

表-17 ダム建設費の経済比較表

(Rp. million)

Item	Pill Dam	Combined Dam	Concrete Gravity Dam
1. River Diversion			
1.1 Diversion channel (included		60.7	60.7
1.2 Cofferdam	in 2.4)	26.1	26.1
2. Dam Body			
2.1 Earth work	507.8	274.2	146.0
2.2 Concrete work	0	867.7	1,040.2
2.3 Foundation Grouting	197.4	404.7	614.3
2.4 Spillway	1,198.0	570.0	674.1
2.5 Water stop	0	96.2	0
3. Access Road	91.2	91.2	91.2
4. Intake	62.2	62.2	62.2
Total	2,056.6	2,453.0	2,714.8

表-18 經濟費用
SUMMARY OF ECONOMIC COST

Unit: US\$ 10³

Item	Economic Cost
1. Preparatory Works /1	1,228
2. Diversion Works	2,852
3. Canal Works	9,516
4. Tertiary Development & On-farm Development	1,196
Sub-total (1-4)	(14,792)
5. O & M Equipment	600
6. Administration Expenses	600
7. House Evacuation /2	325
8. Engineering Services	1,880
Sub-total (5-8)	(3,405)
9. Physical Contingency	1,820
Total	20,017

/1 : including cost for office and quarters

/2 : About 65 houses in the submergible area near Gadeg dam site to be evacuated

表-19 總集費

SUMMARY OF CONSTRUCTION COSTUnit: US\$10³

Item	Total	Foreign Portion	Local Portion
1. Preparatory Works	1,283	290	993
2. Diversion Works /1	2,980	1,778	1,202
3. Canal Works	9,944	4,552	5,392
4. Tertiary Development	750	220	530
<u>Sub-total (1-4)</u>	<u>14,957</u>	<u>6,840</u>	<u>8,117</u>
5. Land Acquisition and House Evacuation/2	2,580	-	2,580
6. O/M Equipment	600	600	-
7. Administration Expenses	600	-	600
8. Engineering Services	1,880	1,264	616
9. Physical Contingency	2,061	870	1,191
<u>Sub-total (5-9)</u>	<u>7,721</u>	<u>2,734</u>	<u>4,987</u>
<u>Total (1-9)</u>	<u>22,678</u>	<u>9,574</u>	<u>13,104</u>
10. Price Contingency	13,261	3,706	9,555
Grand Total	35,939	13,280	22,659

/1: including Dam Spillway and Intake Structure

/2: about 65 houses to be evacuated from the submergible area near Gadeg dam site

表-20 事業実施期間中の農家生産

ANNUAL PRODUCTION VALUE UNDER FUTURE WITH PROJECT

Crop and item	Year after commencement of irrigation				
	1	2	3	4	5
<u>Rice</u>					
Yield (ton/ha)	4.0	4.4	4.6	4.8	5.0
Gross Production Value (10 ³ Rp/ha)	720	792	828	864	900
Production Cost (10 ³ Rp/ha)	333	347	361	376	392
Net Production Value (10 ³ Rp/ha)	387	445	467	488	508
Planted/Harvested Area (ha)	7,000	7,000	7,000	7,000	7,000
Total N.P.V. (10 ⁶ Rp)	2,709	3,115	3,269	3,416	3,556
<u>Palawija (Groundnut)</u>					
Yield (ton/ha)	1.0	1.1	1.2	1.2	1.2
Gross Production Value (10 ³ Rp/ha)	420	462	504	504	504
Production Cost (10 ³ Rp/ha)	227	249	274	274	274
Net Production Value (10 ³ Rp/ha)	193	213	230	230	230
Planted/Harvested Area (ha)	3,500	3,500	3,500	3,500	3,500
Total N.P.V. (10 ⁶ Rp)	676	746	805	805	805
Total N.P.V. of Rice and Palawija	3,385	3,861	4,074	4,221	4,361

N.P.V.: Net Production Value

表-21 事業実施による便益
INCREMENTAL PROJECT BENEFIT
BY YEAR OF DEVELOPMENT

Unit: 106Rp/106USS

Year	Future With Project			Future Without Project			Incremental Benefit (1)-(2)	
	Rice (3,500ha ^{x2})	Palawija (3,500ha)	Total (1)	Rice (3,800ha)	Palawija (380ha)	Total (2)	Rp	USS
1988	2,709	676	3,385	1,167	49	1,216	2,169	3,143
1989	3,115	746	3,861	"	"	"	2,645	3,833
1990	3,269	805	4,074	"	"	"	2,858	4,142
1991	3,416	805	4,221	"	"	"	3,005	4,355
1992	3,556	805	4,361	"	"	"	3,145	4,558

表-22 標準農家の経済

TYPICAL FARM BUDGET
(0.4ha Farm)

	<u>Without Project (Rp)</u>	<u>With Project (Rp)</u>
1. Gross Income	223,400	756,000
Farm income	186,200	756,000
Rainy season paddy	(172,800)	(270,000)
Dry season paddy	(0)	(270,000)
Palawija crops (Groundnut)	(13,400)	(216,000)
Other income	37,200	0*
2. Expenditures	199,200	579,100
Farming expenditures	38,000	143,400
Rainy season paddy	(36,400)	(44,500)
Dry season paddy	(0)	(44,500)
Palawija crops (Groundnut)	(1,600)	(54,400)
Taxes and interest	11,200	35,700
Living expenses	150,000	400,000
3. Net Income (Capacity to pay)	<u>24,200</u>	<u>176,900</u>

* Present condition of a rice a year will be changed into two rice croppings plus one palawija cropping a year with the project and farmers' net income will be increased by more than seven (7) times compared with the present condition even if other income will be zero. It is also considered that there will be very little chance for farmers to do other business than farming under with project condition.

表-23 年次別事業費と便益

COST BENEFIT STREAM (ECONOMIC PRICE)
(US\$ 1,000)

Year in Order	Direct Cost	O & M Cost	Benefit
1	1574.00	0.00	0.00
2	1783.00	0.00	0.00
3	8652.00	0.00	0.00
4	8008.00	0.00	0.00
5	0.00	164.00	3143.00
6	0.00	164.00	3833.00
7	0.00	164.00	4142.00
8	0.00	164.00	4355.00
9	0.00	164.00	4558.00
10	0.00	164.00	4558.00
11	0.00	164.00	4558.00
12	0.00	164.00	4558.00
13	0.00	164.00	4558.00
14	0.00	164.00	4558.00
15	0.00	164.00	4558.00
16	0.00	164.00	4558.00
17	0.00	164.00	4558.00
18	0.00	164.00	4558.00
19	0.00	164.00	4558.00
20	0.00	164.00	4558.00
21	0.00	164.00	4558.00
22	0.00	164.00	4558.00
23	0.00	164.00	4558.00
24	0.00	164.00	4558.00
25	0.00	164.00	4558.00
26	0.00	164.00	4558.00
27	0.00	164.00	4558.00
28	0.00	164.00	4558.00
29	0.00	1034.00	4558.00
30	0.00	164.00	4558.00
31	0.00	164.00	4558.00
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37	0.00	164.00	4558.00
38	0.00	164.00	4558.00
39	0.00	164.00	4558.00
40	0.00	164.00	4558.00
41	0.00	164.00	4558.00
42	0.00	164.00	4558.00
43	0.00	164.00	4558.00
44	0.00	164.00	4558.00
45	0.00	164.00	4558.00
46	0.00	164.00	4558.00
47	0.00	164.00	4558.00
48	0.00	164.00	4558.00
49	0.00	164.00	4558.00
50	0.00	164.00	4558.00
TOTAL	20017.00	8414.00	206909.00

表-24 維持管理用機材一覽表

REQUIRED NUMBER OF MAJOR EQUIPMENT
FOR OPERATION AND MAINTENANCE

Item No.	Equipment	Required No.
1.	Dragline, 0.8 m ³	1
2.	Crawler crane	1
3.	Bulldozer, 11 ton	1
4.	Submersible pump with engine	1
5.	Generator, 10kW	1
6.	Dump Truck, 2 ton	1
7.	Jeep, four wheel drive	1
8.	Sedan	1
9.	Repair shop tools	L.S.
10.	Spareparts (20% of the above)	L.S.

Estimated value: US\$600,000.00

付図一覧

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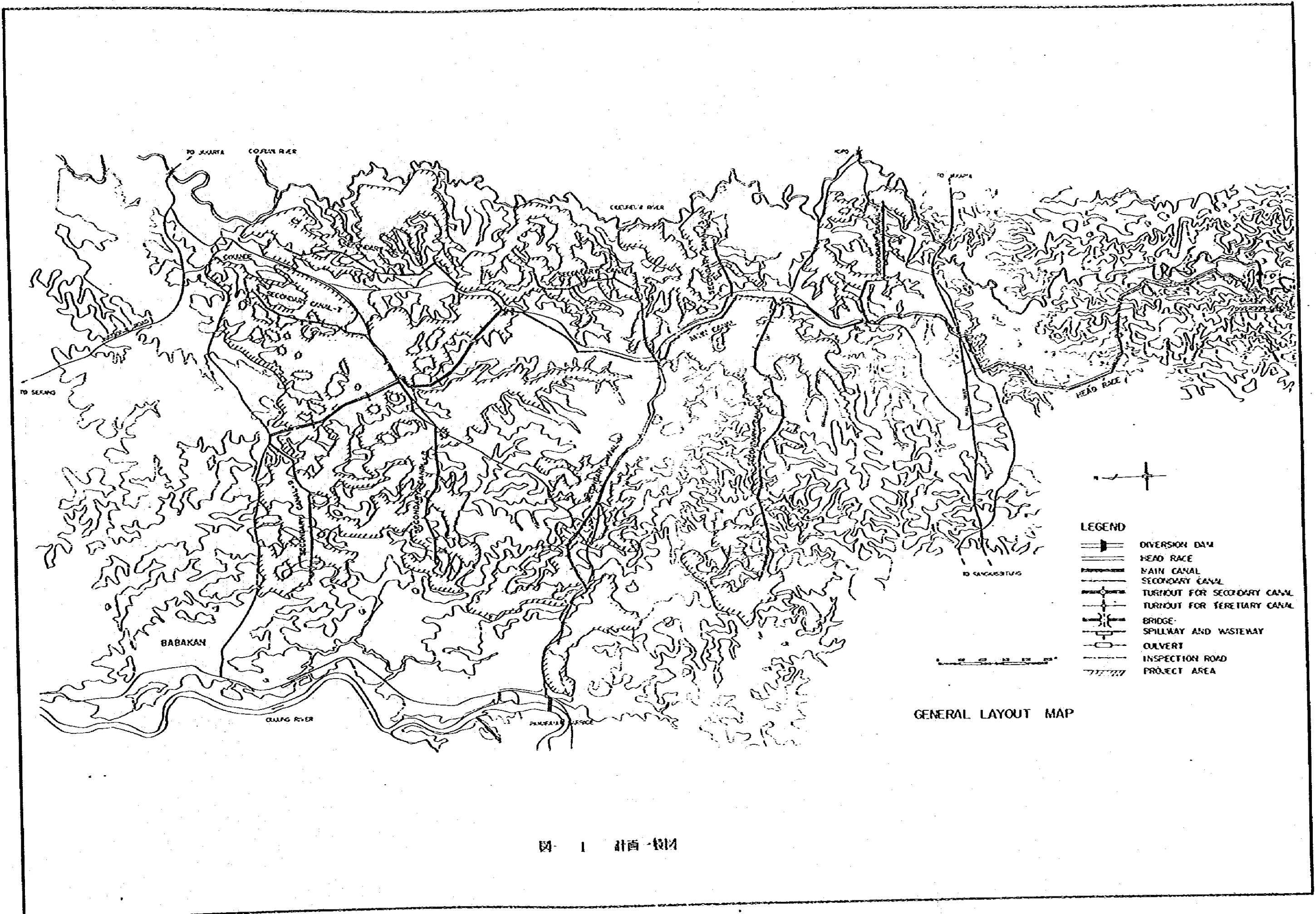


圖 1 計畫圖

WORK ITEMS	1982						1983						
	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
1. METEOROLOGY & HYDROLOGY	■	■			■	■	□						
2. SOIL					■	■	□						
3. GEOLOGY	■	■					□						
4. SOIL MECHANICS	■	■			■	■	□						
5. AGRICULTURE	■	■			■	■	□						
6. AGRO-ECONOMY	■	■			■	■	□						
7. CONSTRUCTION MATERIALS					■	■	□						
8. IRRIGATION & DRAINAGE	■	■			■	■	□						
9. PROJECT EVALUATION								□					
10. REPORT													
a) Inception Report			△										
b) Interim Report						△							
c) Draft Final Report								△					
d) Final Report													△

LEGEND: ■ Field Work □ Home Work △ Report Presentation

图 2 调查工程图
ACTIVITIES OF STUDY TEAM

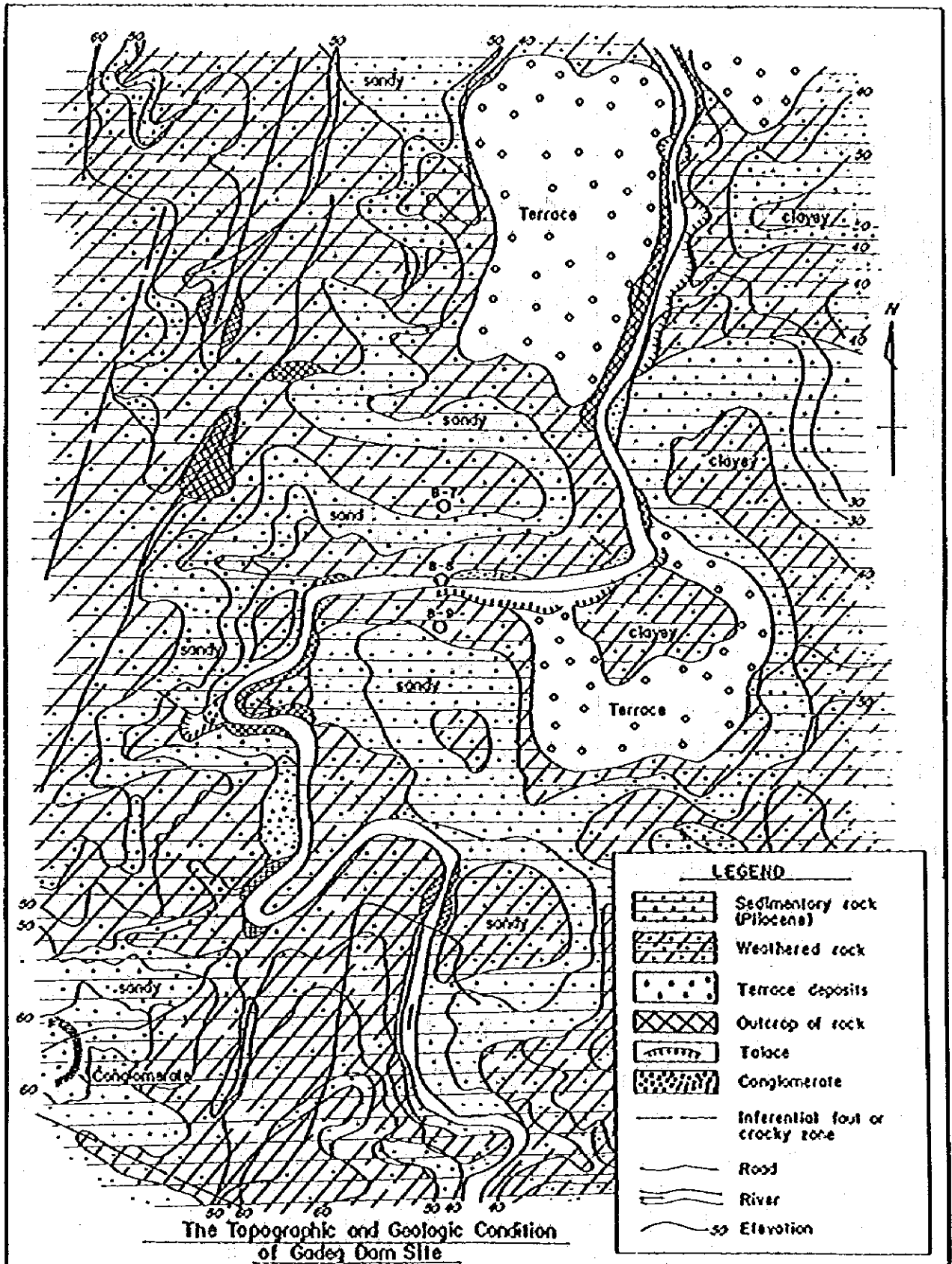
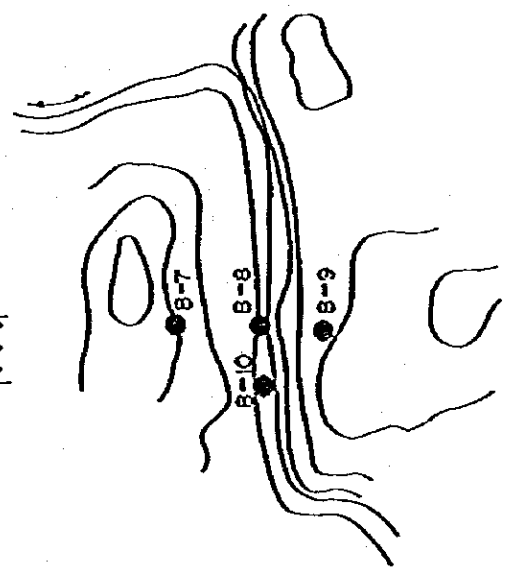
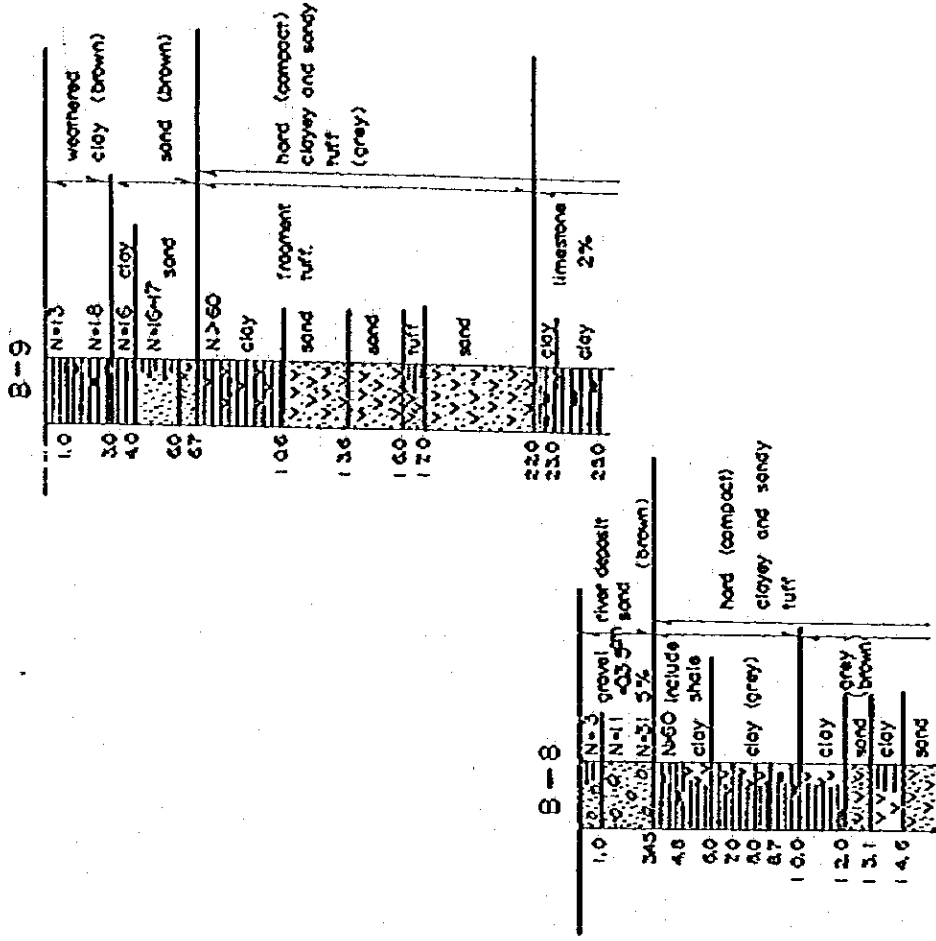


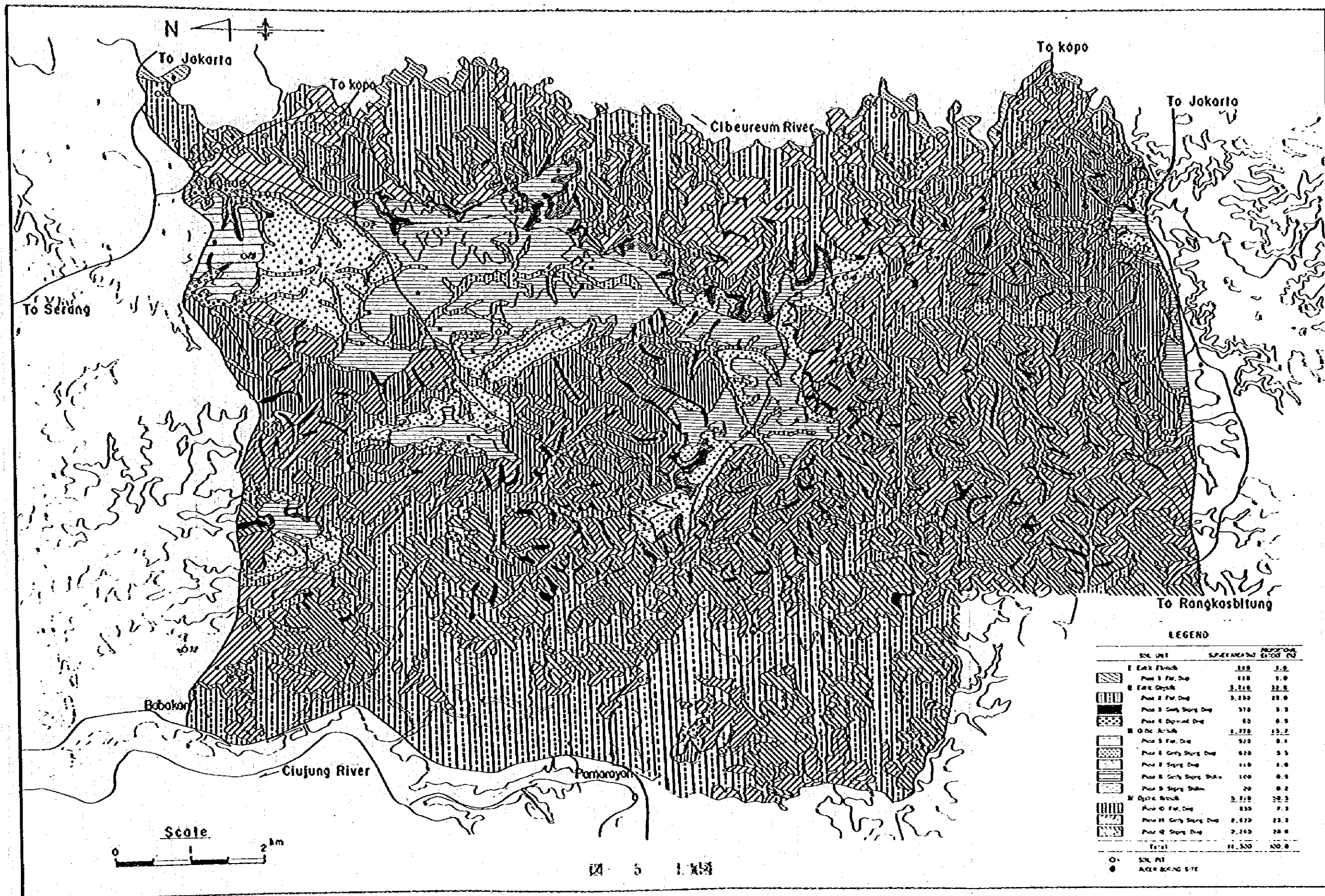
図 3 ガデックダム周辺地形地質図



Geologic Column of Godeg - Site

Geologic Column of Godeg - Site

図 4 ガダノダムサイト地質柱状図



SOIL MAP

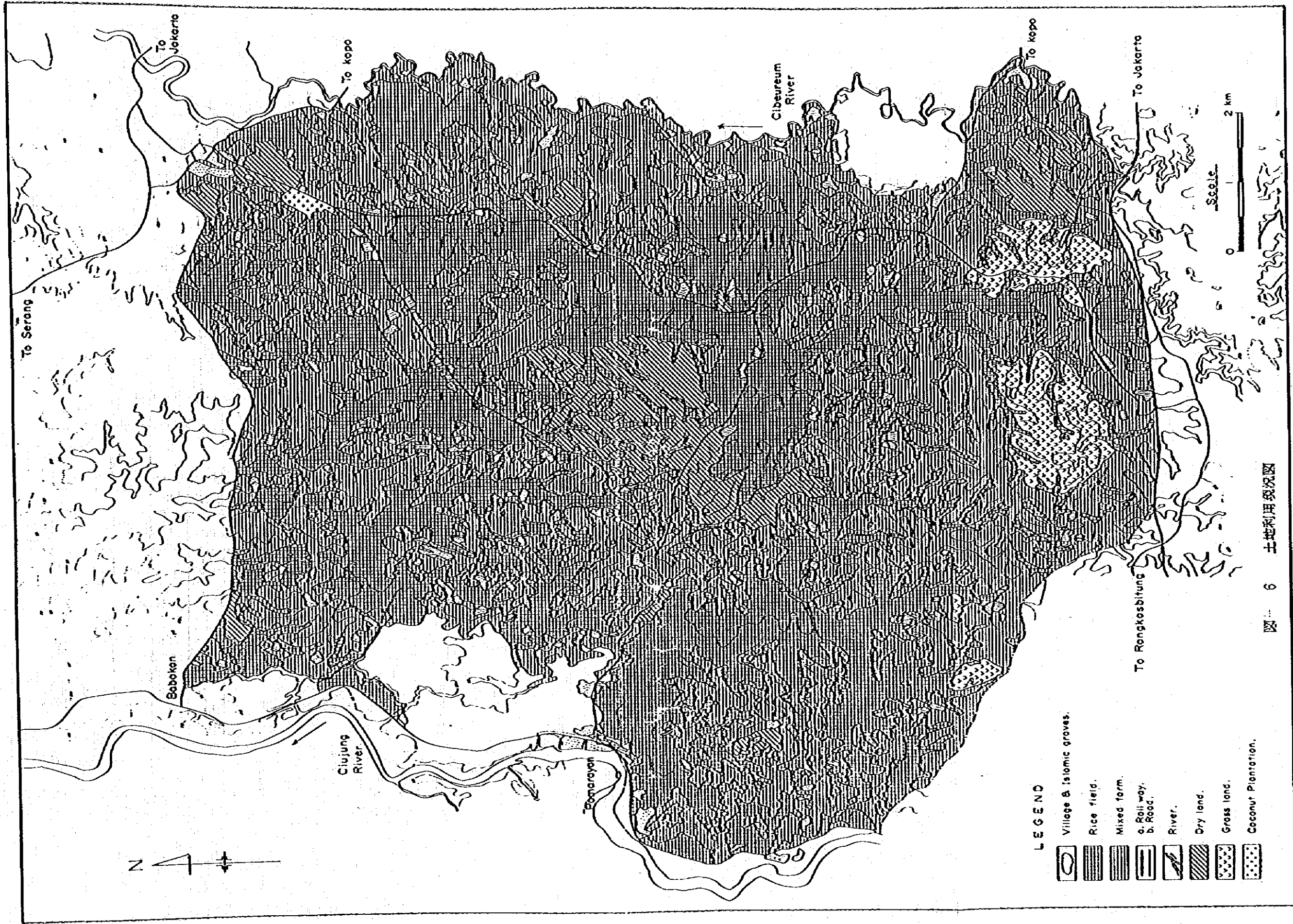
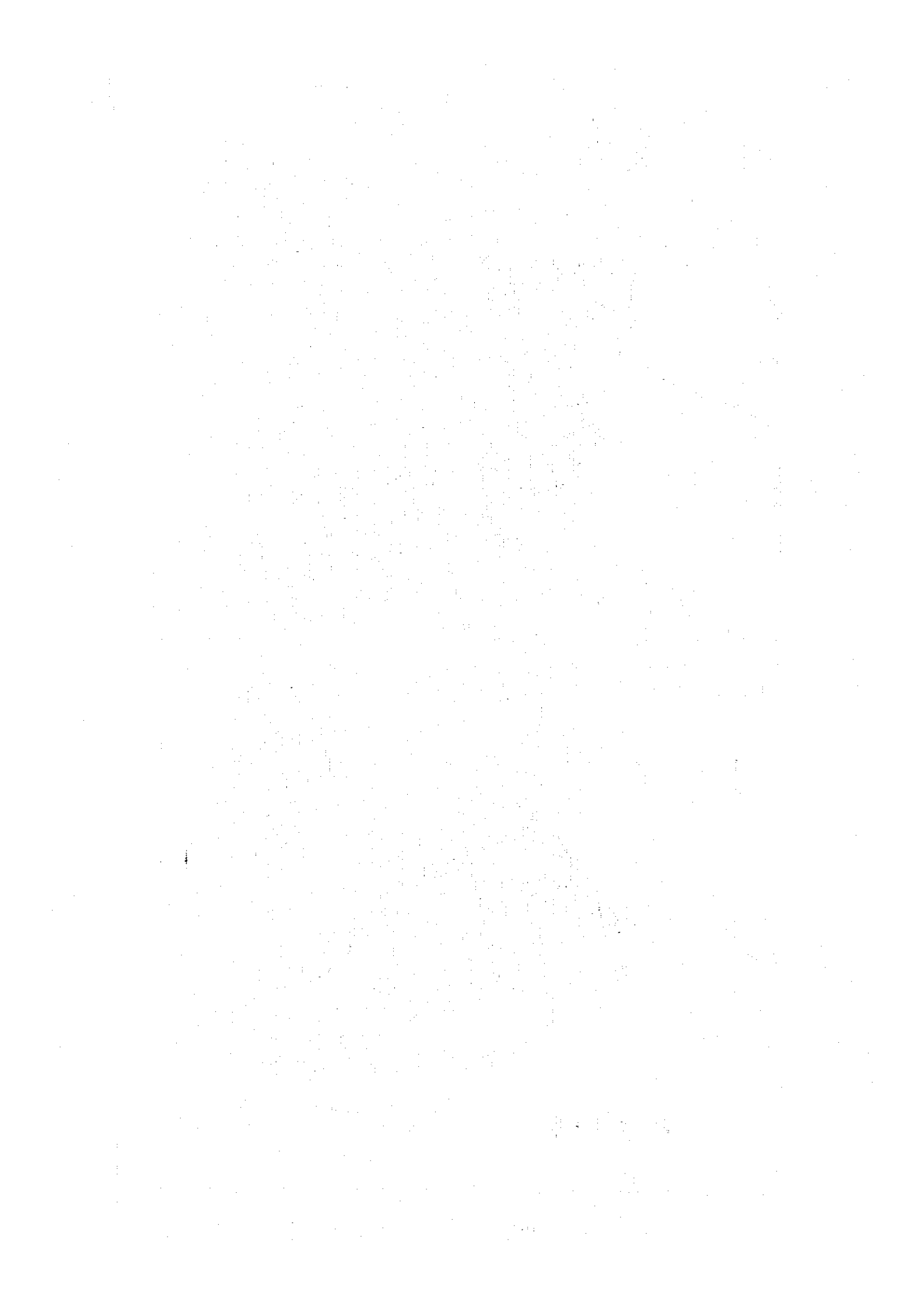
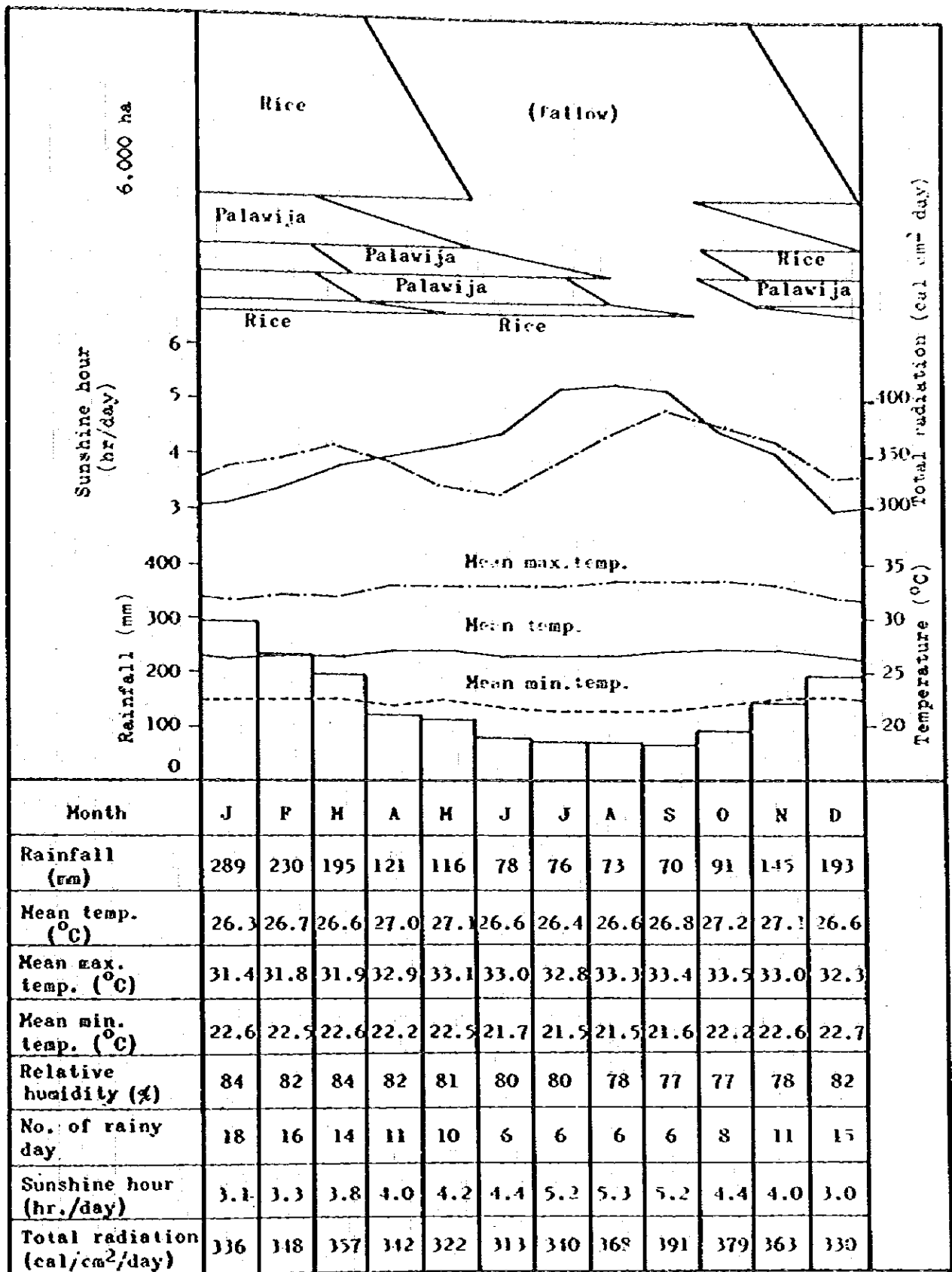


图 6 土地利用现状图

PRESENT LAND USE IN THE STUDY AREA





Note: The values of total radiation are estimated based the sunshine hour shown above. Climatological data shown are obtained at Serang, 1942 - 1981.

**PRESENT CROPPING PATTERN IN THE STUDY AREA
AND RELATED CLIMATOLOGICAL FACTORS**

圖- 7 現況作付体系圖

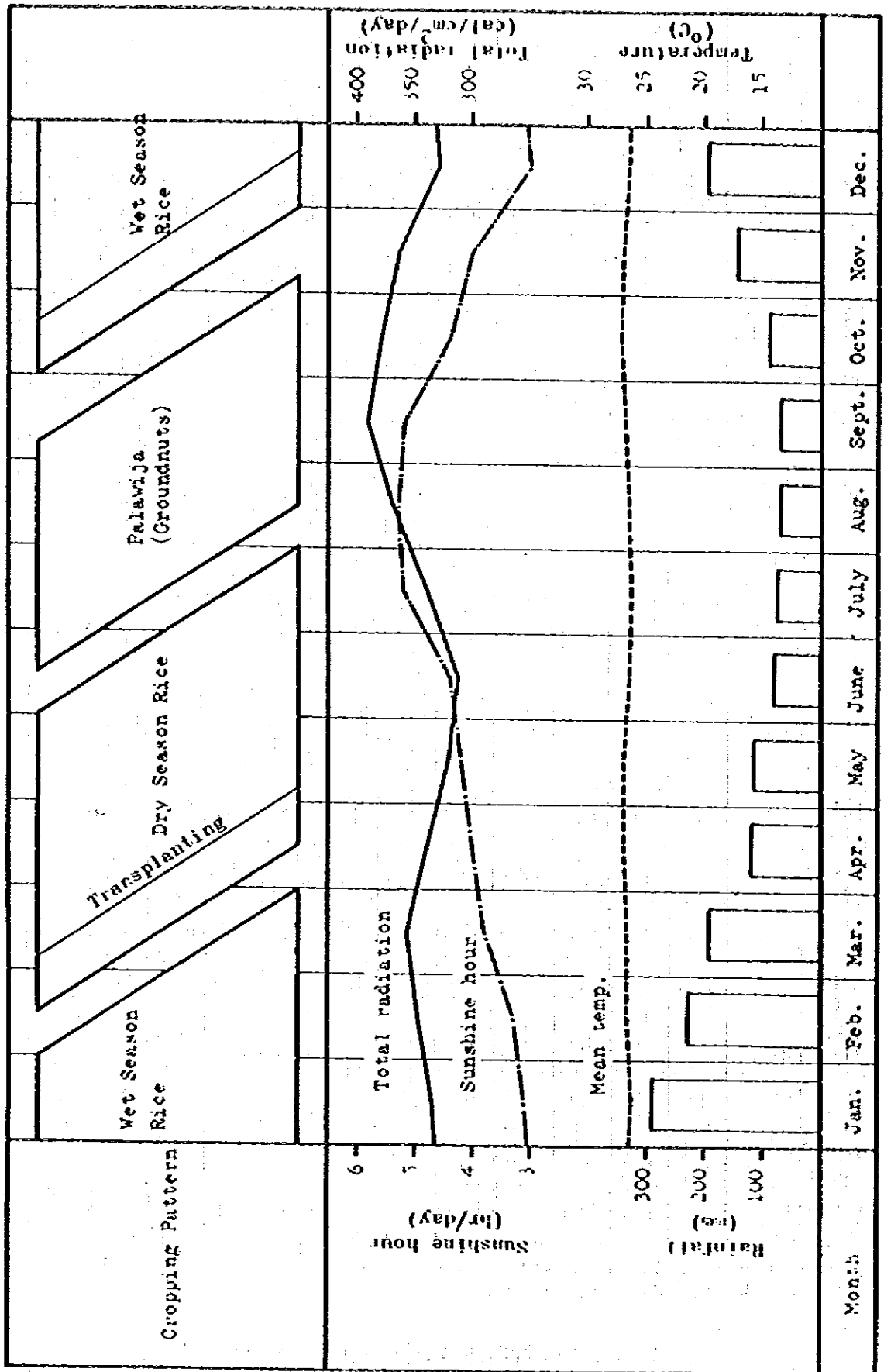


图 - 8 計畫作物体系图

PROPOSED CROPPING PATTERN

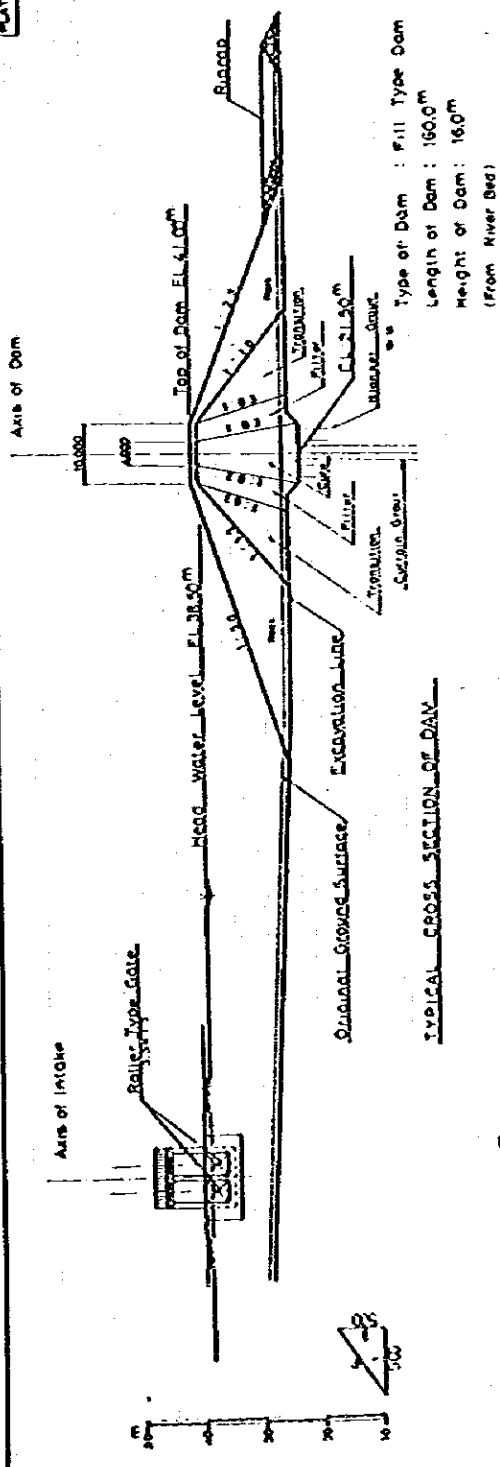
MONTH	CHOIRING PATTERN													
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		
OPERATION ITEM and LABOUR REQUIREMENT														
1. Seed preparation			0.1				0.04							
2. Nursery preparation & management			0.22							0.1				
3. Field preparation			0.89				0.42				0.89			
4. Fertiliser application (basal dose)			0.05				0.1				0.05			
5. Trans-planting/Seeding				1.04			0.31				1.04			
6. First weeding				0.42			0.42				0.42			
7. Fertiliser application (1st top dressing)/Milling up				0.04				0.1			0.04			
8. First pesticide application				0.06			0.06				0.06			
9. Second weeding					0.42			0.42				0.42		
10. Second pesticide application					0.06			0.1				0.06		
11. Fertiliser application (2nd top dressing)					0.04							0.04		
12. Third pesticide application					0.06							0.06		
13. Harvesting & threshing						0.74				0.74				
14. Water management														
Total daily labour requirement	3.3	1.26	3.24	3.74	3.3	3.3	2.20	2.71	1.77	1.04	1.98	2.2	2.02	3.3
Available family labour a day	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Balance of labour requirement & available labour														

Note: The number of workable days assumed at 24 per month. The available family labour force is estimated at 80% of the present family labour force.

UNIT: LABOUR REQUIREMENT AND HANDS BALANCE FOR PROPOSED CHOIRING PATTERN PER HA

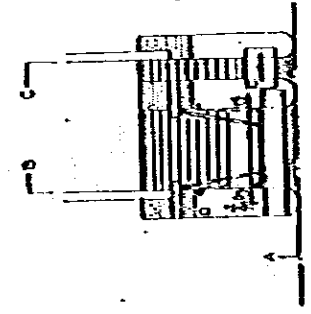
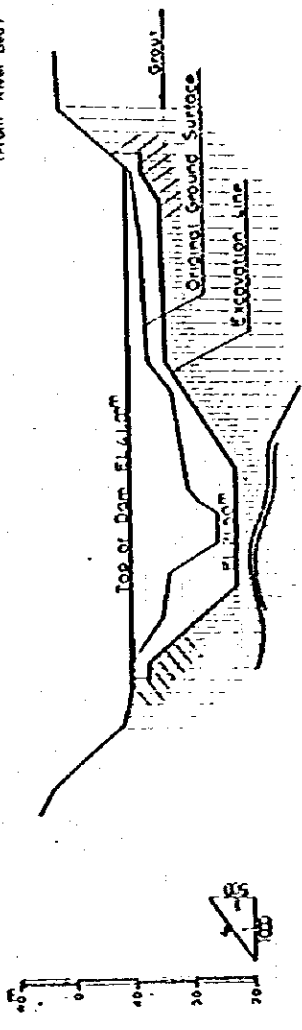
図 9 労働力バランス図





Type of Dam : Fill Type Dam
 Length of Dam : 160.0m
 Height of Dam : 16.0m
 (From River Bed)

TYPICAL CROSS SECTION OF DAM



PLAN

NO. 1 Gate : Radial Gate 8.0⁰ x 8.4⁰
 NO. 2 Gate : Roller Type Gate 20⁰ x 24⁰

SPILLWAY GATES

SECTION C-C

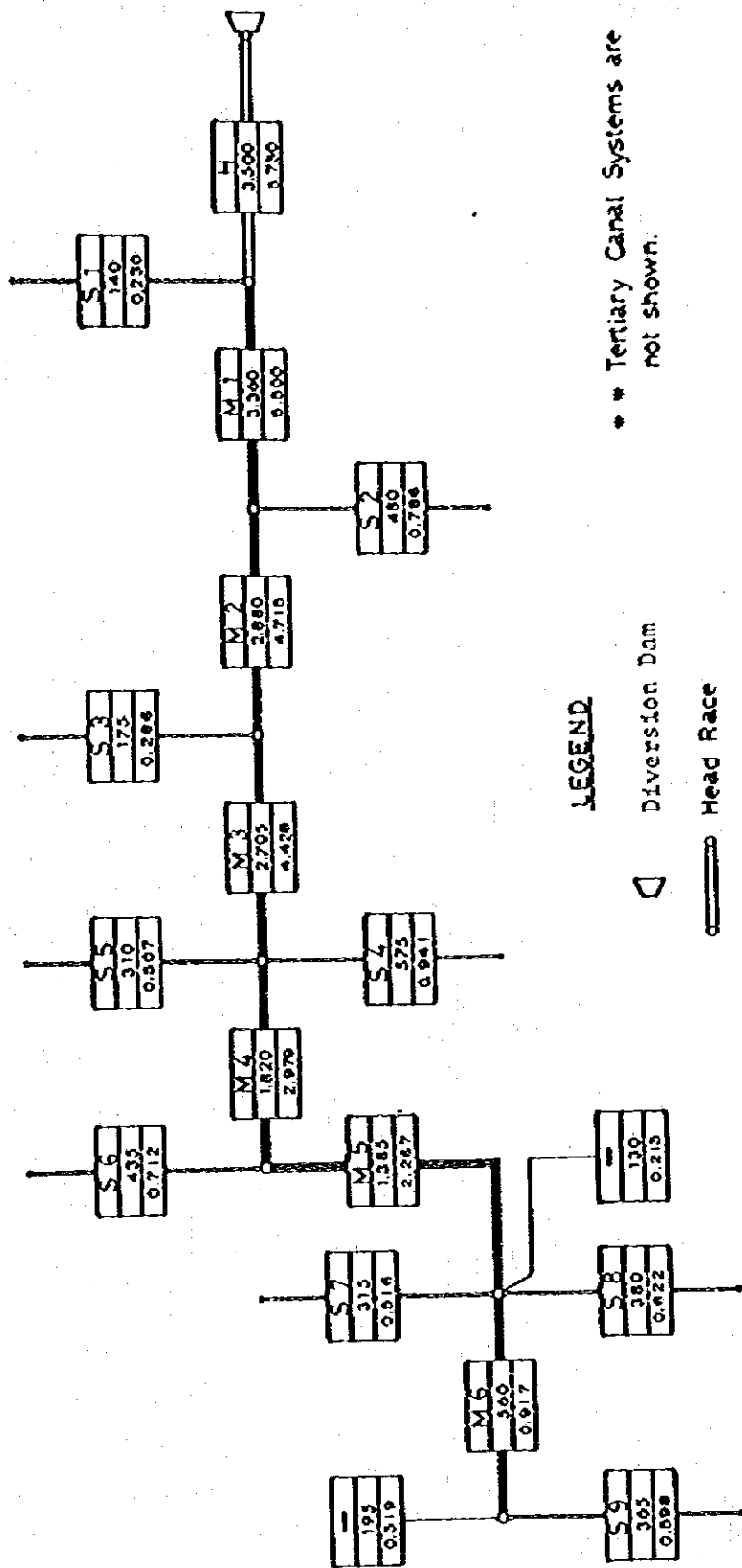
SECTION B-B

SECTION A-A

FEDERATE GENERAL OF WATER RESOURCE DEVELOPMENT
 ECON. INNOVATION DEVELOPMENT PROJECT

図 1.1 取水ダム横断面図

YAMAGUCHI INTERNATIONAL
 COOPERATION AGENCY YAMAGUCHI 1989-80



LEGEND

* * Tertiary Canal Systems are not shown.

∩ Diversion Dam

○ Head Race

— Main Irrigation Canal

— Secondary Irrigation Canal

	Name of Canal
	Command Area (ha)
	Design Discharge (m³/sec)

GENERAL IRRIGATION CANAL DIAGRAM

圖 - 13 用水路系統圖

图-14 未竣整備計画参考図(1)

SAMPLE LAYOUT OF TERTIARY SYSTEM (I)

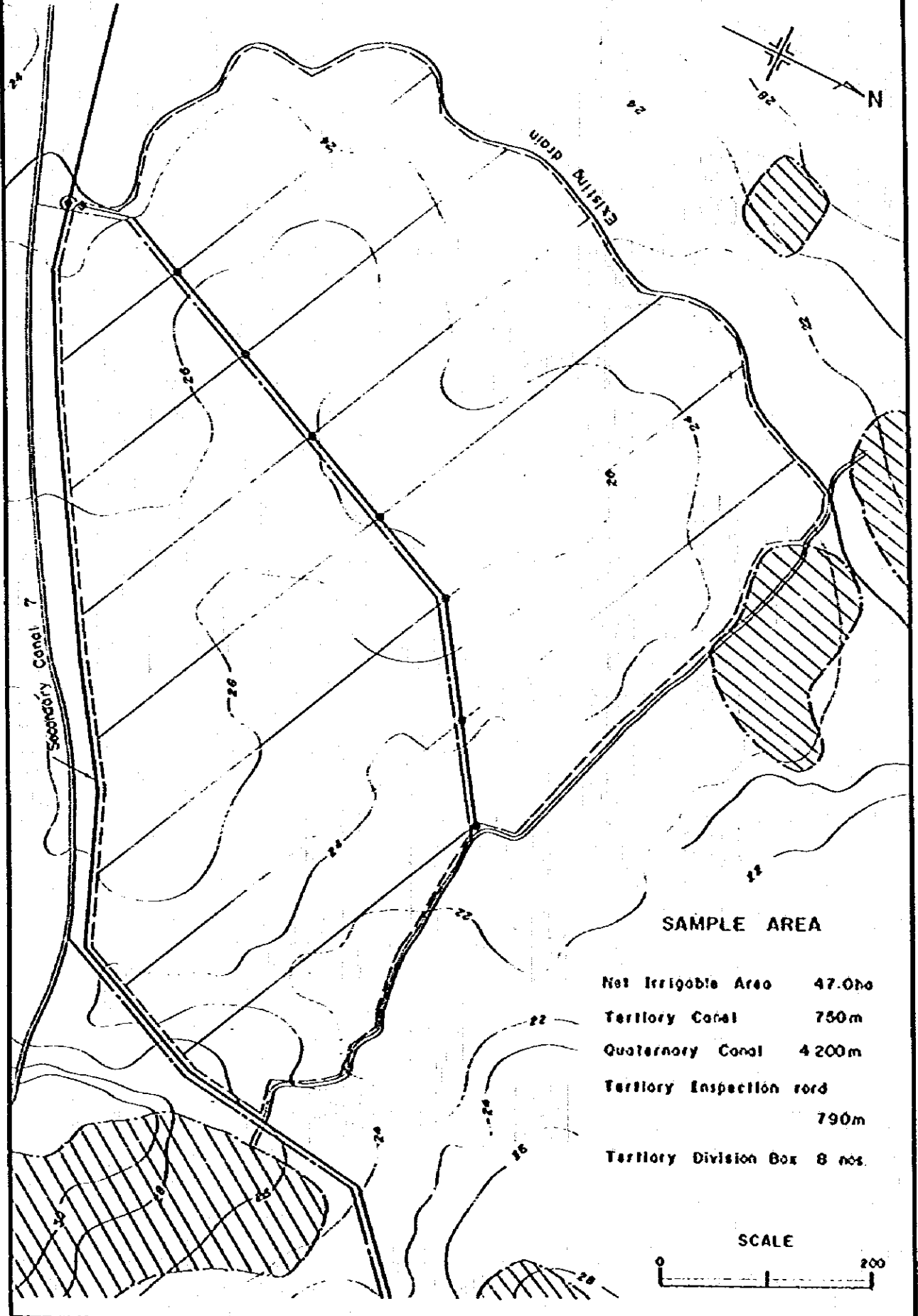
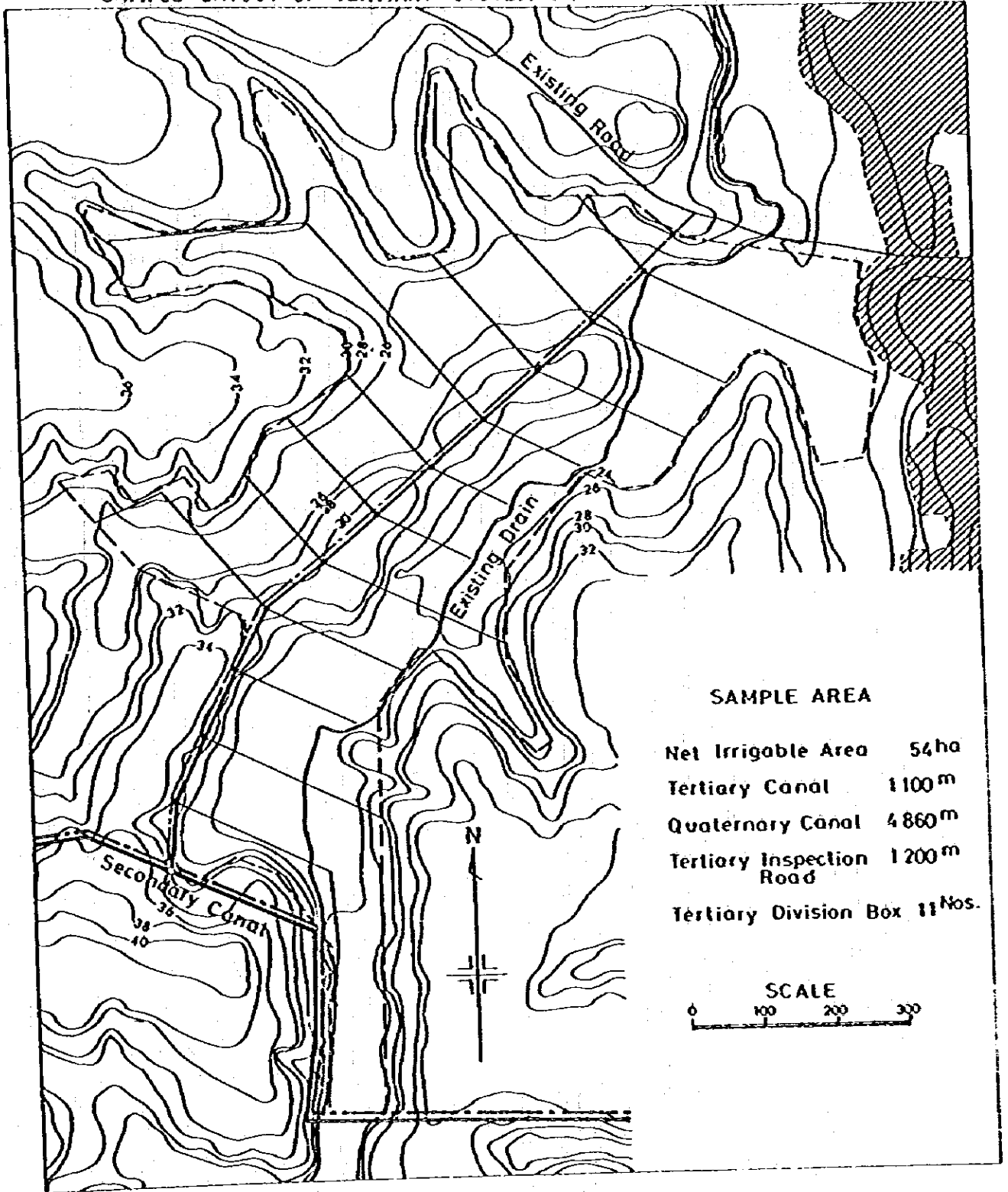


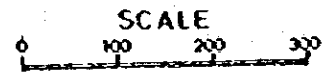
图-14 末端整备計画参考图(2)

SAMPLE LAYOUT OF TERTIARY SYSTEM (2)



SAMPLE AREA

Net Irrigable Area	54ha
Tertiary Canal	1100m
Quaternary Canal	4860m
Tertiary Inspection Road	1200m
Tertiary Division Box	11 Nos.



PROJECT IMPLEMENTATION SCHEDULE

WORK ITEMS	1984			1985			1986			1987		
	1984			1985			1986			1987		
	F.Y.	C.Y.	M.	F.Y.	C.Y.	M.	F.Y.	C.Y.	M.	F.Y.	C.Y.	M.
1. PREPARATORY WORKS												
a) Mapping.												
b) Detailed design												
c) Office and quarters												
d) Land acquisition												
e) Procurement												
2. DIVERSION WORK												
a) Cofferdams and dewatering												
b) Dam												
c) Intake												
d) Spillway												
e) Metal works												
3. CANAL WORKS												
a) Driving canal and inspection road												
b) Main section and inspection road												
c) Secondary canal and inspection road												
d) Development												

ORGANIZATION OF PROJECT CONSTRUCTION OFFICE

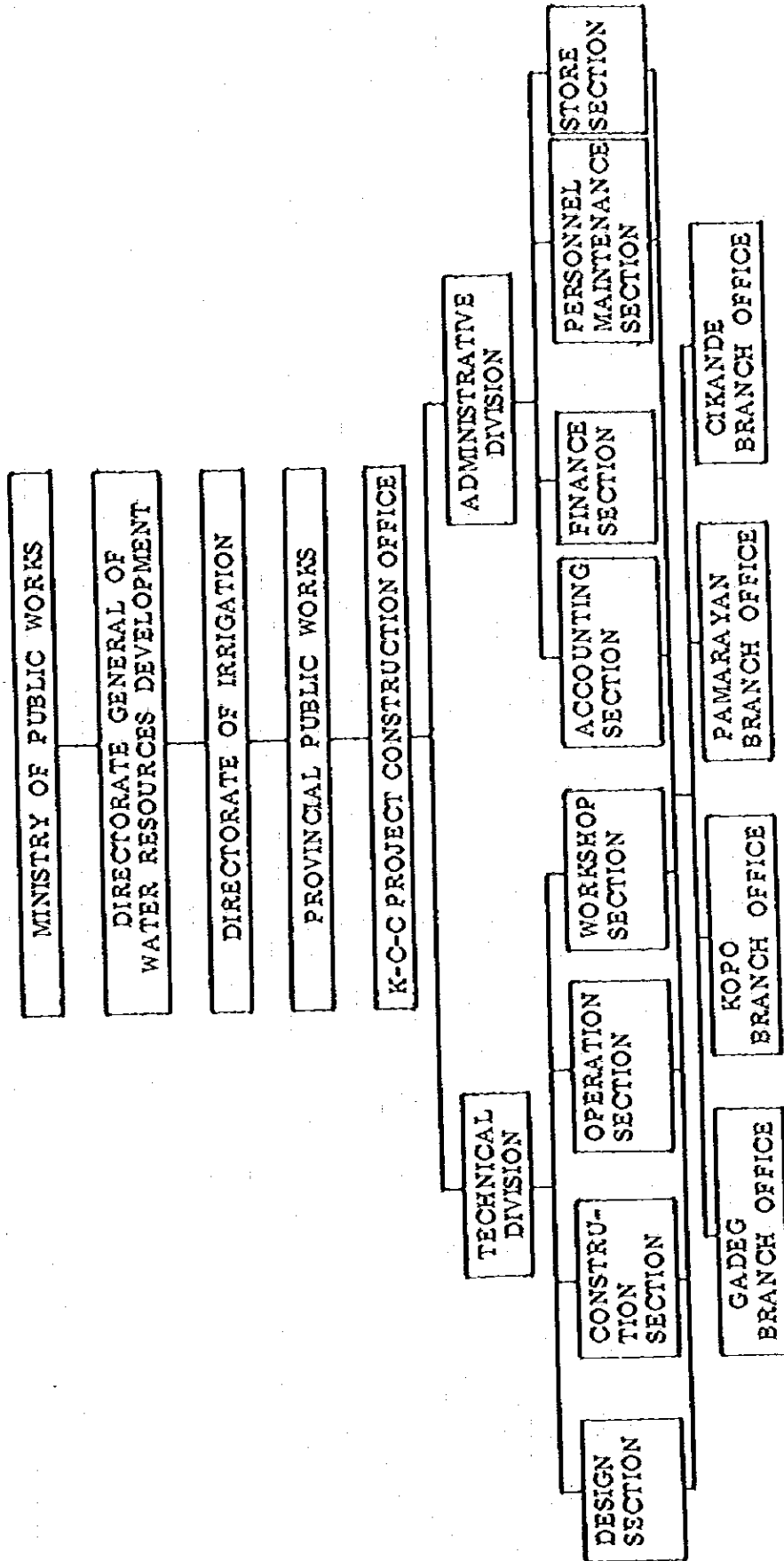


图 1-7 維持管理体制組織圖

ORGANIZATION OF PROJECT OFFICE

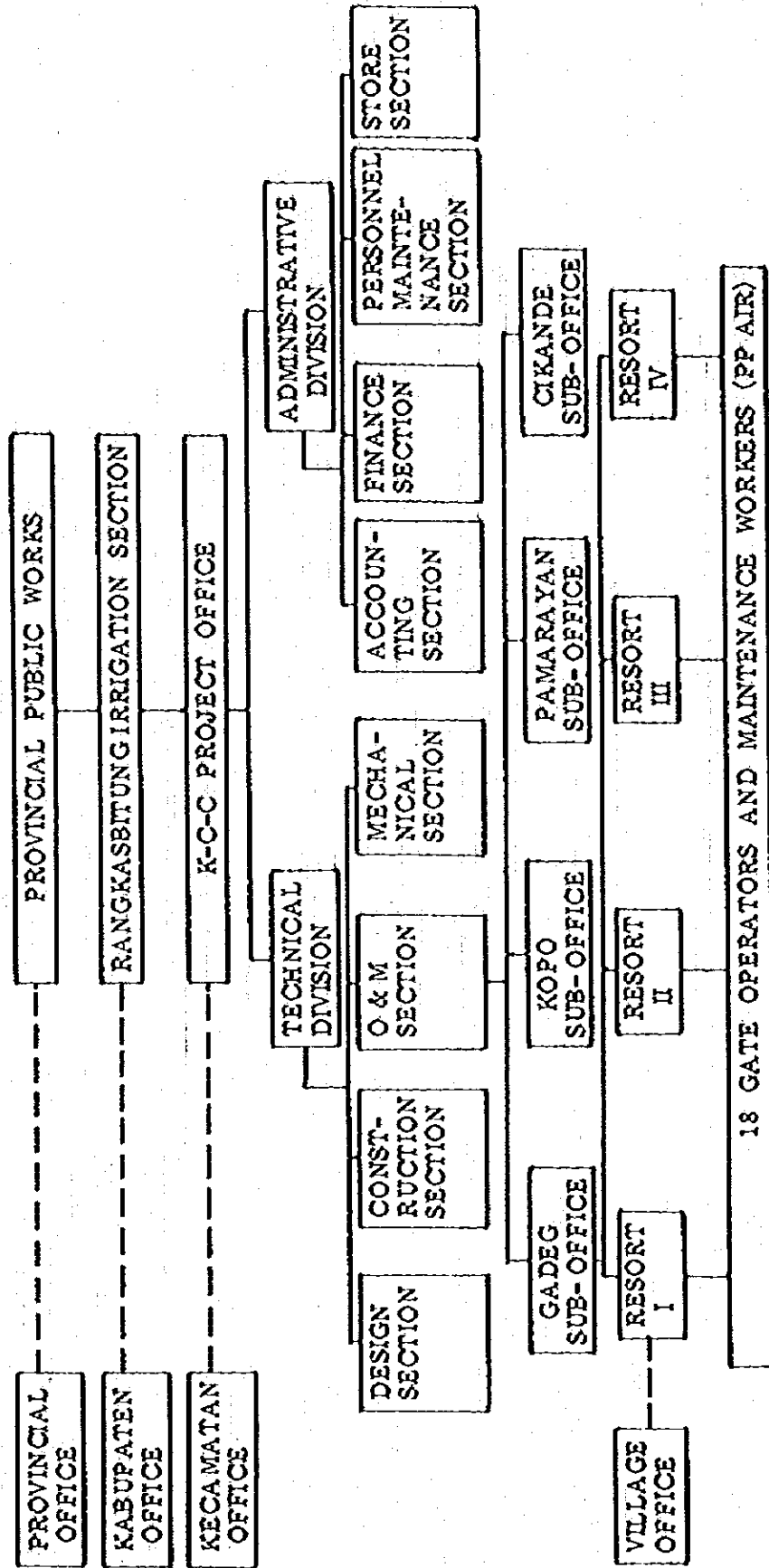
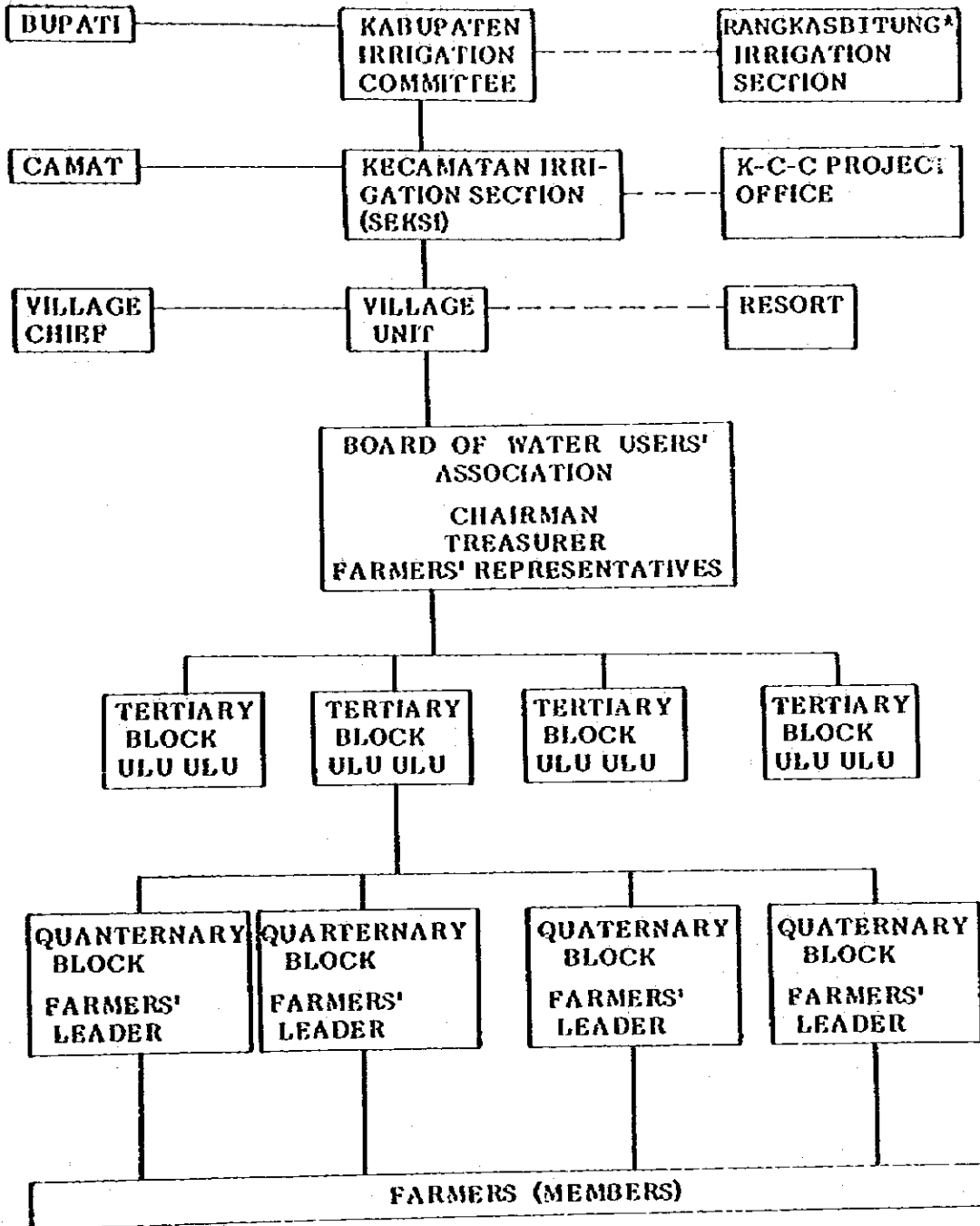


圖 18 水利組合組織圖

WATER USERS' ASSOCIATION



* : Rangkasbitung office will be moved to Serang after completion of the construction works.

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