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PART-1 OVERALL RIVER RIVER BASIN DEVELOPMENT PLAN

CHAPTER 1. EXISTING AND/OR ONGOING PROJECTS

1.1 DEDP Pump Irrigation Projects

Table L.1-1 List of Existing Pumping Stations(1/2) (Data Souce DEDP)

1.List of Existing Electric Pumping Stations by DEDP

1-1 Summary

No	Province	Source	Numbers of Porject	Pump		Canal	Area(Rai)		Remarks
				kw	No	L(m)	Project	Crop	
	Nong Khai	Mekon River	19	2090	19	127196	59400	36580	
		Huai Mong	3	330	3	12661	10700	5030	
		Nam Suai	1	150	1	12057	5000	4360	
		Huai Luang	6	592	6	21828	12200	8090	
	Udonthani	Mekon River	-	-	-	-	-	-	
		Huai Mong	2	205	2	7591	6500	2060	
		Nam Suai	-	-	-	-	-	-	
		Huai Luang	1	150	1	7216	3500	1630	
	S.Total	Mekon River	19	2090	19	127196	59400	36580	
		Huai Mong	5	535	5	20252	17200	7090	
		Nam Suai	1	150	1	12057	5000	4360	
		Huai Luang	11	742	7	29044	15700	9720	
	Total		32	3517	32	188549	97300	57750	→ 9240 ha
	Huai Mong Project	Huai Mong	1(10 P.S)	2518	42	167710	55157	19822	→ 3172 ha

1-2 Souce-- Mekon River

No	Name	Province	Ampoe	Basin	Pump		Canal	Area(Rai)		Year	Remarks
					kw	No	L(m)	Project	Crop	Estab.	
1	Tha Kathin	Nong Khai	Chiang Mai	Huai Mong	110	1	1270	1500	1000	1984	
2	Ban Mo	Nong Khai	Chiang Mai	Huai Mong	110	1	10642	4500	3140	1973	
3	Ban Mo Tai(Soin)	Nong Khai	Chiang Mai	Huai Mong	110	1	5800	2300	1210	1978	
4	Ban Phan Phrao	Nong Khai	Chiang Mai	Huai Mong	110	1	11165	3300	2120	1978	
5	Ban Mo Tai	Nong Khai	Chiang Mai	Huai Mong	110	1	-	4000	3000	1993	
6	Gong Nang	Nong Khai	Tha Bo	Huai Mong	110	1	6000	2800	1570	1977	
7	Tha Bo	Nong Khai	Tha Bo	Huai Mong	110	1	8500	3000	2610	1975	
8	Tha Ma Fyang	Nong Khai	Tha Bo	Huai Mong	110	1	2175	3000	1200	1983	
9	Phon Sa	Nong Khai	Tha Bo	Huai Mong	110	1	8704	3000	2400	1988	
10	Me-Chai	Nong Khai	Muang	Num Suai	110	1	5072	3500	1300	1985	
11	Nian Pa Nau	Nong Khai	Muang	Num Suai	110	1	7195	2700	2250	1982	
12	Had Kam	Nong Khai	Muang	Num Suai	110	1	6675	3000	1810	1978	
13	Hin Ngom	Nong Khai	Muang	Num Suai	110	1	9070	3000	1650	1979	
14	Ban Bon	Nong Khai	Muang	Num Suai	110	1	11715	3700	1700	1982	
15	Tha Jan I	Nong Khai	Muang	Num Suai	110	1	3300	2500	1090	1984	
16	Mag Gong	Nong Khai	Muang	Num Suai	110	1	8812	3500	2500	1982	
17	Dua (Si-Guy)	Nong Khai	Muang	Num Suai	110	1	8984	3100	2560	1981	
18	Ban Hua Had	Nong Khai	Muang	Num Suai	110	1	6906	4000	1620	1982	
19	Ban Tha-Le	Nong Khai	Phon Phisai	Huai Luang	110	1	5211	3000	1850	1989	
	Total				2090	19	127196	59400	36580		

Table L.1-2 List of Existing Pumping Stations(2/2)

1-3 Souce-- Huai Mong

Data source ; DEDP

No	Name	Province	Ampoe	Basin	Pump		Canal	Area(Rai)		Year	Remarks
					kw	No	L(m)	Project	Crop	Estab.	
20	Tung Fang	Nong Khai	Tha Bo	Huai Mong	110	1	8082	3000	1580	1977	
21	Phon Tai-Naka	Nong Khai	Tha Bo	Huai Mong	110	1	1579	4700	1050	1986	
22	Tha-Sam Ran	Nong Khai	Tha Bo	Huai Mong	110	1	3000	3000	2400	1991	
23	Nang Si Na	Udonthani	Ban Phu	Huai Mong	150	1	4600	5000	1060	1987	
24	Ban Lao Karm	Udonthani	Ban Phu	Huai Mong	55	1	2991	1500	1000	1994	
	Sub Total				535	5	20252	17200	7090		
25	P - 1	Nong Khai	Tha Bo	Reservoir	135	3	10448	3932	2193		
26	P - 3	Nong Khai	Tha Bo	Reservoir	175	3	9731	5603	1095		
27	P - 4	Nong Khai	Tha Bo	Reservoir	147	5	20623	6995	1621		
28	P - 5	Nong Khai	Tha Bo	Reservoir	165	4	20538	5039	2675		
29	P - 6	Nong Khai	Tha Bo	Reservoir	485	7	27974	9511	2167		
30	P - 7	Nong Khai	Tha Bo	Reservoir	624	7	36146	10203	6305		
31	P - 8	Nong Khai	Tha Bo	Reservoir	225	3	12587	4319	1113		
32	P - 9	Nong Khai	Tha Bo	Reservoir	150	2	6653	2745	620		
33	SD-10	Nong Khai	Tha Bo	Drainage	90	3					
34	P -10	Nong Khai	Tha Bo	Reservoir	322	5	23010	6810	2033		
	Sub Total				2518	42	167710	55157	19822		
	Total				3053	47	187962	72357	26912		

1-4 Souce-- Nam Suai

No	Name	Province	Ampoe	Basin	Pump		Canal	Area(Rai)		Year	Remarks
					kw	No	L(m)	Project	Crop	Estab.	
35	Ban Don Sud	Nong Khai	Muang	Nam Suai	150	1	12057	5000	4360	1982	

1-5 Souce-- Huai Luang

No	Name	Province	Ampoe	Basin	Pump		Canal	Area(Rai)		Year	Remarks
					kw	No	L(m)	Project	Crop	Estab.	
36	Ban Chum Chang	Nong Khai	Phon Phisai	Huai Luang	110	1	4525	2100	1790	1980	
37	Ban Nong Nam Tang	Nong Khai	Phon Phisai	Huai Luang	95	1	5358	1500	1500	1991	
38	Ban Phon Tun	Nong Khai	Phon Phisai	Huai Luang	90	1	2689	3000	1800	1991	
39	Ban Hat Sung	Nong Khai	Phon Phisai	Huai Luang	132	1	2869	1500	1500	1991	
40	Ban Dong Khan Pe	Nong Khai	Phon Phisai	Huai Luang	55	1	2410	2600	-	1992	
41	Ban Chiang At	Nong Khai	Phon Phisai	Huai Luang	110	1	3977	1500	1500	1991	
42	Ban Dong Yang	Udonthani	Nong Han	Huai Luang	150	1	7216	3500	1630	1986	
	Sub Total				742	7	29044	15700	9720	13922	

Table L.1-3 List of Under Construction and/or Proposed Pumping Stations

No	Name	Province	Ampoe	Basin	Pump		Canal	Area(Rai)		Year	Remarks
					kw	No	L(m)	Project	Crop	Estab.	
43	Wang Yang Thai	Nong Khai	Muang	Nam Suai	110	1				1996	Proposed
44	Tha Jan II	Nong Khai	Muang	Nam Suai	75	1				1996	Proposed
45	Jam Si	Udonthani	Phen	Nam Suai				1500		Under	Construct.
46	Mung Bang	Nong Khai	Muang	Nam Suai	110	1				1996	Proposed
47	Wat Tat Jom Saded	Nong Khai	Muang	Mekong	?					1996	Proposed
48	Thung Mung	Udonthani	Phen	Nam Suai				1500		Under	Construct.
49	Nong Khan Saen	Udonthani	Muang	Huai Luang				1500		Under	Construct.
50	Khok Sa-At	Udonthani	Muang	Huai Luang				1500		Under	Construct.
51	Sam Phrao	Udonthani	Muang	Huai Luang				1500		Under	Construct.
	Total										

Data source ; DEDP

Table L.1-4 Running Cost(1/2)

3-1 Summary

Ampoe Phon Phisai, Nong Khai Province

No	Province	Source	Pump		Area(Rai)		Running Cost (Nov' 1994-Apr' 1995)			Remarks
			kw	No	Project	Crop	Total	Government	Farmer	
	Nong Khai	Huai Luang	592	6	12200	8090	129128	62909	66219	
		Nam Suai	150	1	5000	4360	109777	53481	56296	
		Huai Mong	330	3	10700	5030	32215	16181	16034	
		Mekon River	1980	18	56400	34730	482238	245753	236485	
	Total		3052	28	84300	52210	753358	378324	375034	
	Udonthani	Huai Luang	(150)	(1)	(3500)	(1630)	N.A	N.A	N.A	
		Nam Suai	-	-	-	-	N.A	N.A	N.A	
		Huai Mong	(220)	(2)	(6000)	(3600)	N.A	N.A	N.A	
		Mekon River	-	-	-	-	-	-	-	

3-2 Huai Luang Basin Project

No	Name	Source	Pump		Area(Rai)		Running Cost (Nov' 1994-Apr' 1995)			Remarks
			kw	No	Project	Crop	Total	Government	Farmer	
1	Ban Tha-Le	Mekong	110	1	3000	1850	59761	29206	30555	
2	Ban Chum Chang	Huai Luang	110	1	2100	1790	67125	32702	34423	
3	Ban Nong Nam Tang	Huai Luang	95	1	1500	1500	19026	9269	9757	
4	Ban Phon Tun	Huai Luang	90	1	3000	1800	13108	6386	6722	
5	Ban Hat Sung	Huai Luang	132	1	1500	1500	7492	3650	3842	
6	Ban Dong Khan Pe	Huai Luang	55	1	2600	N.A	1570	765	805	
7	Ban Chiang At	Huai Luang	110	1	1500	1500	20807	10137	10670	
	Sub Total	Huai Luang	592	6	12200	8090	129128	62909	66219	
		Mekong	110	1	3000	1850	59761	29206	30555	
	Total		702		15200	9940	188889	92115	96774	
8	Ban Dong Yang	Huai Luang	(150)	1	(3500)	(1630)	N.A	N.A	N.A	

Data source ; DEDP

Table L.1-5 Running Cost (2/2)

No	Name	Source	Pump		Area (Rai)		Running Cost (Nov' 1994-Apr' 1995)			Remarks
			kw	No	Project	Crop	Total	Government	Farmer	
1	Ban Don Sud	Nam Suai	150	1	5000	4360	109777	53481	56296	
2	Had Kam	Mekong	110	1	3000	1810	66998	32640	34358	
3	Hin Ngom	Mekong	110	1	3000	1650	22710	11064	11646	
4	Dua (Si-Guy)	Mekong	110	1	3100	2560	30329	14776	15553	
5	Nian Pa Nau	Mekong	110	1	2700	2250	10247	4992	5255	
6	Mag Gong	Mekong	110	1	3500	2500	20211	9846	10365	
7	Ban Bon	Mekong	110	1	3700	1700	4338	2113	2225	
8	Ban Hua Had	Mekong	110	1	4000	1620	9637	4695	4942	
9	Tha Jan I	Mekong	110	1	2500	1090	19908	9699	10209	
10	Me-Chai	Mekong	110	1	3500	1300	3968	1933	2035	
	Sub Total	Nam Suai	150	1	5000	4360	109777	53481	56296	
		Mekong	990	9	29000	16480	188346	91758	96588	
	Total				34000	20840	298123	145239	152884	

3-4 Huai Mong Basin Project

	Name	Source	Pump		Area (Rai)		Running Cost (Nov' 1994-Apr' 1995)			Remarks
			kw	No	Project	Crop	Total	Government	Farmer	
1	Tung Fang	Huai Mong	110	1	3000	1580	8425	4168	4257	
2	Phon Tai-Naka	Huai Mong	110	1	4700	1050	3386	1723	1663	
3	Tha-Sam Ran	Huai Mong	110	1	3000	2400	20404	10290	10114	
4	Tha Bo	Mekong	110	1	3000	2610	62465	29910	32555	
5	Gong Nang	Mekong	110	1	2800	1570	62679	30766	31913	
6	Tha Ma Fyang	Mekong	110	1	3000	1200	6181	3128	3053	
7	Phon Sa	Mekong	110	1	3000	2400	44357	27146	17211	
8	Ban Mo	Mekong	110	1	4500	3140	20264	14252	6012	
9	Ban Mo Tai (Soin)	Mekong	110	1	2300	1210	45491	22316	23175	
10	Ban Phan Phrao	Mekong	110	1	3300	2120	15498	7656	7842	
11	Tha Kathin	Mekong	110	1	1500	1000	702	702	0	
12	Ban Mo Tai	Mekong	110	1	4000	3000	36255	18119	18136	
	Sub Total	Huai Mong	330	3	10700	5030	32215	16181	16034	
		Mekong	990	9	27400	18250	293892	153995	139897	
	Total		1320	12	38100	23280	326107	170176	155931	
13	Nang Si Na	Huai Mong	150	1	5000	1060				
14	Ban Lao Kam	Huai Mong	55	1	1500	1000				

Data source ; RID

FIGURE L.1-1 Location Map of Existing Pumping Stations

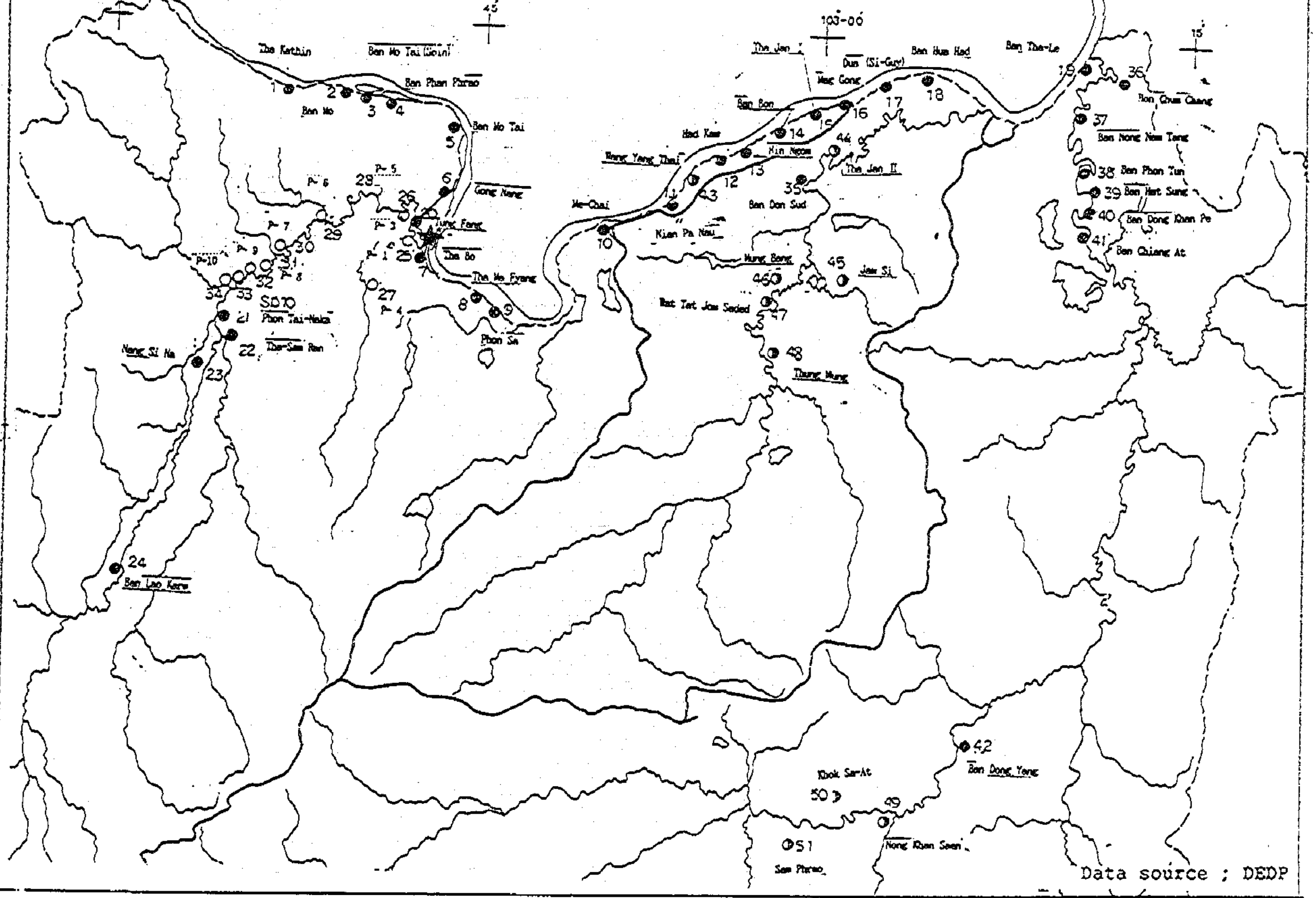


FIGURE L.1-2 Administration of Water User Group Phon Phisai-Parka

in Electric Pumping

Region Ampoe Phon Phisai Nong Khai Province

Data source ; DEDP

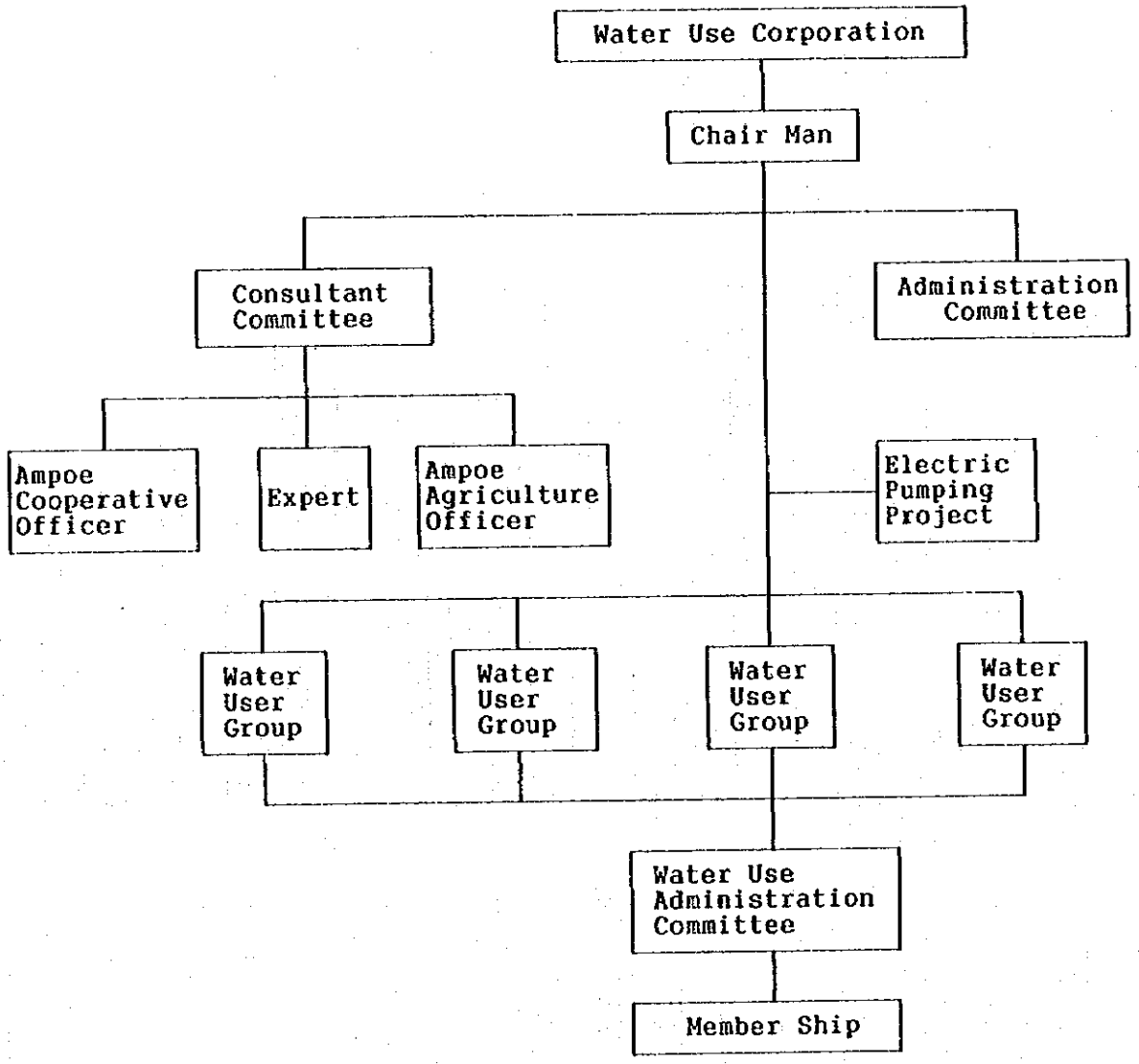
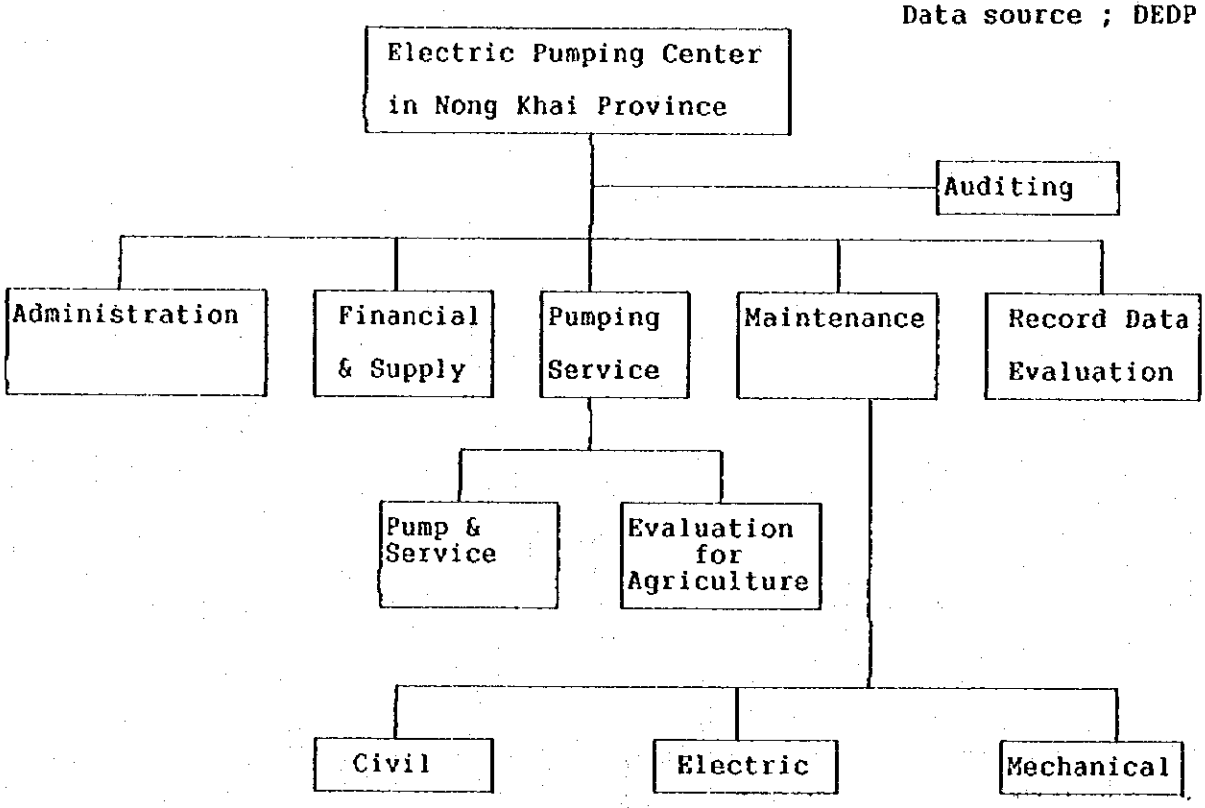


FIGURE L.1-3 Proposed Organization of Electric Pumping Center

in Nong Khai

Data source ; DEDP



1.2 Outline of DEDP Huai Mong, Nam Suai and Huai Luan Projects

Table L.1-6 Outline of 3 Basin Project (1/2)

Data source ; RID

Description	Unit	Huai Mong	Nam Suai	Huai Luang	Remarks
1.General					
1-1.Location(Ampoe)	-	Tha Bo	Ban Pak Suai	Phon Phisai	
1-2.Purpose					
(1)Flood Protection	-	○	○	○	
(2)Irrigation(Projet Area)	(ha)	○ (8825)	○ (20890)	○ (19200)	
(3)Others	-	Fishery	Fishery	Fishery	
1-3.Department		DEDP	DEDP	DEDP	
1-4.Progress					
(1)Under Study	-	-	○	-	
(2)Under Cnstruction	-	On Farm---1997	-	Just Started(Reg)	
(3)Completed	-	1987(R/S,Dike,C)	-	-	
1-5.Construction					
(1)Cost	1000 B	661850	(736000)	315000	
(2)Finace	-	GOT,FEC,GOB	?	GOT(?)	
(3)Period	Years	1982--1987	(1983--1988)	Reg. 1995--1997	
1-6.Population/Nos of Villages	-	P-30000 / V-42	(P-54660 / V-82)	?	
1-6.Benefit	%	?	(22.0)	13.6	
2.Land Use / Agriculture					
2-1.Crops Area (With Project)					
Rice(Wet s./ Dry s.)	ha	?	15800 / 8000	?	
Upland(Wet s./ Dry s.)	ha	?	270 / 45100	?	
Fallow(Wet s./ Dry s.)	ha	?	1680 / 5240	?	
2-2.Crop Yield(Class 1R,HYV.)	ton/ha		Wet 3.30,Dry 3.4		
2-3.Field Eff, G.W requirement	%,l/s/ha	?	80%, 2.34--1.87	?	
2-4.Crop Intensity	%	?	161	?	
3.Design Dimensions					
3-1.Network					
(1)Irrigation Network (Map)	-	9 Blocks	43 Blocks	11 Blocks	
(2)Drainage Network (Map)	-				
(3)Irrigation Area(Net)	ha	3170	17750	(16300)	
(4)Drainage Area	sq.km	3310	1250	4100	
3-2.Water Level					
(1)Mekong River					
H.W.L(Return Priord)	M.S.L	?	165.14(Max)	?	
H.W.L(Design,R.Period)	M.S.L	?	164.87(1/25)	?	
L.W.L(Return Priord)	M.S.L	?	151.35(1/50)	?	
(2)Resorvoir					
H.W.L(Return Priord)	M.S.L	165.50	162.50	?	
M.W.L(Return Priord)	M.S.L	163.50--165.50	162.50--160.00	(Retain) 160.00	
L.W.L(Return Priord)	M.S.L	163.35	160.00		
3-4.Runoff					
(1)Rainfall(Retun Priod)	mm/year	?	1384(Ave)	?	
(2)Unit(ave)/Peak Runoff	l/s/sqkm	?	9.38 / 217.2	?	
(3)Runof coefficient	%	?	21 % (SSARR)	?	
(4)Annual Runnoff	MCM	?	370	?	
3-5.Inundation---1966					
(1)Flood Area	ha		35000		
(2)Lowest Land Elevation	M.S.L	?	160.00	?	
(3)Max Depth/Duration	m,day	?	5.2 m--60 days		
(4)Damage	1000 B		190000		
3-6.Sedimentation	MCM	?	8.11 MCM/50 ys.	?	

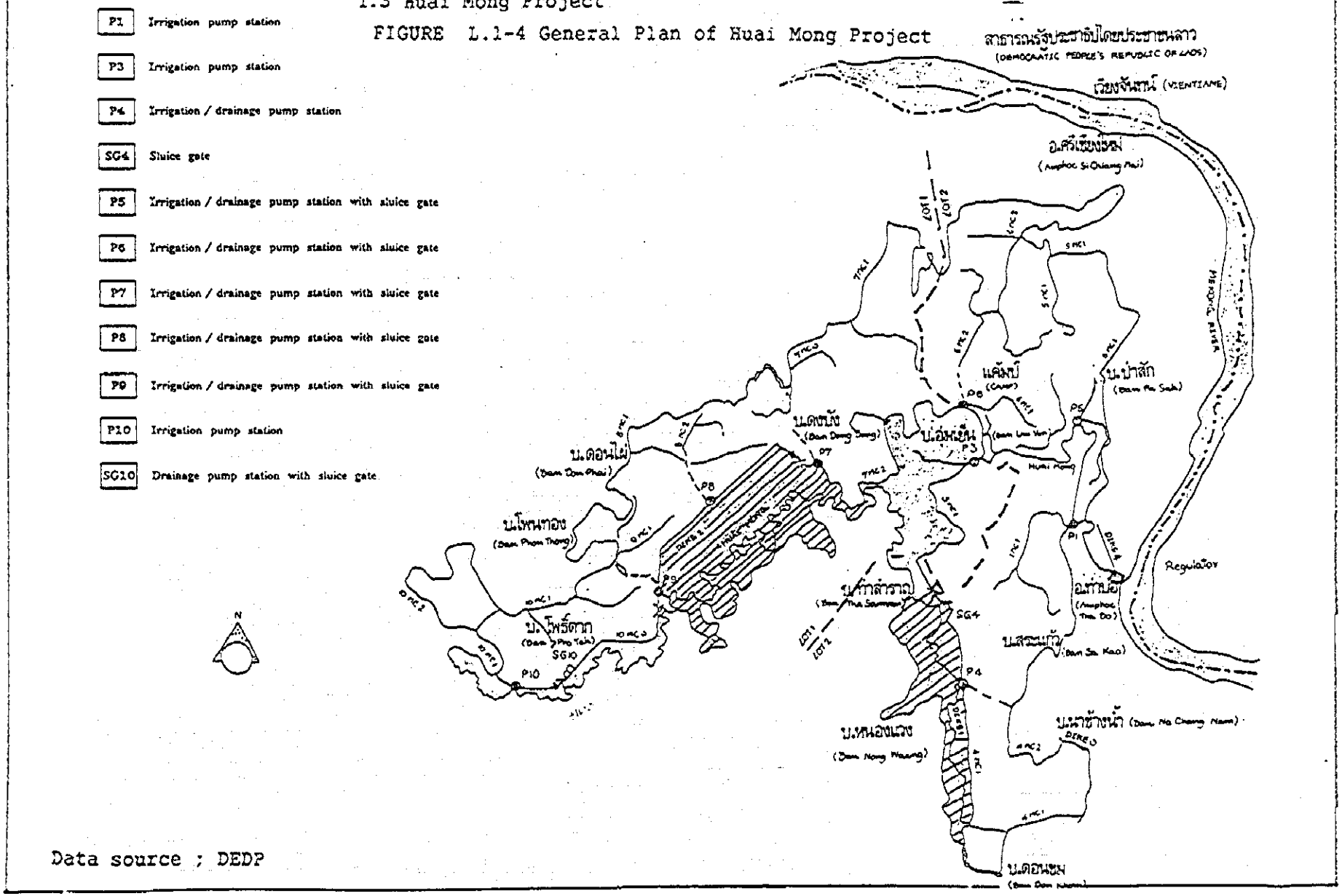
Table L.1-7 Outline of 3 Basin Project (2/2)

Data source ; RID

Description	Unit	Huai Mong	Huai Suai	Huai Luang	Remarks
4.Facilities					
4-1.Regulator					
Elevation(Bottom/Top)	m MSL	160.00/	147.00/167.00	146.00/176.50	
Width	m	24.00	27.50	135.00	
Culvert Area	sqm	5.50*6.0*4	20*5=100	?	
Gate Type	-	Roler.Sluice	Roler.Sluice	Vertical Lift	
Gate Size(H*W*Rows)	m	5.50*6.0*4	20 sqm * 5	14.00*11.00*3	
4-2.Regulating Pump					
Capacity	cum/s	2.362*4=9.448	3.40 *4=13.60	?	
Type	-	V.Mixed Flow	V.Mixed Flow	?	
Head,Power	m, kw	7.50m ,310*4 kw	8.00m , ? kw	?	
4-3.Reservoir					
Capacity(Full)	MCM	26	215	154.87	
(available)	MCM	?	?	?	
Water Surface Area	sqkm	?	126(NWL)	78	
Water Depth	m	7.50	8.00	9.00	
4-4.Dike					
Type	-	Earth,Rip-rap	Earth,Asphalt	Earth,Rip-rap	
Total Length	m	39000	2000	24000	
Height(Ave),Width	m	W=5.0/H=3.75(ave)	W=6.0/H=3.0(max)	W=4.0/H=3.75(ave)	
4-5.Irrigatin Pumps					
Nos.of P.S	Nos	6(Ir & Dr),3(Ir)	43(Ir)	11(Ir)	
Total Capacity	cum/s	15.98(38 pumps)	37.80(76 pumps)	?	
4-6.Irrigatin Canal(M/L)					
Type,Linning	-	Pipe,Concrete L	Pipe,Concrete L	Pipe,Concrete L	
Total Length	km	P-8.7 / C-117 km	265 km	?	
4-7.Drainage Pumps					
Nos.of P.S	Nos	1	-	-	
Total Capacity	cum/s	0.90	-	-	
4-8.Drainage Canal					
Type,Linning	-	Natural(Improv.)	Natural(Improv.)	?	
Total Length	km	M(55),L(27)	?	?	
4-9.Road					
Type,Linning	-	O/M,Village	Hight Way(Improv)	?	
Total Length	km	120	18.8	?	
3.Existing Condition					
3-1.Water Level Records(Daily)					
Mekon River	-	1995 Records(*)	-	-	
Reservoir	-	1995 Records(*)	-	-	
3-2.Discharge Records(Mothly)					
To Mekong R.	cum/s		-	-	
From Mekong R.	cum/s		-	-	
3-3.Running Records (Monthly)					
Intake Pump	hr	This year--First	-	-	
Irrigation Pumps	hr		-		
Drainage Pumps	hr		-	-	
3-4.Running Records of Gates	hr	Jun to Nov Open	-	-	
4.Maitenance					
4-1.Organization	-	Organization Fig.			
4-2.O/M cost	Barts	1995 Running Cost			

1.3 Huai Mong Project

FIGURE L.1-4 General Plan of Huai Mong Project



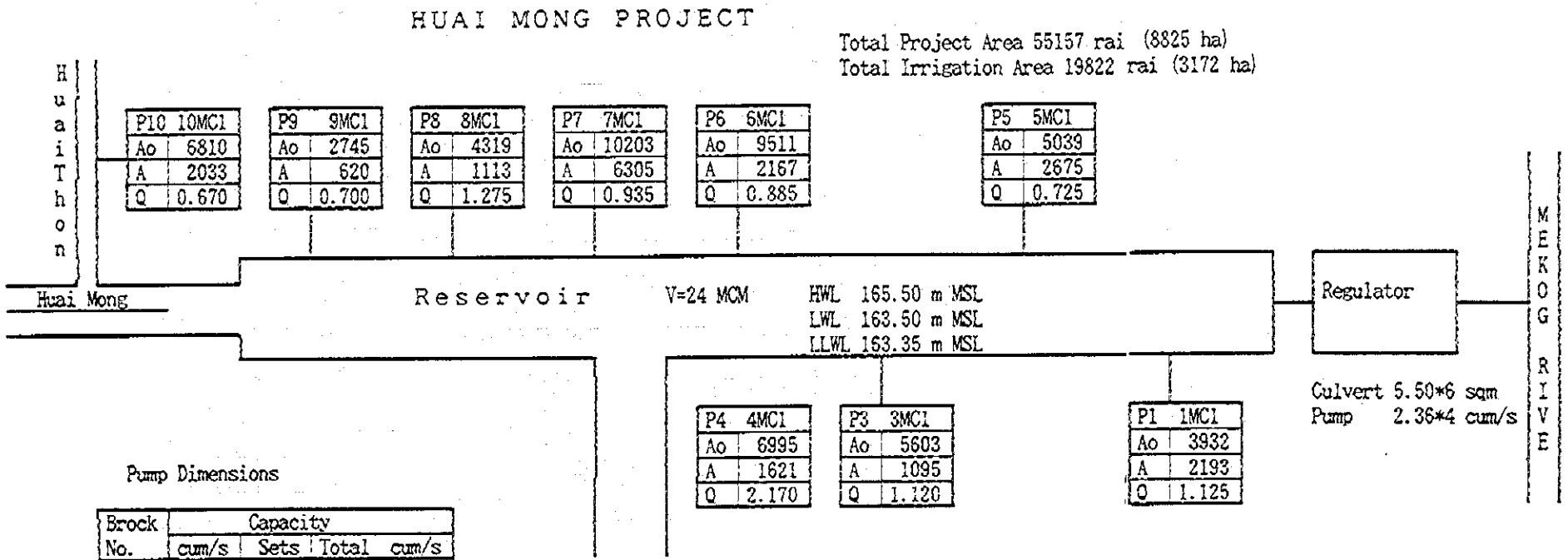
Data source ; DEDP

Table L.1-8 Outline of Huai Mong Project

Data source ; DEDP

Pump Station	Purpose	Area (Rai)		Designod	Pumsp Dimensions			Canal	Trans-	Remarks
		Project	Irriga- tion	Capacity cum/s	Sets	Discharge per Unit	Out put kw	Length (m)	fomer KVA	
Regulator	Irrigation & Drainage			9.448	4	2.362	310		2000	
P- 1	Irrigation	3932	2193	1.125	3	0.375	45	10448	200	
P- 3	Irrigation	5603	1095	0.900	2	0.450	75	9731	400	
				0.220	1	0.220	25			
P- 4	Irrigation & Drainage	6995	1621	0.760	2	0.380	55	20623	400	
				1.410	3	0.470	37			
P- 5	Irrigation & Drainage	5039	2675	1.335	3	0.445	45	20538	400	
				0.280	1	0.280	30			
P- 6	Irrigation & Drainage	9511	2167	2.050	5	0.410	75	27974	800	
				0.950	2	0.475	55			
P- 7	Irrigation & Drainage	10203	6305	2.300	5	0.460	110	36146	1200	
				0.950	2	0.475	37			
P- 8	Irrigation & Drainage	4319	1113	1.275	3	0.425	75	12587	400	
P- 9	Irrigation & Drainage	2745	620	0.700	2	0.350	75	6653	80*2	
P-10	Irrigation	6810	2033	1.720	4	0.430	75	23010	800	
				0.240	1	0.240	22			
Total		55157 (8825ha)	19822 (3172ha)	15.975	38		(3742 kw)	167710	6860	
P-10	Drainage			0.900	3	0.300	30		50*2	
				16.875	41				6960	

FIGURE L.1-5 Schematic Irrigation Diagram



Pump Dimensions

Brock No.	Capacity cum/s	Sets	Total	cum/s
1	0.375	3	1.125	1.125
3	0.450	2	0.900	
	0.220	1	0.220	1.120
4	0.380	2	0.760	
	0.470	3	1.410	2.170
5	0.445	3	1.335	
	0.280	1	0.280	1.615
6	0.410	5	2.050	
	0.475	2	0.950	3.000
7	0.460	5	2.300	
	0.475	2	0.950	3.250
8	0.425	3	1.275	1.275
9	0.350	2	0.700	1.400
10	0.430	4	1.720	
	0.240	1	0.240	1.960

Notes : Data Source DEDP & ALRO' Project Map
Ao : Project Area (rai)
A : Irrigation Area (rai)
Q : Design Discharge (cum/s)

Data source ; DEDP

Table L.1-9 Running Hours & Cost Unit : Barts

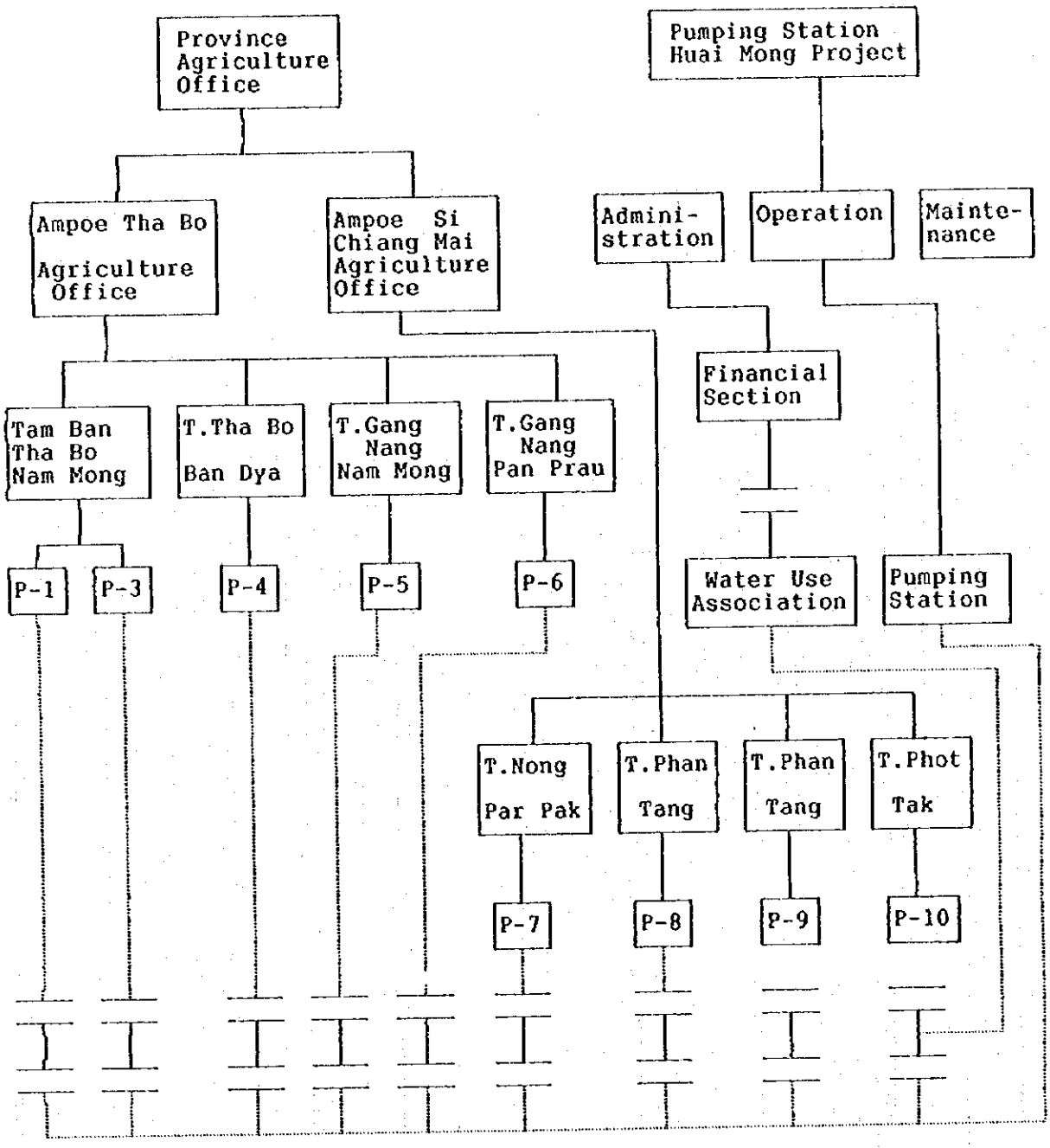
Name	1994				1995								Total		Remarks
	Nov		Dec		JAN		Feb		Mar		Apr				
	hrs	Barts	hrs	Barts	hrs	Barts	hrs	Barts	hrs	Barts	hrs	Barts	hrs	Barts	
P- 1	17	1912	0	1030	108	5967	136	7722	147	8284	50	3253	458	28168	
P- 3	26	2041	11	707	84	6865	63	5518	102	7684	58	4675	344	27490	
P- 4	1536	66208	241	10474	92	5134	79	4891	100	5452	51	2470	2099	94629	
P- 5	32	2902	26	2434	40	2761	24	2808	39	3650	52	3041	213	17596	
P- 6	96	7582	109	7956	8	1123	25	3182	67	7020	42	4867	347	31730	
P- 7	146	17831	414	38189	201	25552	172	21341	96	10810	124	15585	1153	129308	
P- 8	25	1516	306	17718	112	7114	95	6206	85	5302	30	2036	653	39892	
P- 9	7	539	8	584	9	659	6	440	21	1559	11	844	62	4625	
P-10	48	3838	3	281	22	1871	24	1966	27	2340	19	1685	143	11981	
S.T	1933	104369	1118	79373	676	57046	624	54074	684	52101	437	38456	5472	385419	
P-10'	-	117	-	117	-	117	-	117	-	117	-	117	-	-	
Total	1933	104486	1118	79490	676	57163	624	54191	684	52218	437	38573	5472	385419	
Regulator		328	-	515	-	234	-	257	-	608	-	374	-	913	
G.T		104814	1118	80005	676	57397	624	54448	684	52826	437	38947	5472	386332	

Name	1995										Total		Total		Remarks
	May		Jun		Jly		Aug		Spt		May--Spt		Nov--Spt		
	hrs	Barts	hrs	Barts	hrs	Barts	hrs	Barts	hrs	Barts	hrs	Barts	hrs	Barts	
P- 1	10	1240	40	2948	40	2948	-	772	53	2785	143	10693	601	38861	
P- 3	50	3328	90	5452	20	2228	-	117	16	1212	176	12337	520	39827	
P- 4	56	3505	124	7984	55	5546	189	6187	6	117	430	23339	2529	117968	
P- 5	23	1731	45	3089	17	1638	141	6365	468	14696	694	27519	907	45115	
P- 6	144	11232	163	14789	183	15538	238	17129	110	7394	838	66082	1185	97812	
P- 7	42	5194	32	1404	12	561	248	24289	419	37346	753	68794	1906	198102	
P- 8	67	3936	65	3786	18	1072	254	13225	133	7390	537	29409	1190	69301	
P- 9	13	994	33	2561	5	375	104	7257	-	117	155	11304	217	15929	
P-10	41	3557	51	4399	13	1030	-	117	-	117	105	9220	248	21201	
S.T	446	34717	643	46412	363	30936	1174	75458	1205	71174	3831	258697	9303	644116	
P-10'	-	117	-	117	-	117	-	117	-	117	0	585	0	585	
Total	446	34834	643	46529	363	31053	1174	75575	1205	71291	3831	259282	9303	644701	
Regulator		912	-	398	-	445	237	57142	133	37651	370	96548	370	97461	
													0	0	
G.T		35746	643	46927	363	31498	1411	132717	1338	108942	3755	355830	9227	742162	

Note; Data Source DEDP in Nong Khai
Payment in August & September was done by Government due to flood Drainage.

FIGURE L.1-6 Organization

Data source ; DEDP



Pump Station	P-1	P-3	P-4	P-5	P-6	P-7	P-8	P-9	P-10
Crops(rai)	3932	5603	6995	5039	9511	10203	4319	2745	6810
Water User Group	31	40	48	40	86	66	27 (17)	21 (18)	63 (14)

1.4 Nam Suai Project

FIGURE L.1-7 General Plan of Nam Suai Project

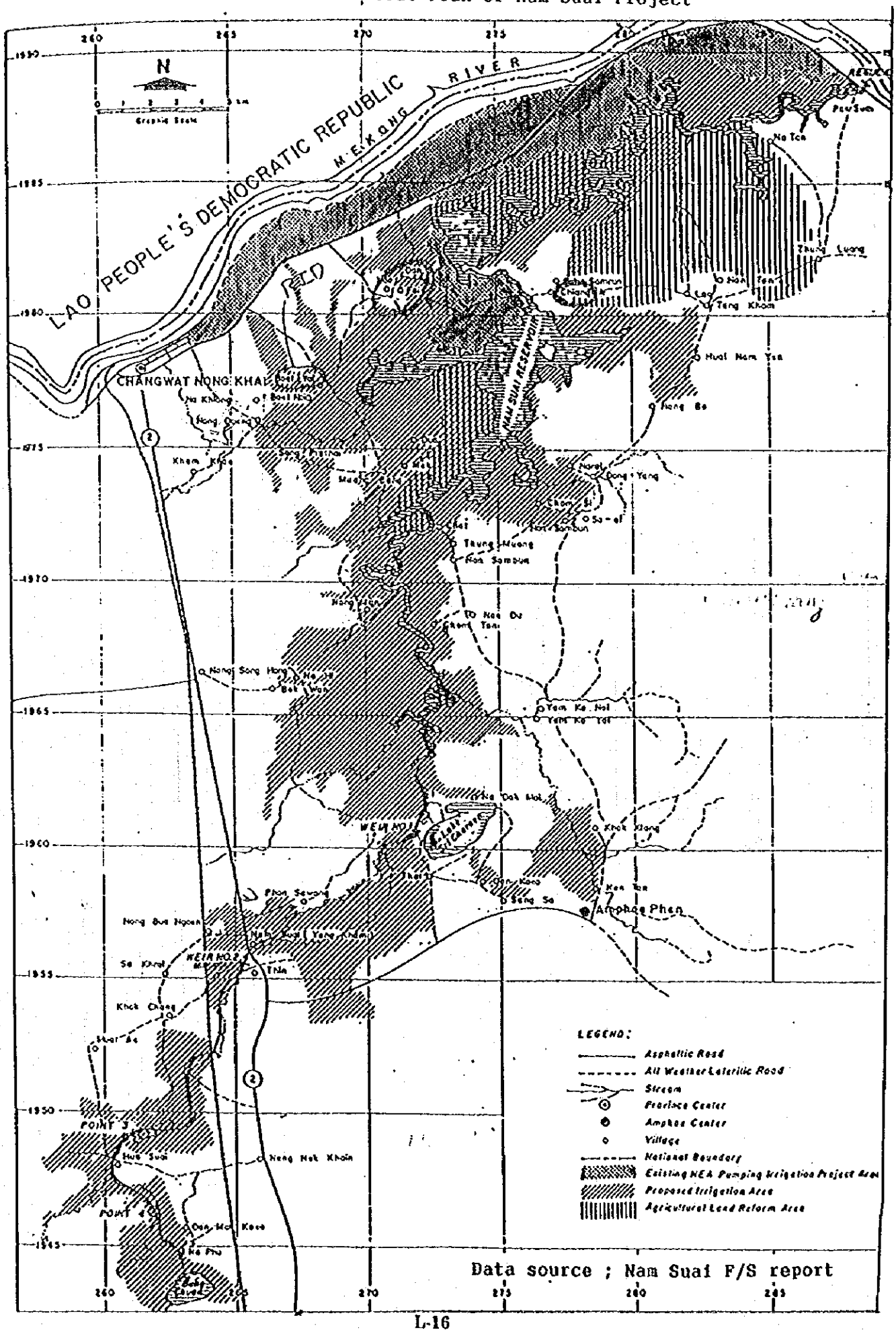


Table L.1-10 Outline of Nam Suai Project

Data Sourse Nam Suai F/S Report

Phasing	Irri. Block		Area (ha)		Designed	Canal	Pump Dimensions		Out put	Remarks
	No	Name	Gross	Net	Discharge	L (m)	Sets	Discharge	(kw)	
Phase-1	1	L- 1	816	694	1.200	11200	2	0.300/0.900	160	Net (A) =Gross (A) *0.85
	2	L- 2	252	214	0.500	2600	1	0.500	27	Discharge; cum/s
	3	L- 3	476	405	1.000	7300	2	0.500	137	
	4	L- 4	378	321	0.800	5100	2	0.300/0.500	109	
	5	L- 5	423	360	0.800	4800	2	0.300/0.500	189	Double Stage
	6	L- 6	178	151	0.500	1300	1	0.500	122	Double Stage
	7	L- 7	373	317	0.800	3000	2	0.300/0.500	109	
	8	L- 8	475	404	0.800	6650	2	0.300/0.500	109	
	9	L- 9	448	381	0.800	4000	2	0.300/0.500	127	
	10	L-10	1048	891	1.800	15000	2	0.900	264	
	11	L-11	1230	1046	1.800	17900	2	0.900	332	
	12	L-12	504	428	1.000	4950	2	0.500	137	
	13	L-13	498	423	1.000	6950	2	0.500	140	
	14	L-14	411	349	0.800	5700	2	0.300/0.500	109	
	15	L-15	176	150	0.500	1400	1	0.500	51	
	16	L-16	668	568	1.000	9300	2	0.500	132	
	17	L-17	216	184	0.500	3200	1	0.500	76	
	18	L-18	304	258	0.600	3200	2	0.300	85	
	19	R- 1	566	481	1.000	9200	2	0.500	57	
	20	R- 2	570	485	1.000	8350	2	0.500	138	
	21	R- 3	460	391	0.800	6000	2	0.300/0.500	109	
	22	R- 4	684	581	1.200	9900	2	0.300/0.900	159	
	23	R- 5	381	324	0.800	6400	2	0.300/0.500	111	
	24	R- 6	133	113	0.300	1500	1	0.300	52	
	25	R- 7	300	255	0.600	4150	2	0.300	85	
	26	R- 8	497	422	1.000	10000	2	0.500	137	
	27	R- 9	554	471	1.000	6900	2	0.500	143	
	28	R-10	165	140	0.500	3000	1	0.500	51	
	29	R-11	176	150	0.500	2200	1	0.500	60	
	30	R-12	302	257	0.600	2500	2	0.300	85	
	31	R-13	142	121	0.300	2700	1	0.300	52	
	32	R-14	198	168	0.500	2650	1	0.500	76	
	33	R-15	770	655	1.200	12150	2	0.300/0.900	161	
		R-1 (A)			0.900		1	0.900	63	
	Sub	Total	14772	12556	27.500	201150	58			
Phase-2	1	L-19	960	816	1.400	8650	2	0.500/0.900	187	
	2	L-20	196	167	0.500	1200	1	0.500	51	
	3	L-21	248	211	0.500	1900	1	0.500	23	
	4	L-22	382	325	0.800	5500	2	0.300/0.500	109	
	5	L-23	308	262	0.600	3000	2	0.300	85	
	6	L-24	1794	1525	2.700	19250	3	0.900	340	
	7	R-16	250	213	0.500	2550	1	0.500	61	
	8	R-17	492	418	0.900	5550	2	0.500	137	
	9	R-18	750	638	1.200	7550	2	0.300/0.900	161	
	10	R-19	740	629	1.200	8700	2	0.300/0.900	168	
	Sub	Total	6120	5202	10.300	63850	18		1322	
	Total		20892	17758	37.800	265000	76		1322	

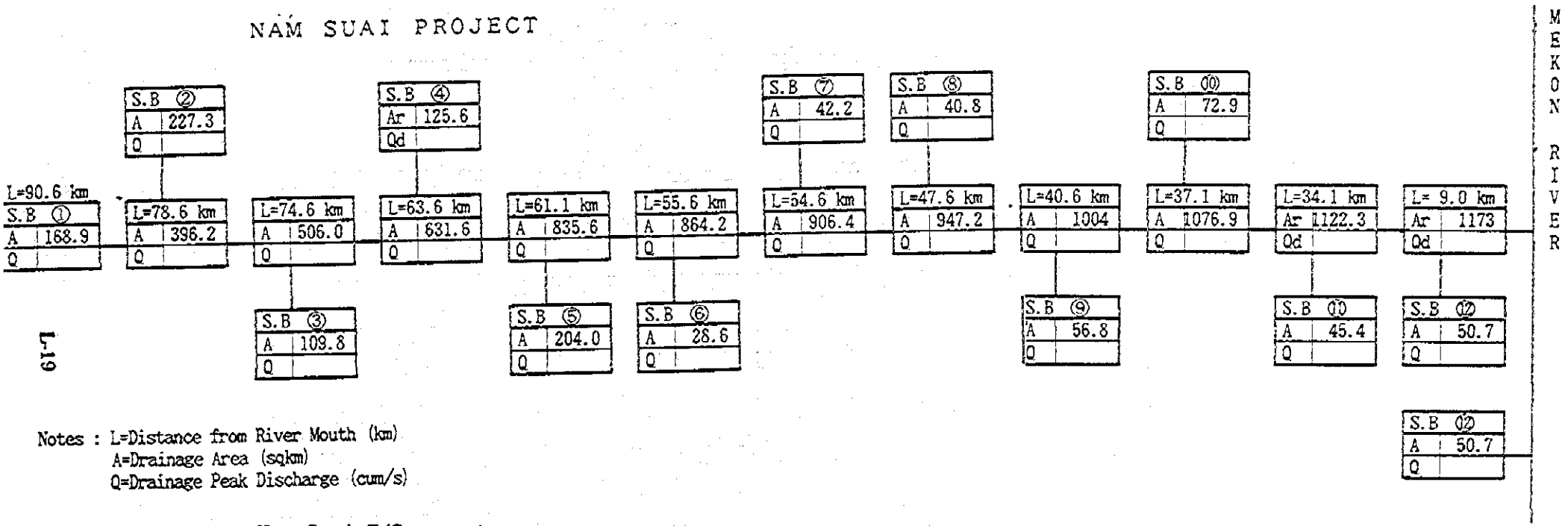
FIGURE L.1-8 Cropping Pattern

Data source ; Nam Suai F/S report

CROP	LAND CLASS	CULTIVATED %	CULTIVATED ha	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
(A) LOWER RESERVOIR (STAGE I)															
AREA 160.0 - 161.0 m MSL															
1 Floating Rice / Vegetables (160.5 - 161.0 mMSL)	2R df.	40	828		LP&N		VT	H/LP&N				FR			H
2 Follow / Paddy HYV (160.0 - 160.5 m MSL)	2R df.	60	1,242		LP&N			HYV		H					
		100	2,070					(CROP INTENSITY = 1.40)							
AREA 161.0 - 162.0 m MSL															
1 Floating Rice / Vegetables (161.0 - 161.5 mMSL)	2R df	4.0	86		LP&N		VT	H/LP&N				FR			H
2 Floating Rice / Paddy HYV (160.0 - 160.5 m MSL)	2R df	40.0	864			HYV		H/LP&N				FR			H
3 Floating Rice / Mungbeans (161.5 - 162.0 m MSL)	2R df	35.4	766	LP&N		MB		H	LP&N			FR			H
4 Follow / Paddy HYV	2R df	20.6	447		LP&N		HYV			H					
		100	2,163					(CROP INTENSITY = 1.79)							
AREA > 162 mMSL															
1 Paddy HYV / Paddy HYV	1 R	10.6	886			HYV		H/LP&N				HYV		H	LP&N
	2 R	17.3	1,442												
2 Paddy HYV / Follow	2 R	16.0	1330					LP&N				HYV		H	
3 Paddy IPV / Paddy HYV	2R	2.7	228			HYV		H/LP&N				IPV		H	LP&N
	2R df	9.6	803												
4 Paddy IPV / Mungbeans & Vegetables	2R	14.0	1,168			MB&VT	H	LP&N				IPV		H	LP&N
	2R df	6.2	513												
5 Paddy IPV / Follow	2R	14.1	1,177					LP&N				IPV		H	
	2R df	7.4	616												
6 Peanuts & Vegetables / Tobacco	1, 2	1.4	119			TB		H/LP&N				PN&VT		H	LP&N
7 Peanuts & Vegetables / Follow	1, 2	0.5	40					LP&N			PN&VT		H		
		100	8,322					(CROP INTENSITY = 1.62)							
(B) STAGE II IRRIGATION															
1 Paddy HYV / Paddy HYV	1R	30.5	1587			HYV		H/LP&N				HYV		H	LP&N
2 Paddy HYV / Mungbeans & Vegetables	2R, 2Rdf	3.7	195			MB	H	LP&N				HYV		H	LP&N
3 Paddy HYV / Follow	2R, 2Rdf	4.2	220					LP&N				HYV		H	
4 Paddy HYV / Paddy HYV	2R, 2Rdf	9.6	500			HYV		H/LP&N				HYV		H	LP&N
5 Paddy IPV / Mungbeans & Vegetables	2R, 2Rdf	14.1	731			MB	H	LP&N				IPV		H	LP&N
6 Paddy IPV / Follow	2R, 2Rdf	35.8	1861					LP&N				IPV		H	
7 Peanuts & Vegetables / Tobacco & Vegetables	1, 2	2.1	108			TB		H/LP&N				PN		H	LP&N
		100	5000					(CROP INTENSITY = 1.60)							

.FIGURE L.1-9 Schematic Irrigation Diagram

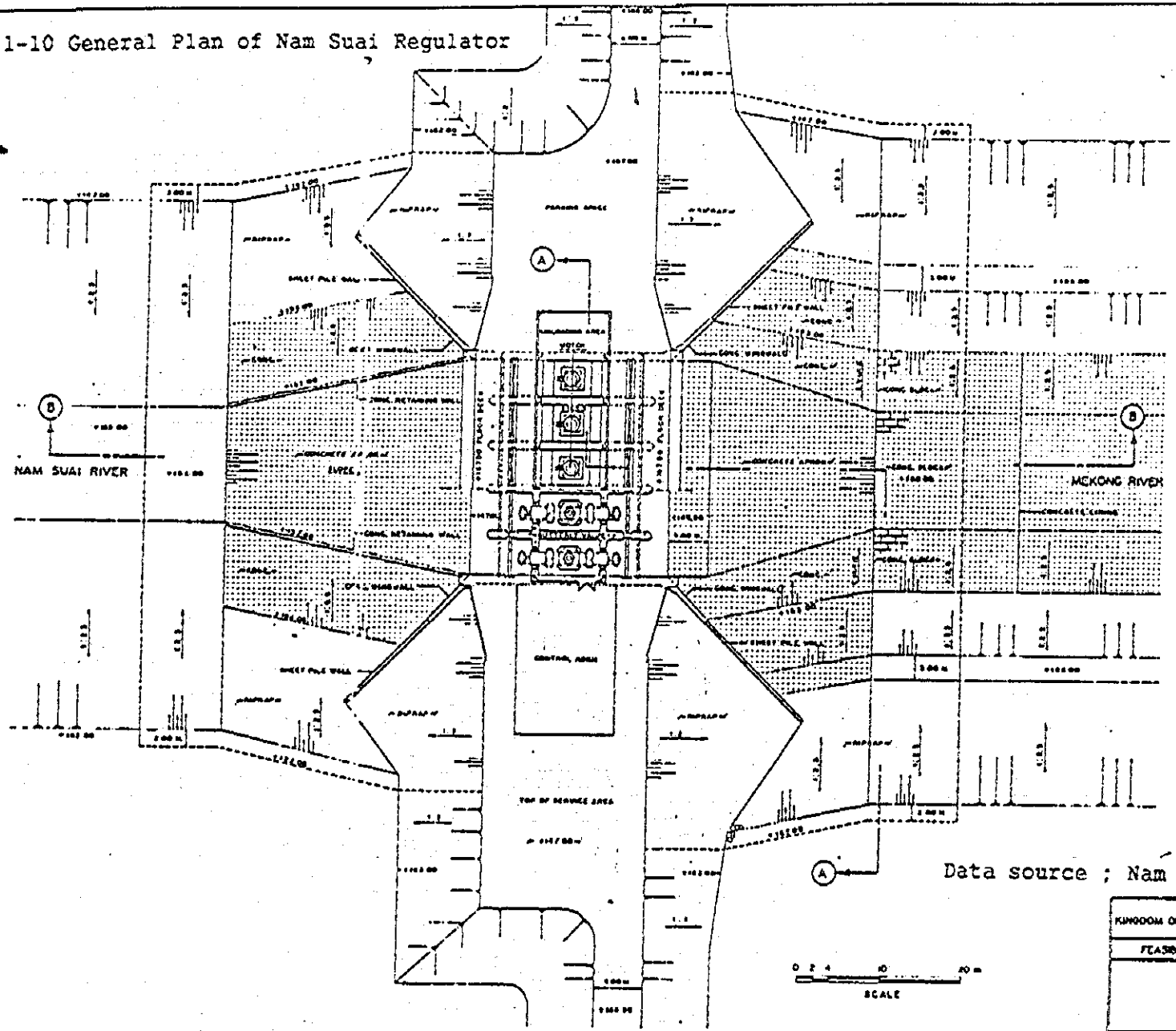
NAM SUAI PROJECT



Notes : L=Distance from River Mouth (km)
A=Drainage Area (sqkm)
Q=Drainage Peak Discharge (cum/s)

Data source ; Nam Suai F/S report

FIGURE L.1-10 General Plan of Nam Suai Regulator



Data source ; Nam Suai F/S report

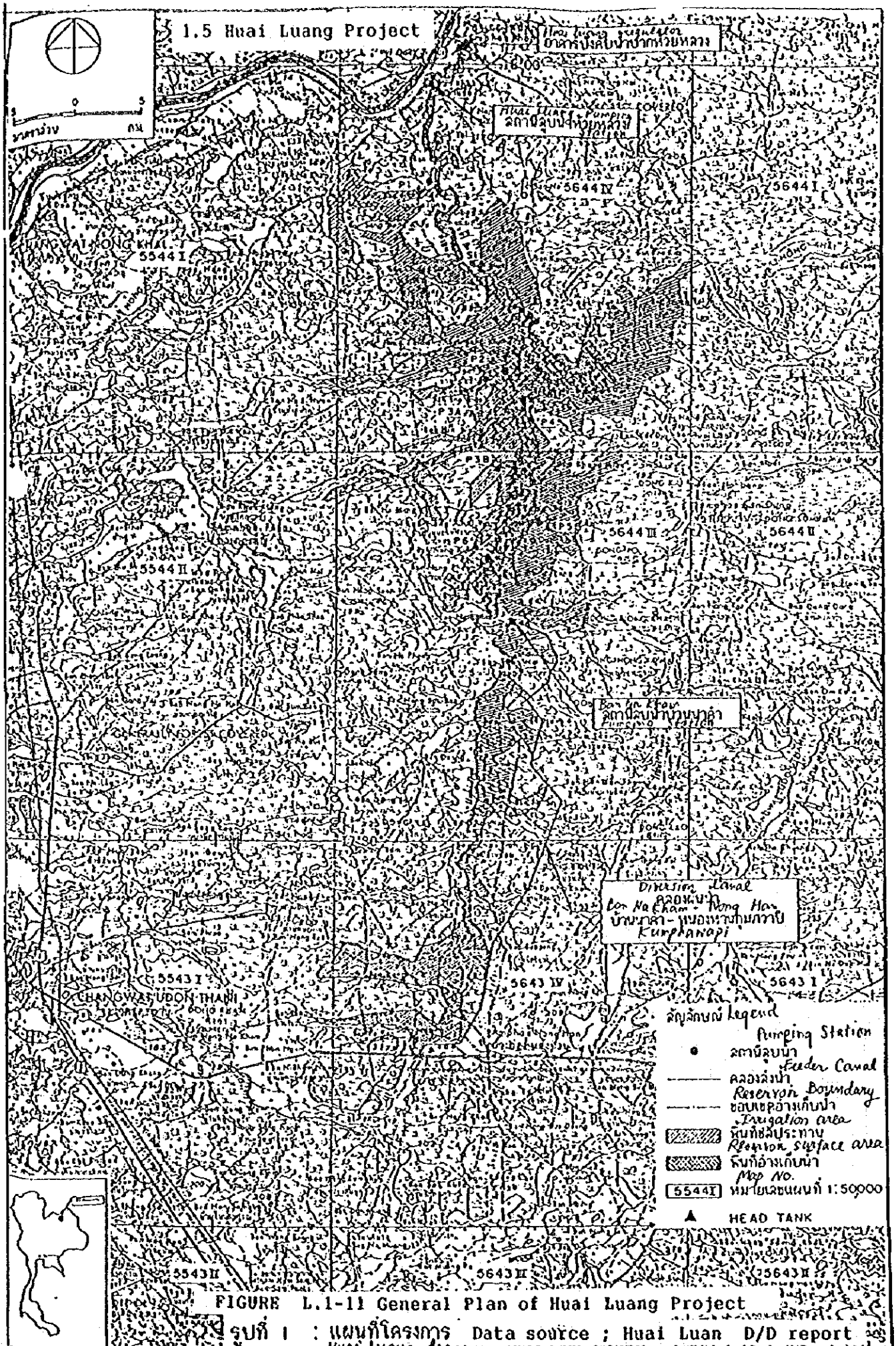
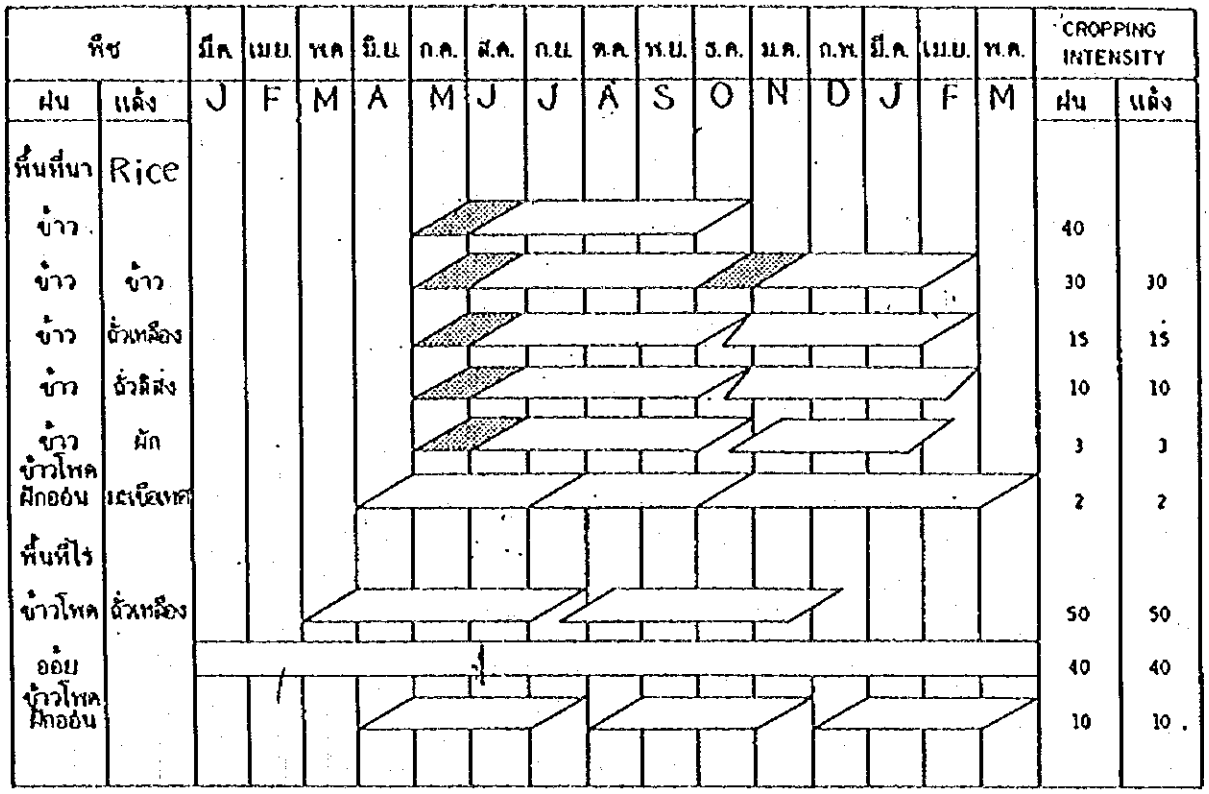


FIGURE L.1-11 General Plan of Huai Luang Project

รูปที่ 1 : แผนที่โครงการ Data source ; Huai Luan D/D report

FIGURE L.1-12 Cropping Pattern



Data source ; Huai Luan D/D report

Table L.1-11 Irrigation Area of Huai Luang Project

No.	Name	Project Area		Irrigable Area		Water Requirement (cum/s)	Remarks
		(rai)	(ha)	(rai)	(ha)		
L-1	Ban Nong Kam	12397	1984	10537	1686	2.849	
L-2	Ban Sang Khom	8472	1356	7201	1152	1.947	
L-3	Ban Non Chat	6098	976	5183	829	1.402	
L-4	Ban Hin Ngon	5311	850	4514	722	1.221	
L-5	Ban Nong Kong	5182	829	4405	705	1.191	
L-6	Ban Non Sawang	16300	2608	13855	2217	3.746	
L-7	Ban Non Pak Wan	22313	3570	18966	3035	5.128	
	Sub Total	76073	12172	64662	10346	17.485	
R-1	Ban Dong Bung Nua	2074	332	1763	282	0.477	
R-2	Ban Phueng	15333	2453	13033	2085	3.524	
R-3	Ban Na Khan Wang	6100	976	5185	830	1.402	
R-4	Ban Na mai (Don Muang)	20270	3243	17230	2757	4.659	
	Sub Total	43777	7004	37210	5954	10.062	
	Total	119850	19176	101873	16300	27.546	

Note : Data source RID
Irrigable area and Water Requirement were suposed.

Irrigable Area = Project Area * 85 % (Nam Suai Proejct)
Water Requirement = Irrigable Area * 1.69 l/s/ha (Nam Suai Proejct)

FIGURE L.1-13 Schematic Irrigation Diagram

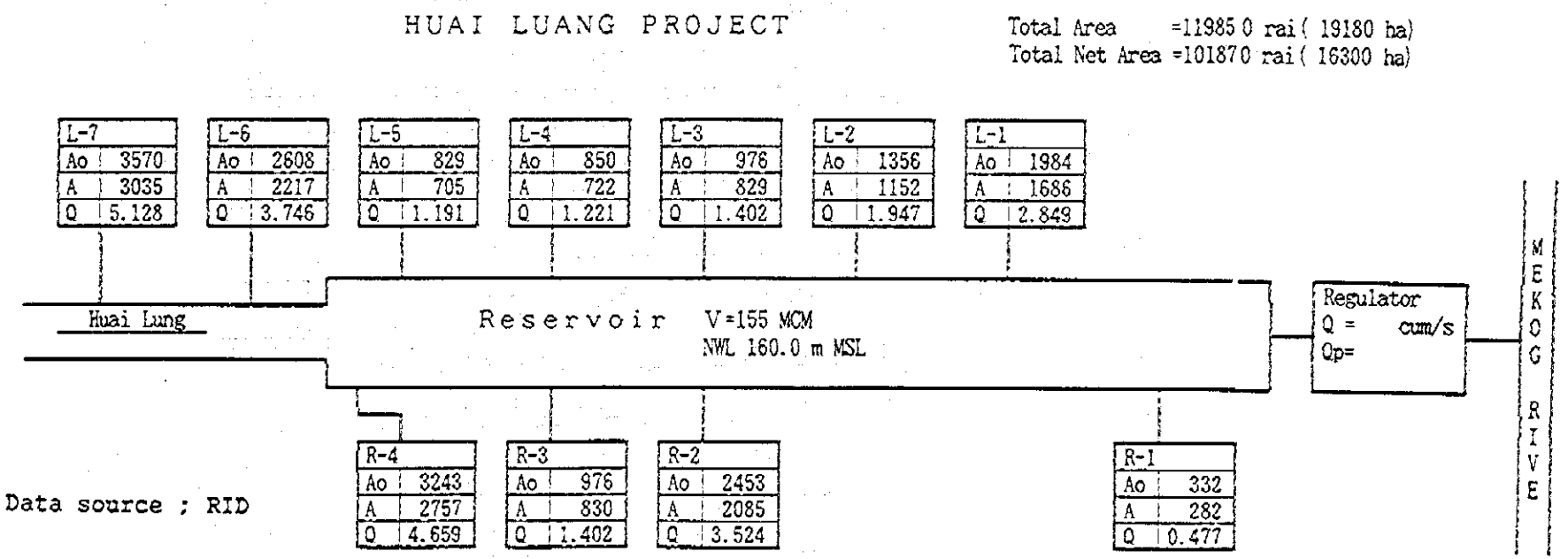
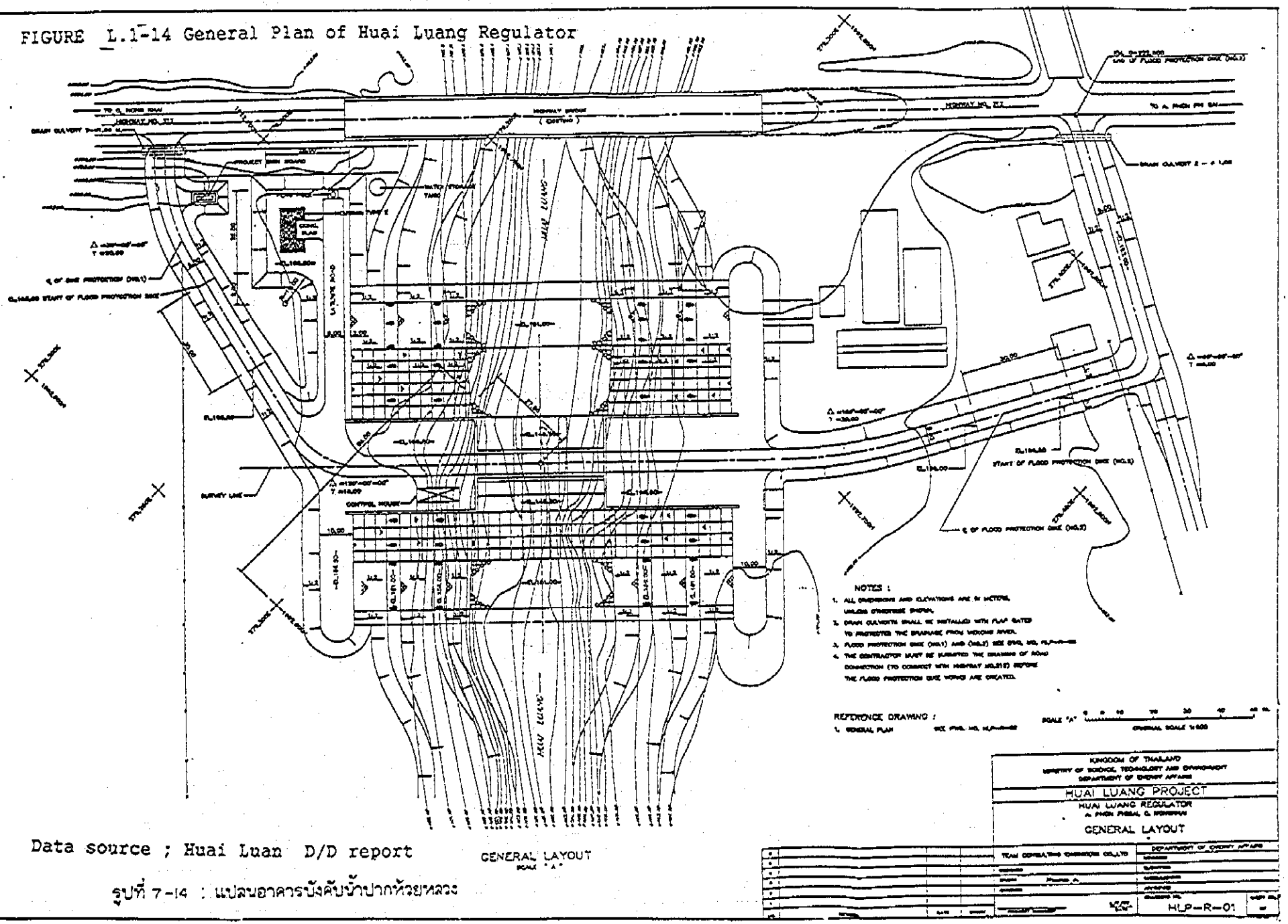


FIGURE L.1-14 General Plan of Huai Luang Regulator

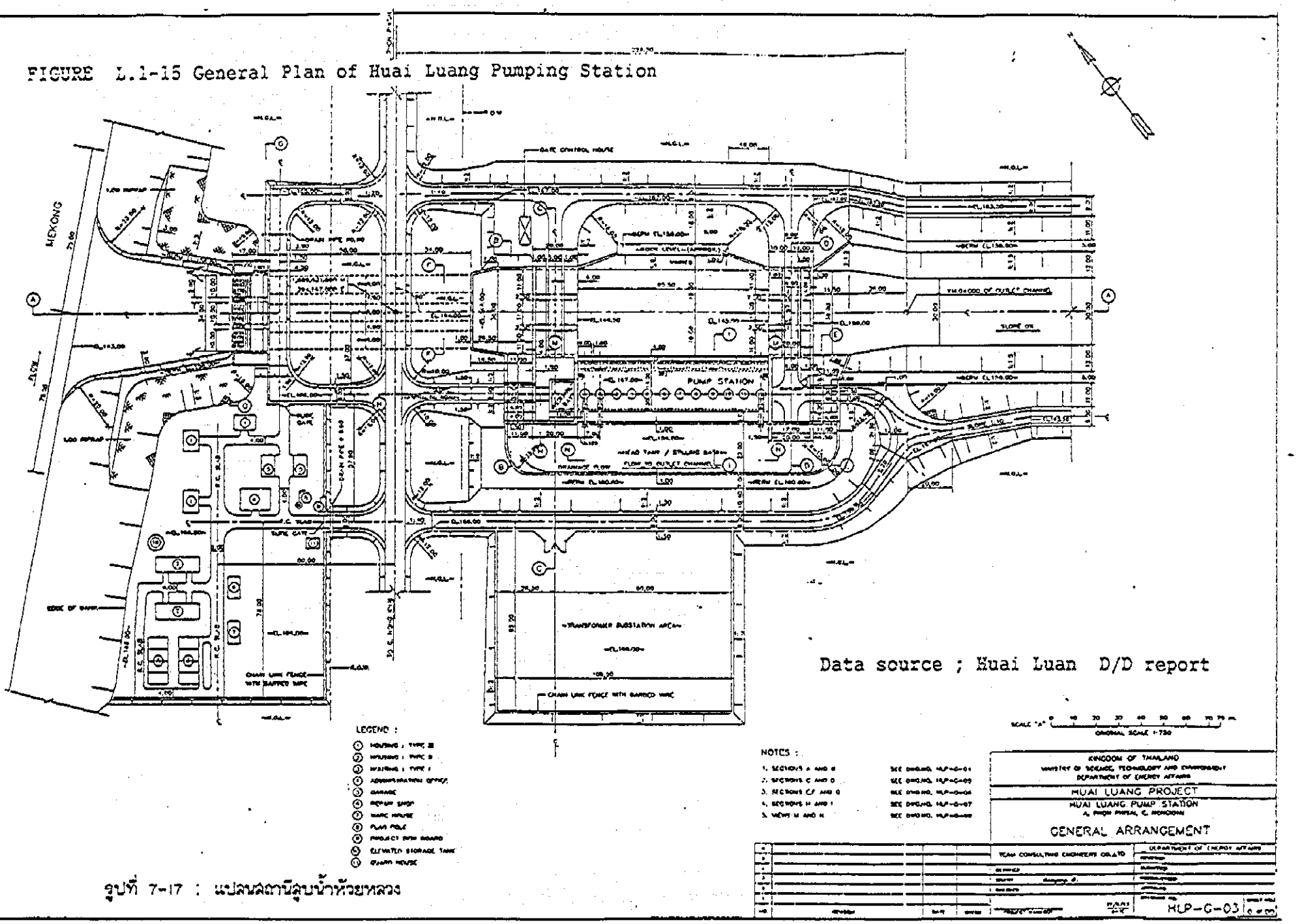


Data source ; Huai Luan D/D report

GENERAL LAYOUT

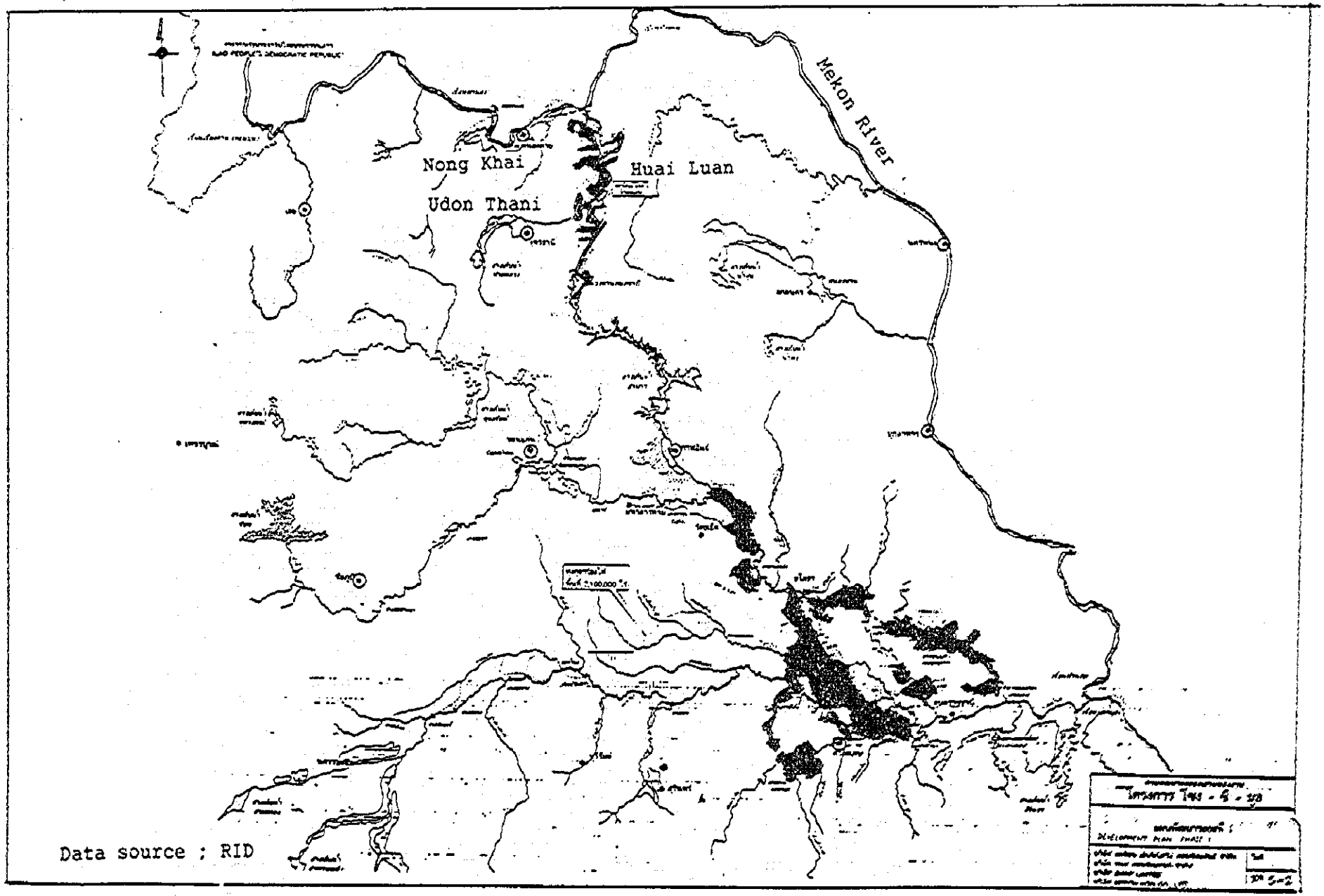
รูปที่ 7-14 : แปลนอาคารบังคับน้ำปากห้วยหลวง

FIGURE L.1-15 General Plan of Huai Luang Pumping Station



รูปที่ 7-17 : แปลนสถานีสูบน้ำห้วยหลวง

FIGURE L.1-16 General Plan of Kong-Chi-Moon Project



1.6 RID Existing Projects

Table L.1-12 Flood Dike Project

1.Dike

Length	63 km
Width of top	8.0 m
Elevation of top	166.62 m MSL
Slope	
Construction Period	1940--1955 (After completion, improvement works were done many t

2.Regulator

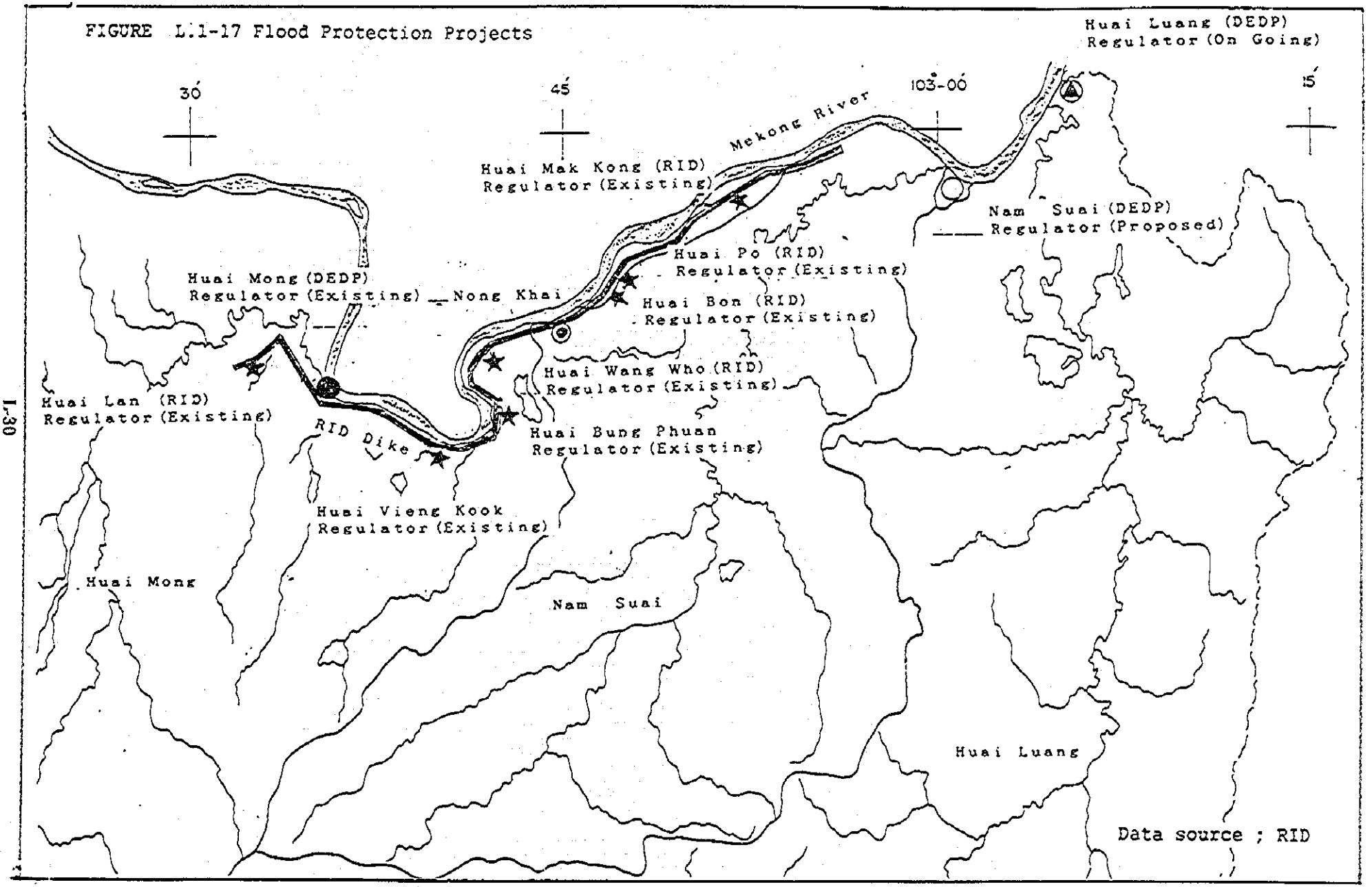
No.	Name	Irrigation Area(rai)	Culvert Size	H * W *rows	Storage W.L.	Bed Level Culvrt	Remarks
1	Huai Lan	14334	R.C	□ 2.50*3.35*1	166.78	162.90	
2	Huai Vieng Kook	20538	R.C	□ 2.50*3.25*2	165.78	161.78	
3	Huai Bung Puan	4953	R.C	□ 2.50*3.25*1	163.78	160.78	
4	Huai Wang Who	9038	Pipe	φ1.50*2	164.78	161.01	
5	Huai Bon	7030	Pipe	φ1.50*2	164.60	159.79	
6	Huai Po	1049	Pipe	φ1.50*2	163.88	160.78	
7	Huai Mak Kong	7058	Pipe	φ1.50*3	162.78	158.39	
	Total	64000	→	10240 ha			

Data Source ; RID Nong Khai

Table L.1-13 Monthly Average Water Level at Head Regulators Data Source RID

Year	Month	① Huai Lan		② H.Vien Kook		③ H.Bung Puan		④ H.Wang Who		⑤ H.Bon		⑥ H.Po		⑦ H.Mak Kong	
		U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S
1993	Jan	163.66	-	159.97	-	163.12	-	164.29	164.16	159.93	-	161.39	-	163.51	-
	Feb	163.56	-	159.60	-	162.70	-	164.12	163.94	-	-	161.70	-	163.36	-
	Mar	163.56	-	159.77	-	162.14	-	163.95	163.63	-	-	161.59	-	163.22	-
	Apr	163.39	-	159.81	-	161.86	-	163.76	163.49	-	-	161.46	-	163.02	-
	May	163.18	-	159.96	-	162.95	160.33	163.67	163.33	-	-	161.49	-	163.14	-
	Jun	163.20	-	160.51	-	163.37	160.44	163.99	163.37	-	-	161.84	-	163.71	159.19
	Jly	163.13	162.47	159.12	159.59	164.02	161.80	163.81	164.40	162.15	160.64	162.19	-	162.99	160.39
	Aug	163.64	164.72	160.68	159.91	164.32	164.66	159.18	164.32	162.13	161.29	162.32	161.67	163.73	162.04
	Spt	164.04	164.66	161.11	160.51	165.07	163.78	165.56	165.65	162.55	161.64	162.72	162.11	164.39	163.45
	Oct	164.24	-	160.86	-	165.00	160.93	165.50	164.23	161.96	-	162.39	-	163.75	160.66
	Nov	164.04	-	161.77	-	164.51	159.98	165.97	164.03	161.39	-	162.34	-	164.10	160.02
	Dec	163.81	-	161.35	-	163.75	161.01	164.97	164.11	160.91	-	162.01	-	163.99	-
1994	Jan	161.38	-	160.09	-	163.49	158.79	164.83	163.93	160.72	-	161.79	-	163.86	-
	Feb	159.94	-	159.94	-	163.43	-	164.72	163.79	160.84	-	161.55	-	163.78	-
	Mar	161.03	-	159.87	-	163.28	-	164.63	163.67	160.80	-	161.80	-	165.73	-
	Apr	159.74	-	159.74	-	163.20	-	164.57	163.70	160.89	-	162.36	-	163.93	-
	May	159.79	-	159.79	-	163.07	-	164.46	163.73	161.07	-	162.00	-	163.65	-
	Jun	160.97	156.16	160.97	150.75	163.75	157.63	164.79	164.48	161.83	160.51	162.00	-	163.37	160.41
	Jly	161.10	159.69	161.10	156.47	164.04	162.74	164.78	164.60	161.84	161.26	162.25	161.79	163.89	162.31
	Aug	161.52	162.64	156.85	155.34	164.85	160.70	165.58	168.79	162.20	162.24	162.53	162.30	164.43	164.38
	Spt	162.64	161.32	161.57	161.32	164.92	164.35	166.82	166.63	162.89	162.02	162.62	162.08	164.71	163.93
	Oct	161.90	153.69	162.87	159.22	164.81	161.61	165.34	165.12	162.10	172.70	162.43	161.12	164.30	161.41
	Nov	161.75	-	156.89	-	164.49	159.80	165.21	164.48	161.75	-	162.26	-	164.11	159.64
	Dec	161.65	-	161.64	-	163.76	159.32	165.09	164.43	161.21	-	162.15	-	164.03	160.83
1995	Jan	161.24	-	161.24	-	163.57	158.00	164.93	164.33	160.51	-	162.00	-	163.89	-
	Feb	160.79	-	160.79	-	163.30	158.91	164.78	164.13	160.21	160.32	161.49	-	163.81	-
	Mar	160.28	-	160.28	-	162.97	158.81	164.62	163.87	160.19	-	161.12	-	163.70	-
	Apr	160.02	-	161.46	-	162.66	158.81	164.44	163.61	160.46	-	162.08	-	163.25	160.81
	May	159.96	-	159.96	-	162.30	158.82	164.33	163.48	160.32	-	162.26	-	163.32	-
	Jun	161.07	159.09	161.07	159.09	162.97	159.17	164.32	163.99	161.23	-	162.26	-	163.56	160.43
	Jly	161.46	159.63	161.46	154.44	163.63	162.03	167.89	168.23	161.16	106.55	162.03	162.22	163.35	161.63
	Aug	162.33	162.83	162.36	162.86	165.44	165.82	168.07	167.54	163.28	163.35	163.24	163.59	165.73	165.46
	Spt	162.50	162.40	162.50	162.40	165.86	165.40	166.06	165.50	163.52	163.02	163.65	163.05	165.44	165.07

FIGURE L.1-17 Flood Protection Projects



CHAPTER 2 WATER LEVEL

2.1 Mekong River

Table L.2- 1 Maximum and Minimum Water Level

Data source : Mekong Secretariat

Year	Tha Bo					Nong Khai					Phon Phisai				
	Max	Day	Rk	Min	Day	Max	Day	Rk	Min	Day	Max	Day	Rk	Min	Day
1965	-	-	-	-	-	163.68	Aug.21	25	154.74	Apr.09	-	-	-	-	-
1966	-	-	-	-	-	168.25	Spt.10	1	154.97	Apr.07	-	-	-	-	-
1967	-	-	-	-	-	163.95	Aug.24	24	154.78	Apr.07	-	-	-	-	-
1968	-	-	-	-	-	164.80	Aug.18	16	154.87	Apr.03	-	-	-	-	-
1969	-	-	-	-	-	166.46	Spt.20	6	154.75	Apr.10	-	-	-	-	-
1970	-	-	-	-	-	166.56	Aug.16	5	154.57	Mar.24	-	-	-	-	-
1971	-	-	-	-	-	167.14	Aug.22	2	154.68	Apr.20	-	-	-	-	-
1972	-	-	-	-	-	164.59	Aug.27	19	154.66	Mar.28	-	-	-	-	-
1973	-	-	-	-	-	166.14	Spt.08	8	155.33	Apr.11	162.85	Spt.06	2	150.95	Mar.06
1974	-	-	-	-	-	165.08	Spt.02	15	155.09	Mar.22	161.85	Spt.03	6	151.23	Mar.25
1975	-	-	-	-	-	165.38	Spt.05	14	154.78	Apr.01	161.85	Spt.05	6	150.95	Mar.19
1976	-	-	-	-	-	165.79	Aug.17	11	155.21	Mar.10	161.76	Aug.15	11	150.85	Mar.26
1977	-	-	-	-	-	164.40	Aug.02	20	155.18	Mar.24	160.35	Aug.02	16	150.95	Apr.01
1978	-	-	-	-	-	166.86	Aug.16	3	154.81	Apr.09	163.02	Aug.16	1	150.35	Mar.09
1979	-	-	-	-	-	164.26	Aug.30	23	154.71	Apr.06	160.95	Spt.15	12	150.80	Apr.05
1980	-	-	-	-	-	166.57	Spt.08	4	154.75	Mar.27	162.85	Spt.09	2	150.73	Mar.29
1981	168.10	Aug.08	3	157.82	Apr.14	165.68	Aug.08	12	155.04	Mar.31	161.95	Aug.08	4	150.95	Apr.16
1982	168.04	Aug.26	4	157.78	Apr.01	165.49	Aug.26	13	155.15	Mar.24	161.85	Aug.19	6	151.23	Mar.25
1983	167.43	Aug.08	6	157.78	Apr.14	164.75	Aug.08	17	155.36	Mar.14	160.85	Spt.19	13	151.45	Mar.24
1984	167.71	Jly.18	5	157.58	Apr.11	164.30	Spt.08	22	155.17	Apr.11	160.85	Aug.19	13	150.73	Apr.08
1985	168.78	Spt.02	2	157.58	Mar.24	166.27	Spt.02	7	155.02	Mar.26	161.95	Spt.02	4	150.49	Mar.29
1986	167.14	Aug.01	7	157.71	Mar. 6	164.73	Aug.01	18	155.15	Apr.07	160.45	Aug.02	15	150.71	Apr.07
1987	165.75	Spt.28	10	157.53	Apr.06	163.44	Spt.28	27	155.25	Apr.04	159.61	Aug.26	18	150.45	Apr.06
1988	166.74	Aug.19	9	157.46	Apr.14	164.37	Aug.19	21	155.08	Apr.14	160.09	Aug.13	17	150.61	Mar.23
1989	166.87	Aug.19	8	158.28	Apr.21	163.55	Aug.19	26	154.77	Apr.21	159.25	Aug.19	19	150.65	Apr.20
1990	-	-	-	-	-	165.94	Aug.02	10	154.93	Apr.21	161.85	Aug.03	6	150.61	Apr.22
1991	169.58	Aug.21	1	158.84	Mar.30	166.09	Aug.21	9	155.19	Mar.13	161.85	Aug.19	6	150.77	Mar.30
AVR	167.61			157.84		165.35			154.96		161.37			150.81	

Table- Monthly Rainfall in Flooded Year (1965--1993)

Udon Thani

WL Rank	Year	WL max	Month	Jly		Aug		Spt		Jly+Aug		Remarks
				R (mm)	Rank	R (mm)	Rank	R (mm)	Rank	R (mm)	Rank	
1	1966	162.85	Spt.10	168.1	(20)	491.7	(2)	176.2	(22)	659.8	(3)	
2	1972	167.14	Aug.22	282.3	(8)	360.6	(7)	228.4	(13)	642.9	(5)	
3	1978	166.86	Aug.16	449.3	(1)	499.7	(1)	213.4	(15)	949.0	(1)	
	Avg			218.1		283.2		242.9		501.3		
	Max	(Year)		449.3	(1978)	499.7	(1978)	642.1	(1970)	948.5	(1978)	

Nong Khai

WL Rank	Year	WL max	Month	Jly		Aug		Spt		Jly+Aug		Remarks
				R (mm)	Rank	R (mm)	Rank	R (mm)	Rank	R (mm)	Rank	
1	1966	162.85	Spt.10	185.4	(21)	539.4	(3)	118.5	(27)	724.8	(7)	
2	1972	167.14	Aug.22	425.0	(3)	231.5	(22)	171.0	(24)	656.5	(9)	
3	1978	166.86	Aug.16	393.6	(5)	432.8	(7)	293.9	(11)	826.4	(1)	
	Avg			240.2		320.9		261.0		561.2		
	Max	(Year)		437.1	(1992)	583.2	(1980)	620.5	(1967)	826.4	(1978)	

Table L.2- 2 Probability Calculation (1/2)--Maximum ; Nong Khai

Probability Calucu|ation (A) Nong Khai (Maximum)

i ①	Xi ②	(2i-1)/2N ③ %	log(Xi) ④	Xi/Xo ⑤	log(Xi/Xo) ⑥	⑦=⑥^2	Xi-Xa ⑧	(Xi-Xa)^2 ⑨	Remarks
1	168.25	1.85	2.2260	1.018	0.0076	0.00006	2.8974	8.39497	1966 Spt.10
2	167.14	5.56	2.2231	1.011	0.0047	0.00002	1.7874	3.19483	1971 Aug.22
3	166.86	9.26	2.2224	1.009	0.0040	0.00002	1.5074	2.27228	1978 Aug.16
4	166.57	12.96	2.2216	1.007	0.0032	0.00001	1.2174	1.48208	1980 Spt.08
5	166.56	16.67	2.2216	1.007	0.0032	0.00001	1.2074	1.45783	1970 Aug.16
6	166.46	20.37	2.2213	1.007	0.0029	0.00001	1.1074	1.22635	1969 Spt.20
7	166.27	24.07	2.2208	1.006	0.0024	0.00001	0.9174	0.84164	1985 Spt.02
8	166.14	27.78	2.2205	1.005	0.0021	0.00000	0.7874	0.62001	1973 Spt.08
9	166.09	31.48	2.2203	1.004	0.0019	0.00000	0.7374	0.54377	1991 Aug.21
10	165.94	35.19	2.2200	1.004	0.0016	0.00000	0.5874	0.34505	1990 Aug.02
11	165.79	38.89	2.2196	1.003	0.0012	0.00000	0.4374	0.19133	1976 Aug.17
12	165.68	42.59	2.2193	1.002	0.0009	0.00000	0.3274	0.10720	1981 Aug.08
13	165.49	46.30	2.2188	1.001	0.0004	0.00000	0.1374	0.01888	1982 Aug.26
14	165.38	50.00	2.2185	1.000	0.0001	0.00000	0.0274	0.00075	1975 Spt.05
15	165.08	53.70	2.2177	0.998	-0.0007	0.00000	-0.2726	0.07431	1974 Spt.02
16	164.80	57.41	2.2170	0.997	-0.0014	0.00000	-0.5526	0.30536	1968 Aug.18
17	164.75	61.11	2.2168	0.996	-0.0016	0.00000	-0.6026	0.36312	1983 Aug.08
18	164.73	64.81	2.2168	0.996	-0.0016	0.00000	-0.6226	0.38762	1986 Aug.01
19	164.59	68.52	2.2164	0.995	-0.0020	0.00000	-0.7626	0.58155	1972 Aug.27
20	164.40	72.22	2.2159	0.994	-0.0025	0.00001	-0.9526	0.90743	1977 Aug.02
21	164.37	75.93	2.2158	0.994	-0.0026	0.00001	-0.9826	0.96549	1988 Aug.19
22	164.30	79.63	2.2156	0.994	-0.0028	0.00001	-1.0526	1.10795	1984 Aug.08
23	164.26	83.33	2.2155	0.993	-0.0029	0.00001	-1.0926	1.19376	1979 Aug.30
24	163.95	87.04	2.2147	0.992	-0.0037	0.00001	-1.4026	1.96727	1967 Aug.24
25	163.68	90.74	2.2140	0.990	-0.0044	0.00002	-1.6726	2.79757	1965 Aug.21
26	163.55	94.44	2.2137	0.989	-0.0047	0.00002	-1.8026	3.24934	1989 Aug.19
27	163.44	98.15	2.2134	0.988	-0.0050	0.00003	-1.9126	3.65801	1987 Spt.28
Total	4464.52		59.90			0.00026		38.25572	
	Xa		Xo			δo=((Σ⑦)/N)^0.5			
	165.35		165.35			0.0031			

Table- Probability Calucuration (B) Nong Khai

Proba-bility W	ξ a	δo b	ξ*δo c	logXo d	logX e=c+d	X e	Remarks
1/ 5	0.8416	0.0031	0.0026	2.2184	2.2210	166.35	
1/10	1.2816	0.0031	0.0040	2.2184	2.2224	166.88	
1/20	1.6449	0.0031	0.0051	2.2184	2.2235	167.32	
1/30	1.8344	0.0031	0.0057	2.2184	2.2241	167.54	
1/40	1.9600	0.0031	0.0061	2.2184	2.2245	167.70	
1/50	2.0537	0.0031	0.0064	2.2184	2.2248	167.81	
1/60	2.1282	0.0031	0.0066	2.2184	2.2250	167.90	
1/100	2.3263	0.0031	0.0073	2.2184	2.2257	168.14	
1/200	2.5758	0.0031	0.0080	2.2184	2.2264	168.44	
1/250	2.6521	0.0031	0.0083	2.2184	2.2267	168.53	
1/300	2.7191	0.0031	0.0085	2.2184	2.2269	168.61	
1/500	2.8782	0.0031	0.0090	2.2184	2.2274	168.81	
1/1000	3.0902	0.0031	0.0097	2.2184	2.2281	169.06	

Table L.2- 3 Probability Calculation --Minimum ; Nong Khai

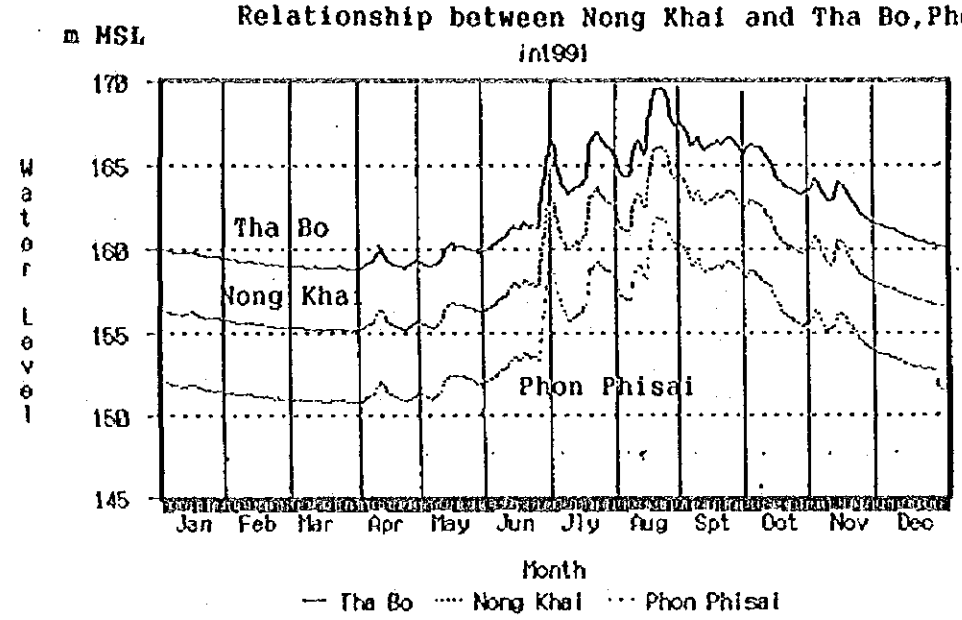
Probability Calucuration (A) Nong Khai (Minimum)

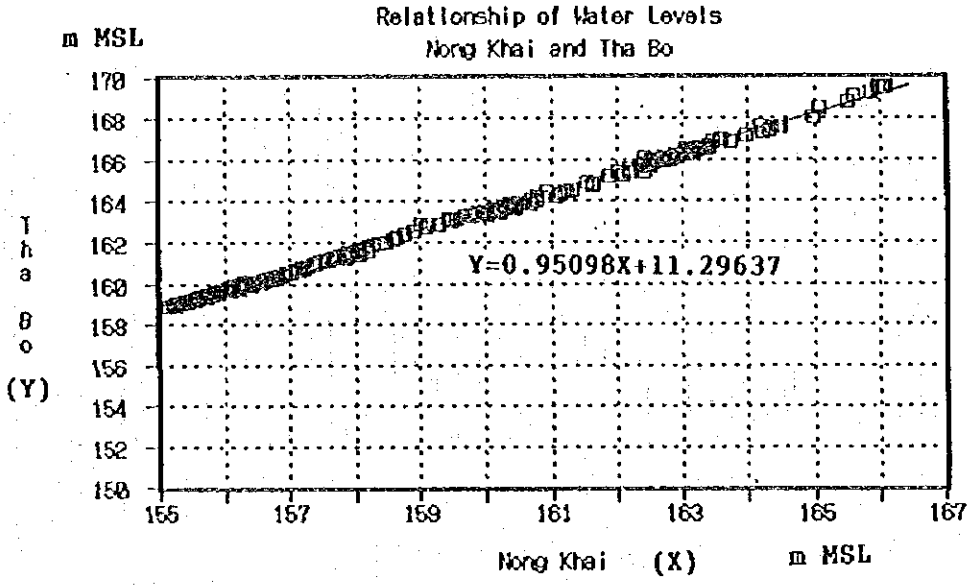
i ①	Xi	(2i-1)/2N ③ %	log(Xi) ④	Xi/Xo ⑤	log(Xi/Xo) ⑥	⑦=⑥^2	Xi-Xa ⑧	(Xi-Xa)^2 ⑨	(Xi-Xa)^2 ⑨	Remarks
1	154.57	1.85	2.1891	0.997	-0.0011	0.00000	-0.3926	0.15413	0.02376	1970 Mar,24
2	154.66	5.56	2.1894	0.998	-0.0008	0.00000	-0.3026	0.09156	0.00838	1972 Mar,28
3	154.68	9.26	2.1894	0.998	-0.0008	0.00000	-0.2826	0.07986	0.00638	1971 Mar,24
4	154.71	12.96	2.1895	0.998	-0.0007	0.00000	-0.2526	0.06380	0.00407	1979 Apr,06
5	154.74	16.67	2.1896	0.999	-0.0006	0.00000	-0.2226	0.04955	0.00245	1965 Apr,09
6	154.75	20.37	2.1896	0.999	-0.0006	0.00000	-0.2126	0.04520	0.00204	1969 Apr,10
7	154.75	24.07	2.1896	0.999	-0.0006	0.00000	-0.2126	0.04520	0.00204	1980 Mar,27
8	154.77	27.78	2.1897	0.999	-0.0005	0.00000	-0.1926	0.03709	0.00138	1989 Apr,21
9	154.78	31.48	2.1897	0.999	-0.0005	0.00000	-0.1826	0.03334	0.00111	1967 Apr,07
10	154.78	35.19	2.1897	0.999	-0.0005	0.00000	-0.1826	0.03334	0.00111	1975 Apr,01
11	154.81	38.89	2.1898	0.999	-0.0004	0.00000	-0.1526	0.02328	0.00054	1978 Apr,09
12	154.87	42.59	2.1900	0.999	-0.0003	0.00000	-0.0926	0.00857	0.00007	1968 Apr,03
13	154.93	46.30	2.1901	1.000	-0.0001	0.00000	-0.0326	0.00106	0.00000	1990 Apr,21
14	154.97	50.00	2.1902	1.000	0.0000	0.00000	0.0074	0.00005	0.00000	1966 Apr,07
15	155.02	53.70	2.1904	1.000	0.0002	0.00000	0.0574	0.00330	0.00001	1985 Mar,26
16	155.04	57.41	2.1904	1.001	0.0002	0.00000	0.0774	0.00599	0.00004	1981 Mar,31
17	155.08	61.11	2.1906	1.001	0.0003	0.00000	0.1174	0.01378	0.00019	1988 Apr,14
18	155.09	64.81	2.1906	1.001	0.0004	0.00000	0.1274	0.01623	0.00026	1974 Mar,22
19	155.15	68.52	2.1908	1.001	0.0005	0.00000	0.1874	0.03512	0.00123	1982 Mar,24
20	155.15	72.22	2.1908	1.001	0.0005	0.00000	0.1874	0.03512	0.00123	1986 Apr,07
21	155.17	75.93	2.1908	1.001	0.0006	0.00000	0.2074	0.04302	0.00185	1984 Apr,11
22	155.18	79.63	2.1908	1.001	0.0006	0.00000	0.2174	0.04727	0.00223	1977 Mar,24
23	155.19	83.33	2.1909	1.001	0.0006	0.00000	0.2274	0.05171	0.00267	1991 Mar,13
24	155.21	87.04	2.1909	1.002	0.0007	0.00000	0.2474	0.06121	0.00375	1967 Mar,10
25	155.25	90.74	2.1910	1.002	0.0008	0.00000	0.2874	0.08260	0.00682	1987 Apr,04
26	155.33	94.44	2.1913	1.002	0.0010	0.00000	0.3674	0.13499	0.01822	1973 Apr,11
27	155.36	98.15	2.1913	1.003	0.0011	0.00000	0.3974	0.15793	0.02494	1983 Mar,14
total	4183.99		59.14			0.00001		1.35432		
	Xa		Xo			δo=((Σ⑦)/N)^0.5				
	154.96		154.96			0.0006				

Probability Calucuration (B) Nong Khai

Proba-bility W	ξ a	δo b	ξ*δo c	logXo d	logX e=c+d	X e	Remarks
1/ 3	-0.4306	0.0006	-0.0003	2.1902	2.1900	154.87	
1/ 5	-0.8416	0.0006	-0.0005	2.1902	2.1897	154.77	
1/10	-1.2816	0.0006	-0.0008	2.1902	2.1894	154.68	
1/20	-1.6449	0.0006	-0.0010	2.1902	2.1892	154.59	
1/30	-1.8344	0.0006	-0.0012	2.1902	2.1891	154.55	
1/40	-1.9600	0.0006	-0.0012	2.1902	2.1890	154.52	
1/50	-2.0537	0.0006	-0.0013	2.1902	2.1889	154.50	
1/60	-2.1282	0.0006	-0.0013	2.1902	2.1889	154.49	
1/100	-2.3263	0.0006	-0.0015	2.1902	2.1888	154.44	
1/200	-2.5758	0.0006	-0.0016	2.1902	2.1886	154.39	
1/250	-2.6521	0.0006	-0.0017	2.1902	2.1886	154.37	
1/300	-2.7191	0.0006	-0.0017	2.1902	2.1885	154.35	
1/500	-2.8782	0.0006	-0.0018	2.1902	2.1884	154.32	

FIGURE L.2- 1 Mekong River Water Level at Nong Khai in 1991 &
Relationship between Nong Khai and Tha Bo,Phon Phisai





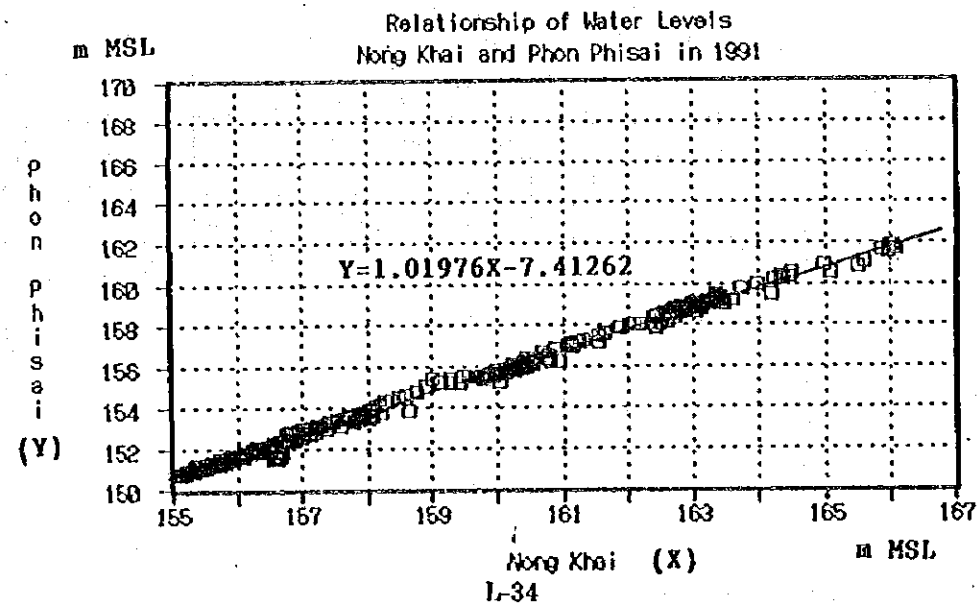
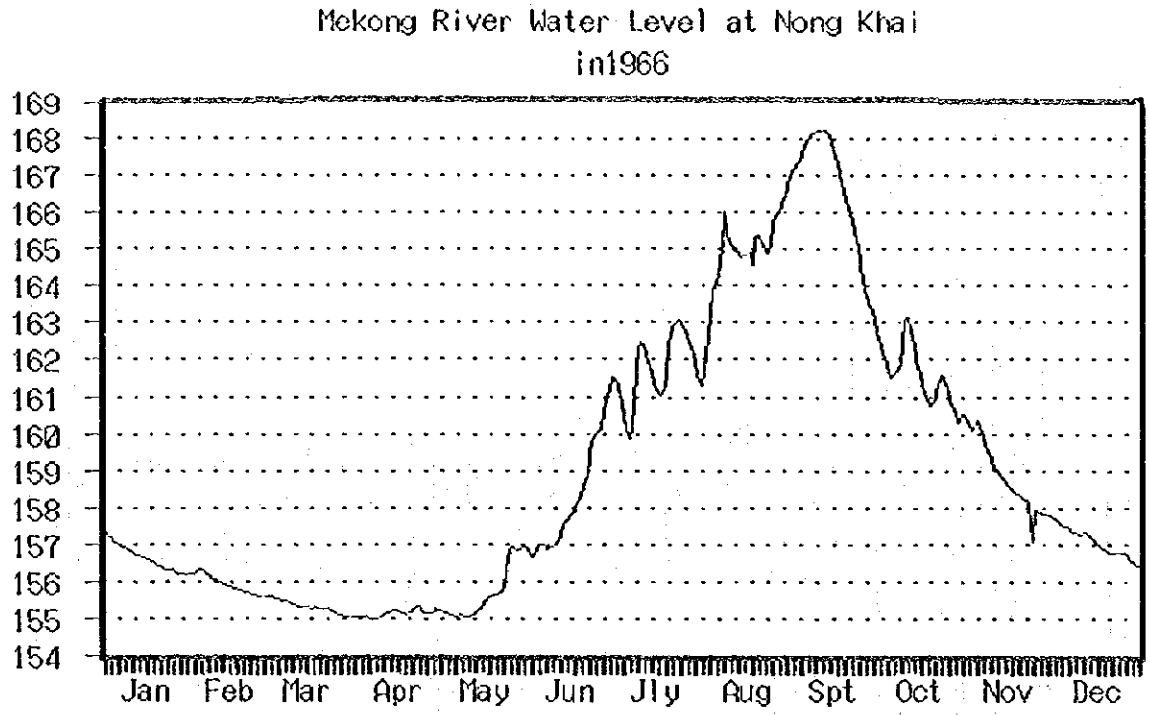


FIGURE L.2- 2 Mekong River Water Level in 1996



Data source ; DEDP

2.2 Water Level of Huai Mong in 1995

Table L.2- 4 Water Level of Huai Mong in 1995 (1/3)

Data source ; DEDP

Water Level in Huai Mong Project (1995)

Month	Day	Regulator		P-1		P-3		P-4		P-5		P-6	
		Reserv.	Mekong	Reserv.	Field	Reserv.	Field	Reserv.	Field	Reserv.	Field	Reserv.	Field
1995													
	22	164.98	160.83	165.06	-	165.10	-	164.84	164.03	164.67	164.63	164.10	164.78
	23	165.24	161.03	165.24	-	165.22	-	164.87	164.06	164.71	164.67	164.20	164.80
	24	164.78	161.10	164.76	-	164.89	-	164.87	164.06	164.93	165.87	164.90	164.60
Jun	25	164.43	161.28	164.52	-	164.62	-	164.87	164.06	165.03	165.97	164.60	164.67
	26	164.25	160.63	164.43	-	164.37	-	164.86	164.05	165.11	165.11	164.40	164.40
	27	164.81	160.61	164.76	-	164.81	-	164.86	164.05	165.11	165.10	164.80	164.56
	28	164.96	160.70	164.98	-	164.96	-	164.86	164.05	165.09	165.09	164.90	164.56
	29	165.05	160.61	165.04	-	165.05	-	164.85	164.05	165.07	165.07	165.10	164.60
	30	165.10	160.54	165.10	-	165.10	-	164.85	164.05	165.13	165.12	165.10	164.56
	Avg	164.56	160.40	164.55	-	164.61	-	164.83	163.93	164.46	164.49	164.63	164.64
	1	165.14	160.48	165.16	-	165.15	-	164.85	164.05	165.19	165.18	165.40	164.90
	2	165.23	160.42	165.22	-	165.23	-	164.88	164.05	165.21	165.20	165.33	164.45
	3	165.31	160.55	165.31	-	165.30	-	164.85	164.08	165.26	165.25	165.27	164.50
	4	165.24	161.35	164.45	-	165.25	-	164.83	164.08	165.29	165.28	165.20	164.67
	5	164.44	162.00	164.46	-	165.01	-	164.92	164.98	165.31	165.30	165.10	164.67
	6	164.66	162.44	164.46	-	164.76	-	164.98	164.78	165.33	165.31	164.78	164.80
	7	164.68	162.29	164.47	-	164.70	-	165.00	164.23	165.37	165.36	164.78	164.80
	8	164.80	162.27	164.78	-	164.85	-	165.04	164.24	165.41	165.41	164.90	164.78
	9	164.84	162.46	164.80	-	164.93	-	165.22	164.24	165.43	165.42	165.10	165.10
	10	165.04	162.77	165.03	-	165.11	-	165.14	164.24	165.45	165.46	165.10	165.10
	11	165.10	163.03	164.92	-	165.08	-	165.18	164.23	165.51	165.50	165.10	165.10
	12	164.56	163.78	164.78	-	165.20	-	165.20	164.22	165.47	165.48	165.20	165.10
	13	164.64	164.45	164.46	-	164.86	-	165.22	164.22	165.44	165.45	164.90	164.95
	14	164.75	164.71	164.76	-	164.85	-	165.22	164.21	165.39	165.41	164.80	164.90
Jly	15	164.67	164.63	164.68	-	164.84	-	165.24	164.20	165.27	165.28	164.89	164.80
	16	164.58	164.53	164.64	-	164.82	-	165.29	164.26	165.23	165.21	164.83	164.80
	17	164.62	164.57	164.61	-	164.79	-	165.33	164.31	165.07	165.09	164.82	164.85
	18	164.58	164.53	164.58	-	164.78	-	165.42	164.32	165.03	165.07	164.87	164.90
	19	164.73	164.70	164.76	-	164.95	-	165.45	164.36	164.95	164.93	164.92	164.95
	20	164.78	164.73	164.78	-	165.00	-	165.54	164.39	164.83	164.88	165.00	165.07
	21	164.84	164.81	164.86	-	165.11	-	165.68	164.45	165.01	164.05	165.08	165.13
	22	165.30	165.25	165.32	-	165.47	-	165.71	164.43	165.15	164.21	165.42	165.21
	23	165.00	165.27	165.26	-	165.59	-	165.78	164.46	165.27	164.33	165.49	165.34
	24	165.34	165.27	165.36	-	165.58	-	165.84	164.54	165.43	164.49	165.60	165.48
	25	165.29	165.22	165.29	-	165.58	-	165.94	164.67	165.35	164.40	165.59	165.58
	26	165.25	165.18	165.29	-	165.50	-	165.93	164.64	165.30	164.38	165.63	165.67
	27	165.06	164.95	165.10	-	165.50	-	165.92	164.63	165.20	164.25	165.59	165.66
	28	165.72	164.61	164.76	-	165.41	-	165.91	164.62	164.90	164.95	165.49	165.59
	29	164.40	164.30	164.50	-	165.25	-	165.94	164.61	164.60	164.95	165.33	165.46
	30	164.14	164.06	164.12	-	165.10	-	165.98	164.60	164.75	164.50	165.30	165.43
	31	164.32	164.84	165.39	-	165.17	-	165.94	164.70	164.65	164.70	165.31	165.39
	Avg	164.87	163.69	164.95	-	165.12	-	165.40	164.39	165.20	164.99	165.17	165.05
	1	165.25	165.14	165.28	-	165.80	-	166.35	164.98	165.75	165.80	167.99	165.81
	2	166.24	166.08	166.19	-	166.88	-	166.35	164.95	166.55	166.42	167.97	165.83
	3	166.36	166.11	166.36	-	167.26	-	166.87	165.15	166.66	166.52	167.97	165.97
	4	165.04	165.69	166.09	-	167.34	-	167.43	165.27	166.53	166.66	167.67	166.11
	5	166.52	165.20	165.72	-	167.13	-	167.56	165.39	166.60	166.68	167.45	166.18
	6	164.96	164.85	165.54	-	166.95	-	167.65	165.23	165.90	166.02	167.25	166.23
	7	165.84	165.60	165.99	-	167.00	-	167.83	165.44	166.30	166.38	167.22	166.32
	8	165.08	165.80	166.10	-	167.15	-	167.90	165.55	166.47	167.60	167.40	166.54
	9	166.70	165.20	166.96	-	168.30	-	168.02	165.50	167.40	166.67	168.30	167.90

Water Level in Huai Mong Project (1995)

Month	Day	P-7		P-8		P-9		P-10		Remarks
		Reserv.	Field	Reserv.	Field	Reserv.	Field	Reserv.	Field	
1995										
	22	164.93	164.57	164.97	164.84	165.04	164.98	165.82	-	
	23	165.04	164.58	165.12	164.85	165.20	164.99	165.84	-	
	24	165.24	164.66	165.26	164.87	165.32	165.02	165.86	-	
Jun	25	165.97	164.69	165.04	164.87	165.16	165.02	165.79	-	
	26	165.71	164.71	164.82	164.85	164.99	165.01	165.64	-	
	27	165.50	164.55	164.64	164.85	164.94	164.95	165.80	-	
	28	165.82	164.56	164.84	164.85	164.96	164.94	165.73	-	
	29	165.97	164.55	164.98	164.85	165.06	164.95	165.69	-	
	30	165.05	164.56	165.07	164.85	165.12	164.95	165.67	-	
	Avg	164.74	164.34	164.63	164.56	164.62	164.65	165.11	-	
	1	165.11	164.56	165.12	164.83	165.16	164.95	165.65	-	
	2	165.16	164.57	165.16	164.81	165.20	164.92	165.75	-	
	3	165.20	164.58	165.26	164.81	165.28	164.91	165.78	-	
	4	165.30	164.59	165.32	164.81	165.37	164.97	165.80	-	
	5	165.29	164.69	165.30	164.91	165.36	165.00	165.82	-	
	6	164.92	164.93	165.12	165.01	165.35	165.03	166.14	-	
	7	164.87	164.93	165.00	165.14	165.30	165.09	166.22	-	
	8	164.90	164.97	165.12	165.13	165.38	165.12	166.82	-	
	9	165.00	165.06	165.12	165.13	165.42	165.17	166.95	-	
	10	165.09	165.14	165.20	165.12	165.44	165.19	167.17	-	
	11	165.21	165.22	165.30	165.29	165.64	165.22	167.27	-	
	12	165.25	165.31	165.48	165.31	165.69	165.27	167.27	-	
	13	165.31	165.34	165.42	165.31	165.74	165.32	167.17	-	
	14	165.13	165.13	165.30	165.39	165.62	165.32	167.02	-	
Jly	15	165.09	165.14	165.30	165.23	165.52	165.34	167.07	-	
	16	165.00	165.07	165.23	165.15	165.46	165.34	167.12	-	
	17	164.92	164.99	165.08	165.15	165.42	165.40	167.17	-	
	18	164.93	165.00	165.08	165.15	165.36	165.43	167.22	-	
	19	164.98	165.04	165.14	165.15	165.60	165.45	167.27	-	
	20	165.08	165.13	165.22	165.17	165.68	165.52	167.37	-	
	21	165.22	165.27	165.42	165.23	165.80	165.60	167.47	-	
	22	165.31	165.34	165.47	165.28	165.88	165.66	167.52	-	
	23	165.56	165.39	165.96	165.39	165.96	165.70	167.70	-	
	24	165.79	165.48	165.84	165.51	166.05	165.80	167.70	-	
	25	165.88	165.68	165.96	165.65	166.12	165.93	167.80	-	
	26	165.91	165.90	165.98	165.99	166.20	166.01	168.40	-	
	27	165.99	166.08	166.08	166.06	166.28	166.17	168.40	-	
	28	166.07	166.15	166.18	166.18	166.38	166.23	168.35	-	
	29	166.10	166.19	166.23	166.22	166.44	166.34	168.35	-	
	30	166.07	166.17	166.18	166.19	166.42	166.44	168.35	-	
	31	166.05	166.15	166.10	166.10	166.38	166.47	168.40	-	
	Avg	165.34	165.27	165.46	165.35	165.71	165.50	167.18	-	
	1	166.47	166.53	166.66	166.57	167.82	166.61	169.08	-	
	2	167.60	166.91	167.32	166.90	167.96	166.92	169.20	-	
	3	168.26	167.05	167.36	167.07	168.70	167.11	169.15	-	
	4	168.50	167.12	168.75	168.86	168.86	167.23	169.13	-	
Aug	5	168.44	167.29	168.60	167.31	169.00	167.31	169.12	-	
	6	168.27	167.65	168.44	167.65	168.74	167.73	169.62	-	
	7	168.11	169.87	168.21	167.91	168.39	168.11	168.97	-	
	8	168.22	167.87	168.38	168.17	169.52	168.24	169.55	-	
	9	169.47	167.67	169.54	168.08	170.15	168.32	170.59	-	

Data source ; DEDP

Table L.2- 5 Water Level of Huai Mong in 1995 (2/3)

Water Level in Huai Mong Project (1995)

Month	Day	Regulator		P-1		P-3		P-4		P-5		P-6	
		Reserv.	Mekong	Reserv.	Field	Reserv.	Field	Reserv.	Field	Reserv.	Field	Reserv.	Field
Aug	10	167.52	166.70	167.90	-	169.10	-	168.35	165.68	168.50	166.64	168.85	168.17
	11	167.65	167.09	167.90	-	168.95	-	168.48	165.53	168.40	166.58	169.25	168.00
	12	167.86	167.07	167.87	-	168.66	-	167.50	165.69	168.05	166.02	169.04	169.04
	13	167.10	167.57	167.70	-	168.40	-	168.61	165.70	167.84	167.80	168.94	168.94
	14	167.62	167.29	167.76	-	168.20	-	168.72	165.75	167.76	167.90	168.90	168.92
	15	167.64	167.33	167.76	-	168.09	-	168.84	165.84	167.72	168.98	168.89	169.46
	16	167.70	167.53	167.92	-	168.01	-	168.87	165.85	167.72	169.00	168.93	169.56
	17	168.20	168.02	168.06	-	168.11	-	168.02	165.85	168.02	169.02	169.13	169.67
	18	168.87	168.58	168.61	-	168.50	-	168.90	165.85	168.66	169.10	169.38	169.74
	19	169.08	169.97	168.14	-	168.70	-	168.91	165.85	169.10	169.20	169.80	169.77
	20	169.16	169.12	169.26	-	168.86	-	168.32	165.85	169.55	169.00	169.90	169.79
	21	169.13	169.04	169.17	-	168.78	-	168.97	165.85	169.50	169.55	169.85	169.73
	22	169.16	169.10	169.20	-	168.87	-	168.98	165.89	169.53	169.50	169.87	169.75
	23	169.22	169.16	169.25	-	168.93	-	168.99	165.89	169.58	169.53	169.92	169.78
	24	169.19	169.10	169.23	-	168.92	-	169.01	165.90	169.56	169.55	169.87	169.76
	25	169.06	168.94	169.14	-	168.85	-	169.02	165.91	169.40	169.38	169.74	169.76
	26	169.01	168.90	169.09	-	168.80	-	169.04	165.94	169.39	169.41	169.36	169.39
	27	169.00	168.88	169.02	-	168.75	-	169.17	165.94	168.70	168.82	169.12	169.26
	28	168.78	168.59	168.84	-	168.71	-	169.16	165.95	168.63	168.79	169.06	169.27
	29	168.38	168.16	168.44	-	168.55	-	169.19	165.97	168.84	168.76	168.89	169.25
	30	167.98	168.67	168.08	-	168.42	-	169.14	165.99	168.36	168.76	168.57	169.30
	31	167.74	168.44	167.87	-	168.19	-	169.14	166.04	168.16	168.71	168.51	169.24
	Ave	167.65	167.51	167.75	-	168.17	-	168.38	165.89	168.04	168.02	168.81	168.47
Sep	1	167.92	167.78	167.99	-	168.33	-	169.14	166.06	167.14	168.30	168.54	169.11
	2	168.44	168.33	168.46	-	168.49	-	169.16	166.04	168.47	168.32	168.61	169.02
	3	168.19	167.94	168.27	-	168.47	-	169.18	166.06	168.45	168.50	168.62	169.03
	4	168.40	168.20	168.47	-	168.50	-	169.19	166.08	168.48	168.70	168.67	169.09
	5	168.56	168.36	168.49	-	168.71	-	169.22	166.13	168.52	168.92	168.89	169.13
	6	168.72	168.55	168.38	-	168.76	-	169.21	166.23	168.70	169.01	168.92	169.16
	7	168.72	168.44	168.92	-	168.95	-	169.23	166.26	168.93	169.19	169.02	169.50
	8	168.63	168.38	168.86	-	169.11	-	169.30	166.29	168.87	169.27	169.00	169.59
	9	168.49	168.18	168.50	-	169.04	-	169.30	166.29	168.76	169.28	168.95	169.59
	10	168.42	168.14	168.42	-	168.94	-	169.29	166.30	168.66	169.23	168.86	169.52
	11	168.26	167.92	168.35	-	168.84	-	169.29	166.31	168.45	169.15	168.72	169.46
	12	168.07	167.74	168.08	-	168.68	-	169.21	166.32	168.30	169.09	168.61	169.40
	13	167.82	167.53	167.84	-	168.43	-	169.16	166.32	168.06	168.99	168.43	169.30
	14	167.58	167.17	167.60	-	168.22	-	169.10	166.32	167.79	168.84	168.22	169.21
	15	167.24	166.78	167.26	-	168.00	-	169.04	166.32	167.60	168.68	167.97	169.08
	16	167.00	166.51	167.02	-	167.80	-	168.96	166.32	167.40	168.51	167.76	168.98
	17	166.64	166.32	166.66	-	167.62	-	168.89	166.32	167.38	168.30	167.68	168.84
	18	166.20	165.85	166.22	-	167.37	-	168.82	166.32	167.29	168.12	167.40	168.72
	19	165.76	165.49	165.78	-	167.03	-	168.73	166.32	166.89	167.89	167.10	168.60
	20	165.33	165.05	165.52	-	166.69	-	168.62	166.30	165.89	167.53	166.87	168.39
	21	165.22	164.84	165.42	-	166.48	-	168.52	166.29	165.75	167.35	166.65	168.29
	22	165.14	164.80	165.32	-	166.32	-	168.41	166.29	165.65	166.95	166.54	168.09
	23	165.08	164.85	165.26	-	166.20	-	166.28	166.27	165.55	166.70	166.34	167.95
	24	165.70	165.60	165.88	-	166.35	-	168.16	166.26	165.95	166.85	166.49	167.69
	25	166.44	166.38	166.53	-	166.68	-	168.03	166.25	165.35	167.30	166.70	167.60
	26	166.44	166.40	166.51	-	166.75	-	167.94	166.23	166.38	167.35	166.72	167.48
	27	166.08	165.95	166.10	-	166.46	-	167.87	166.22	166.10	167.23	166.50	167.30
	28	165.70	165.61	165.76	-	166.20	-	167.63	166.19	165.90	166.55	166.24	167.12
	29	165.52	165.42	165.54	-	166.00	-	167.60	166.19	165.70	166.40	166.05	166.93
	30	165.55	165.44	165.58	-	165.90	-	167.55	166.16	165.71	166.37	166.00	165.96
	Ave	167.04	166.80	167.12	-	167.65	-	168.67	166.24	167.30	168.10	167.70	168.57

Water Level in Huai Mong Project (1995)

Month	Day	P-7		P-8		P-9		P-10		
		Reserv.	Field	Reserv.	Field	Reserv.	Field	Reserv.	Field	
Aug	10	170.01	167.95	170.10	168.35	170.33	168.87	170.65	-	
	11	169.76	168.34	169.88	168.57	170.28	169.99	170.60	-	
	12	169.68	168.79	169.80	169.00	169.20	169.05	170.48	-	
	13	168.99	168.63	169.35	168.73	168.84	168.04	169.78	-	
	14	168.89	168.69	169.21	168.78	168.80	168.45	169.70	-	
	15	168.82	168.84	168.93	168.97	169.00	169.14	169.23	-	
	16	168.80	168.95	169.02	169.00	168.99	169.11	169.30	-	
	17	168.77	168.97	168.99	169.03	168.94	169.01	169.30	-	
	18	168.87	168.99	169.04	168.05	168.92	168.95	169.15	-	
	19	169.02	169.01	168.22	169.10	169.09	169.00	169.27	-	
	20	169.17	169.10	169.31	169.17	169.22	169.19	169.34	-	
	21	169.23	169.13	169.33	169.21	169.85	169.82	169.87	-	
	22	169.22	169.24	169.38	169.26	169.90	169.87	169.92	-	
	23	169.24	169.29	169.41	169.30	169.93	169.90	169.50	-	
	24	169.23	169.33	169.41	169.34	169.55	169.50	169.42	-	
	25	169.19	169.34	169.33	169.36	169.23	169.20	169.36	-	
	26	169.14	169.32	169.29	169.32	169.22	169.22	169.31	-	
	27	169.15	169.34	169.24	169.30	169.26	169.36	169.28	-	
	28	169.09	169.31	169.13	169.30	169.20	169.32	169.29	-	
	29	169.00	169.26	169.10	169.25	169.16	169.28	169.24	-	
	30	168.91	169.20	169.01	169.22	169.09	169.26	169.18	-	
	31	168.87	169.18	168.95	169.19	169.09	169.25	169.16	-	
	Avg	168.85	168.59	168.97	168.62	169.17	168.72	169.51	-	
Sep	1	168.85	169.12	168.91	169.17	168.97	169.24	169.13	-	
	2	168.89	169.08	168.94	169.15	168.99	169.19	169.16	-	
	3	168.90	169.09	169.00	169.11	169.09	169.20	169.18	-	
	4	168.98	169.13	169.08	169.15	169.15	169.21	169.19	-	
	5	169.06	169.17	169.13	169.19	169.18	169.24	169.21	-	
	6	169.15	169.20	169.22	169.30	169.28	169.39	169.32	-	
	7	169.25	169.28	169.24	169.31	169.29	169.39	169.33	-	
	8	169.26	169.37	169.22	169.33	169.28	169.41	169.32	-	
	9	169.22	169.30	169.19	169.34	169.26	169.41	169.30	-	
	10	169.13	169.33	169.14	169.32	169.19	169.39	169.21	-	
	11	169.03	169.25	169.08	169.28	169.13	169.35	169.19	-	
	12	168.93	169.17	169.04	169.23	169.08	169.30	169.15	-	
	13	168.82	169.07	168.88	169.10	168.92	169.14	169.04	-	
	14	168.69	168.88	168.71	169.02	168.75	169.06	168.96	-	
	15	168.53	168.77	168.58	168.90	168.62	168.95	168.90	-	
	16	168.38	168.74	168.41	168.80	168.47	168.71	168.85	-	
	17	168.23	168.66	168.32	168.65	168.38	168.68	168.49	-	
	18	168.06	168.55	168.10	168.56	168.16	168.61	168.32	-	
	19	167.85	168.42	167.86	168.47	167.95	168.52	168.19	-	
	20	167.59	168.29	167.61	168.31	167.74	168.31	168.08	-	
	21	167.36	168.13	167.37	168.16	167.71	168.21	167.92	-	
	22	167.18	167.99	167.21	167.99	167.26	168.17	167.73	-	
	23	167.01	167.83	N.A	N.A	167.09	167.80	167.47	-	
	24	166.91	167.66	N.A	N.A	166.96	167.66	167.31	-	
	25	166.90	167.49	N.A	N.A	166.90	167.52	167.20	-	
	26	166.96	167.37	166.95	167.38	167.01	167.38	167.08	-	
	27	166.82	167.24	166.86	167.25	166.86	167.25	166.95	-	
	28	166.62	167.11	166.64	167.11	166.66	167.19	166.76	-	
	29	166.42	166.95	166.45	166.91	166.46	166.92	166.77	-	
	30	166.27	166.71	166.25	166.71	166.19	166.75	166.32	-	
	Ave	168.11	168.48	151.45	151.74	168.20	168.55	168.37	-	

Table L.2- 6 Water Level of Huai Mong in 1995 (3/3)

Data source ; DEDP

Water Level in Huai Mong Project (1995)

Month	Day	Regulator		P-1		P-3		P-4		P-5		P-6	
		Reserv.	Mekong	Reserv.	Field	Reserv.	Field	Reserv.	Field	Reserv.	Field	Reserv.	Field
1995	1	164.09	158.44	164.07	-	164.07	-	164.91	163.87	164.23	164.03	164.04	163.99
	2	164.08	158.44	164.07	-	164.07	-	164.91	163.87	164.23	164.03	164.04	163.99
	3	164.06	158.44	164.06	-	164.07	-	164.91	163.87	164.22	164.02	164.04	163.99
	4	164.06	158.44	164.04	-	164.07	-	164.91	163.87	164.22	164.01	164.04	163.99
	5	164.05	158.44	164.06	-	164.07	-	164.90	163.87	164.23	164.00	164.03	163.99
	6	164.06	158.44	164.06	-	164.07	-	164.90	163.87	164.22	163.99	164.03	163.99
	7	164.06	158.44	164.06	-	164.07	-	164.90	163.87	164.22	163.99	164.03	163.99
	8	164.07	158.44	164.06	-	164.07	-	164.89	163.87	164.21	163.98	164.03	163.99
	9	164.06	158.44	164.05	-	164.07	-	164.89	163.87	164.20	163.98	164.03	163.98
	10	164.06	158.44	164.06	-	164.07	-	164.89	163.87	164.19	163.98	164.02	163.98
	11	164.07	158.44	164.06	-	164.07	-	164.88	163.86	164.18	163.99	164.02	163.98
	12	164.08	158.46	164.06	-	164.07	-	164.88	163.86	164.17	163.98	164.02	163.98
	13	164.12	158.55	164.06	-	164.06	-	164.88	163.86	164.16	163.99	164.02	163.98
	14	164.17	158.57	164.12	-	164.06	-	164.88	163.86	164.15	163.99	164.01	163.98
	15	164.18	158.64	164.18	-	164.06	-	164.87	163.86	164.14	164.00	164.01	163.98
May	16	164.20	158.68	164.20	-	164.06	-	164.87	163.86	164.15	164.01	164.00	163.98
	17	164.20	158.87	164.19	-	164.09	-	164.87	164.86	164.16	164.03	164.00	163.97
	18	164.19	158.89	164.18	-	164.09	-	164.86	164.86	164.15	164.04	164.00	163.97
	19	164.18	158.92	164.19	-	164.09	-	164.86	164.85	164.14	164.03	164.00	163.97
	20	164.17	158.91	164.18	-	164.09	-	164.86	164.85	164.13	164.04	164.00	163.97
	21	164.16	158.90	164.16	-	164.09	-	164.85	164.85	164.13	164.05	164.00	163.97
	22	164.15	158.89	164.15	-	164.08	-	164.85	164.85	164.12	164.06	164.00	163.97
	23	164.12	158.88	164.13	-	164.08	-	164.85	164.85	164.13	164.05	163.99	163.97
	24	164.10	158.80	164.11	-	164.08	-	164.84	164.85	164.14	164.04	163.99	163.96
	25	164.08	158.94	164.10	-	164.08	-	164.84	164.84	164.16	164.03	163.99	163.96
	26	164.09	159.13	164.09	-	164.08	-	164.84	164.84	164.15	164.03	163.99	163.96
	27	164.09	159.64	164.09	-	164.08	-	164.83	164.84	164.14	164.02	163.99	163.96
	28	164.10	160.28	164.08	-	164.07	-	164.83	164.84	164.13	164.01	163.99	163.96
	29	164.09	160.13	164.06	-	164.07	-	164.83	164.84	164.12	164.02	163.99	163.96
	30	164.08	159.94	164.07	-	164.07	-	164.83	164.84	164.12	164.03	163.99	163.96
	31	164.08	159.77	164.07	-	164.07	-	164.82	164.84	164.11	164.03	163.99	163.96
	Avg	164.11	158.86	164.10	-	164.07	-	164.87	164.34	164.17	164.02	164.01	163.98
	1	164.07	159.88	164.06	-	164.06	-	164.81	163.84	164.12	164.02	163.99	164.04
	2	164.07	159.97	164.06	-	164.06	-	164.81	163.84	164.11	164.01	163.99	164.04
	3	164.07	159.83	164.06	-	164.06	-	164.81	163.84	164.11	164.01	164.04	164.16
	4	164.07	159.57	164.06	-	164.09	-	164.80	163.84	164.10	164.00	164.14	164.26
	5	164.07	159.31	164.06	-	164.13	-	164.80	163.84	164.10	164.02	164.24	164.36
	6	164.08	159.04	164.06	-	164.17	-	164.80	163.84	164.09	164.03	164.34	164.46
	7	164.08	158.84	164.07	-	164.20	-	164.80	163.84	164.11	164.07	164.44	164.56
	8	164.08	158.81	164.08	-	164.25	-	164.80	163.84	164.13	164.11	164.54	164.66
	9	164.12	158.99	164.10	-	164.30	-	164.79	163.83	164.15	164.13	164.64	164.76
Jun	10	164.22	159.22	164.13	-	164.36	-	164.79	163.83	164.15	164.13	164.74	164.86
	11	164.39	159.44	164.31	-	164.31	-	164.79	163.83	164.17	164.15	164.84	164.96
	12	164.54	159.72	164.52	-	164.52	-	164.79	163.83	164.18	164.16	164.94	165.06
	13	164.77	159.97	164.71	-	164.87	-	164.79	163.83	164.19	164.67	164.99	165.01
	14	164.98	160.43	164.91	-	165.02	-	164.79	163.83	164.23	164.19	165.04	165.06
	15	165.18	161.90	165.18	-	165.20	-	164.88	163.95	164.27	164.22	165.14	165.16
	16	165.38	162.01	165.37	-	165.38	-	164.96	163.95	164.30	164.23	165.24	165.36
	17	164.78	162.47	164.75	-	164.82	-	164.85	163.96	164.35	164.27	164.74	164.76
	18	164.38	161.75	164.38	-	164.57	-	164.84	163.97	164.41	164.29	164.54	164.56
	19	163.96	161.50	163.92	-	164.06	-	164.83	163.98	164.47	164.39	164.40	164.31
	20	164.82	161.07	164.81	-	164.81	-	164.83	163.98	164.53	164.49	164.81	164.57
	21	164.93	160.80	164.89	-	164.93	-	164.85	164.03	164.61	164.58	164.96	164.66

Water Level in Huai Mong Project (1995)

Month	Day	P-7		P-8		P-9		P-10		Remarks
		Reserv.	Field	Reserv.	Field	Reserv.	Field	Reserv.	Field	
1995	1	164.08	164.10	164.12	164.09	164.14	164.17	164.17	-	
	2	164.07	164.09	164.11	164.09	164.14	164.17	164.16	-	
	3	164.07	164.08	164.11	164.08	164.14	164.17	164.14	-	
	4	164.06	164.07	164.10	164.08	164.14	164.17	164.13	-	
	5	164.06	164.07	164.09	164.07	164.14	164.17	164.13	-	
	6	164.05	164.06	164.08	164.07	164.14	164.17	164.22	-	
	7	164.05	164.06	164.07	164.07	164.14	164.17	164.15	-	
	8	164.04	164.05	164.07	164.06	164.14	164.17	164.15	-	
	9	164.04	164.05	164.07	164.06	164.14	164.17	164.16	-	
	10	164.04	164.05	164.06	164.06	164.14	164.17	164.16	-	
	11	164.04	164.05	164.06	164.07	164.14	164.17	164.17	-	
	12	164.12	164.10	164.08	164.08	164.14	164.17	164.89	-	
	13	164.13	164.10	164.10	164.10	164.14	164.17	164.88	-	
	14	164.13	164.10	164.12	164.10	164.14	164.17	164.87	-	
	15	164.14	164.10	164.12	164.11	164.14	164.17	164.42	-	
May	16	164.14	164.11	164.12	164.13	164.14	164.17	164.42	-	
	17	164.15	164.11	164.12	164.14	164.14	164.17	164.42	-	
	18	164.15	164.11	164.10	164.14	164.14	164.17	164.39	-	
	19	164.15	164.11	164.08	164.15	164.14	164.17	164.36	-	
	20	164.16	164.11	164.07	164.15	164.14	164.17	164.33	-	
	21	164.17	164.11	164.06	164.16	164.14	164.17	164.30	-	
	22	164.17	164.11	164.05	164.16	164.14	164.17	164.27	-	
	23	164.14	164.11	164.05	164.15	164.14	164.17	164.25	-	
	24	164.13	164.11	164.00	164.14	164.14	164.17	164.23	-	
	25	164.12	164.11	164.06	164.12	164.14	164.17	164.21	-	
	26	164.06	164.11	164.07	164.11	164.14	164.17	164.20	-	
	27	164.06	164.11	164.07	164.10	164.14	164.17	164.17	-	
	28	164.07	164.11	164.09	164.09	164.14	164.17	164.17	-	
	29	164.07	164.11	164.09	164.08	164.14	164.17	164.17	-	
	30	164.07	164.11	164.09	164.07	164.14	164.17	164.17	-	
	31	164.07	164.11	164.08	164.07	164.14	164.17	164.16	-	
	Avg	164.10	164.09	164.08	164.10	164.14	164.17	164.29	-	
	1	164.10	164.09	164.08	164.10	164.14	164.17	164.29	-	
	2	164.05	164.11	164.06	164.06	164.14	164.17	164.16	-	
	3	164.04	163.96	164.07	164.06	164.14	164.17	164.16	-	
	4	164.03	163.97	164.07	164.06	164.14	164.17	164.16	-	
	5	164.05	163.98	164.06	164.06	164.14	164.17	164.16	-	
	6	164.05	163.98	164.07	164.07	164.14	164.17	164.16	-	
	7	164.05	163.99	164.08	164.07	164.14	164.17	164.16	-	
	8	164.06	164.00	164.08	164.08	164.14	164.17	164.17	-	
	9	164.07	164.01	164.09	164.09	164.14	164.17	164.17	-	
Jun	10	164.08	164.02	164.11	164.10	164.18	164.19	164.18	-	
	11	164.15	164.16	164.32	164.30	164.30	164.33	164.23	-	
	12	164.25	164.18	164.41	164.39	164.42	164.41	164.90	-	
	13	164.54	164.20	164.54	164.53	164.50	164.55	165.43	-	
	14	164.75	164.31	164.76	164.78	164.62	164.73	165.45	-	
	15	164.99	164.42	165.00	164.94	164.14	164.91	165.32	-	
	16	165.16	164.48	165.20	164.97	164.34	164.93	165.20	-	
	17	165.37	164.57	165.40	164.98	164.39	164.95	165.12	-	
	18	165.06	164.64	165.22	164.99	165.35	164.99	166.20	-	
	19	164.77	164.68	165.00	164.95	165.32	165.06	166.12	-	
	20	164.39	164.43	164.70	164.85	165.07	165.06	165.82	-	
	21	164.84	164.54	164.84	164.81	164.91	164.94	165.37	-	

2.3 Water Level at Bang Phuan and Vieng Kook Regulator

Table L.2- 7 Water Level at Bang Phuan Regulator (1/2)

Data source ; RID

Year	Day	Month																												Remarks
		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec						
		U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S		
1993	1	163.61	-	163.61	-	163.31	-	163.12	-	162.93	-	164.11	-	163.19	-	-	-	162.82	160.89	164.75	164.47	163.79	161.15	164.21	164.24	164.86	-			
	2	163.61	-	163.61	-	163.38	-	163.12	-	162.93	-	164.08	159.59	163.21	157.99	162.74	160.59	164.85	164.43	163.62	161.24	164.28	160.13	164.85	-					
	3	163.60	-	163.61	-	163.38	-	163.11	-	162.93	-	164.08	159.43	163.21	157.99	162.84	160.33	164.91	164.41	163.43	161.27	164.19	159.98	164.85	-					
	4	163.60	-	163.61	-	163.38	-	163.10	-	162.92	-	163.81	159.29	163.19	157.99	162.98	160.32	164.95	164.48	163.28	161.26	164.16	160.23	164.84	-					
	5	163.60	-	163.61	-	163.29	-	163.11	-	162.92	-	163.76	159.25	163.13	157.99	162.93	160.14	164.98	164.44	163.28	161.42	164.14	160.33	164.84	-					
	6	163.59	-	163.61	-	163.29	-	163.10	-	162.91	-	163.71	159.23	163.11	158.14	162.93	160.15	164.88	164.64	163.75	161.27	164.13	160.23	164.84	-					
	7	163.59	-	163.61	-	163.28	-	163.09	-	162.90	-	163.66	159.23	163.08	158.15	162.93	160.56	164.98	164.88	164.09	161.27	164.12	160.21	164.84	-					
	8	163.58	-	163.48	-	163.27	-	163.09	-	162.89	-	163.61	159.23	163.06	158.15	162.93	161.51	165.84	164.86	164.1	161.27	164.1	159.96	164.83	-					
	9	163.57	-	163.36	-	163.27	-	163.07	-	162.89	-	163.56	159.23	163.03	158.18	162.93	161.88	165.87	164.98	164.72	161.46	164.11	159.57	164.83	-					
	10	163.55	-	163.36	-	163.27	-	163.06	-	162.88	-	163.57	159.23	162.98	158.25	162.93	159.75	165.88	164.92	164.14	161.53	164.11	159.55	164.83	-					
	11	163.54	-	163.36	-	163.26	-	163.06	-	162.87	-	163.55	159.11	162.96	158.45	162.91	159.87	165.86	164.85	164.15	161.29	164.11	159.49	164.83	-					
	12	163.54	-	163.37	-	163.25	-	163.05	-	162.87	-	163.66	159.03	163.00	159.23	162.89	159.83	165.81	164.88	164.15	161.35	164.11	159.33	164.82	-					
	13	163.54	-	163.36	-	163.24	-	163.04	-	162.87	-	163.64	159.03	163.18	162.55	162.88	161.76	164.88	164.29	164.15	161.13	164.11	159.33	164.82	-					
	14	163.53	-	163.36	-	163.23	-	163.03	-	162.87	-	163.62	158.86	163.39	163.45	162.98	161.73	164.59	163.87	164.18	160.96	164.18	159.26	164.81	-					
	15	163.52	-	163.35	-	163.23	-	163.03	-	162.91	-	163.54	159.08	163.52	162.67	164.15	161.73	164.84	163.43	164.16	160.88	164.18	159.26	164.81	-					
	16	163.51	-	163.35	-	163.22	-	163.02	-	162.91	-	163.52	159.08	163.46	162.84	164.33	161.77	163.95	163.17	164.17	160.98	164.18	159.12	164.80	-					
	17	163.50	-	163.34	-	163.21	-	163.02	-	162.90	-	163.52	-	163.36	162.77	164.46	161.82	163.94	162.95	164.17	160.48	164.09	158.99	164.80	-					
	18	163.50	-	163.34	-	163.21	-	163.01	-	162.90	-	163.66	-	163.24	162.77	164.50	161.87	163.77	162.94	164.17	160.28	164.09	159.02	163.99	-					
	19	163.50	-	163.34	-	163.21	-	163.00	-	162.93	-	163.66	-	163.22	162.74	164.44	162.09	163.78	162.96	164.18	160.15	164.09	159.07	163.99	-					
	20	163.50	-	163.34	-	163.20	-	162.99	-	162.96	-	163.66	-	162.93	162.46	164.45	162.68	163.86	162.93	164.18	160.83	164.09	158.79	163.98	-					
	21	163.49	-	163.33	-	163.19	-	162.98	-	162.96	-	163.66	-	162.85	162.81	164.48	163.88	163.81	163.88	164.19	159.93	164.09	158.88	163.97	-					
	22	163.48	-	163.33	-	163.18	-	162.97	-	163.19	-	163.66	-	162.54	161.55	164.21	163.32	163.98	162.91	164.19	159.93	164.08	-	163.96	-					
	23	163.47	-	163.33	-	163.18	-	162.96	-	163.25	-	163.70	-	162.52	161.33	164.23	163.29	163.83	162.91	164.20	159.98	164.08	-	163.95	-					
	24	163.47	-	163.32	-	163.17	-	162.95	-	163.21	-	163.70	-	162.79	161.81	164.25	163.33	163.71	162.58	164.21	159.85	164.08	-	163.95	-					
	25	163.46	-	163.32	-	163.17	-	162.94	-	163.43	-	163.89	-	162.95	161.88	164.25	163.63	163.57	162.23	164.21	159.78	164.07	-	163.94	-					
	26	163.46	-	163.32	-	163.16	-	162.93	-	163.56	-	164.82	-	162.81	160.94	164.45	164.14	163.88	162.23	164.21	159.82	164.07	-	163.94	-					
	27	163.45	-	163.32	-	163.15	-	162.93	-	163.71	-	164.10	-	162.72	160.97	164.59	164.31	164.26	161.98	164.21	160.00	164.07	-	163.94	-					
	28	163.44	-	163.31	-	163.15	-	162.92	-	163.80	-	164.39	-	162.67	160.81	164.63	164.35	164.26	161.57	164.21	160.28	164.07	-	163.93	-					
	29	163.43	-	-	-	163.14	-	162.92	-	163.91	-	163.98	-	162.62	160.54	164.61	164.28	164.22	161.52	164.21	160.38	164.07	-	163.93	-					
	30	163.43	-	-	-	163.13	-	162.93	-	164.88	-	163.39	-	162.58	160.45	164.62	164.28	164.08	161.18	164.21	160.38	164.06	-	163.92	-					
	31	163.42	-	-	-	163.12	-	-	-	164.89	-	-	-	162.57	160.67	164.67	164.35	-	-	164.21	160.29	-	-	163.92	-					
	Ave.	163.52	-	163.36	-	163.22	-	163.02	-	163.14	-	163.75	159.21	162.99	160.67	163.73	162.84	164.44	162.58	164.07	160.66	164.11	159.41	163.99	-					
	Max.	163.61	-	163.41	-	163.31	-	163.12	-	164.89	-	164.38	159.59	163.52	163.45	164.67	164.35	165.88	164.92	164.72	161.53	164.28	160.33	164.86	-					
	Min.	163.42	-	163.31	-	163.12	-	162.92	-	162.87	-	163.39	159.03	162.52	157.99	162.82	159.75	163.77	161.18	163.28	159.78	164.06	155.79	163.92	-					
1994	1	163.61	-	163.80	-	163.77	-	163.72	-	163.64	-	163.79	-	163.48	163.86	164.28	164.16	165.66	166.21	164.85	163.80	164.17	159.66	164.10	-					
	2	163.61	-	163.80	-	163.76	-	163.72	-	163.64	-	163.75	-	163.41	163.11	164.51	164.49	165.68	166.28	164.78	163.83	164.12	159.63	164.11	-					
	3	163.61	-	163.80	-	163.76	-	163.72	-	163.64	-	163.68	-	163.38	162.98	164.23	164.87	165.64	165.98	164.47	162.95	164.06	158.63	164.13	-					
	4	163.60	-	163.80	-	163.75	-	163.72	-	163.64	-	164.03	-	163.03	162.65	164.03	163.73	165.68	165.63	164.38	162.90	164.05	-	164.13	-					
	5	163.60	-	163.79	-	163.75	-	163.72	-	163.64	-	164.14	-	162.41	162.07	164.78	163.88	165.67	165.44	164.28	162.88	164.13	-	164.13	-					
	6	163.60	-	163.79	-	163.74	-	163.72	-	163.63	-	164.33	-	162.88	161.62	164.50	163.86	165.55	165.20	164.13	162.78	164.12	-	164.13	-					
	7	163.59	-	163.79	-	163.74	-	163.72	-	163.62	-	164.13	160.48	163.61	160.44	164.42	163.88	165.48	164.95	163.99	162.78	164.12	-	164.11	160.83					
	8	163.59	-	163.79	-	163.74	-	163.72	-	163.62	-	164.11	158.86	163.63	158.69	162.75	163.88	165.25	164.58	164.03	162.81	164.12	-	164.10	160.83					
	9	163.58	-	163.78	-	163.73	-	163.72	-	163.62	-	163.28	158.87	163.65	160.53	164.13	163.83	165.08	164.18	164.21	162.41	164.12	-	164.09	160.83					
	10	163.58	-	163.78	-	163.73	-	163.72	-	163.62	-	163.71	158.81	163.71	160.56	163.93	163.38	164.79	163.81	164.25	162.22	164.12	-	164.08	160.83					
	11	163.58	-	163.79	-	163.74	-	163.72	-	163.63	-	163.68	158.85	163.70	160.85	163.65	163.16	164.54	163.62	164.24	162.85	164.12	-	164.07	160.83					
	12	163.58	-	163.79	-	163.74	-	163.72	-	163.64	-	163.65	159.20	163.68	161.85	163.56	163.12	164.36	163.46	164.18	161.87	164.12	-	164.08	160.83					
	13	163.57	-	163.79	-	163.74	-	163.72	-	163.64	-	163.26	159.42	163.79	161.48	163.47	163.15	164.18	163.44	164.13	161.80	164.12	-	164.05	160.83					
	14	163.57	-	163.79	-	163.74	-	163.71	-	163.64	-	163.22	161.88	163.83	161.62	163.45	163.15	164.08	163.44	164.33	161.48	164.12	-	164.03	-					
	15	163.57	-	163.79	-	163.74	-	163.71	-	163.64	-	163.16	161.81	163.89	161.86	163.38	163.16	164.08	163.46	164.33	161.49	164.12	-	164.02	-					
	16	163.56	-	163.78	-	163.73	-	163.71	-	163.63	-	162.99	161.39	164.86	162.48	163.27	163.98	164.82	163.51	164.24	161.35	164.12	-	164.01	-					
	17	163.56	-	163.79	-	163.72	-	163.71	-	163.63	-	163.81	161.80	164.25	163.31	163.88	163.27	164.19	163.58	164.39	161.22	164.12	-	164.00	-					
	18	163.56	-	163.79	-	163.72	-	163.70	-	163.63	-	162.92	159.86	164.49	164.48	163.65	163.58	164.26	163.68	164.43	161.22	164.12	-	164.00	-					
	19	163.56	-	163.79	-	163.72	-	163.70	-	163.63	-	162.93	159.25	164.71	164.27	164.16	164.12	164.33	163.64	164.43	161.47	164.12	-	163.99	-					
	20	163.55	-	163.79	-	163.72	-	163.69	-	163.64	-	163.13	158.98	164.89	164.81	164.58	164.81	164.44	163.65	164.43	160.96	164.12	-	163.98	-					
	21	163.54	-	163.79	-	163.72	-	163.68	-	163.61	158.81	164.88	163.53	164.72	165.58	164.49	163.81	164.42	160.85	164.12	-	163.98	-							
	22	163.54	-	163.79	-	163.72	-	163.68	-	163.59	-	163.25	160.36	164.68	163.19	164.85	165.73	164.56	163.51	164.42	160.85	164.12	-	163.98	-					
	23	163.53	-	163.78	-	163.72	-	163.68	-	163.71	-	163.15	159.07	164.58	162.95	164.85	165.95	164.66	163.41	164.42	160.54	164.12	-	163.96	-					
	24	163.53	-	163.78	-	163.72	-	163.67	-	163.71	-	163.08	159.58	164.37	162.58	165.85	165.78	164.72	163.61	164.42	160.46	164.12	-	163.97	-					
	25	163.52	-	163.78	-	163.72	-	163.66	-	163.71	-	162.98	161.31	164.25	162.26	165.14	165.69	164.67	163.18	164.42	160.28	164.12	-	163.97	-					
	26	163.52	-	163.77	-	163.72	-	163.66	-	163.71	-	162.94	162.30	164.11	161.99	165.21	165.73	164.54	162.98	164.42	160.19	164.12	-	163.97	-					
	27	163.52	-	163.77	-	163.72	-	163.65	-	163.71	-	163.04	162.53	163.93	161.88	165.31	165.73	164.46	162.74	164.42	160.17	164.12	-	163.97	-					
	28	163.52	-	163.77	-	163.72	-	163.65	-	163.71	-	163.19	162.73	163.92	162.84	165.39	165.80	164.35	162.29	164.48	160.13	164.12	-	163.96	-					
	29	163.51	-	-	-	163.72	-	163.65	-	163.71	-	163.32	162.88	163.83	162.69	165.48	165.52	164.26	163.88	164.36	160.88	164.12	-	163.95	-					
	30	163.51	-	-	-	163.72	-	163.65	-	163.71	-	163.28	162.99	163.81	163.73	165.45	165.43	164.16	163.28	164.26	159.98	164.11	-	163.94	-					
	31	163.51	-	-	-	163.72	-	-	-	163.71	-	-	-	164.89	-	165.54	165.75	-	-	164.21	159.93	-	-	163.93	-					
	Ave.	163.56	-	163.79	-	163.73	-	163.70	-	163.66	-	163.38	160.41	163.98	162.37	164.44	164.38	164.71	163.98	164.21	161.48	164.12	159.64	164.02	160.83					
	Max.	163.61	-	163.80	-	163.77	-	163.72	-	163.71	-	164.33	162.99	164.89	164.27	165.54	165.95	165.68	166.28	164.47	163.80	164.17	-	164.13	-					
	Min.	163.51	-	163.77	-	163.72	-	163.65	-	163.62	-	162.92	159.01	162.41	160.44	163.27	163.88	164.08	162.29	163.99	159.93	164.05	-	163.93	-					

Table L.2- 8 Water Level at Bang Phuan Regulator (2/2) Data source ; RID

Year	Day	Month																						Remarks
		Jan		Feb		Mar		Apr		May		Jun		Jly		Aug		Sept		Oct		Nov		Dec		
		U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	
1995	1	163.94	-	163.85	-	163.76	-	163.63	-	163.28	-	163.33	160.88	163.87	160.11	163.51	163.27	166.13	166.09	164.80	163.63	164.13	159.81	164.10	-	
	2	163.94	-	163.85	-	163.76	-	163.63	-	163.28	-	163.33	160.88	163.63	160.13	164.56	164.88	166.29	166.37	164.43	163.64	164.13	159.81	164.10	-	
	3	163.94	-	163.85	-	163.76	-	163.62	-	163.26	-	163.76	160.88	163.58	160.13	164.52	164.88	166.33	166.25	164.46	163.13	164.13	159.79	164.08	-	
	4	163.94	-	163.85	-	163.76	-	163.62	-	163.28	-	163.38	-	163.56	160.36	164.88	163.61	166.33	166.46	164.61	162.88	164.13	159.79	164.08	-	
	5	163.93	-	163.85	-	163.75	-	163.62	-	163.27	-	163.38	-	163.53	159.75	163.85	163.18	166.49	166.55	164.73	162.85	164.13	159.79	164.08	-	
	6	163.93	-	163.84	-	163.75	-	163.61	-	163.27	-	163.48	-	163.58	159.97	163.92	163.19	166.61	166.65	164.57	163.01	164.13	159.73	164.08	-	
	7	163.92	-	163.84	-	163.75	-	163.60	-	163.27	-	163.42	-	163.78	158.93	164.17	163.64	166.68	166.88	164.85	163.13	164.13	159.66	164.06	-	
	8	163.92	-	163.84	-	163.74	-	163.59	-	163.27	-	163.47	-	163.78	159.13	164.53	164.84	166.56	166.47	163.96	163.28	164.13	159.63	164.06	-	
	9	163.91	-	163.84	-	163.74	-	163.55	-	163.26	-	163.54	-	163.48	159.85	164.95	164.43	166.48	166.38	163.88	163.02	164.13	159.82	164.07	-	
	10	163.91	-	163.84	-	163.73	-	163.51	-	163.26	-	163.61	-	163.81	159.92	165.28	164.71	166.45	166.28	164.81	163.02	164.13	159.61	164.07	-	
	11	163.91	-	163.83	-	163.73	-	163.54	-	163.26	-	163.65	161.43	163.86	161.16	165.49	164.98	166.38	166.13	164.48	162.43	164.13	159.61	164.07	-	
	12	163.90	-	163.83	-	163.72	-	163.57	-	163.26	-	163.64	161.48	163.78	161.90	165.54	165.75	166.28	166.05	164.23	162.31	164.13	159.61	164.07	-	
	13	163.90	-	163.82	-	163.72	-	163.56	-	163.28	-	163.48	161.38	163.78	162.37	165.58	165.22	165.96	165.59	164.12	162.15	164.13	159.58	164.06	-	
	14	163.89	-	163.82	-	163.71	-	163.56	-	163.33	-	163.89	161.38	163.78	162.64	165.84	165.33	165.78	165.34	164.11	162.94	164.13	159.58	164.06	-	
	15	163.89	-	163.81	-	163.71	-	163.56	-	163.35	-	163.18	159.81	163.78	162.58	166.73	166.48	165.58	165.84	164.15	162.13	164.13	159.58	164.06	-	
	16	163.89	-	163.81	-	163.78	-	163.55	-	163.35	-	163.15	159.81	163.82	162.47	165.86	165.56	165.31	164.75	164.08	162.22	164.13	159.58	164.06	-	
	17	163.89	-	163.81	-	163.69	-	163.55	-	163.35	-	163.86	159.54	163.95	162.45	166.87	166.14	165.82	164.47	164.09	162.88	164.13	159.58	164.06	-	
	18	163.88	-	163.88	-	163.69	-	163.54	-	163.36	-	163.18	159.88	164.85	162.49	166.17	166.56	164.69	164.18	164.12	161.71	164.13	159.58	164.06	-	
	19	163.88	-	163.88	-	163.68	-	163.54	-	163.35	-	163.71	159.59	163.93	162.61	166.18	166.88	164.52	163.68	164.09	161.88	164.13	159.58	164.06	-	
	20	163.87	-	163.79	-	163.68	-	163.48	-	163.36	-	163.78	160.41	163.13	162.66	166.16	167.00	164.39	163.38	164.09	161.88	164.13	159.58	164.05	-	
	21	163.87	-	163.79	-	163.67	-	163.17	-	163.37	-	163.63	160.28	163.32	162.79	166.18	166.87	164.17	163.22	164.13	160.88	164.12	159.58	164.05	-	
	22	163.87	-	163.78	-	163.67	-	163.06	-	163.38	-	163.93	160.13	163.63	162.19	166.18	167.02	164.23	163.15	164.12	159.84	164.12	159.58	164.04	-	
	23	163.86	-	163.78	-	163.66	-	162.93	-	163.39	-	163.93	160.13	163.69	163.28	166.19	167.07	164.41	163.31	164.05	159.82	164.12	159.58	164.04	-	
	24	163.86	-	163.77	-	163.66	-	162.81	-	163.38	-	163.88	160.28	163.58	163.28	166.21	167.01	164.71	164.08	164.08	160.53	164.12	159.58	164.03	-	
	25	163.86	-	163.77	-	163.66	-	162.88	-	163.38	-	163.78	160.33	163.58	163.15	166.22	166.94	164.67	164.48	164.09	160.41	164.12	159.57	164.03	-	
	26	163.85	-	163.77	-	163.65	-	163.28	-	163.38	-	163.73	160.33	163.39	163.04	166.22	166.91	164.36	164.48	164.12	160.18	164.12	159.57	164.02	-	
	27	163.85	-	163.76	-	163.65	-	163.28	-	163.38	-	163.68	160.33	163.	162.98	166.24	166.87	164.03	164.83	164.13	159.95	164.12	159.56	164.01	-	
	28	163.85	-	163.76	-	163.64	-	163.28	-	163.37	-	163.71	160.28	162.94	162.51	166.24	166.52	164.01	163.71	164.12	159.92	164.11	159.55	164.00	-	
	29	163.85	-	-	-	163.64	-	163.28	-	163.37	-	163.75	160.13	162.85	162.19	166.11	166.11	164.24	163.57	164.19	159.88	164.11	159.55	164.00	-	
	30	163.85	-	-	-	163.64	-	163.28	-	163.35	-	163.74	160.13	162.80	162.83	166.05	165.88	164.34	163.86	164.13	159.82	164.11	159.54	163.99	-	
	31	163.85	-	-	-	163.63	-	-	-	163.37	-	-	-	162.71	162.98	166.01	165.67	-	-	164.13	159.81	-	-	163.98	-	
	Avg	163.89	-	163.81	-	163.70	-	163.42	-	163.32	-	163.56	160.39	163.53	161.65	165.48	165.46	165.38	165.01	164.28	161.69	164.13	159.63	164.05	-	
	Max	163.94	-	163.85	-	163.76	-	163.62	-	163.28	-	163.93	161.43	164.85	163.28	166.24	167.07	166.61	166.65	164.73	163.63	164.13	159.82	164.10	-	
	Min	163.85	-	163.76	-	163.63	-	162.81	-	163.26	-	163.86	159.81	162.69	158.93	163.51	163.18	164.01	163.15	163.88	159.81	164.11	159.54	163.98	-	

Year	Day	Month																						Remarks
		Jan		Feb		Mar		Apr		May		Jun		Jly		Aug		Sept		Oct		Nov		Dec		
		U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	
1993	Avg	163.62	-	163.36	-	163.22	-	163.02	-	163.14	-	163.75	159.21	162.99	160.47	163.73	162.84	164.84	163.90	164.07	160.86	164.11	159.81	163.99	-	
	Max	163.61	-	163.41	-	163.31	-	163.12	-	164.09	-	164.36	159.58	163.52	163.45	164.87	164.35	165.89	164.92	164.72	161.53	164.28	160.33	164.06	-	
	Min	163.42	-	163.31	-	163.12	-	162.92	-	162.87	-	163.39	159.03	162.52	157.99	162.82	159.75	163.57	161.14	163.28	159.78	164.06	155.79	163.92	-	
1994	Avg	163.86	-	163.74	-	163.78	-	163.66	-	163.38	160.41	163.98	162.37	164.44	164.38	164.71	163.98	164.31	161.88	164.12	159.84	164.03	159.83			
	Max	163.91	-	163.88	-	163.77	-	163.72	-	163.71	-	164.33	162.99	164.89	164.97	165.54	165.05	165.88	165.28	164.67	163.88	164.17	159.86	164.13	160.03		
	Min	163.81	-	163.77	-	163.72	-	163.65	-	163.62	-	163.92	159.81	162.81	158.48	163.27	163.88	164.08	163.28	163.90	159.93	164.05	159.63	163.93	160.03	
1995	Avg	163.89	-	163.81	-	163.70	-	163.42	-	163.32	-	163.56	160.39	163.53	161.65	165.48	165.46	165.38	165.01	164.28	161.69	164.13	159.63	164.05	-	
	Max	163.94	-	163.85	-	163.76	-	163.63	-	163.38	-	163.93	161.43	164.85	163.28	166.24	167.07	166.61	166.65	164.73	163.63	164.13	159.82	164.10	-	
	Min	163.85	-	163.76	-	163.63	-	162.81	-	163.26	-	163.86	159.81	162.69	158.93	163.51	163.18	164.01	163.15	163.88	159.81	164.11	159.54	163.98	-	

Table L.2- 9 Water Level at Vieng Kook Regulator (1/2)

Data source ; RID

Year	Day	Month																												Remarks
		Jan		Feb		Mar		Apr		May		Jun		Jly		Aug		Sep		Oct		Nov		Dec						
		U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S					
1993	1	163,49	-	162,96	-	162,33	-	161,99	-	-	-	162,24	160,28	164,17	161,16	164,84	161,24	164,90	164,89	165,45	161,28	164,81	160,58	164,15	159,81					
	2	163,38	-	162,91	-	162,31	-	161,95	-	-	-	163,08	160,12	164,02	161,26	164,88	161,05	164,65	164,81	165,18	161,52	164,80	160,46	164,15	159,81					
	3	163,37	-	162,88	-	162,30	-	161,94	-	-	-	162,92	159,98	164,01	161,13	164,18	160,88	164,98	164,76	165,10	161,56	164,89	160,46	164,15	159,98					
	4	163,37	-	162,78	-	162,28	-	161,93	-	-	-	162,89	-	164,12	160,96	164,11	160,79	165,01	164,79	165,18	161,65	164,27	160,57	164,14	159,98					
	5	163,34	-	162,75	-	162,26	-	161,92	-	161,88	-	163,84	-	164,28	161,13	164,12	160,77	165,05	164,88	165,18	161,66	164,85	160,76	164,14	159,98					
	6	163,32	-	162,74	-	162,25	-	161,91	-	161,79	-	163,11	-	164,25	160,98	164,12	160,64	165,09	165,83	165,18	161,54	164,83	160,80	164,14	159,56					
	7	163,29	-	162,73	-	162,24	-	161,90	-	-	-	163,13	-	164,27	161,02	164,13	160,96	165,14	165,17	165,86	161,46	164,79	160,66	163,80	159,96					
	8	163,27	-	162,72	-	162,23	-	161,90	-	-	-	162,15	-	164,86	161,24	164,14	161,64	165,17	165,22	165,85	161,56	164,76	160,46	163,80	159,96					
	9	163,24	-	162,71	-	162,22	-	161,89	-	-	-	163,16	-	163,83	161,45	164,15	162,39	165,18	165,27	165,84	161,77	164,76	160,29	163,76	159,92					
	10	163,21	-	162,70	-	162,21	-	161,88	-	-	-	163,19	-	164,15	161,44	164,15	162,33	165,21	165,26	165,84	161,84	164,72	160,25	163,82	159,23					
	11	163,18	-	162,68	-	162,20	-	161,88	-	-	-	163,24	-	164,13	161,63	164,15	162,11	165,29	165,19	165,84	161,83	164,67	160,24	163,80	159,22					
	12	163,16	-	162,66	-	162,19	-	161,88	-	-	-	163,27	-	164,87	162,14	164,14	162,12	165,28	165,00	165,81	161,84	164,64	160,20	163,79	159,21					
	13	163,15	-	162,65	-	162,18	-	161,87	-	-	-	163,30	-	164,86	162,19	164,13	162,21	165,28	164,89	164,99	161,49	164,60	160,17	163,72	159,27					
	14	163,13	-	162,61	-	162,17	-	161,87	-	-	-	163,21	-	164,82	163,42	164,14	162,19	165,24	164,34	164,98	161,31	164,56	160,15	163,72	159,51					
	15	163,10	-	162,58	-	162,16	-	161,85	-	-	-	163,11	-	164,81	163,37	164,15	162,21	165,17	163,95	164,98	161,86	164,53	160,13	163,68	159,51					
	16	163,08	-	162,58	-	162,15	-	161,85	-	-	-	163,33	-	163,43	163,26	164,18	162,21	165,13	163,56	164,88	69,45	164,46	160,11	163,59	159,50					
	17	163,07	-	162,56	-	162,14	-	161,84	-	-	-	163,33	-	163,98	163,25	164,24	162,38	165,12	163,37	164,98	160,92	164,45	160,07	163,58	159,26					
	18	163,06	-	162,53	-	162,12	-	161,83	-	-	-	163,32	-	163,84	163,24	164,38	162,33	165,16	163,15	164,98	160,55	164,42	160,06	163,58	159,13					
	19	163,05	-	162,50	-	162,10	-	161,83	-	-	-	163,31	-	163,93	163,01	164,41	162,43	165,15	163,11	164,98	160,45	164,36	160,05	163,58	158,98					
	20	163,04	-	162,47	-	162,08	-	161,83	-	-	-	163,28	-	163,86	162,53	164,44	163,06	165,15	163,12	164,98	160,33	164,22	159,33	163,57	158,86					
	21	163,04	-	162,44	-	162,07	-	161,81	-	161,88	-	163,29	-	163,88	162,84	164,58	163,54	165,02	163,20	164,98	160,31	164,26	158,98	163,57	158,84					
	22	163,02	-	162,42	-	162,07	-	161,81	-	162,14	-	163,28	-	163,88	161,78	164,51	163,76	164,98	163,33	164,98	160,31	164,29	158,98	163,57	158,98					
	23	163,01	-	162,41	-	162,06	-	161,81	-	162,37	-	163,34	-	163,95	161,78	164,54	163,74	164,95	163,48	164,97	160,23	164,28	158,98	163,57	158,79					
	24	163,00	-	162,39	-	162,04	-	161,80	-	163,03	-	163,55	-	163,96	161,41	164,59	163,95	165,00	162,93	164,95	160,12	164,27	158,98	163,57	158,79					
	25	162,99	-	162,38	-	162,03	-	161,80	-	163,75	-	163,79	-	163,96	161,32	164,63	164,81	165,00	162,65	164,95	159,98	164,25	159,38	163,57	158,79					
	26	162,98	-	162,37	-	162,02	-	163,00	159,73	161,84	-	163,97	161,44	164,55	164,51	165,00	162,46	164,95	164,51	164,21	158,57	163,57	158,79							
	27	162,97	-	162,35	-	162,01	-	161,79	-	163,75	160,26	163,64	158,58	163,98	161,46	164,59	164,88	165,10	162,23	164,94	160,35	164,16	159,56	163,56	158,79					
	28	162,96	-	162,34	-	162,00	-	161,79	-	163,65	160,55	164,00	160,81	163,98	161,42	164,60	164,71	165,11	161,85	164,93	160,49	164,14	159,67	163,56	158,79					
	29	162,95	-	-	-	161,99	-	161,79	-	163,56	160,62	164,03	160,59	163,99	161,21	164,62	164,66	165,10	161,86	164,93	160,56	164,10	159,38	163,57	158,79					
	30	162,94	-	-	-	161,98	-	161,79	-	163,43	160,46	164,15	160,94	163,99	161,18	164,65	164,68	165,09	161,58	164,92	160,55	164,14	159,82	163,57	158,79					
	31	162,93	-	-	-	161,97	-	-	-	163,33	160,38	-	-	164,01	161,28	164,78	164,75	-	-	164,91	160,53	-	-	163,56	158,79					
	Avg	163,13	-	162,66	-	162,14	-	161,86	-	162,95	-	163,37	160,44	163,99	161,81	164,33	162,66	165,11	163,93	165,08	158,94	164,52	159,84	163,75	159,12					
	Max	163,38	-	162,92	-	162,33	-	161,96	-	163,88	-	164,15	160,94	164,27	163,42	164,78	164,75	165,29	165,27	165,18	161,84	164,91	160,80	164,15	159,98					
	Min	162,93	-	162,34	-	161,97	-	161,79	-	161,79	-	162,92	159,98	163,98	160,98	164,84	158,54	164,90	161,58	164,91	159,88	164,14	158,98	163,56	158,79					
1994	1	163,56	158,79	163,39	-	163,25	-	163,33	-	163,87	-	163,15	-	163,79	163,25	164,28	164,43	165,54	166,74	164,45	163,87	164,81	159,54	164,19	-					
	2	163,56	158,79	163,38	-	163,34	-	163,33	-	163,86	-	163,15	-	163,79	163,54	164,43	164,94	165,56	166,67	164,66	163,27	164,81	159,53	164,17	-					
	3	163,56	158,79	163,38	-	163,32	-	163,32	-	163,85	-	163,17	-	163,76	163,38	164,41	164,47	165,58	166,29	164,62	163,21	164,88	159,51	164,14	-					
	4	163,56	158,79	163,38	-	163,31	-	163,32	-	163,84	-	163,26	-	163,65	162,95	164,76	164,46	165,57	165,95	164,72	163,22	164,88	159,88	164,16	-					
	5	163,56	158,79	163,38	-	163,30	-	163,31	-	163,83	-	162,37	-	163,51	162,52	164,72	164,25	165,58	165,74	164,88	163,15	164,77	159,69	164,15	-					
	6	163,56	158,79	163,37	-	163,28	-	163,30	-	163,82	-	164,00	159,59	163,36	162,15	164,76	164,26	165,61	165,51	164,52	163,85	164,74	159,97	164,18	-					
	7	163,56	158,79	163,37	-	163,27	-	163,29	-	163,81	-	164,11	160,38	163,65	161,58	164,88	164,16	165,51	165,23	164,84	162,96	164,72	159,86	164,86	-					
	8	163,56	158,79	163,36	-	163,26	-	163,28	-	163,99	-	164,14	160,66	163,72	161,16	164,83	164,84	165,37	164,95	164,86	162,91	164,78	159,95	164,82	-					
	9	163,55	158,79	163,36	-	163,25	-	163,28	-	163,99	-	164,88	160,89	163,76	160,92	164,52	163,78	165,17	164,63	164,86	162,73	164,69	159,93	163,94	-					
	10	163,55	158,79	163,35	-	163,24	-	163,27	-	163,83	-	164,38	161,74	163,66	160,75	164,54	163,54	165,81	164,23	164,88	162,48	164,68	159,93	163,89	-					
	11	163,55	158,79	163,32	-	163,24	-	163,26	-	163,85	-	164,33	161,48	163,98	161,02	164,66	163,48	165,17	163,98	164,88	162,37	164,66	159,92	163,72	-					
	12	163,54	158,79	163,37	-	163,24	-	163,25	-	163,88	-	164,23	161,64	164,85	161,28	164,59	163,52	165,18	163,98	164,84	162,28	164,64	159,91	163,72	-					
	13	163,54	158,79	163,37	-	163,24	-	163,24	-	163,86	-	164,21	161,81	164,14	161,39	164,37	163,58	164,59	163,78	164,96	162,83	164,63	159,98	163,64	-					
	14	163,53	158,79	163,37	-	163,23	-	163,23	-	163,88	-	164,17	162,81	164,18	161,74	164,21	163,51	164,67	163,81	164,91	161,85	164,59	160,83	163,66	-					
	15	163,52	158,79	163,32	-	163,27	-	163,22	-	163,88	-	164,00	162,19	164,21	161,99	164,62	163,61	164,61	163,85	164,89	161,82	164,47	160,38	163,53	-					
	16	163,51	158,79	163,38	-	163,27	-	163,21	-	163,87	-	163,92	162,19	164,25	161,12	164,66	163,58	164,60	163,83	164,87	161,74	164,42	160,26	163,51	-					
	17	163,50	158,78	163,38	-	163,26	-	163,20	-	163,86	-	163,86	161,95	164,41	161,65	164,48	163,84	164,64	163,84	164,85	161,66	164,35	160,33	163,50	-					
	18	163,49	158,78	163,38	-	163,27	-	163,19	-	163,85	-	163,77	161,85	164,28	163,54	164,77	164,26	164,65	164,02	164,92	161,58	164,28	160,32	163,57	-					
	19	163,49	158,79	163,39	-	163,26	-	163,17	-	163,86	-	163,66	161,32	164,64	164,60	164,84	165,03	164,65	163,96	164,81	161,58	164,23	160,39	163,58	-					
	20	163,48	158,79	163,38	-	163,25	-	163,16	-	163,86	-	163,55	161,88	164,83	165,05	164,72	166,94	164,58	163,99	164,78	161,15	164,21	159,53	163,58	-					
	21	163,48	158,79	163,38	-	163,24	-	163,14	-	163,88	-	163,72	160,71	164,25	164,99	165,88	166,88	164,63	163,95	164,77	160,58	164,30	159,52	163,58	-					
	22	163,47	158,79	163,38	-	163,23	-	163,12	-	163,89	-	163,71	160,65	164,39	164,00	165,84	166,20	164,56	163,86	164,81	160,72	164,28	159,51	163,59	-					
	23	163,46	158,79	163,38	-	163,22	-	163,10	-	163,18	-	163,68	160,81	164,21	163,69	165,88	166,88	164,58	163,78	164,82	160,56	164,29	159,51	163,60	-					
	24	163,44	158,79	163,38	-	163,27	-	163,09	-	163,12	-	163,53	161,19	164,06	163,43	165,12	166,08	164,62	163,66	164,83	160,61	164,28	159,50	163,61	-					
	25	163,43	158,79	163,38	-	163,28	-	163,08	-	163,12	-	163,46	161,68	163,89	163,15	165,17	166,95	164,66	163,56	164,83	160,31	164,27	159,58	163,62	-					
	26	163,42	-	163,38	-	163,28	-	163,06	-	163,12	-	163,35	162,46	163,83	162,84	165,22	166,03	164,56	163,32	164,83	160,23	164,26	159,49	163,62	-					
	27	163,42	-	163,37	-	163,29	-	163,08	-	163,13	-	163,34	162,91	164,08	163,48	165,26	165,98	164,65	163,57	164,83	160,15	164,24	159,47	163,62	-					
	28	163,41	-	163,36	-	163,29	-	163,08	-	163,13	-	163,46	163,11	163,98	163,27	165,32	165,88	164,63	163,57	164,82	160,18	164,23	159,50	163,62	-					
	29	163,40	-	-	-	163,30	-	163,08	-	163,14	-	163,60	163,11	163,83	163,56	165,38	165,64	164,56	163,42	164,81	160,83	164,22	159,49	163,62	-					
	30	163,40	-	-	-	163,31	-	163,06	-	163,15	-	163,60	163,38	163,83	163,68	166,49	166,86	164,47	163,16	164,80	159,85	164,21	159,49	163,62	-					
	31	163,39	-	-	-	163,33	-	-	-	163,15	-	-	-	164,89	164,89	165,51	166,88	-	-	164,79	159,61	-	-	163,62	-					
	Avg	163,50	-	163,37	-	163,29	-	163,24	-	163,87	-	163,74	161,61	164,81	163,87	164,83	164,79	164,92	164,34	164,80	161,65	164,49	159,88	163,76	-					
	Max	163,56	-	163,39	-	163,35	-	163,33	-	163,15	-	164,16	163,38	164,84	165,05	165,51	166,32	165,61	166,74	164,96	163,87	164,81	160,38	164,19	-					
	Min	163,39	-	163,32	-	163,22	-	163,06	-	162,99	-	163,15	159,59	163,35	158,75	164,28	163,41	164,47	163,16	164,45	159,61	164,21	159,47	163,51	-					

Table L.2-10 Water Level at Vieng Kook Regulator (2/2) Data source ; RID

Year	Day	Jan U/S	Jan D/S	Feb U/S	Feb D/S	Mar U/S	Mar D/S	Apr U/S	Apr D/S	May U/S	May D/S	Jun U/S	Jun D/S	Jly U/S	Jly D/S	Aug U/S	Aug D/S	Spt U/S	Spt D/S	Oct U/S	Oct D/S	Nov U/S	Nov D/S	Dec U/S	Dec D/S	Remarks
1995	1	163.61	158.99	163.51	158.60	163.18	158.82	162.77	158.81	162.50	158.81	162.46	158.83	163.34	158.60	164.07	163.64	166.16	166.06	164.45	164.09	164.80	160.15	164.44	159.80	
	2	163.60	158.99	163.51	158.87	163.12	158.82	162.77	158.81	162.48	158.81	162.47	158.83	163.34	158.84	164.55	164.45	166.19	166.75	164.33	163.95	164.60	160.10	164.43	159.56	
	3	163.60	158.99	163.50	158.87	163.10	158.82	162.76	158.81	162.47	158.81	162.52	158.84	163.35	158.84	164.83	164.48	166.25	166.68	164.24	163.62	164.60	159.99	164.37	160.29	
	4	163.60	158.98	163.50	158.86	163.09	158.82	162.74	158.81	162.46	158.81	162.54	158.84	163.37	159.44	164.63	164.12	166.35	166.52	164.46	163.34	164.50	159.90	164.32	160.39	
	5	163.59	158.95	163.49	158.86	163.07	158.82	162.74	158.81	162.45	158.81	162.57	158.84	163.41	160.14	164.37	163.78	166.48	166.98	164.46	163.25	164.58	160.01	164.26	160.39	
	6	163.59	158.94	163.49	158.86	163.06	158.82	162.72	158.81	162.44	158.81	162.59	158.85	163.46	160.35	164.21	163.80	166.58	167.02	164.47	163.51	164.56	159.98	164.22	160.39	
	7	163.59	158.93	163.48	158.85	163.05	158.82	162.72	158.81	162.44	158.81	162.62	158.85	163.69	160.47	164.53	164.11	166.67	166.95	164.43	163.55	164.58	159.95	164.16	160.39	
	8	163.58	158.92	163.45	158.88	163.04	158.82	162.73	158.81	162.43	158.81	162.65	158.85	163.70	160.91	164.93	164.84	166.72	166.82	164.32	163.57	164.57	159.94	164.11	160.36	
	9	163.58	158.91	163.35	159.39	163.03	158.82	162.73	158.81	162.42	158.81	162.68	158.85	163.78	161.29	165.08	164.75	166.78	166.71	164.29	163.45	164.57	159.93	164.05	160.38	
	10	163.58	158.90	163.30	159.38	163.03	158.82	162.73	158.81	162.41	158.81	162.73	158.86	163.67	161.58	165.21	166.06	166.74	166.64	164.30	163.14	164.56	159.93	163.99	160.37	
	11	163.58	158.90	163.27	159.29	163.03	158.81	162.73	158.81	162.44	158.81	162.85	158.86	163.56	161.76	165.39	165.27	166.67	166.87	164.31	162.80	164.56	159.92	163.92	160.36	
	12	163.58	158.89	163.27	158.88	163.03	158.81	162.72	158.81	162.46	158.82	162.97	158.86	163.47	162.33	165.46	165.47	166.58	166.31	164.29	162.60	164.55	159.91	163.85	160.35	
	13	163.58	158.89	163.27	158.88	163.03	158.81	162.71	158.81	162.47	158.82	163.01	158.86	163.53	162.77	165.40	165.52	166.44	166.05	164.38	162.46	164.54	159.90	163.75	160.29	
	14	163.58	158.88	163.26	158.87	163.02	158.81	162.70	158.81	162.54	158.82	163.02	158.86	163.57	162.95	165.59	165.63	166.20	165.75	164.40	162.31	164.53	160.00	163.67	160.23	
	15	163.58	158.88	163.26	158.87	163.01	158.81	162.69	158.81	162.56	158.82	163.03	159.46	163.60	162.86	165.68	165.60	166.07	165.46	164.39	162.38	164.53	159.95	163.62	160.18	
	16	163.58	158.88	163.25	158.87	162.99	158.81	162.68	158.81	162.56	158.82	163.06	160.20	163.68	162.79	165.77	165.80	165.92	165.25	164.40	162.52	164.52	159.93	163.73	159.48	
	17	163.58	158.88	163.24	158.85	162.98	158.81	162.67	158.81	162.56	158.83	163.08	160.79	163.75	162.85	165.79	166.30	165.80	164.96	164.43	162.37	164.51	160.03	163.73	159.44	
	18	163.58	158.88	163.23	158.85	162.96	158.81	162.65	158.81	162.56	158.83	163.12	160.23	163.77	162.86	165.82	166.08	165.82	164.59	164.44	162.18	164.51	160.04	163.73	159.43	
	19	163.58	158.88	163.22	158.84	162.95	158.81	162.63	158.81	162.56	158.84	163.14	159.70	163.76	163.00	165.86	167.32	165.50	164.23	164.46	161.73	164.50	160.03	163.73	159.40	
	20	163.57	158.88	163.21	158.83	162.93	158.81	162.61	158.81	162.56	158.84	163.16	159.34	163.67	163.11	165.87	167.48	165.44	163.94	164.49	161.35	164.49	160.05	163.74	159.38	
	21	163.57	158.88	163.20	158.87	162.91	158.81	162.60	158.81	162.56	158.84	163.19	159.14	163.74	163.19	165.88	167.34	165.28	163.83	164.50	161.66	164.48	160.11	163.76	159.38	
	22	163.56	158.88	163.19	158.82	162.89	158.81	162.59	158.81	162.55	158.84	163.21	159.16	163.74	163.60	165.89	167.30	165.26	163.64	164.53	160.95	164.48	160.05	163.78	159.38	
	23	163.56	158.88	163.18	158.82	162.88	158.81	162.58	158.81	162.54	158.84	163.25	159.24	164.05	163.67	165.92	167.40	165.25	163.69	164.55	160.92	164.48	159.97	163.76	159.38	
	24	163.55	158.88	163.17	158.82	162.87	158.81	162.58	158.81	162.53	158.84	163.28	159.33	164.08	162.56	165.94	167.42	165.22	164.26	164.57	160.93	164.47	159.94	163.75	159.38	
	25	163.55	158.88	163.16	158.82	162.86	158.81	162.57	158.81	162.52	158.84	163.30	159.19	164.03	162.52	165.96	167.25	165.22	164.87	164.53	160.90	164.46	159.92	163.74	159.36	
	26	163.54	158.88	163.15	158.82	162.85	158.81	162.56	158.81	162.51	158.84	163.32	159.05	164.07	162.46	165.97	167.27	165.34	164.82	164.40	160.87	164.45	159.92	163.73	159.34	
	27	163.54	158.88	163.15	158.82	162.84	158.81	162.58	158.81	162.50	158.83	163.33	158.95	164.74	163.31	165.99	167.21	165.04	164.46	164.56	160.56	164.45	159.88	163.73	159.24	
	28	163.53	158.88	163.14	158.82	162.83	158.81	162.65	158.81	162.49	158.83	163.33	158.94	164.61	163.00	166.02	166.92	164.73	164.18	164.53	160.12	164.45	159.84	163.73	159.20	
	29	163.53	158.88	-	-	162.82	158.81	162.53	158.81	162.48	158.83	163.34	158.91	164.47	162.69	166.03	166.47	164.56	164.05	164.56	160.00	164.44	159.61	163.73	159.18	
	30	163.52	158.88	-	-	162.81	158.81	162.52	158.81	162.47	158.83	163.34	158.88	164.45	162.41	166.07	166.02	164.50	164.05	164.58	159.98	164.44	159.48	163.73	159.17	
	31	163.52	158.88	-	-	162.80	158.81	-	-	162.46	158.83	-	-	164.54	162.51	166.08	165.89	-	-	164.58	159.90	-	-	163.72	159.13	
	Avg	163.57	158.90	163.30	158.91	162.97	158.81	162.66	158.81	162.50	158.82	162.97	159.11	163.83	162.03	165.44	165.85	165.87	165.42	164.44	162.17	164.53	159.94	163.90	159.78	
	Max	163.61	158.99	163.51	159.39	163.18	158.82	162.77	158.81	162.56	158.84	163.34	160.79	164.87	163.87	166.08	167.48	166.78	167.02	164.58	164.09	164.80	160.16	164.44	160.39	
	Min	163.52	158.88	163.14	158.82	162.80	158.81	162.52	158.81	162.41	158.81	162.46	158.14	163.34	158.60	164.07	163.64	164.50	163.64	164.24	159.90	164.44	159.40	163.62	159.13	

Year	Day	Jan U/S	Jan D/S	Feb U/S	Feb D/S	Mar U/S	Mar D/S	Apr U/S	Apr D/S	May U/S	May D/S	Jun U/S	Jun D/S	Jly U/S	Jly D/S	Aug U/S	Aug D/S	Spt U/S	Spt D/S	Oct U/S	Oct D/S	Nov U/S	Nov D/S	Dec U/S	Dec D/S	Remarks
1993	Avg	163.13	-	162.60	-	162.14	-	161.86	-	162.95	-	163.37	160.44	163.90	161.81	164.33	162.66	166.11	163.03	165.00	160.94	164.52	159.94	163.75	-	
	Max	163.38	-	162.92	-	162.33	-	161.96	-	163.00	-	164.15	160.84	164.27	163.42	164.78	164.75	165.28	165.27	165.18	161.84	164.91	160.00	164.15	-	
	Min	162.93	-	162.34	-	161.97	-	161.79	-	161.79	-	162.92	159.90	163.03	158.98	164.04	160.64	164.90	161.58	164.91	159.80	164.14	159.98	163.56	-	
1994	Avg	163.50	-	163.37	-	163.26	-	163.20	-	163.07	-	163.74	161.61	164.01	162.67	164.83	164.70	164.92	164.34	164.80	161.65	164.49	159.80	163.76	17-	
	Max	163.60	-	163.39	-	163.35	-	163.33	-	163.15	-	164.38	163.38	164.84	165.05	165.51	166.32	165.61	166.74	164.96	163.67	164.61	160.38	164.19	0.00	
	Min	163.39	-	163.32	-	163.22	-	163.06	-	162.99	-	163.15	159.59	163.36	158.75	164.20	159.41	164.07	163.16	164.45	159.61	164.21	159.47	163.61	19-	
1995	Avg	163.57	-	163.30	-	162.97	-	162.66	-	162.50	-	162.97	159.11	163.83	162.03	165.44	165.05	165.87	165.42	164.44	162.10	164.53	159.94	163.90	-	
	Max	163.61	-	163.51	-	163.18	-	162.77	-	162.56	-	163.34	160.79	164.87	163.87	166.08	167.48	166.78	167.02	164.58	164.09	164.80	160.16	164.44	-	
	Min	163.52	-	163.14	-	162.80	-	162.52	-	162.41	-	162.46	158.14	163.34	158.60	164.07	163.64	164.50	163.64	164.24	159.90	164.44	159.40	163.62	-	

CHAPTER 3 FLOOD DAMAGE

Table L.3- 1 Flood Damage (1/4)

Summary of Damege by Flood in 1995 From 8 July to 12 September

From 8 July to 12 Septemver

① Low Pressure 22 July to 23 July
② Hot Zone Storm 'Gary' 31 July to 8 Aug
③ Hot Zone Storm 'Erwing' 10 Aug
④ Hot Zone Storm 'Lois'

Province Nong Khai

Description	Unit	Amphoe							Total	Remarks
		Muan	Sri C. Mai	Ta Bo	Phon Phisai	Sang Khom	Sra Khrai			
Dameged Area										
Tanbon	Nos.	15	6	9	10	3	3		46	
Muban	Nos.	81	54	48	91	10	32		316	
House Hold	Nos.	14896	8250	5308	14005	1890	804		45153	
People	Nos.	21504	28875	34905	70025	10450	4021		169780	
Nos. of Dameged										
Plantation Area	Rai	64583	34846	41170	55092	4968	3423		204082	
Effected Animal										
Cattle/Buffalo	Head	2336	15382	1356	4426	1299	6198		30997	
Poultry	Head	31497	43779	13804	18000	11542	26650		145272	
Swine	Head	7	652	352		248	1230		2489	
Nos. of Dead	Head	31504	43730	13140	-	-	-		88374	
Fishery Pond	Nos.	1564	1311	3191	1123	48	436		7673	
Public facility										
Road	Nos.	92	46	49	70	22	12		291	
Bridge	Nos.	4	-	2	2	2	2		12	
Dam	Nos.	1	3	15	10	-	3		32	
School	Nos.	2	3	15	11	-	1		32	
Others	Nos.									

Data Source ; Nong Khai Changwat Office

Table L.3- 2 Flood Damage (2/4)

Subsidy to Flooded People in 1995 From 8 July to 12 September

From 8 July to 12 Septemver

① Low Pressure 22 July to 23 July

② Hot Zone Storm 'Gary' 31 July to 8 Aug

③ Hot Zone Storm 'Erwing' 10 Aug

④ Hot Zone Storm 'Lois'

Province Nong Khai

Description	Unit	Amphoe						Total	Remarks
		Muan	Sri C. Mai	Ta Bo	Phon Phisai	Sang Khom	Sra Khrai		
Public Facility									
① Low Pressure	Bahts	302170	368500	413410	397320	300860	431520	2213780	
② 'Gary'	Bahts	214300	368540	292800	450000	424740	332200	2082580	
③ 'Erwing'	Bahts	438000	370000	314000	302500	330000	255000	2009500	
④ 'Lois'	Bahts	300750	875000	322560	299560	162120	227015	2187035	
S.Total	Bahts	1255220	1982040	1342770	1449380	1217720	1245765	8492895	
Agriculture									
① Low Pressure	Bahts	130000	125000	-	-	-	370000	625000	
② 'Gary'	Bahts	102280	43530	300055	244750	40300	43400	774315	
③ 'Erwing'	Bahts	287500	17500	17500	394920	208380	17500	943300	
④ 'lois'	Bahts	-	-	-	-	-	-	-	
S.Total	Bahts	519780	186030	317555	639670	248680	430900	2342615	
Livestock									
① Low Pressure	Bahts	-	203210	-	-	45980	-	249190	
② 'Gary'	Bahts	Proceeding by Provincial Livestock Office							
③ 'Erwing'	Bahts	133270	185640	122670	-	-	42210	483790	
④ 'Lois'	Bahts	-	122870	38800	110460	46170	-	318300	
S.Total	Bahts	133270	511720	161470	110460	92150	42210	1051280	
Fishery									
① Low Pressure	Bahts	451814	122517	154698	151533	-	5588	886210	
② 'Gary'	Bahts	280000	90000	305000	-	70000	-	745000	
③ 'Erwing'	Bahts	-	-	-	674232	-	-	674232	
④ 'Lois'	Bahts	-	585120	316800	-	8800	51240	961960	
S.Total	Bahts	731814	797637	776498	825825		56828	3188602	
Total		2640084	3477427	2598293	3025335	1558550	1775703	15075392	

Data Source ; Nong Khai Changwat Office

Table L.3- 3 Flood Damage (3/4)

Agricultural Damaged Area and Helping needed in 1995

Province Nong Khai

Amphoe	Area (rai)		House	Damaged Crops		Helping Needed			Remarks
	Flooded	Damaged	Hold	Crops	Area(rai)	Crops	Amount	Unit	
Muan	66700	66700	5079	Major Rice	66700	Kor Khor 6	256885	kg	
						Kor Khor 7	37000	kg	
						Sweet Corn	8976	kg	
						Maise	1250	kg	
						Soy Beam	36500	kg	
						Vegetable	3044	kg	
Sri Chiang Mai	34900	34900	2784	Rice	34403	Major Rice	130290	kg	
				Vegetable	293	Kor Khor 10	61000	kg	
				Fluit	204	Vegetable	460	kg	
						Mushroom	30000	kg	
Ta Bo	51674	43749	4258	Rice	42793	Kor Khor 6	201310	kg	
				Fluit	713	Kor Khor 10	25310	kg	
				Vegetable	149	Fluit Trees	19013	Trees	
Phon Phisai	85049	63646	5099	Rice	63646	Major Rice	230675	kg	Study A. 71%
						Second Rice	93000	kg	
						Soy Beam	52500	kg	
						Ground Nut	25480	kg	
						Sweet Corn	9865	kg	
						String Beam	3402	kg	
						Cucumber	600	kg	
						Fluit Trees	8060	Trees	
Sang Khom	4899	4899	1079	Rice	3453	Kor Khor 6	16910	kg	Study A. 19%
				Fluit	175	Fluit Trees	2397	kg	
				Vegetable	1063	Vegetable	104	kg	
				Vegetable	208	String Beam	9250	kg	
						Ground Nut	1456	kg	
						Maise	2085	kg	
Sra Khrai	8198	5159	678	Rice	5159	Kor Khor 6	18825	kg	
						Sweet Corn	6000	kg	
						String Beam	655	kg	
						Morning G.	1656	kg	
Total	251420	219053	18977						
(ha)	(40227)	(35048)	(3036)						

Data Source ; Extention Ofiice in Nong Khai
'Flood Farming Helping Plan in 1995/1996'

Table L.3- 4 Flood Damage (4/4)

Summary of Damage by Flood in 1995 (Out of Irrigation Area)

① Low Pressure 22 July to 23 July
② Hot Zone Storm 'Gary' 31 July to 8 Aug
③ Hot Zone Storm 'Erwing' 10 Aug

Province Udonthani

Ampoe	Damaged Area (Rai)	Low Pressure	'Gary'	'Erwing'	Damaged Area ≧50 %	Damaged Area 100 %	Nos. of Damaged Tunban	Nos. of Damaged Muban	H.hold Nos.	Remarks
Muang	44971	-	10190	6970	19151	25820	16	84	2198	
Ban Dung	55947	-	25000	10845	20102	35845	13	82	2146	
Ban Phu	57986	-	31483	2061	11018	46968	10	72	3397	
Kumphawapi	234105	-	50094	-	181969	52136	16	137	4191	
Nong Han	22082	-	8004	8467	5611	16471	12	71	1418	
Phen	54728	-	23605	12337	18786	35942	9	60	2657	
Nam Som	18384	-	5569	-	12815	5569	7	63	1732	
Nong Wa So	280	-	271	-	-	280	6	9	44	
Kut Chap	2961	-	1514	-	1402	1514	4	14	232	
Sang Khom	24073	-	6342	10945	6786	17287	6	40	1346	
Thung Fon	7346	-	5541	-	1805	5541	1	8	298	
Phibl Rak	8204	-	4564	3191	449	7755	3	21	457	
Total	531067	-	172177	54816	279894	251128	103	661	20116	

Data Source : Udonthani Changwat Office

APPENDIX M. HUAI MONG PROJECT

APPENDIX M HUAI MONG PROJECT

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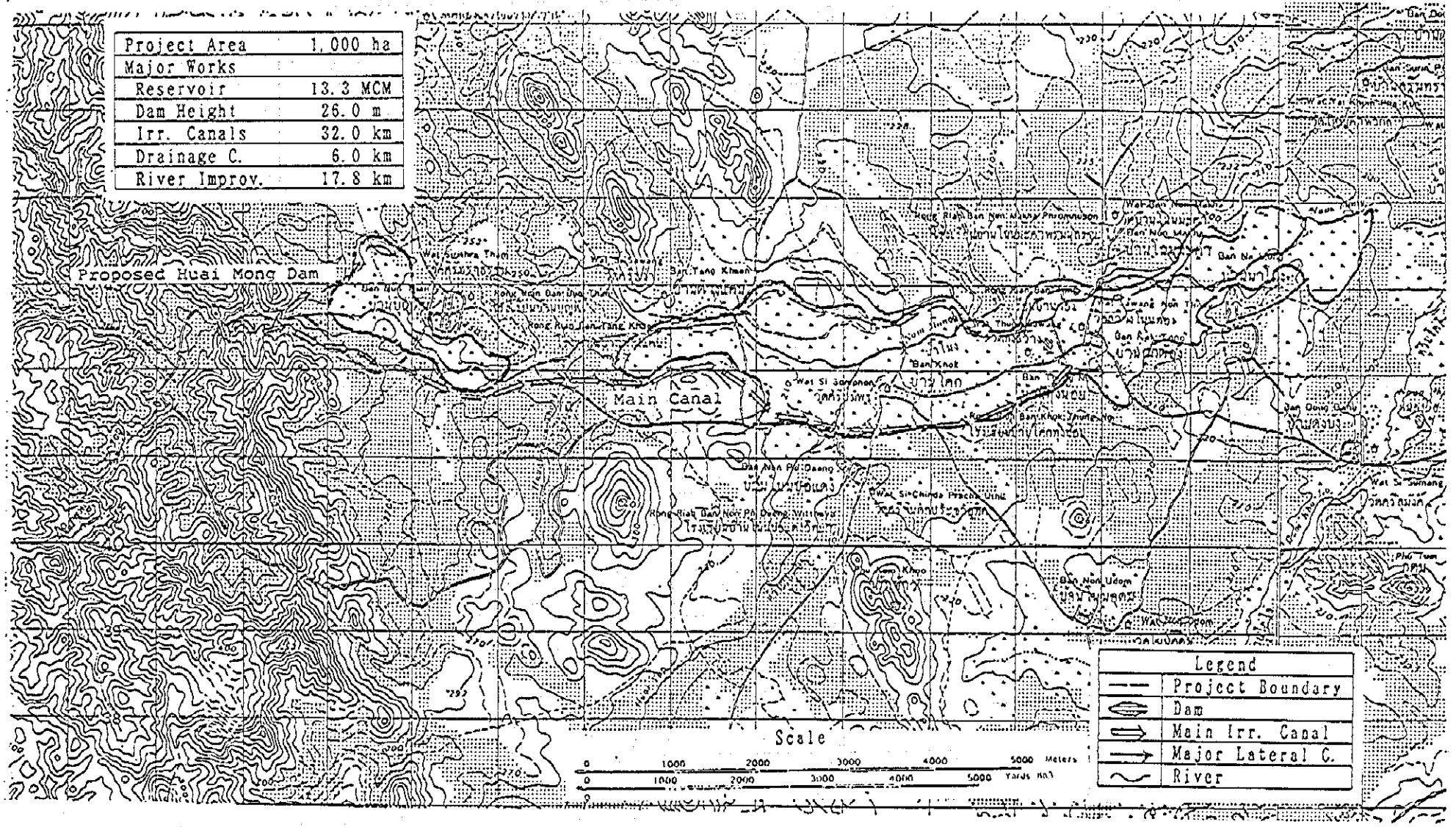
GENERAL MAP OF HUAI MONG PROJECT



CHAPTER 1. LOCATION AND AREA

1.1 Location

The Huai Mong Projec Area is the rural area developed between the mountains/hills, whichI is located along the most upper reaches of the Huai Mong, and extended over the Tambon Ban Than and Ban khok, Amphoe Suwan Khuha, Nong Bua Lamphu province.

1.2 Area

Project Area

Tambon	Area (ha)
Ban Than	194
Ban Khok	804
Total	1,000

CHAPTER 2. THE AREA

2.1 Climate

The climate in the area is tropical and monsoonal. Nevertheless, it is seemed that the rainfall is strongly affected by typhoon and/or tropical depression rather than monsoonal winds, as shown in the rainfall variance at Suwana Khuha Station, The standard deviation of the rainy season rainfall is about 50 % of the average rainfall, which is bigger, as compared to the other stations with a standard deviation of 20 %. This trend is the same in the runoff discharge recorded at Kh-18 station. Since the hydro-meteorological data are very limited in the area, it is necessary for the accurate hydrological study to establish more gauging and rainfall stations in the the area before the implementation of the project.

2.2 Topography

The Land extends, as a long strip with a width of 1.0 to 1.5 km, along the Huai Mong, and have a gentle slope from the upstram to the downstream with a gradient of about 1 in 500 to 800. While the slope toward the said river is about 1/50 to 1/300. The lands elevation are about 250 m MSL in the upstram area and about 200 to 220 m MSL in the middle and downstream area.

2.3 Geology

The lands consists of the paleozoic sandstone, siltstone and shale in the most area, and the limestone in the some area of the downstream, and phyllite/quartzite in the upstream area in the geology. While, the soils are made from those weathered rocks so that are a little in organic composits and fertile.

The geology at the dam site consists of agglomerate and andesite but the land is thickly overlaid with sandstone/siltstone. the some outcropped rocks are found in the mountain.

2.4 Irrigation and Drainage

Some lands in the project area are irrigated for both the wet and dry season crops by utilizing the spring and river waters. Two (2) weirs were constructed to irrigate a land area of some 80 ha and 96 ha in Tambon Ban Than and Ban Khok by the RID. Another one (1) weir is planned to construct under the small scale project program. Further more two (2) reservoirs with a total storage capacity of about 1.63 MCM have been con structed on the Huai So, a tributary of Huai Mong joining at Ban Khok.

The drainage system is poorly organized. Ther are swampy land due to spring and absence of farm drains, and flooded area currently along the Huai Mong and other rivers dut to inadiquate flow capacities.

CHAPTER 3. THE PROJECT

3.1 Reservoir and Dam

3.1.1 Reservoir

The reservoir land, which located within the forest conservation area, mainly consists of grass-land, but about a land area of some 18 ha are cultivated with rainfed rice. There are no dwellings in the submerged area. Based on the 1/50,000 map, the storage volume and area to the water depth (H-V/A curve) at the proposed dam site, as discussed in the following section, have been developed. By appling the effective storage capacity (see Apenddix C), the said H-V/A curve and dead water level to irrigate the land with an elevation of 250 m MSL, the proposed reservoir elements have been estimated (refer to Figure m-3.1), as follows:

Reservoir Elements

Catchment Area	57.1 Sq.km
Reservoir Capacity	
Effective Water	12.2 MCM
Dead Water	1.1 MCM
Total	13.3 MCM
Water Level	
Max. Water Level	269.0 m MSL
Design Water Level	268.0 m MSL
Dead Water Level	256.0 m MSL
Water Surface Area	
At Max. Water Level	178.0 ha
At Design Water Level	165.0 ha

3.1.2 Dam

The proposed dam will be located in the Amphoe Pak Chom, Loei province at about 400 m upstream from the boundary line between Loei and Nong Bua Lamphu province. Since the depth of envelope materias at the propposed

dam site is uncertain, the dam will be constructed as the earth fill type by hauling the materials in the reservoir area and/or from the vicinity of the dam site.

Based on the reservoir plan and 1/50,000 topographic map, the dimension of dam have been drawn up (refer to Figure M-3.1), as follows:

Dimension of Dam

Type	Earth Fill
Height	26.0 m
Length	150.0 m
Crest Width	7.0 m
Free Board	2.0 m
Elevation of Crest	271.0 m MSL
Reservoir Side Slope	1:3.0
Land side Slope	1:2.5

The appurtenant structures will be composed of one (1) intake, of which barrel will be used as diversion conduit during the construction and one (1) spillway, as shown below:

Appurtenant Structures

Intake	
Design Discharge	1.80 cu.m/s
Barrel	Dia. 2.0 m
Intake gate	0.8 m x 1.2 m
Spillway	
Type	Overflow type
Design Discharge	81.2 cu.m/s
Length	48.0 m
Energy Dissipator	Sky Jump type

For desgn of spillway, the water balance simulaton have benn conducted to minimize the dischare, appling 126 mm daily rainfall with a probability of 1/100 year, runoff coefficient of 0.6, tme of concentration

of 1 hour and allowable increased water depth of 1.0 m. As a result, the food dischare through the spillway was reduced form a peak flood dischare of 178 cu.m/s to 81.1 cu.m/s.

3.2 Canals

3.2.1 Irrigation Canals

The main canal with the design discharge 1.80 cu.m/s will be located along the right hill side. Two major laterals will be provided to irrigate the left river side land areas with the ground elevation of about 250 m MSL in the upstream area and about 200 to 220 m MSL in the middle and downstream.

The planned canals' length are as follows:

Canals	Length
Main Canal	13.0 km
Lateral A	1.5 km
Lateral B	7.5 km
Other Lats.	10.0 km
Total	32.0 km

Table M-3.1 Irrigation Canal Cross-section

Q (cu. m/s)	Bottom b(m)	Depth h(m)	Free B. (m)	Side Slope	Applied A(ha)
0.125	0.6	0.3	0.3	1.5:1	100<
0.270	0.8	0.4	0.3	1.5:1	100-230
0.490	1.0	0.5	0.3	1.5:1	230-410
0.798	1.2	0.6	0.3	1.5:1	410-670
1.202	1.4	0.7	0.3	1.5:1	670-1,000

In addition to the main and lateral canals, the on-farm facilities, such as farm ditches, farm drains and farm roads, shall be constructed to irrigate the land effectively through the turnouts. The density of the such ditches, drains and roads per hectare will be 80 m, 20 m and 80 m excluding supplemental farm ditches and drains, respectively, taking into account the topographical conditions, farm-plot size, future agricultural development plan and so on.

3.2.2 Drainage Canals

The drainage canals, to remove the excess water from the locally inundated area promptly, will be required. The total length of the drainage canal is estimated to be about 6 km, assuming the canal length rate of 6m per ha.

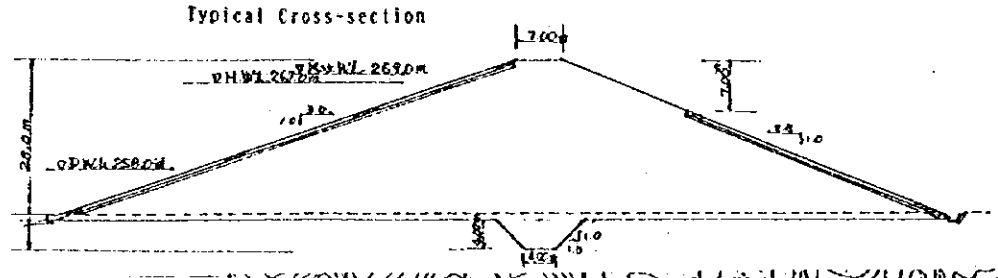
Besides the land drainage, since the flood occurs frequently by over flowing from the rivers, according to the farmers in the project area, the rivers might as well be improved to mitigate the flood damages. The proposed river improvement will consists river training, dredging and dike construction. Major rivers to be improved are listed below:

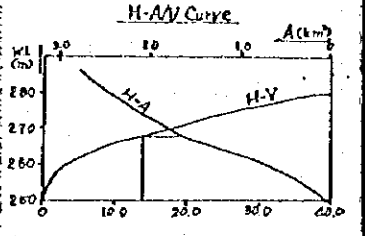
	River Improvement		
Name of River	Drainage A.	Discharge	length
Huai Mong U/S	91 sq.km	108 cu.m/s	5.0 km
Huai Mong D/S	242 sq.km	214 cu.m/s	8.0 km
Huai Yap	36 sq.km	28 cu.m/s	0.8 km
3 Other Stream	20 sq.km	16 cu.m/s	4.0 km
Total			17.8 km

Table M-3.2 Drainage Canal Cross-section

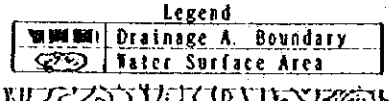
Q (cu.m/s)	Bottom b(m)	Depth h(m)	Free B.(m)	Side Slope	Applied Rivers
108.0	6.0	3.8	0.4	2.0:1	H.Mong U/S
214.0	10.0	4.2	0.4	2.0:1	H.Mong D/S
28.0	2.4	2.6	0.4	2.0:1	Huai Yap
8.0	1.6	1.4	0.4	2.0:1	T.Kaen 1
3.0	1.0	1.1	0.3	2.0:1	T.Kaen 2
7.0	1.5	1.5	0.3	2.0:1	Ban Ong
1.0	0.8	0.8	0.3	1.5:1	B.Thung Noi
0.8	0.6	0.6	0.3	1.5:1	Drainage C.

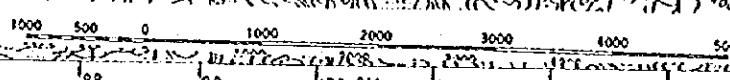
Figure M-3.1 Location Map of Huai Mong Dam





Items / Reservoir Name		Huai Mong
Location		
- Amphoe		Pak Chom
- Changwat		Loe
- Coordination		5444-III 958-425
Name of Stream		Huai Mong
Catchment Area (sq.km)		57.1
Annual Inflow (MCM)		
Reservoir Capacity		
- Effective	(MCM)	12.2
- Dead	(MCM)	1.1
- Total	(MCM)	13.3
Water Surface Area		
- Max. W.L.	(ha)	178.0
- H.W.L.	(ha)	165.0





CHAPTER 4. PROJECT COSTS AND MANAGEMENT

4.1 Estimated Costs

The Project costs have been estimated to be about 200.6 million Bahts as contract works for major civil works, except the costs for the on-farm facilities, which will be done by the force account works or farmers themselves, at the price of 1995. The costs include the costs for Engineering, Land Acquisition, Administration, Project Contingences and Price Escalation. The cost breakdown is shown in Table m-4.1.

4.2 Construction Schedule and Management

The Project will be implemented by the RID, as the leading agency, in cooperation with the other agencies concerned within the period of 5 years included one year for the engineering services, such as surveys,engieerings etc.(refer to Table M-4.2).

The Project Manger with adequate number of supporting staff will be appointed under the RID Regional office 4. The Steering Committee will be established to coordinate the works among the agencies concerned. For the project implementation, the water users cooperatives shall be organized for each commanded area of lateral and/or even further smaller unit for smooth construction of on-farm facilities and operation and maintenance of the said facilities after implementation of the project.

4.3 Operation and Mintenance

The proproject facilities, after the completion of the Project, will be operated and maintained by the Nong Bua Lamphu province irrigation office with the guidance of Regional office, and of course with the particiapation of water users cooreratives concerned. The RID will deal with operation and maintenance of reservoir dam, main and lateral canals. The on-farm facilities will be maintained by the water users coperatives concerned. The other facilities, such as river and rural infrastructures may be maintained by the province, district and/or village.

Table M-1 Costs for Huai Mong Project

Item	unit	Qun'ty	Amount (M.B)	In F.C. (M.B)	Remarks
Dam	L.S.	1	44.3	17.2	See Bd-1
Irr. Canal	km	32.0	35.4	16.5	See Bd-2
R. Improv. & Drainage	km	23.8	25.2	17.7	See Bd-3
Sub-total			104.9	51.4	
On-farm Facilities	ha	1000	3.6	1.3	See Bd-4
Rural Infrastuctures			10.2	5.9	See Bd-5
Total for Field Costs			118.7	58.6	
Engineering Costs			7.1	2.8	
Land Acquisition	ha	107.4	19.3	0.0	
Administration Costs			14.2	0.0	
Contingencies			15.9	6.1	
Price Escalation (7%)			25.4	6.5	3% F.C.
Toal Project Cost			200.6	74.0	

Breakdwon-1 Dam

Item	Spec.	Unit	Qun'ty	U.Price (Bahts)	Amount (B'000)	In F.C. (B'000)
Preparatorry Works		L.s.	1		1,500	300
Stripping		Cu.m	8,715	14	122	98
Excavation	Common	Cu.m	2,856	69	197	158
	Hard Ban	Cu.m	952	93	89	71
	Rock	Cu.m	952	744	708	531
Foundation	Prepa.	Sq.m	8,715	12	105	63
Embankment		Cu.m	89,068	135	12,024	9,619
Riprap		Cu.m	10,275	960	9,864	986
Bedding		Cu.m	6,164	672	4,142	828
Sodding		Sq.m	1,672	29	48	2
Surfacing		Sq.m	210	394	83	50
RC Concrete	Intake	Cu.m	138	6,938	957	373
	Spilway	Cu.m	1,413	5,958	8,419	3,704
	Others	Cu.m	78	5,534	432	186
Gate/Lifts		Set	2	9,000	18	16
Misc. Works		L.S.	1		5,592	2,515
Total					44,300	19,500

Breakdwon-2 Irigation Canals

Item	Spec.	Unit	Qun'ty	U.Price (Bahts)	Amount (B'000)	In F.C. (B'000)
Main Canals	Q=1.18	km	4.5	2101100	9,455	3,782
	Q=0.59	km	8.5	1714700	14,575	5,684
Laterals	Q=0.47	km	7.5	1415100	10,613	4,139
	Q=0.24	km	1.5	1171700	1,758	686
	Q=0.12	km	10.0	897500	8,975	3,411
Misc. Works	(10%)				4,524	1,798
Total					49,900	19,500
Land for Acquisition		38.0 ha				

Breakdwon-3 River Improvement & Drainage

Item	Spec.	Unit	Qun'ty	U.Price (Bahts)	Amount (B'000)	In F.C. (B'000)
R. Improve.	Q=108	m	5,000	1,073	5,365	3755
Do.	Q=214	m	8,000	1,361	10,888	7856
Do.	Q=28	m	800	662	530	356
Do.	Q=8	m	1,500	532	798	512
Do.	Q=3	m	500	412	206	133
Do.	Q=7	m	1,000	443	443	291
Do.	Q=1	m	1,000	399	399	256
Drainage C.	Q=0.8		6,000	258	1,548	1038
Misc. Works	(25%)				5,023	3,503
Total			23,800		25,200	17,700
Land for Acquisition			51.2 ha			

Breakdwon-4 On-farm Develpment

Item	Spec.	Unit	Qun'ty	U.Price (Bahts)	Amount (B'000)	In F.C. (B'000)
F. Ditches	80m/ha	m	80,000	20	1,600	560
F. Drains	20m/ha	m	20,000	4	80	28
F. Roads	80m/ha	m	80,000	17	1,360	476
Misc. Works	(20%)				560	236
Total					3,600	1,300

Breakdwon-5 Rural Infrastructures

Item	Spec.	Unit	Qun'ty	U.Price (Bahts)	Amount (B'000)	In F.C. (B'000)
Farm-to-Market R.		km	4.0	200,000	800	440
Village Roads		km	7.0	100,000	700	385
Village water S.		km	9.0	700,000	6,300	3,780
Deep Wells		place	6.0	120,000	720	288
Misc. Works	(20%)				1,680	1,007
Total					10,200	5,900

Table M-4.2 Construction Schedule

Item	1st Yr.	2nd Yr.	3rd Yr.	4th Yr.	5th Yr.	
Dam Construction	=========	=========	=========			
Irrigation Canals			=========	=========	=========	
River &Drain. Impr.			=========	=========	=========	
On-farm Facilities			=========	=========	=========	
Rural Infra.				=========	=========	
Land Acquisition	=========	=========	=========			

Table M-4.3 Disbursement Schedule

Item	1st Yr.	2nd Yr.	3rd Yr.	4th Yr.	5th Yr.	Total
Dam Construction	8.9	22.2	13.2	0	0	44.3
Irrigation Canals	0	0	7.1	21.2	7.1	35.4
River &Drain. Impr.	0	0	7.6	10.1	7.5	25.2
On-farm Facilities	0	0	0.7	1.4	1.5	3.6
Rural Infra.	0	0	0	5.1	5.1	10.2
Sub-total	8.9	22.2	28.6	37.8	21.2	118.7
Engineering Costs	4.3	0.7	0.7	0.7	0.7	7.1
Land Acquisition	7.7	7.7	3.9	0	0	19.3
Administration Cost	2.8	2.8	2.8	2.8	3.0	14.2
Contingencies	2.4	3.3	3.6	4.1	2.5	15.9
Price Escalation	0.8	3.3	5.5	8.3	7.5	25.4
Total Project Costs	26.9	40.0	45.1	53.7	34.9	200.6