEOLOGY AND GROUNDWATER

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# B-1. Topography and Geology of the Study Area

#### B-1-1. Topography

The study area can be subdivided into four physiographic units: mountainous terrain, undulating rolling hill, terrace and alluvial flood plain.

The mountainous tarrain extends along the western edge of the study area with width of less than 500~m and an altitude attains a maximum of more than 260~m.

The undulating rolling hill is distributed both west and east sides of the study area with an altitude ranging from 180 to 220 mamsl. In general, it shows monotonous t gentle undulating g terrain, but small-scale, shallow and broad valleys are also observed in various places.

The terrace largely covers in a center of the study area with an altitude ranges form 160 m 180 mamsl and it forms two distinct flat topographic features, and upper terrace and a lower terrace.

The alluvial flood plain extends along the river courses in the undulating rolling hill and the eastern edge of the study area.

#### B-1-2. Geology

The study area comprises of three main geologic unite: the Khorat Group, the Pleistocene and the Holocene.000000

The Khorat Group in the area are divided into the Soa Khua, Phu Phan, Khok Kruat and Maha Sarakham Formations in ascending order and the last is overlain by the gravel bed and terrace deposits of Pleistocene age. The Group consists of mudstone, siltstone and sandstone, and it crops out in the western edge of the study area.

Although the question arises whether the Maha Sarakham Formation includes the rock salt beds is assigned the Khorat Group or more younger formation no out-crops of the rock salt have been observed in the study area.

The Pleistocene gravel bed which named the Pa Mo Gravel Formation underlie in the undulating rolling hill and the thickness attains more than 30 meters. The formation thins eastward form the undulating rolling hill due to erosion and it finally underlies the terrace deposits. The beds is mainly composed of well-rounded pebbles of white chart and it can be traced to the base of the traced deposits.

The terrace deposits consists of fine grained sediments of clay, silt and thin sand, but contains some intercalated laterite grave beds. The deposits is extensively overlain buy thick loam. From the lithological point of vies, the question arises whether this sediments are of terracial origin or lake deposits, this study adopt a term of the terrace deposits for the convenience of future discussion.

The alluvial deposits are distributed in the recent flood plain of Lam Chi, Huai Yai, Huai Yan and Huai Phra Nao. The deposits consists of organic clay with laterite gravels in the base, clayed fine sand and fine to medium siliceous sand in the middle, and loam in the uppermost.

The geological map of the study area and the table of formations are shown in figure B-1 and Table B-1 in APPENDIX B.

### B-2 . RESULTS OF THE FIELD INVESTIGATION

#### B-2-1 Geo-resistivity survey

#### (1) Purpose of the Survey

The vertical sounding with Wenner array were applied in determining the boundary of layers based on their apparent resistivities. A depth of sounding ranges from 150 to 190 meters in extensive study area and 30 meters in the proposed Pilot area. Total number of soundings in above areas are 61 and 77 respectively. Location of the sites is shown in Figure B-2, Location Map of Hydrogeological Study.

The survey provided information on lithologic characteristics of surficial beds and the surface topography of the Siltstone. Furthermore, approximate rate of salt water concentration in the respective beds, especially in the Siltstone, can be inffered form the relationship between apparent resistivity and electrical conductance.

# (2) Surface Topography of the Siltstone

The survey reveals that depth of the siltstone which is correlative with the Maha Sarakham or the Tertiary formations, ranges from 4 to 18 mbgs and an altitude of its surface ranges from 180 to 150 mamsl as shown in Figure B-3.

The Figure shows that the surface of siltstone decreases altitude to the east of Ban Phra Yun with a gradient of 1 to 220 and it forms narrow platform from Ban Phra Yun to Ban Non Tun. Two broad valleys from both sides of the platform trending northeast and southeast

directions and their locations are identical with Huai Si Phung, a tributary of Huai Yai, and Huai Yan respectively.

# (3) Resistivity of the Siltstone

The resistivity-spacing curve ( $\rho$ -a curve) of the Siltstone varies in horizontal and vertical direction. The resistivity in a deeper part of the Siltstone may indicates proper resistivity of the rock because resistivity in a shallow part shows effect of saturated groundwater in the surface unconsolidated beds on the whole. In attempt to understand the distribution of resistivity of the Siltstone, the resistivity distribution contour at depth of 140 m is delineated in the map as shown in Figure B-4.

As easily visualized from the figure, a zone of low resistivity forms obviously in the west of Ban Phra Yun with north-south trending.

In addition to the above results, a low resistivity zone with depth to more than 150m is identified by means of  $\rho$ -a curve analysis. The location of low resistivity zone is identical with the zone delineated by resistivity distribution contour at a depth of 140 m (see figure B-4, Resistivity Contour Map at Depth of 140 m and Figure B-5, Resistivity Profiles).

These fact support the ideas that under laying layer is subjected to saltwater infiltration throughout the sounding depth of more than 150 meters due to upward flow potential through joints, cracks and coarse grain facies in the siltstone. The low resistivity zone trending north-south direction in the west of Ban Phra Yun can be identified the zone of salt water discharge.

Provided  $\rho$ -a curves are attached at the end of APPENDIX-B.

#### B-2-2. Electrical Conductance Survey in Ponds and Streams

The electrical conductance (EC) and pH were measured in July and August, 1990 and January, 1991 in the river courses of Huai Yai, Huai Yang and Huai Phra Nao, and selected ponds. Number of measured sites in the surface river and ponds are 47 and 33 respectively.

The EC of the surface river in the rainy season increases moderately toward the lower stream ranging form 230 to 720  $\mu\rm S/cm$  in the Huai Yai, however it increases rapidly toward the down stream ranging form 240 to 1,400  $\mu\rm S/cm$  in the Huai Yang and Huai Phra Nao. The rapid increment were observed especially in the river course of Huai Yang from Ban Pa Mo to Highway 2067 and in the Huai Phra Nao from Ban Hua-Na Nua to Ban Non Ngiu.

The Ponds in the rolling hill in the west part of the study area and in the central terraced terrain from Ban Phra Yun to Ban Non Tun indicate comparatively low EC ranging from 40 to 2,000  $\mu$ S/cm in opposition to the tributary of Huai Phra Nao in the southern part of the study area where EC indicates more than 5,000  $\mu$ S/cm.

Observed EC of the surface rivers and reservoirs in the dry season generally indicate more larger than data in the rainy season (see Table B-2 Electrical Conductance in Stream and Reservoir).

In general, water quality of stream represents it of drainage area, however, field evidence shows that the quality of the ponds on the drainage are quite differ form it of related stream. From this, it may be inffered that the ponds act a part of salt acummulation/evaporation basin.

Distribution of EC in the surface rivers and ponds is delineated in Figure B-6.

Measured EC, PH and water temperature in the end of July and August, 1990 and January, 1991 are shown in Table B- and location of measured sites is shown in Figure B-2, Location Map of Hydrogeology and Groundwater Study.

#### B-2-3. Existing Well Survey

The well structure and water quality (EC and pH) of the existing wells were investigated on July, 1990 and February, 1991 in the study area. The wells comprise of 19 shallow dug wells and 36 deep tube wells.

The depth and water table in the dug wells ranges from 2.5 to 9.5 m and from 0.5 to 7.1 mbgs respectively. On the contrary, depth of the tube wells ranges from 12 to 54 m.

Groundwater from 17 dug wells indicates comparatively low EC, especially in a western rolling hilly area and a central terraced terrain, from Ban Phra Yunt of Ban Non Tun, and it increases EC toward the north from Ban Phra Yun.

Groundwater from 34 tube wells indicates more high EC compare with the dug wells ranging from 800 to 11,600  $\mu$ S/cm on the rainy season and it increases in the dry season. A zone of high concentration of EC locates on the west of Ban Phra Yun trending north-south direction

which is quite identical with a zone of low resistivity in the Siltstone.

Observed data of sell structure and water quality are shown in Table B-3.

#### B-2-4. Drilling of The Exploratory Wells

Two exploratory wells and ten observation wells were constructed in the study area. The objectives of drilling are to obtain the information of subsurface geology and groundwater potential for the formulation of the project.

The work commenced on 1st August and it completed in 15the of September, 1990.

The standard design of the exploratory and observation wells are shown in Figure B-7 and B-8 respectively.

The location of wells is shown in Figure B-2, Location map of Hydrogeology and Groundwater Study.

Two exploration wells with 30 meters depth are located in the both east and west sides of the study area. Ten observation wells with 15 meters depth are scattered in the area.

The works of exploration well drilling comprises of welldrilling, borehole logging, aquifer test and installation of automatic water level recorder, and the observation wells install 50mm PVC casing for manual water level monitoring.

The obtained geologic samples from the well drillings reveal that the study area is underlain mainly by the siltstone less than 10mbgs depth. The depth to the siltstone increases more than 15 meters in W-1, P-3, P-5 and P-10 where ancient river courses or major tectonic zone are supporsedly underlain.

The drilling logs of the exploratory and observation wells with geology, borehole logging and screen schedule are shown in Figure B-9  $\sim$  B-20.

After installation of the well casings, an aquifer test was conducted in the exploratory wells of W-1 and W-2. Obtained specific capacity of W-1 and W-2 are 25.0 and 0.5 lit/min/m respectively. Calculated transmissivities for W-1 and W-2 are 70.4 and 0.74  $m^2$ /day respectively.

Results of the test is summarized in Table B-4, and time-drawdown and time-recovery curves are shown in Figures B-21, -22 and -23.

# B-2-5. Electrical Magnetic (EM) survey on the Pilot Area

The electromagnetic induction, using Geonicos EM 38 and EM 34-3 instruments, measured apparent electrical conductivity on an approximately 800 m square grid to survey the lateral variation of salt content of the soil by the 1,10 and 20 m coil spacing on the Pilot Area. The results are shown in the conductivity contour map.

Location of EM survey is shown in Figure B-24, Location Map of Hydrogeological Survey Pilot Area.

The contour map at nominal depth form 0.75 to 1.5 mugs shows that high conductivity with more than 100 mS/m (less than 10  $\Omega m$  in resistivity) concentrates at 2.1 km southwest of Ban Phra Yun where a tributary of the Huai Yan across the highway. The high conductivity zone extends to the southeast along the alluvial plain.

The same tendency obtains until a depth of 7.5 m. The conductivity of surface have an effect on this depth.

The apparent conductivity at nominal depth 15 m varies moderately in contrast with shallow depth. It indicates about 70mS/m except the rolling hill in the east and south where it shows less than 50mS/m.

The apparent conductivity contour map at the coil spacing 1,10 and 20 m are shown in Figure B-25  $\sim$  B-27 . Observed field data is listed in Table B-5.

To compare with the contour maps of EM, the apparent resistivity contour maps at depth of a=1 m, a=10 m, a=16 m and a=30 m are drawn in Figures B-28 and -29.

### B-2-6. Permeability Test on the Pilot Area

The permeability test was conducted in the different lithology of unconsolidated beds of the Quaternary Formation on the Pilot Area. The open hole method was applied for the test to identify the aquifer permeability overlying the Siltstone. The sites located at the same of the piezometer on the terrace where the soil texture were observed by this study. A total number of holes and soil samples are 15 and 18 respectively.

Measured permeability indicate  $1.1 \times 10^{-4}$  cm/sec in SiC and sgSC in a maximum and  $6.1 \times 10^{-8}$  cm/sec in gSL in a minimum.

In general, the permeability of the unconsolidated beds in the area indicates low in spite of gravelly and sandy composition. The results of a laboratory test reveals same conclusion as shown in APPENDIX C.

Location of the test is shown in Figure B-24, Location Map of Hydrogeological Survey on Pilot Area.

Summarized results of the permeability test is listed in Table B-6.

## B-2-7. Aquifer Test in the Existing Dug Wells on the Pilot Area

Three dug wells were selected for the aquifer test to evaluated shallow groundwater potential. A well of DW-1, located on the rolling hill, indicates 3.8 lit/min/m of specific capacity and the rest, DW-3 and DW-5 on the terrace indicate 5.2 lit/min/m of specific capacity.

Based on above results, expected well yield of shallow dug wells ranges 1.8 to 2.5 cu.m/day by 8 hours pumping and 1 m drawdown.

The results of aquifer test is summarized in Table B-7. The time-drawdown and time-recovery curves for DW-1, DW-3, and DW-5 are shown in Figures B-30, -31 and -32. Location of the tested wells is shown in Figure B-24, Location Map of Hydrogeological on Pilot Area.

#### B-2-8. Existing Pond Survey on the Pilot Area

The EC in the existing ponds on the pilot area was investigated to analyze an aquifer system of the unconsolidated beds. Total Number of investigated ponds is about 150.

The results of investigation reveals that a distinct break of EC value in the ponds was observed between terrace and alluvial flood plain. The former indicates EC less than 600  $\mu$ S/cm and the latter indicates more than 3,000  $\mu$ S/cm. From this fact it is inffered that a different manner of salt water contamination from the siltstone aquifer take place in the terrace deposits and the alluvial deposits as described in the following chapters.

Investigated EC in the existing ponds is shown in Figure B-33, EC in Existing Ponds on the pilot Area.

#### B-2-9. Groundwater Monitoring in the Exploratory Wells

The water tables and PH in the two exploratory wells and ten observation wells have been continuously monitored twice a month since November 1990.

The exploratory well, W-1 on Ban Pa Mo indicates 1.29 m water level depression by two months and W-2 on Ban Non Tun indicates 0.15 m depression during observation period. The former penetrate in the sand and gravel aquifer and the latter penetrate in the siltstone.

The seasonal fluctuation in the observation wells which penetrate in the siltstone ranges from 0 to 4.8 m.

Observed water levels in the exploratory wells and observation wells are shown in Figures B-34 to B-37, and location of the exploratory wells is shown in Figure B-2.

### B-2-10. Hydrogeological Field Survey

The W-1 well, drilled in Ban Pa Mo, reveals that the unconsolidated gravel bed has a thickness of more than 30 meters and it thins to the east. The bed unconformable overlies the Khok Kruat and the Maha Sarakham Formation.

Although the boundary of the Khok Kruat and the Maha Sarakham locates on the basement of the gravel bed, no outcrops of the boundary were observed in this area. However, in view of general geologic knowledge, a king of tectonic zone which is represented by a zone of cracks, fractures and coarse grained sandstone, may be expected near the formation boundary, especially if these two formations has an unconformable relationship. There is a large possibility that the boundary of these formation play the most important role for the discharge of the dissolved salt water from rock salt. The salt water can easily disperse through the permeable gravel bed after it discharged to the surface of the siltstone. Data from geo-resistivity sounding and EC distribution in the existing wells support this idea because heavily concentrated salt water is mainly located at the eastern limit of the gravel bed (see Figure B-4, Resistivity Contour Map at Depth of 140 m and B-38, Groundwater Conductivity Map in Siltstone Aquifer).

The salt concentration was observed on a surface of the siltstone in a riverbed of the Chi River near Ban Non Bua Di Mi where new bridge is under construction. The salt crystallization was found on the cores grained sandstone and, along joints and cracks of the siltstone.

These field evidences suggest that the dissolved salt water from the rock salt discharge vertically into the overlying unconsolidated beds through its cracks, fractures and cores grained sandstone beds, then it flows horizontally through the permeable layers.

As already stated, detailed hydrogeological surveys were carried out in the pilot area (see B-24, Location Map of Hydrogeological Survey on Pilot Area).

Based on the survey, the hydrogeological map is prepared sa shown in Figure B-39.

# B-3. Hydrogeology and Groundwater of the Study Area

## B-3-1. Hydrogeological Units

Two major aquifer systems, the Quaternary and Siltstone, are distributed n the study area. The Siltstone forms the basement of the study area and depth to it ranges from 3 to more than 30 mugs. The Quaternary is subdivided into two, the Pa Mo gravel bed and the terrace deposits.

The Pa Mo gravel bed forms the undulating rolling hill near Ban Pa Mo trending north-south direction with an altitude of about 200 mamsl and 2km width. The maximum thickness attains more than 30 m and it thins eastward where the terrace deposits unconformable overlies it.

The beds are composed of mainly well rounded white colored gravel of chart with minor amount of fine sand and silt.

The terrace deposits are widely distributed in the study area and the thickness attains a maximum of about 15 m. Although detail investigation of the deposits is not conducted by the study team, ocular investigation in this deposits was conducted at 20 hand augering holes by the soil survey crew of the study team during the 1st stage field survey. The augering reveals that the deposits were composed of a silty and/or clayey material with fine sand with lateritic grave. From this it may be inffered that the deposits act slightly impermeable than the Pa Mo gravel bed.

As already stated, the Siltstone is practically impermeable basement but the fractures and coarse grained sandstone facies in the rock acts a kind of aquifer.

## B-3-2. Groundwater Flow

The contour map for the piezometric head on the end of September, 1990 in the Siltstone aquifer is drawn by the use of water level records of the exploration wells (see B-34, -35, -36 and -37, Well Hydrograph for the Exploratory Wells). The map shows that the piezometric head decreases monotonously toward the east from the rolling hill to the east of Ban Phra Yun and from this point, it forms narrow groundwater mound toward Ban Non Tun.

This feature suggests that the groundwater flows monotonously from the rolling hill to the east of Ban Phra Yun and it changes direction of flow toward two, the northeast and southeast (see Figure B-40, Piezometric Surface of the Siltstone Aquifer).

A large number of the Piezometric head in the Siltstone aquifer in the existing wells were also observed by GREP (Groundwater Resources Evaluation Pilot Project, Thai-Australia northeast water resource project). Same feature of the contour map is obtained by the data of GREP.

The groundwater in the Siltstone aquifer shows the confined condition but it could not flow out to the ground surface except a few wells. Among the exploratory wells, only one observation well, P-5, shows an artesian condition.

The water tables in the Quaternary aquifer were also observed in the exploratory wells, W-1 and P-7, during the survey period. The fluctuation of water tables in W-1 which penetrated into the Pa Mo Gravel Bed, indicates 45 cm between the rainy and dry months in comparison with it of the Siltstone which indicates more than 75 cm at W-2.

#### B-3-3. Groundwater Potential

#### (1) Aquifer System

The hydrogeological study reveals that two kinds of aquifer systems, the Siltstone and the Quaternary, are distributed in the study area. The Siltstone is practically impermeable, but infiltration and/or discharge may occur in concentrated points, fracture zone or formation boundary for example, or more generally. It is widely distributed in the study area. The unconsolidated Quaternary aquifers unconformable overlies the Siltstone in the study area and it is distributed in the undulating rolling hill, terrace terrain and alluvial plain. The aquifers in the former two assign to the Pleistocene and the last assign to the Holocene.

#### (2) The siltstone Aquifer

The aquifer potential of the Siltstone depends on presence of fractures in the rock because well consolidated siltstone is basically impermeable. Although the fractures develop irregularly, in vies of general geologic knowledge, these fractures develop concentrically at a kind of tectonic zone which is represented by faults and unconformable formation boundary. it is natural that greater yield can be expected if water well is located on these zones.

Based on the aquifer test in the existing wells conducted by GREP, specific capacity of the Siltstone on a central part of terracial terrain which extends from Ban Tao near the middle of Huai Yai to Huai

Wan Hin, a tributary of Huai Yai, indicates less than 5 lit/min/m in contrast with the west of Ban Phra Yun where specific capacity ranges from 5 to 10 lit/min/m

Based on above specific capacity of 5 lit/min/m, well yield cab be calculated at 12cu.m/day if pumping duration apply to 8 hours with drawdown of 5 m. It is natural that, well with specific capacity of 10 lit/min/m can Yield 24 cu.m/day if pumping apply to same condition.

In general, the specific capacity of the Siltstone tends to increase on the northwestward and eastward of the study area. Furthermore, a zone of high specific capacity is located on Ban Phra Yun with north-south trending (see Figure B-41 Specific Capacity of the Existing Wells in Siltstone Aquifer in APPENDIX B)

Water quality of the Siltstone aquifer varies with location of wells. Distribution of EC in the existing wells are shown in Figure B-38, Groundwater Conductivity Map of Siltstone Aquifer in APPENDIX B.

As easily visualized in the figure, a zone of high EC forms obviously at 2 km west of Ban Phra Yun with north-south ternding where EC ranges from 10,000 to 20,000  $\mu$ S/cm and it decreases toward both sides from the zone.

A location of low resistivity zone is quite identical with zone of high EC because resistivity is reciprocal with conductivity (see Figure B-4 Resistivity Contour Map at Depth of 140 m in APPENDIX B).

Based on the water quality test of groundwater in W-2, which drilled at Ban Non Tun on the rolling hill, EC and TDS indicated 1,600  $\mu$ S/cm and 810mg/lit respectively, however high concentration of total iron and hardness provided to be inadequate for drinking purpose (see Table B-8, The results of Water Quality Test in The Exploratory Wells in APPENDIX B).

Based on the drinking standard of WHO, permissive limit of TDS is 1,500mg/lit which can probably express 2,300  $\mu$ S/cm in EC, consequently only the groundwater in the silstone aquifer on the rolling hill, about 5 km east of Ban Phra Yun, is acceptable for the drinking purpose.

EC of the siltstone aquifer in newly excavated drainage at 3 km south-west of Ban Phura Yun, indicates more than 20,000  $\mu$ S/cm. There is a large possibility that overlying aquifer is more subject to contaminate by a high concentration of EC when water table of the siltstone aquifer ascends through cracks to the surface of the siltstone.

As mentioned before, groundwater yield of the siltstone aquifer estimates about 20 cu.m/day in promise potential areas, however considering qualitative assessment for drinking purposes, the maximum

yield attains 10 cu.m/day on the limited area of rolling hill in the east of the study area.

#### (3) The Quaternary Aquifers

### 1) The Pa Mo Gravel Bed.

The Pa Mo Gravel Bed on the rolling hill in the west of the study area is about 30 meters in maximum thickness and it forms exploitable potable aquifer in consideration of quantity and quality (see Table S-8 The Results of Water Quality Test in the Exploratory Wells in APPENDIX B).

The aquifer test in the exploratory well of W-1 reveals that calculated specific capacity and transmissivity are 20 lit/min/m and  $70m^2$ /day respectively by 21.4 lit/min pumping rate. It can lead to an yield of 48 cu.m/day by 8 hours pumping and 5 m drawdown.

Groundwater from this aquifer is utilized in Ban Non Khu, the north of Ban Pa Mo, for the source of village water supply system.

Recommendable area for the development of this aquifer is restricted on a center of the rolling hill where underlies thick gravel bed. The thickness of bed thins toward both sides of the hill.

## 2) The Terrace Deposit

The Terrace Deposit is widely distributed in the area and the permeability of it indicates comparatively low due to lithological composition. The thickness attains less than 10 m and expected potential in this aquifer is low due to its permeability. Although many dug wells are utilized fro domestic purposes, depth of the wells is not so deep ranging from 5 to 8 m to prevent vertical seepage of groundeater from the siltstone aquifer.

Based on the aquifer test conducted by the study, the groundwater yield of this aquifer estimates from 2 to 2.5 cu.m/day by 8 hours puming and 1 m drawdown.

Measured EC in this aquifer indicates less than 600  $\mu$ S/cm in extensive area but it increases to more than 2,000  $\mu$ S/cm in the comparatively low land where the aquifer is subject to contaminate by the siltstone aquifer of high concentration of EC. EC of the ponds located in alluvial plain where the siltstone is just underlying, indicates extremely high in comparison with it of ponds located in more higher place. This fact leads to the following idea that the groundwater in the terrace aquifer is contaminated by the groundwater in siltstone aquifer. This aquifer is not utilized by the villagers for drinking purpose because of high concentration of