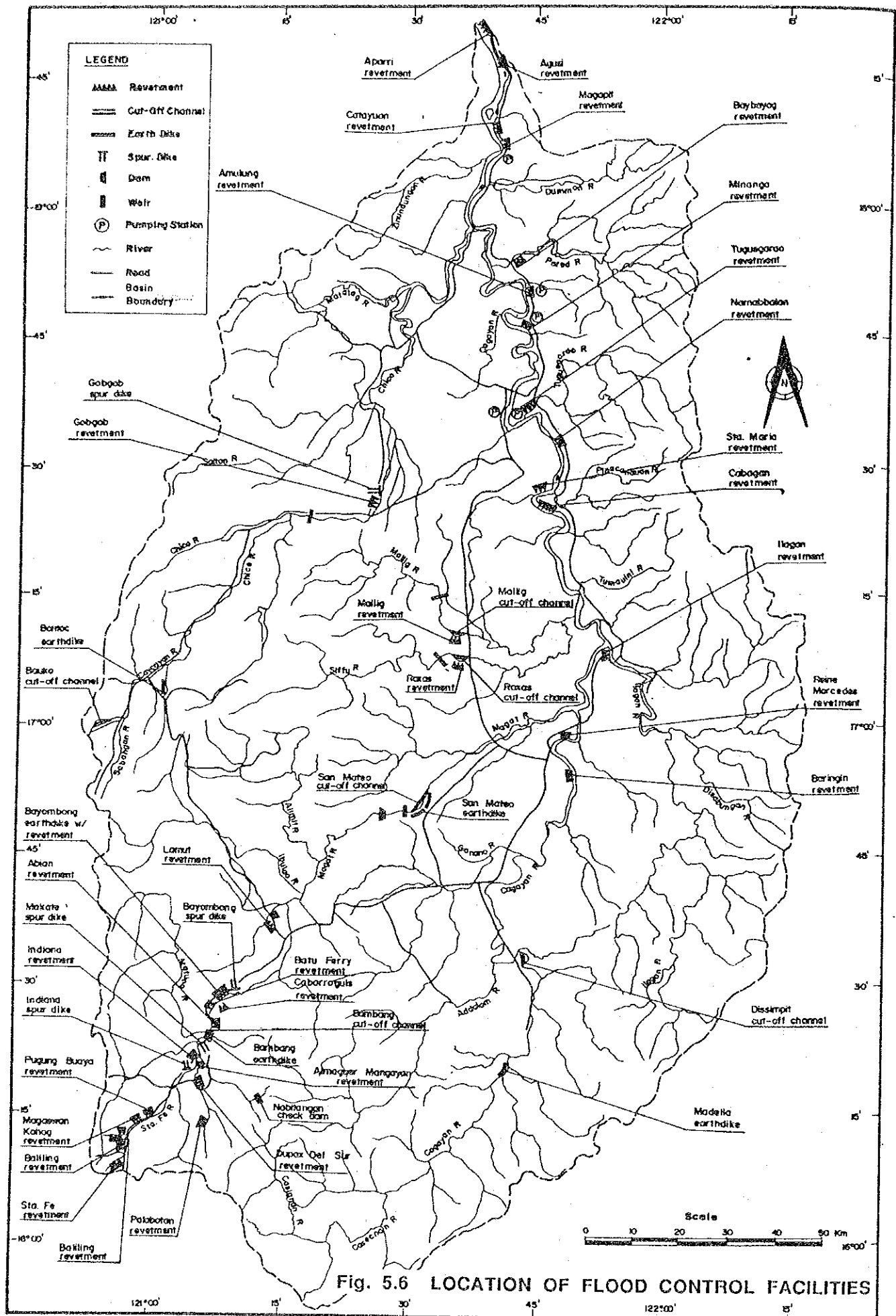


Fig. 5.5 RIVER COURSE SHIFTING



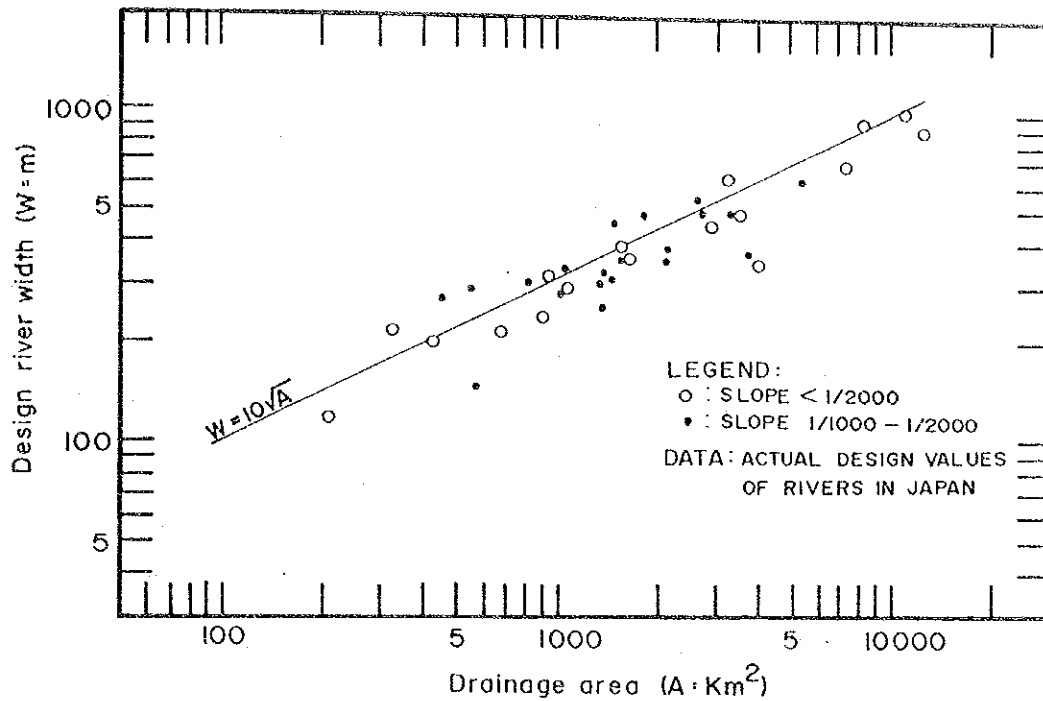
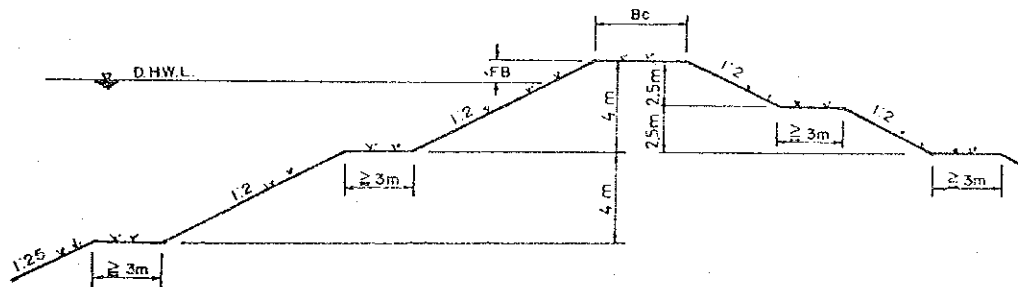


Fig. 5.7 RELATIONSHIP BETWEEN DESIGN RIVER WIDTH AND DRAINAGE AREA



Design Discharge Q (m ³ /s)	Free-board FB (m) not less than	Crown width Bc (m) not less than
< 200	0.6	3
200 to 500	0.8	3
500 to 2,000	1.0	4
2,000 to 5,000	1.2	5
5,000 to 10,000	1.5	6
10,000 <	2.0	7

Fig. 5.8 STANDARD DIKE SECTION

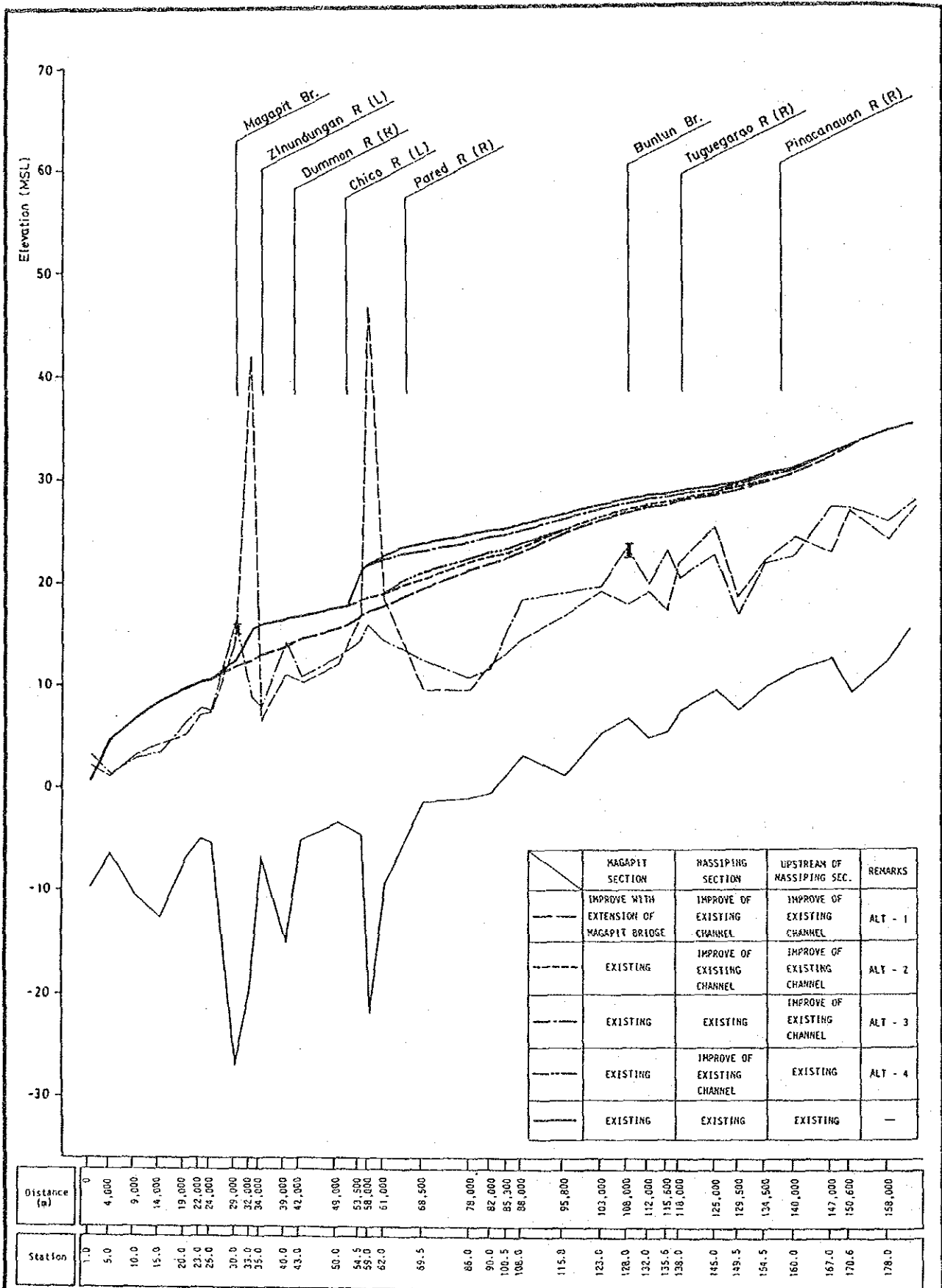
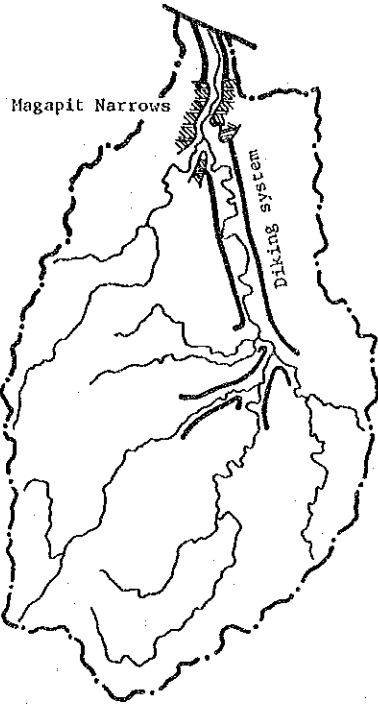
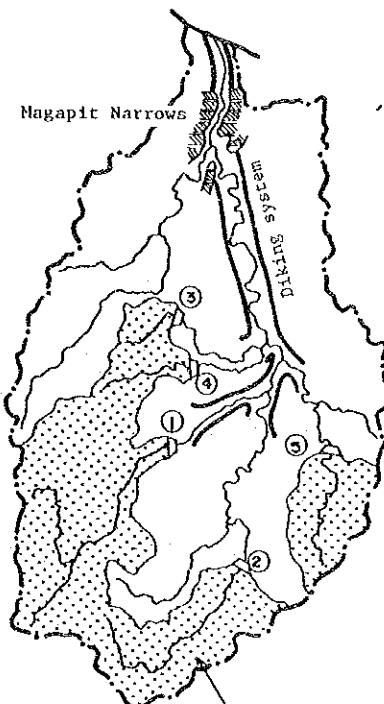


Fig. 5.9 LONGITUDINAL PROFILE FOR MAGAPIT NARROW IMPROVEMENT

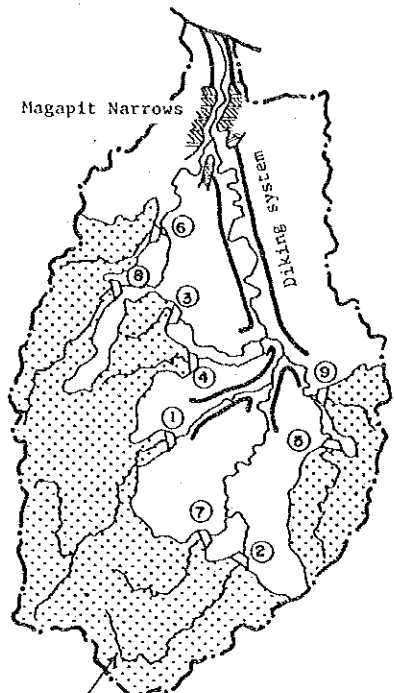
ALT. PLAN - OD



ALT. PLAN - 5D

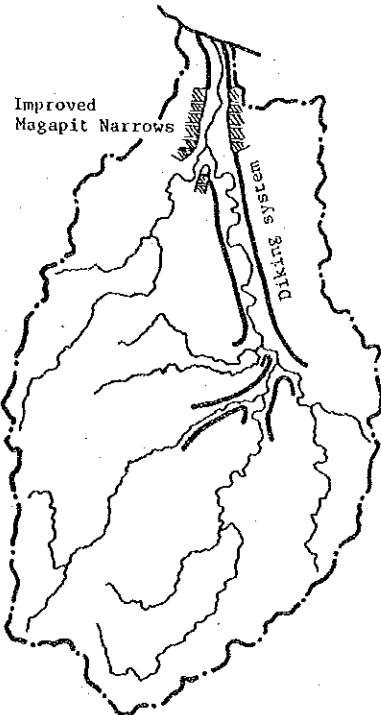


ALT. PLAN - 9D

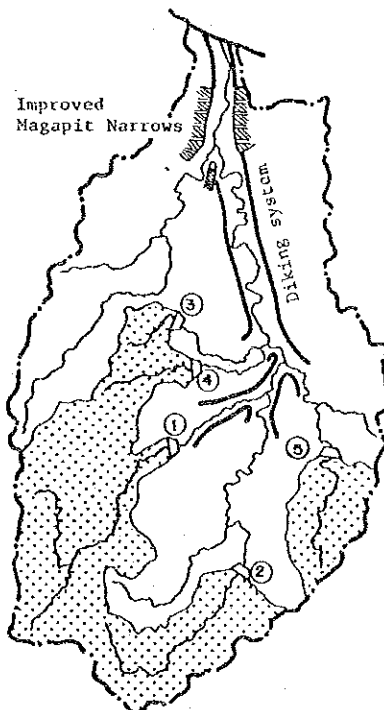


Basin subject to control by dams

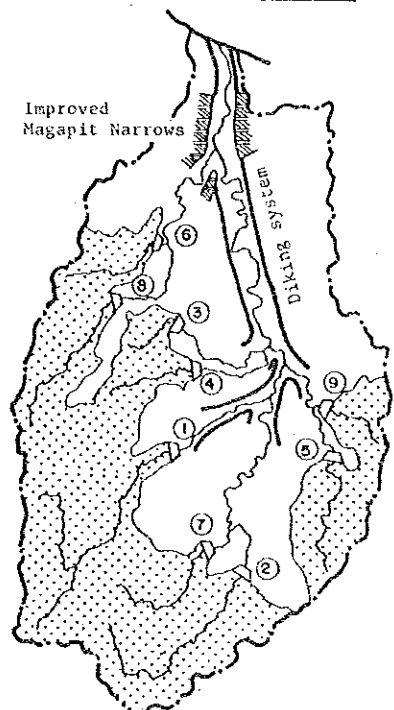
ALT. PLAN - ODM



ALT. PLAN - 5DM



ALT. PLAN - 9DM



Legend

- | | |
|-----------------|-----------------|
| 1 Magat | 6 Pinukpuk |
| 2 Cagayan - 1 | 7 Addalam - (A) |
| 3 Mallig - 2 | 8 Chico - 4 |
| 4 Siffu - 1 (A) | 9 Disabungan |
| 5 Ilagan - 1 | |

Fig. 5.10 ALTERNATIVE FLOOD CONTROL FRAMEWORK PLANS

LEGEND

- Basin boundary
- Dam reservoir
- Hilly land
- Channel Retardation
- Diking system
- River channel

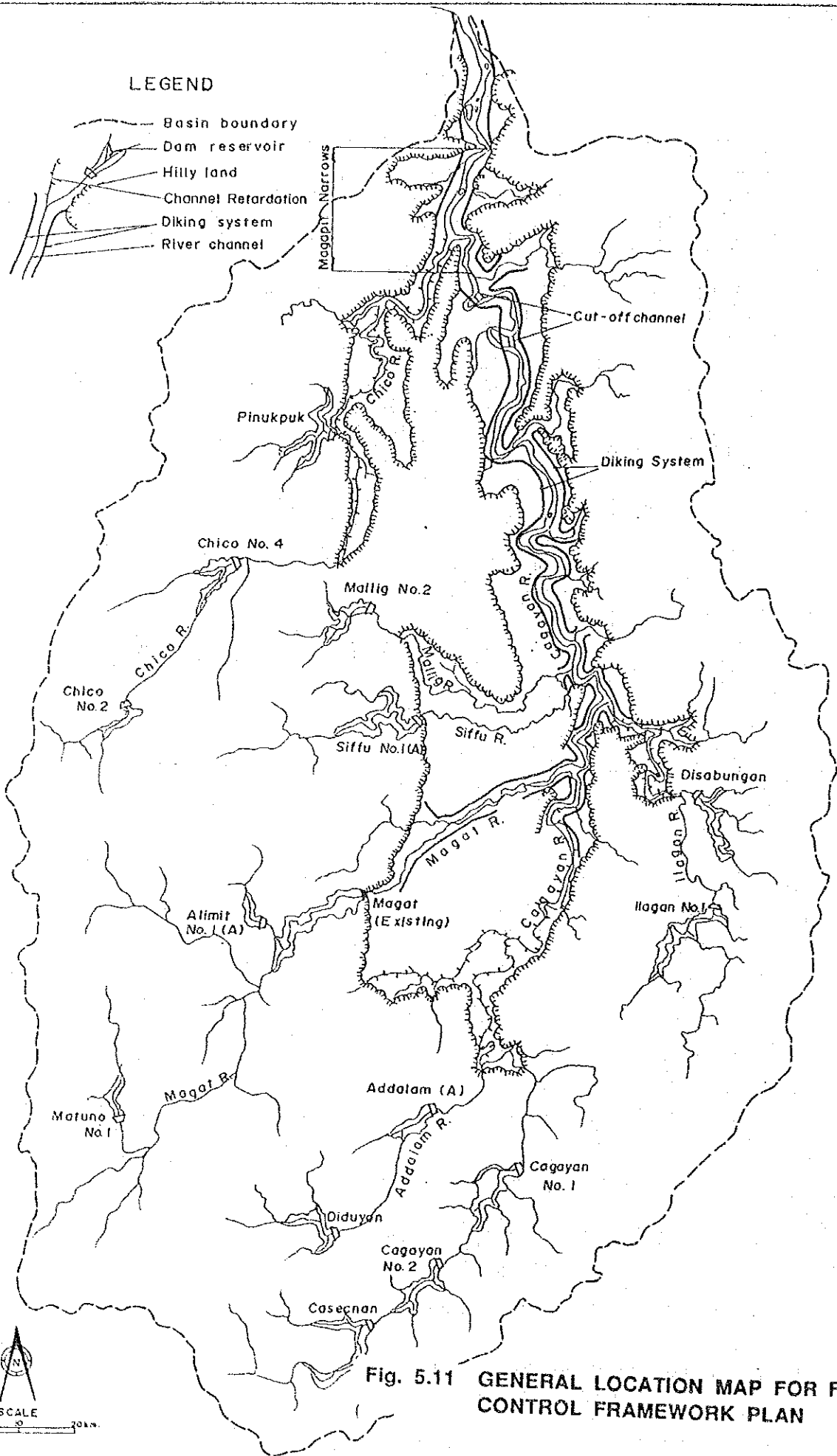
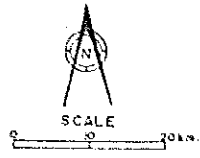
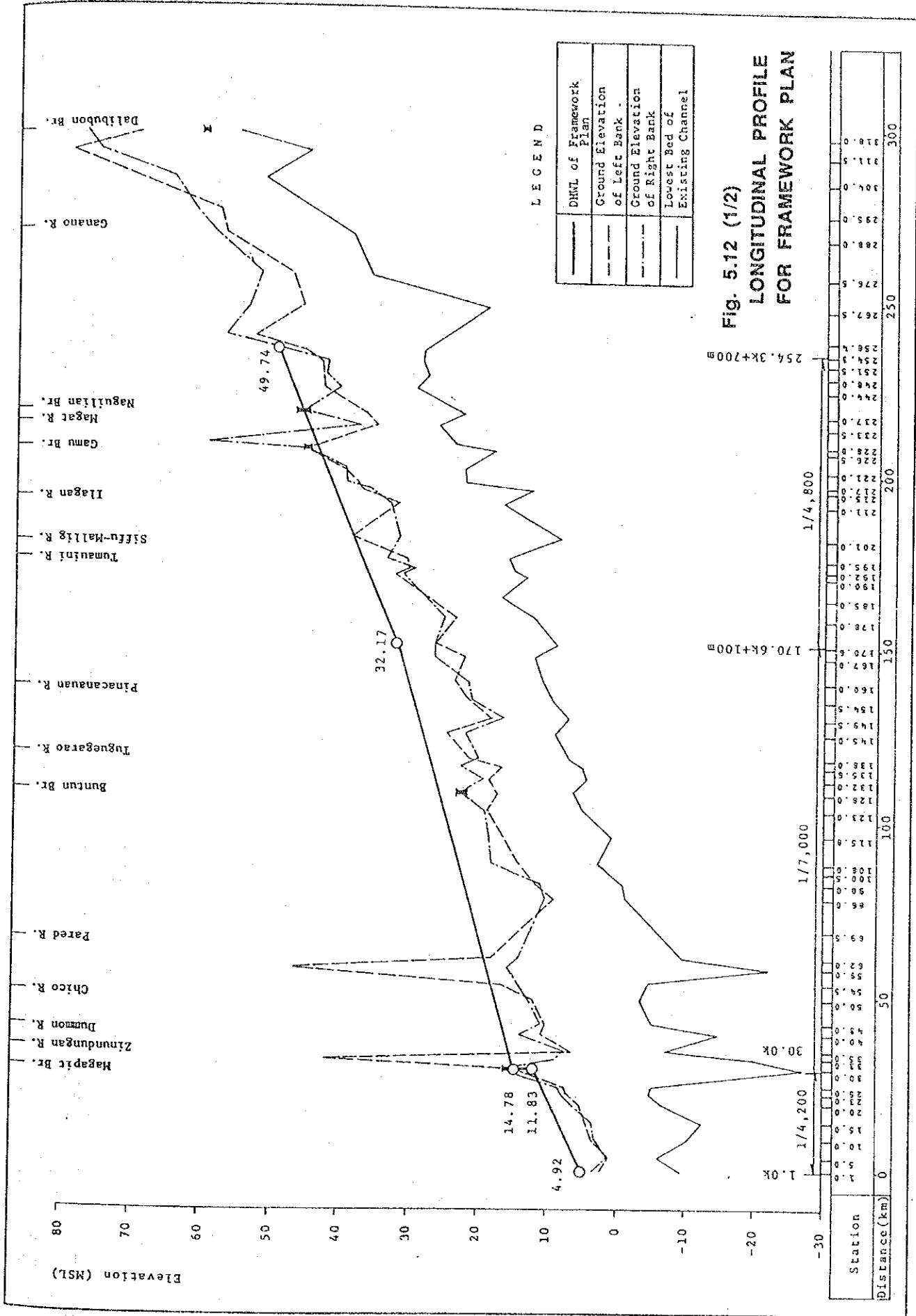


Fig. 5.11 GENERAL LOCATION MAP FOR FLOOD CONTROL FRAMEWORK PLAN

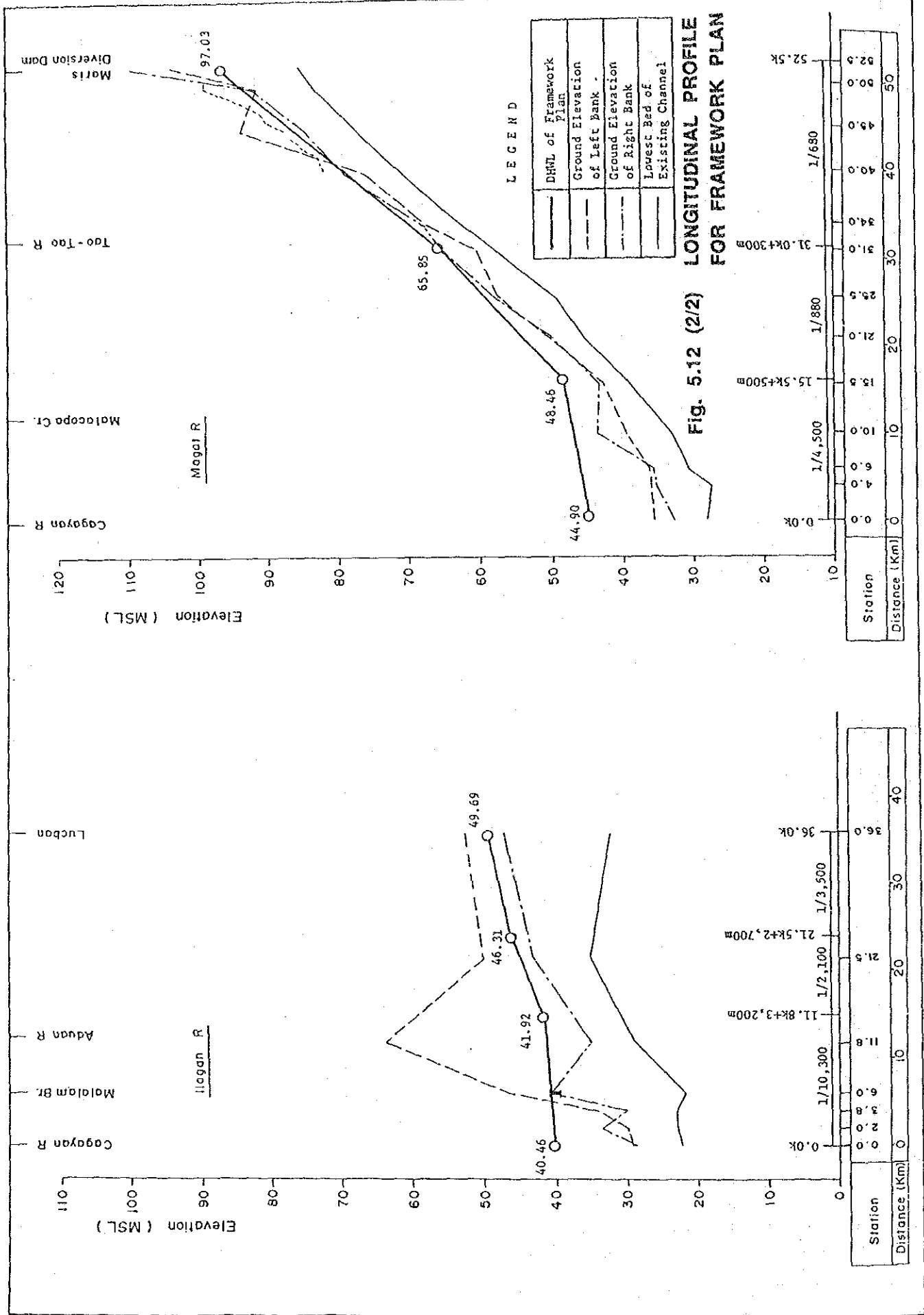




LEGEND

	DMWL of Framework Plan
	Ground Elevation of Left Bank
	Ground Elevation of Right Bank
	Lowest Bed of Existing Channel

Fig. 5.12 (1/2)
LONGITUDINAL PROFILE
FOR FRAMEWORK PLAN



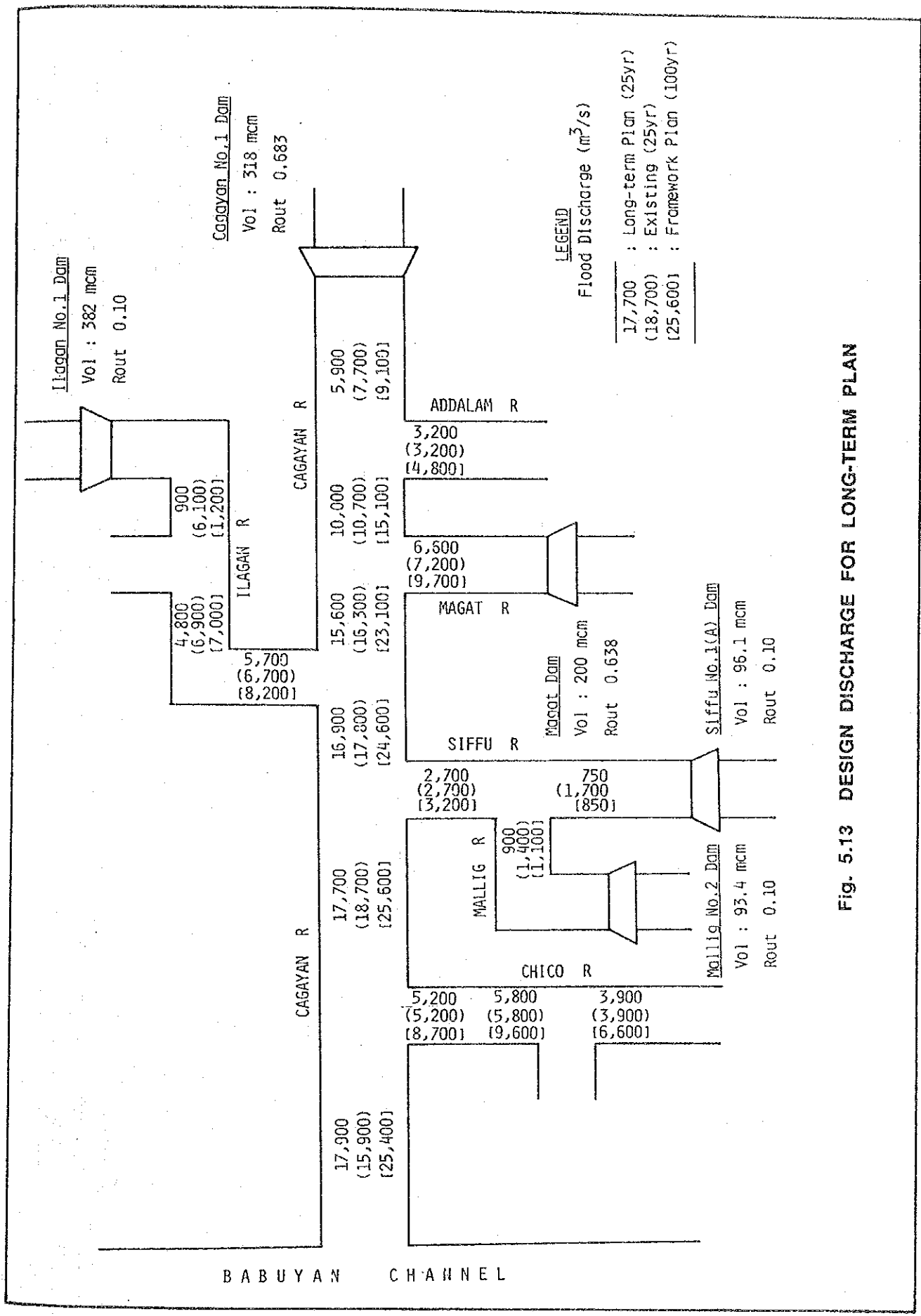
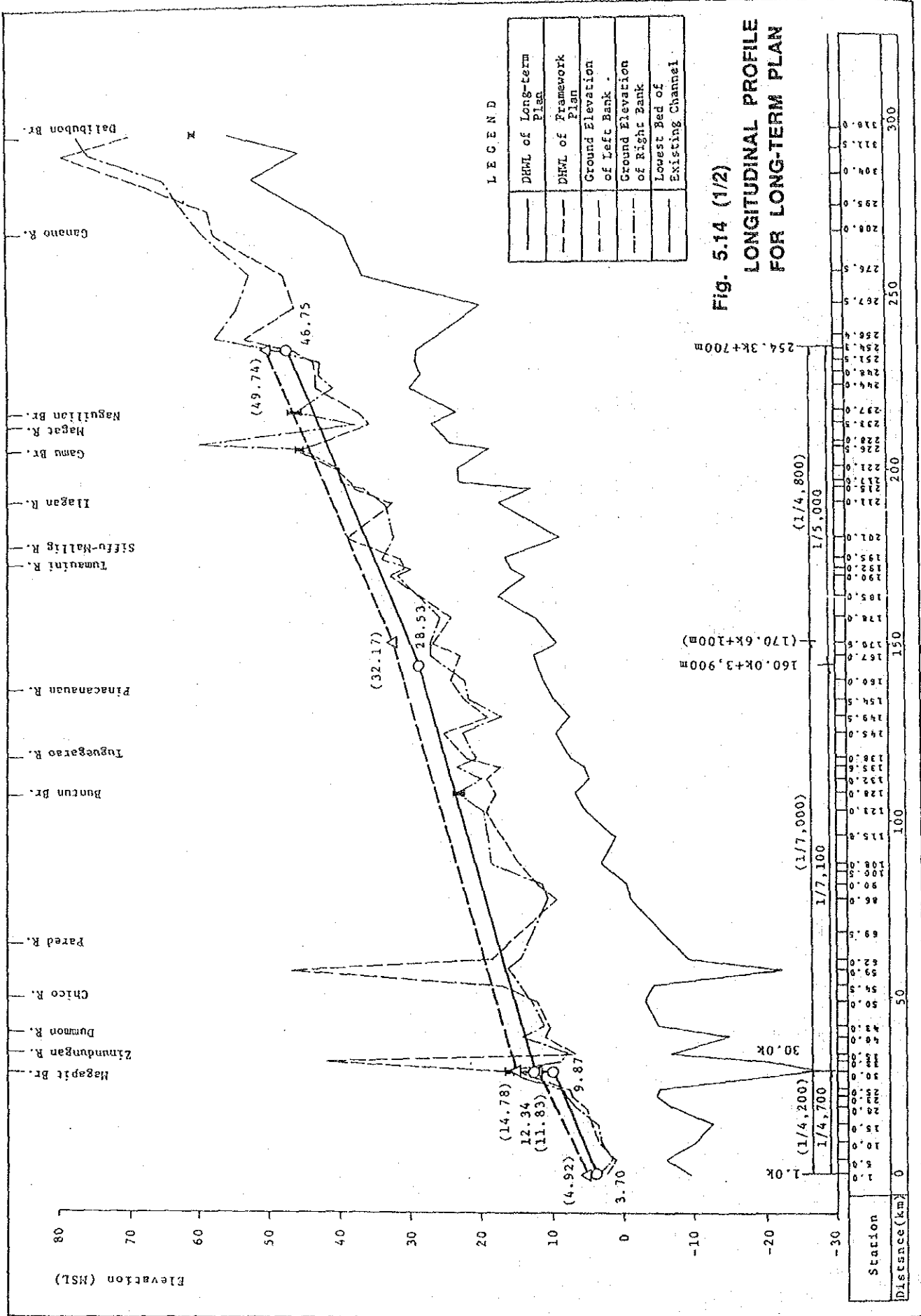


Fig. 5.13 DESIGN DISCHARGE FOR LONG-TERM PLAN

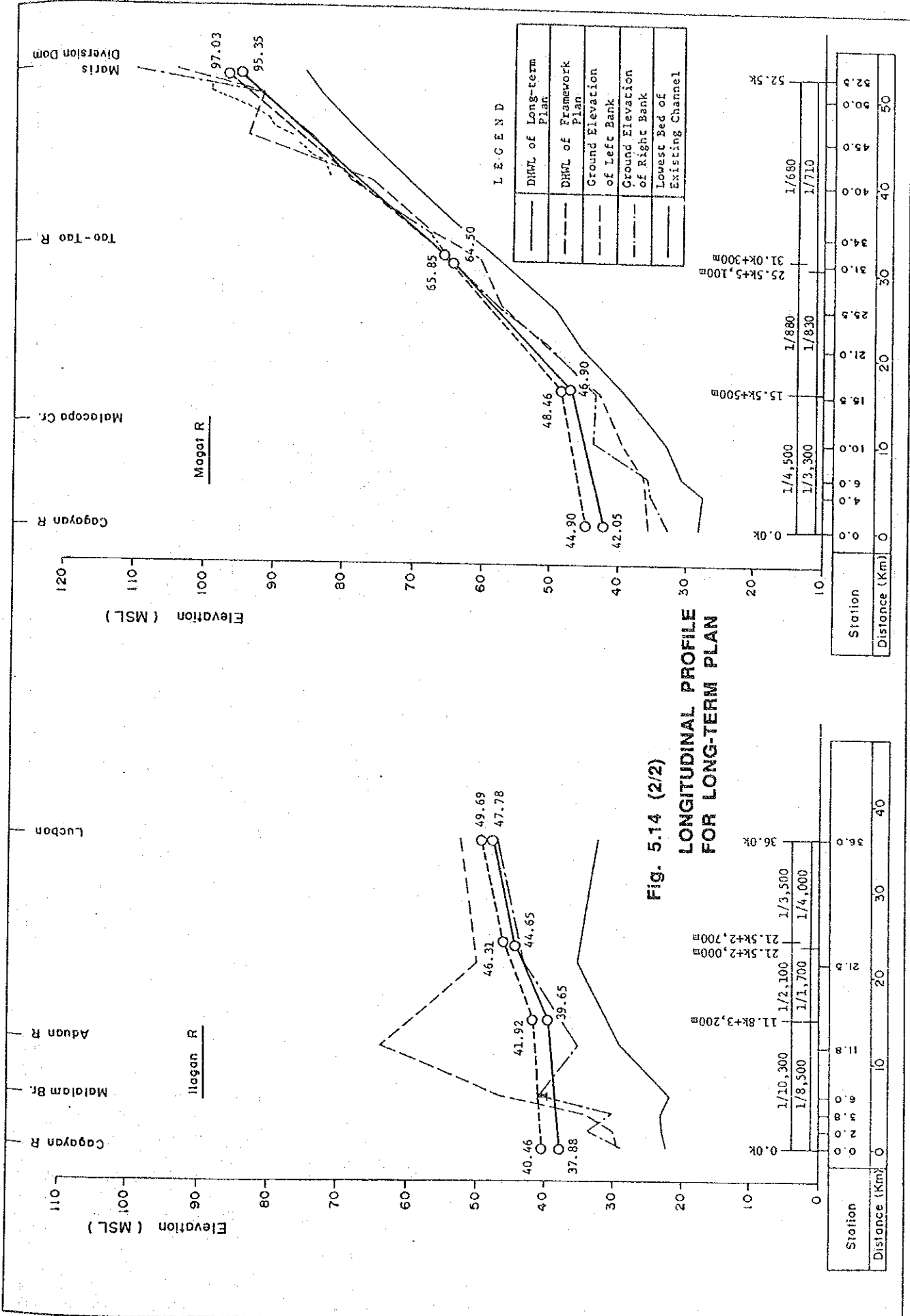


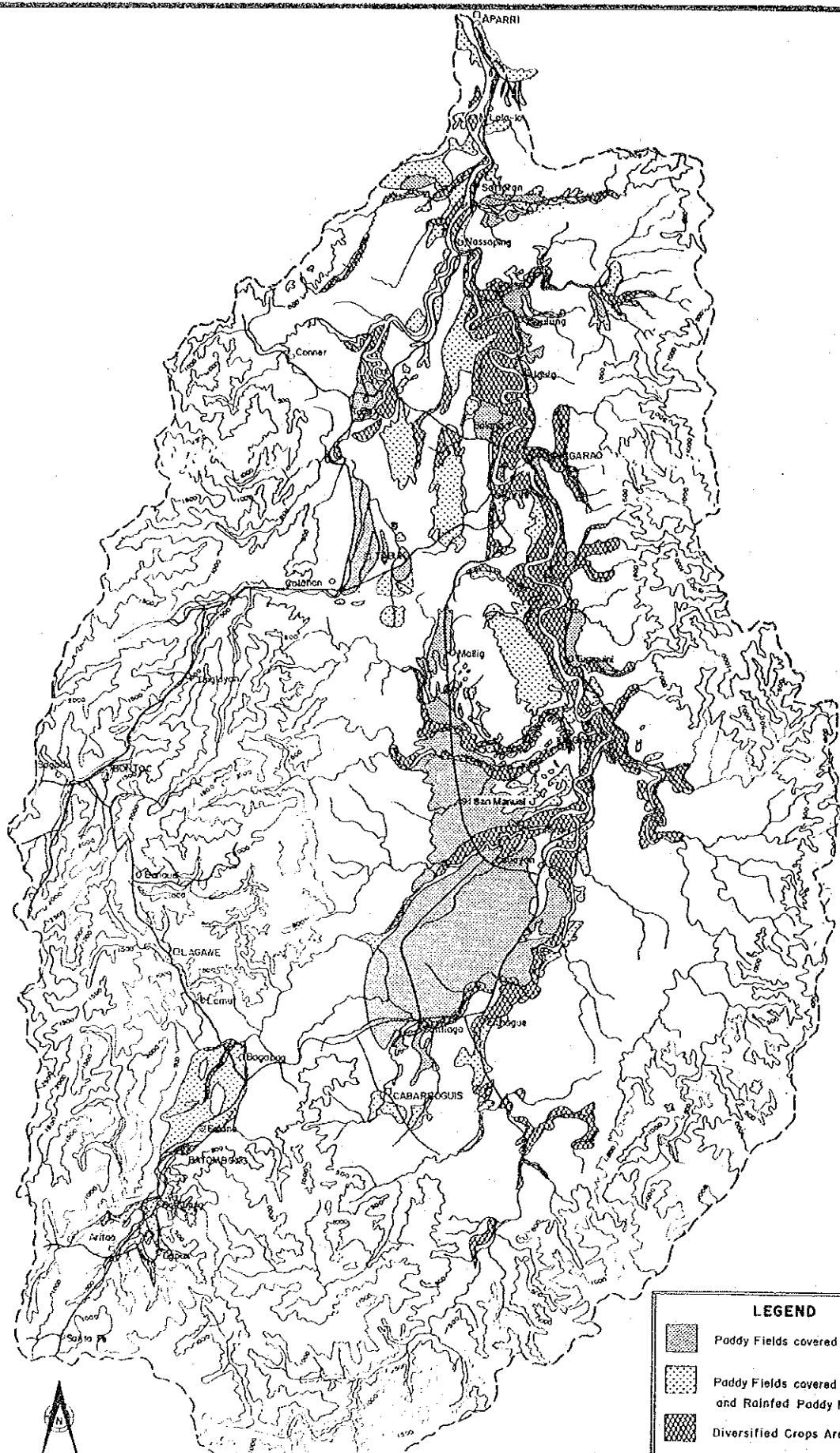
LEGEND

—	DHML of Long-term Plan
- - -	DHML of Framework Plan
—	Ground Elevation of Left Bank
—	Ground Elevation of Right Bank
—	Lowest Bed of Existing Channel

Fig. 5.14 (1/2)
LONGITUDINAL PROFILE FOR LONG-TERM PLAN

Station	Distance (km)
1.0	0
5.0	5
10.0	10
15.0	15
20.0	20
25.0	25
30.0	30
35.0	35
40.0	40
45.0	45
50.0	50
55.0	55
60.0	60
65.0	65
70.0	70
75.0	75
80.0	80
85.0	85
90.0	90
95.0	95
100.0	100
105.0	105
110.0	110
115.0	115
120.0	120
125.0	125
130.0	130
135.0	135
140.0	140
145.0	145
150.0	150
155.0	155
160.0	160
165.0	165
170.0	170
175.0	175
180.0	180
185.0	185
190.0	190
195.0	195
200.0	200
205.0	205
210.0	210
215.0	215
220.0	220
225.0	225
230.0	230
235.0	235
240.0	240
245.0	245
250.0	250
255.0	255
260.0	260
265.0	265
270.0	270
275.0	275
280.0	280
285.0	285
290.0	290
295.0	295
300.0	300





LEGEND

- Paddy Fields covered by NIS
- Paddy Fields covered by GIS and Rainfed Paddy Fields
- Diversified Crops Areas
- Basin Boundary
- Road

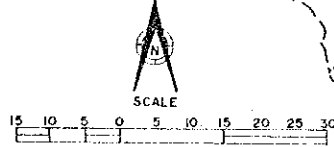


Fig. 6.1 PRESENT AGRICULTURAL LAND USE MAP

REGION II

PHILIPPINES

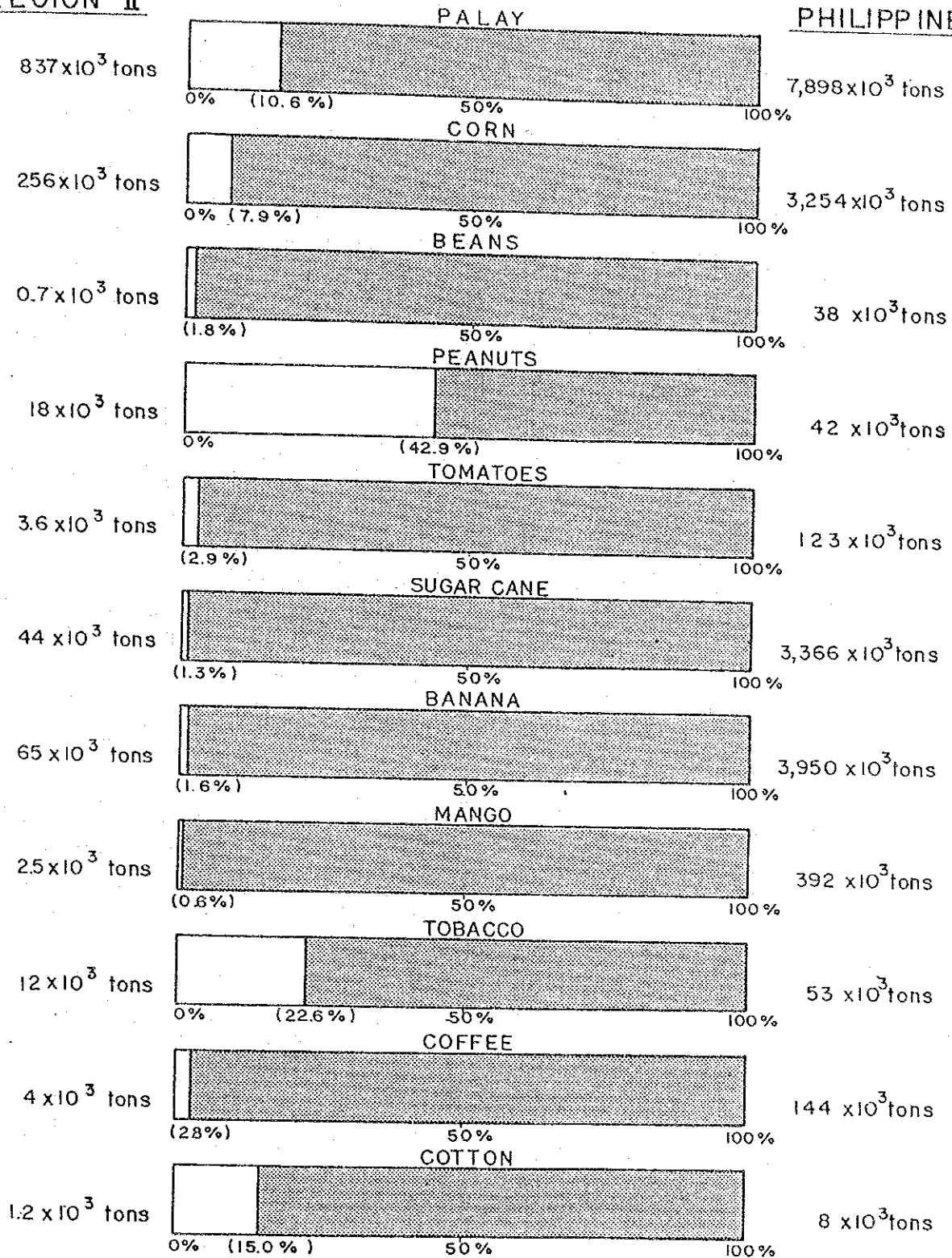


Fig. 6.2 PRESENT CROP PRODUCTIONS OF REGION II (1982-1984 AVERAGE)

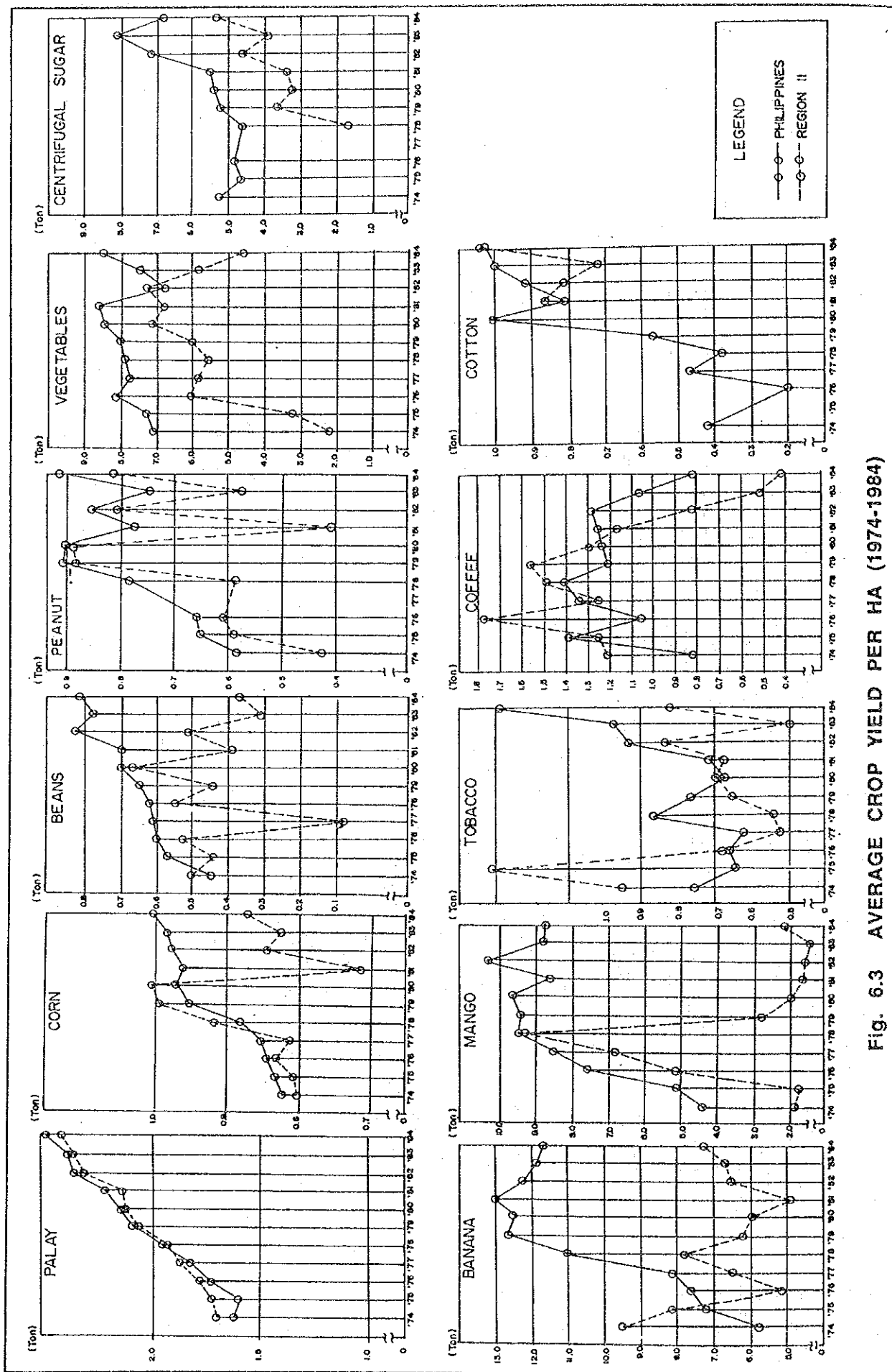


Fig. 6.3 AVERAGE CROP YIELD PER HA (1974-1984)

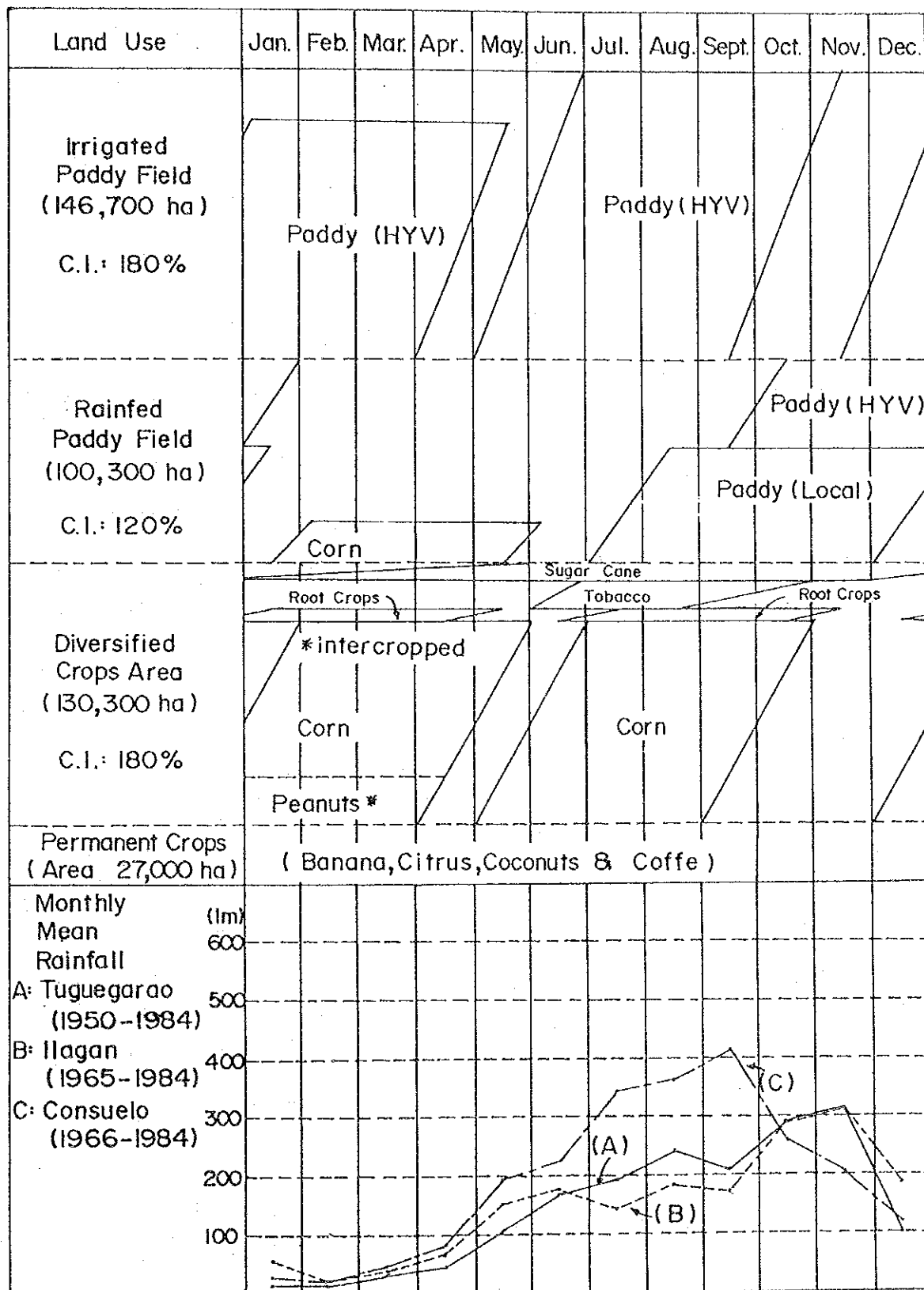
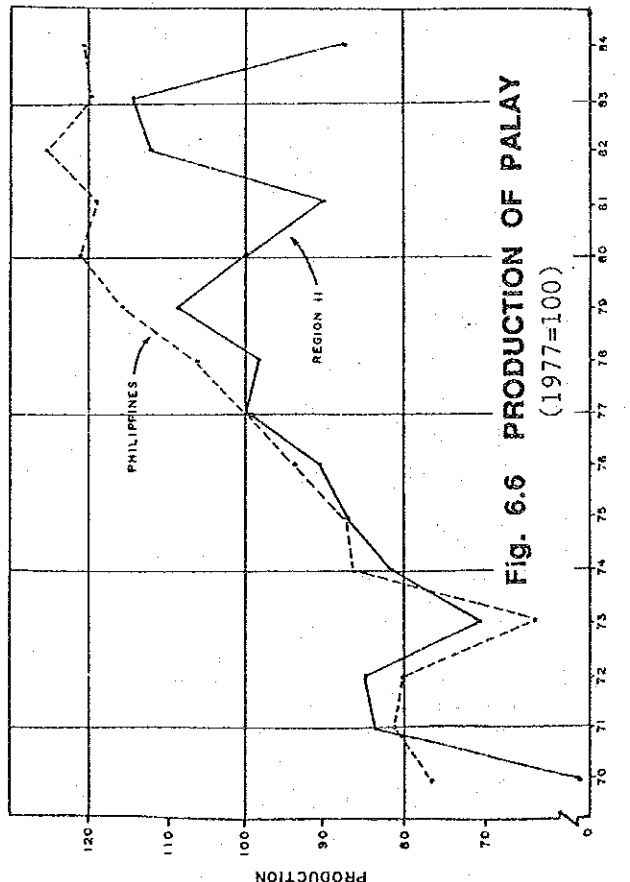
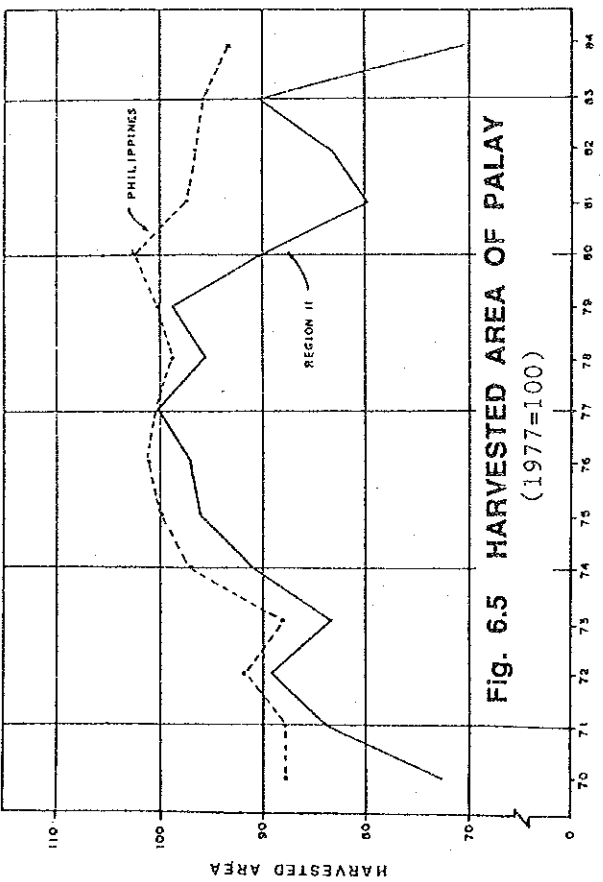
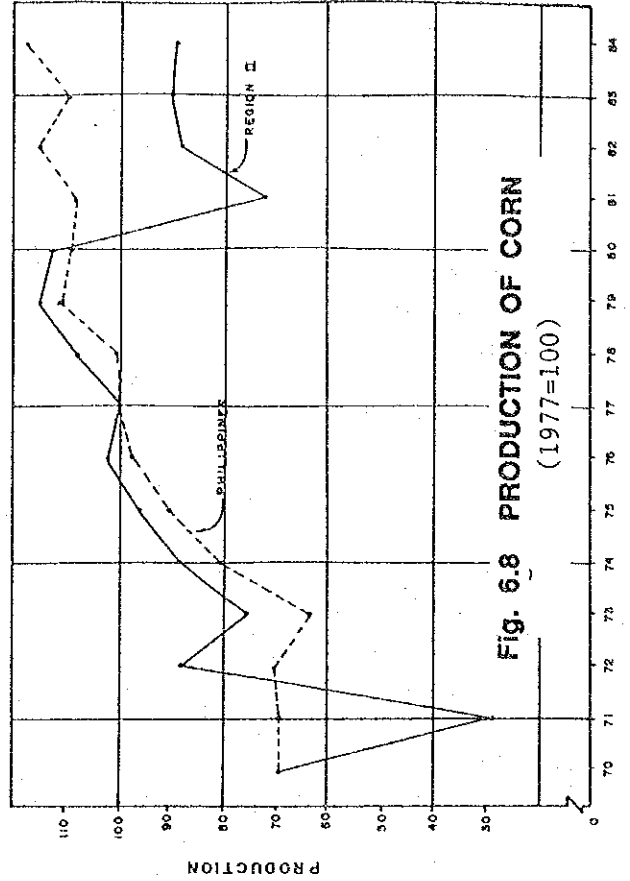
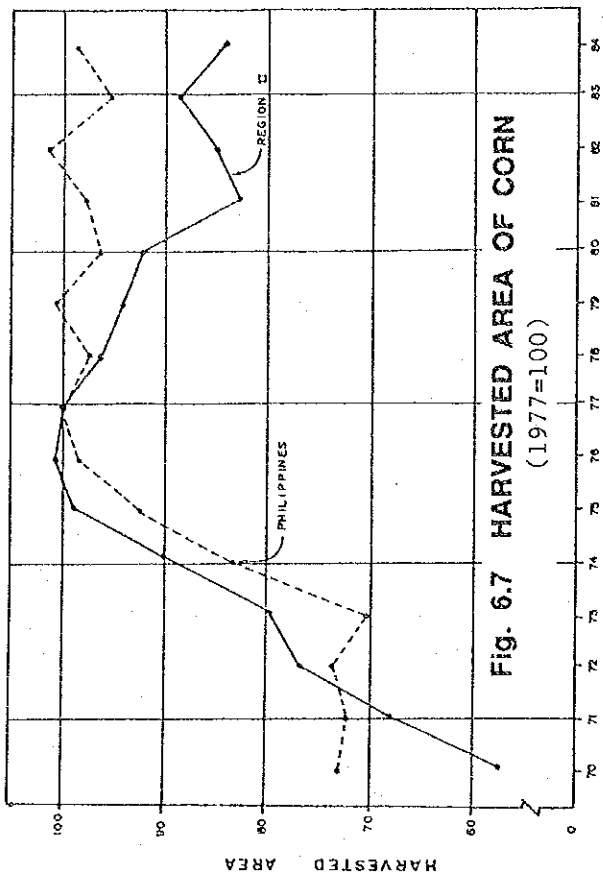


Fig. 6.4 PRESENT CROPPING PATTERN IN CAGAYAN RIVER BASIN



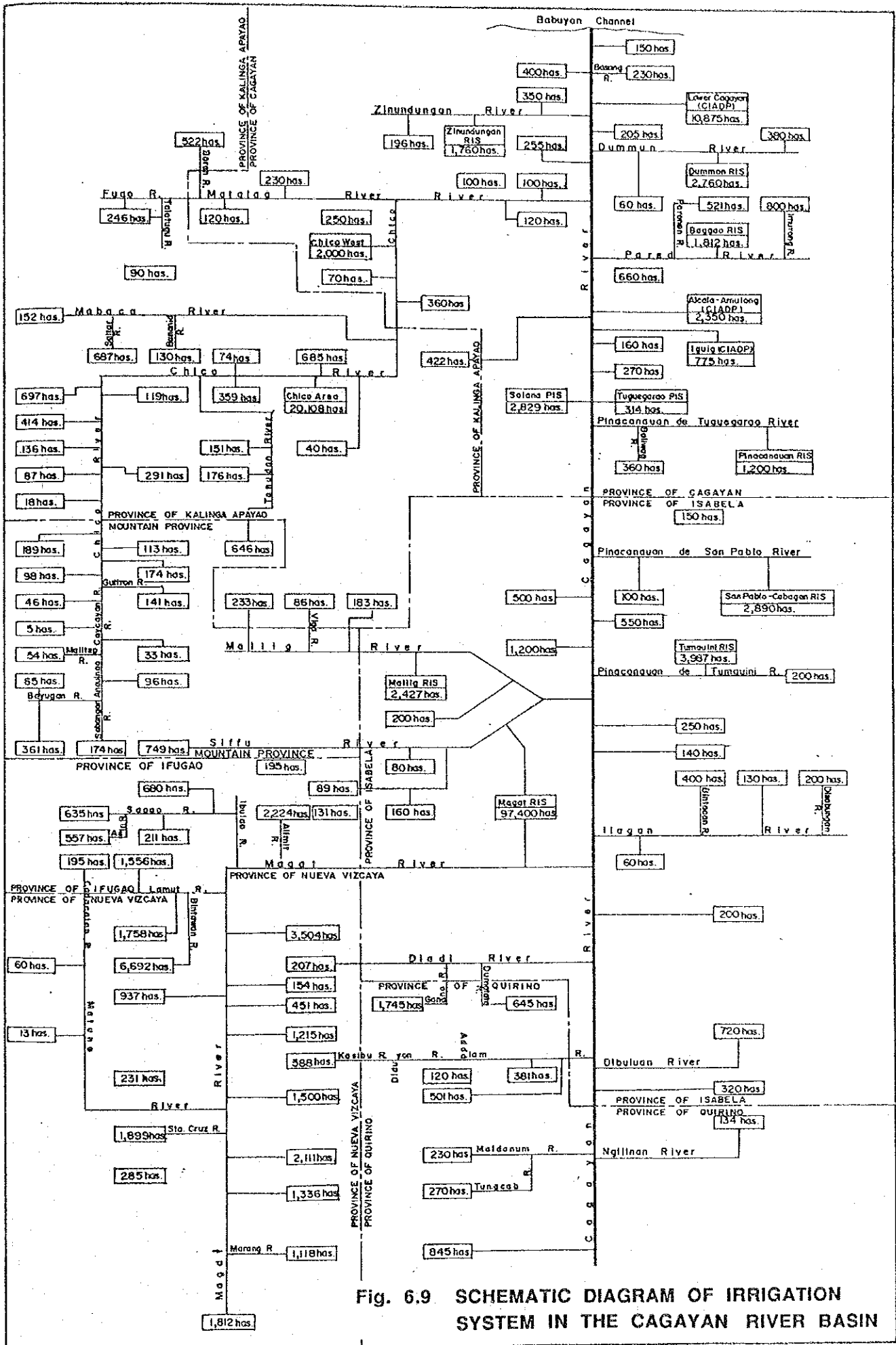
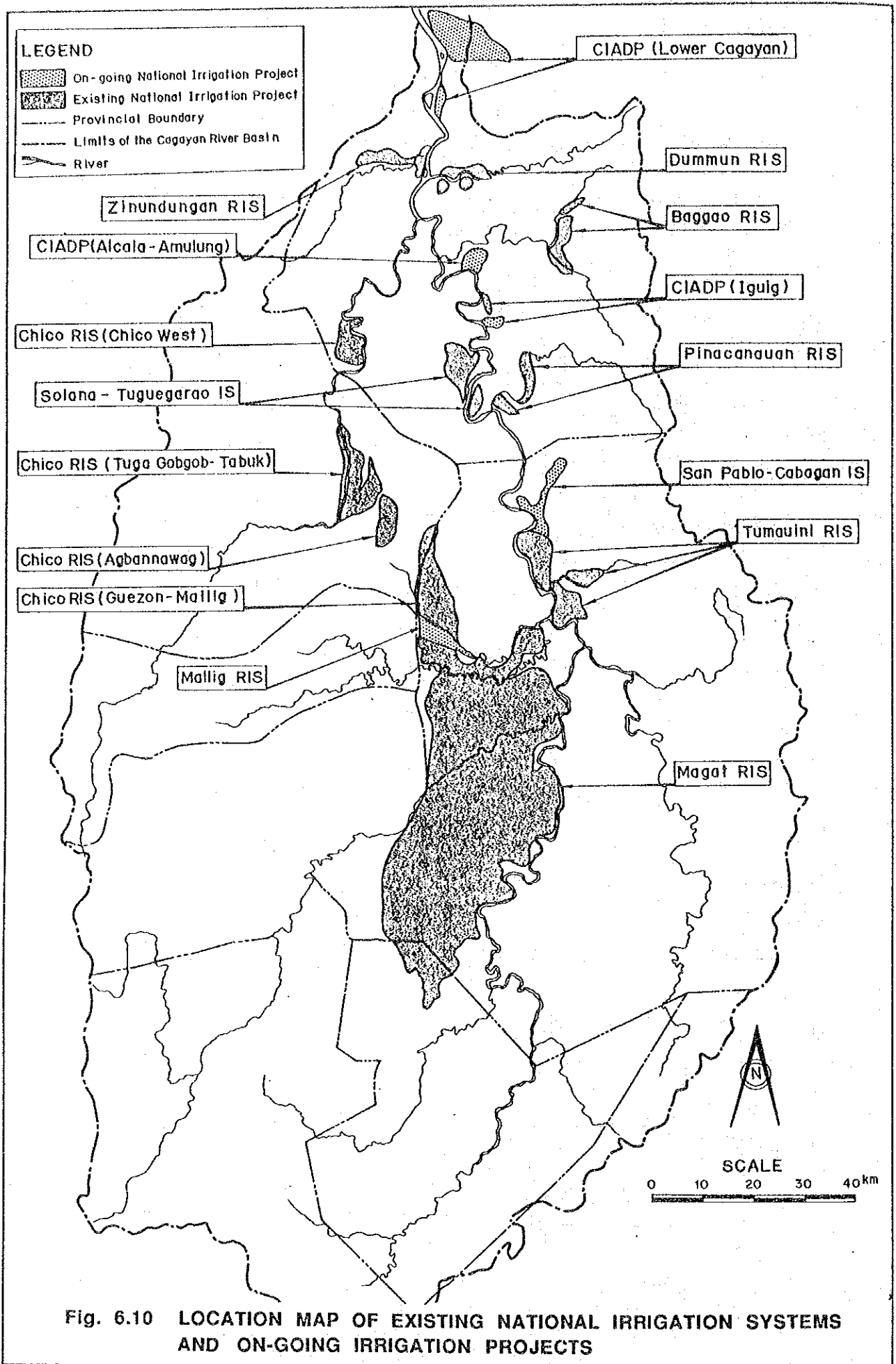
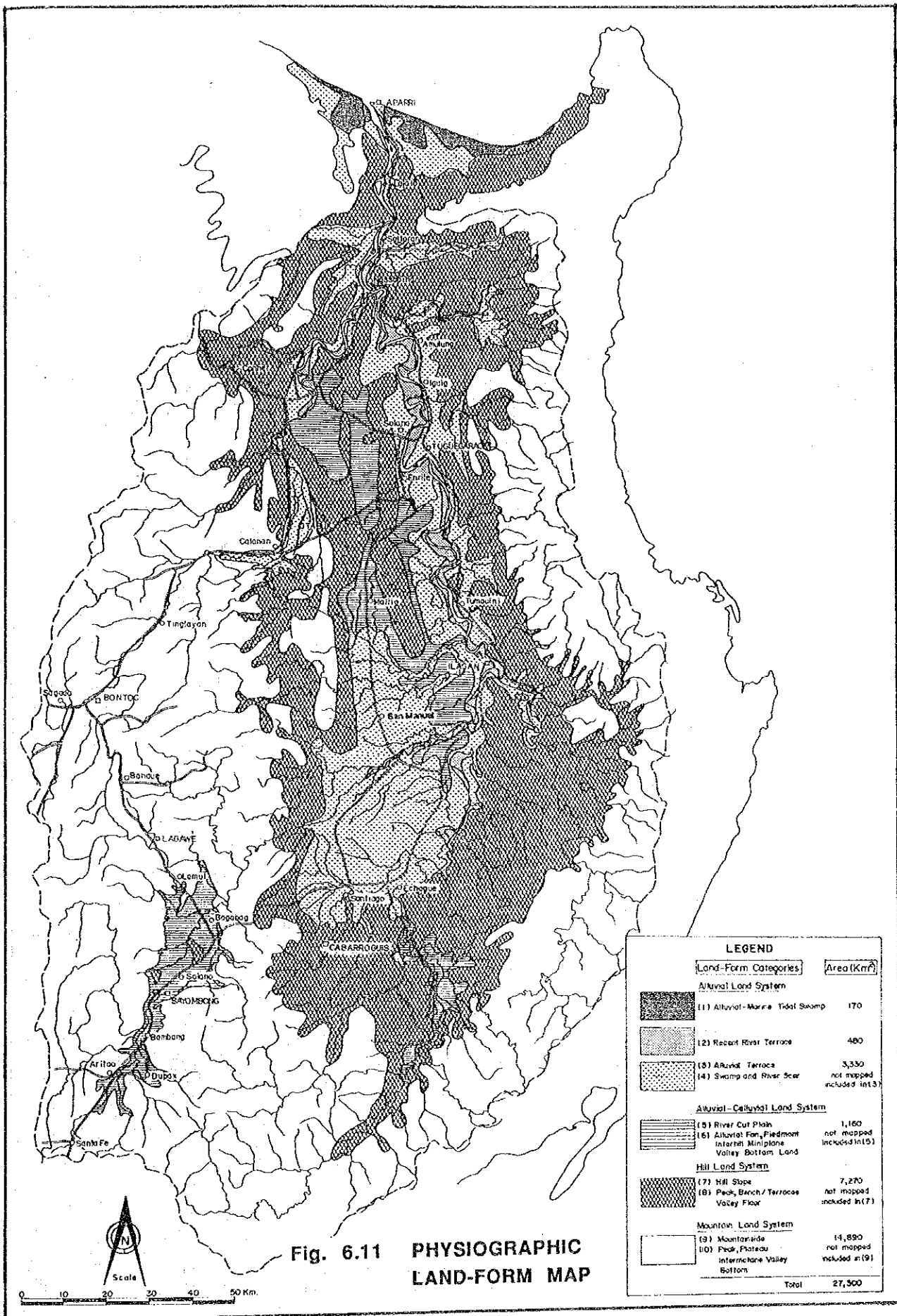


Fig. 6.9 SCHEMATIC DIAGRAM OF IRRIGATION SYSTEM IN THE CAGAYAN RIVER BASIN





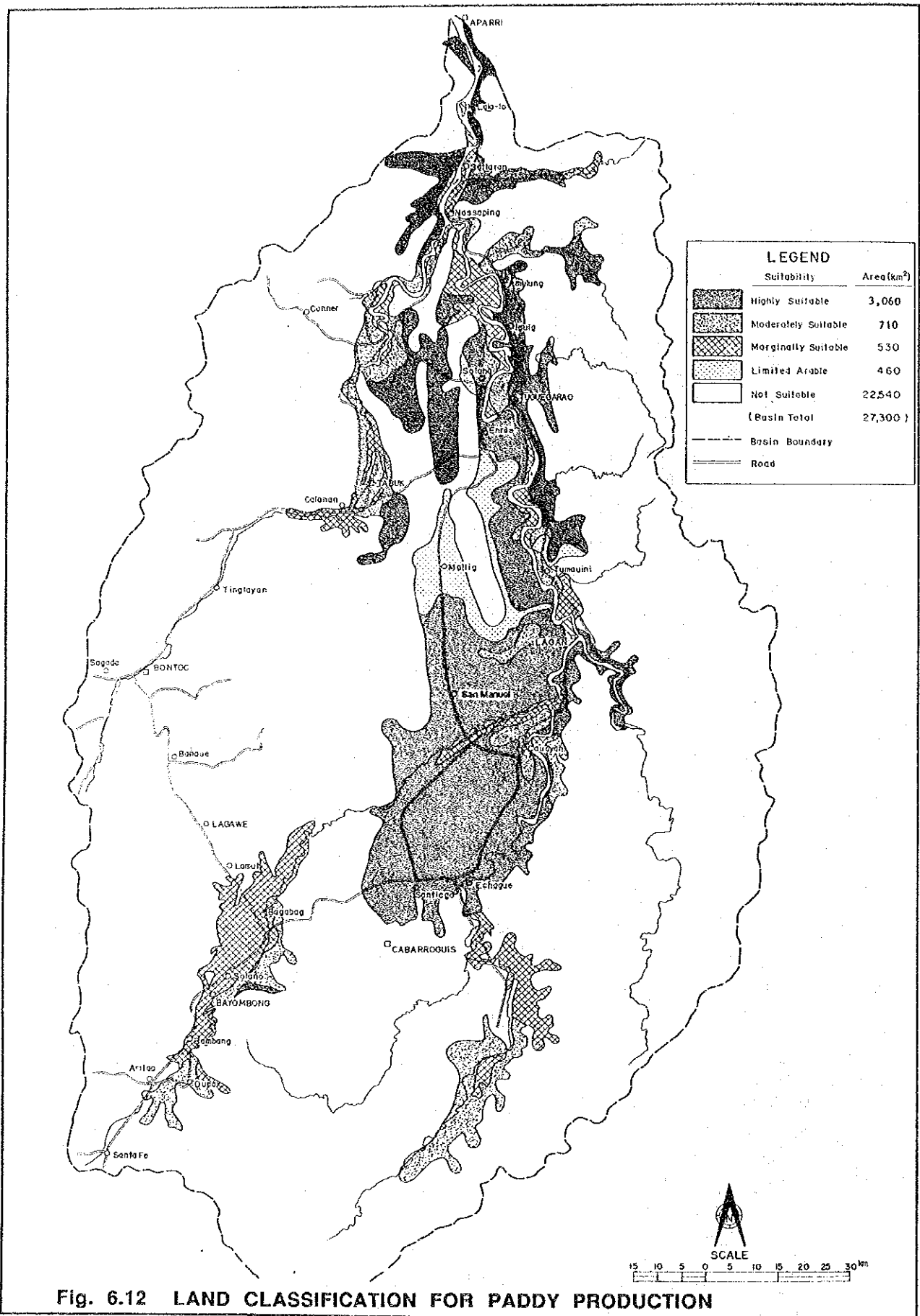


Fig. 6.12 LAND CLASSIFICATION FOR PADDY PRODUCTION

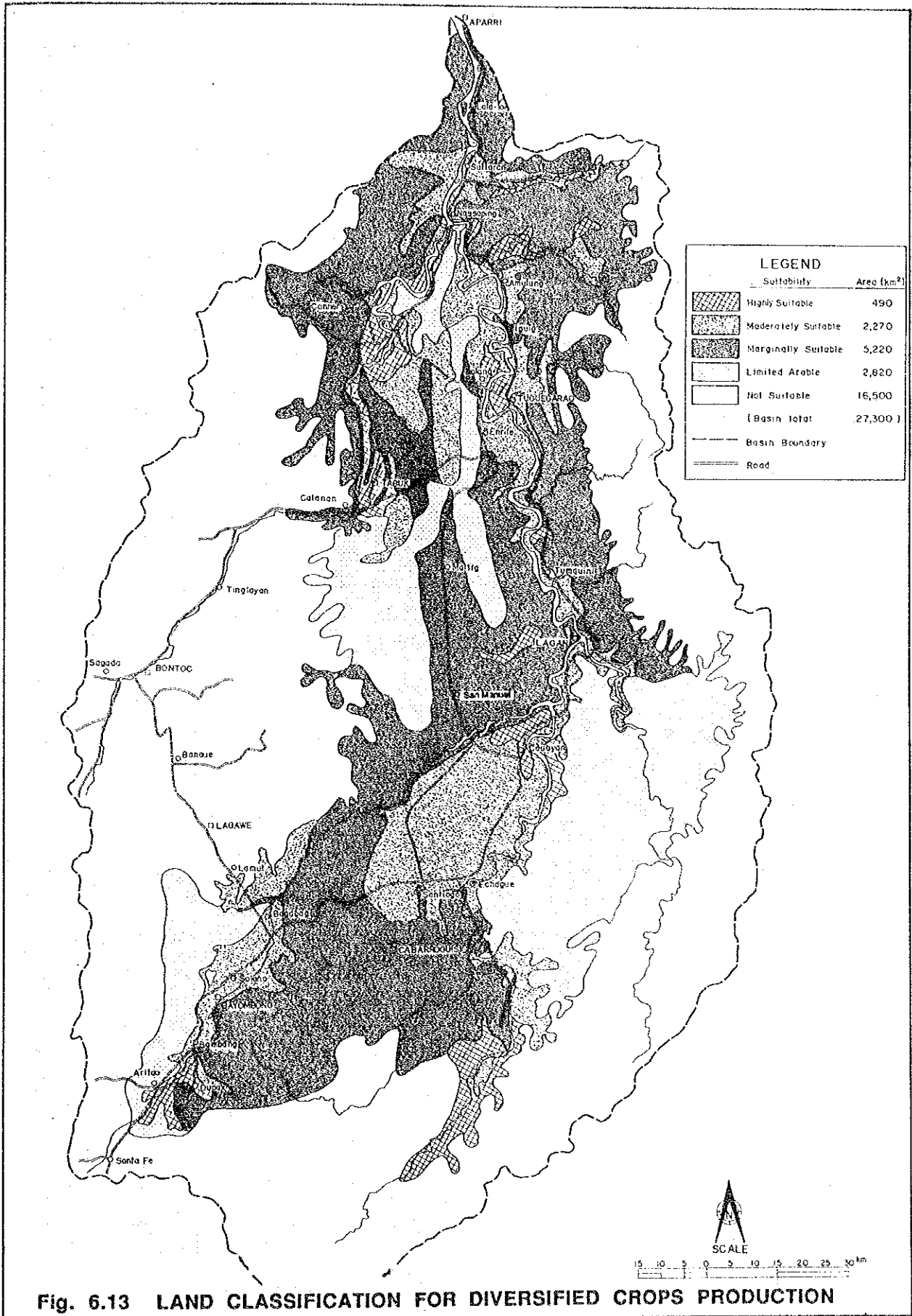
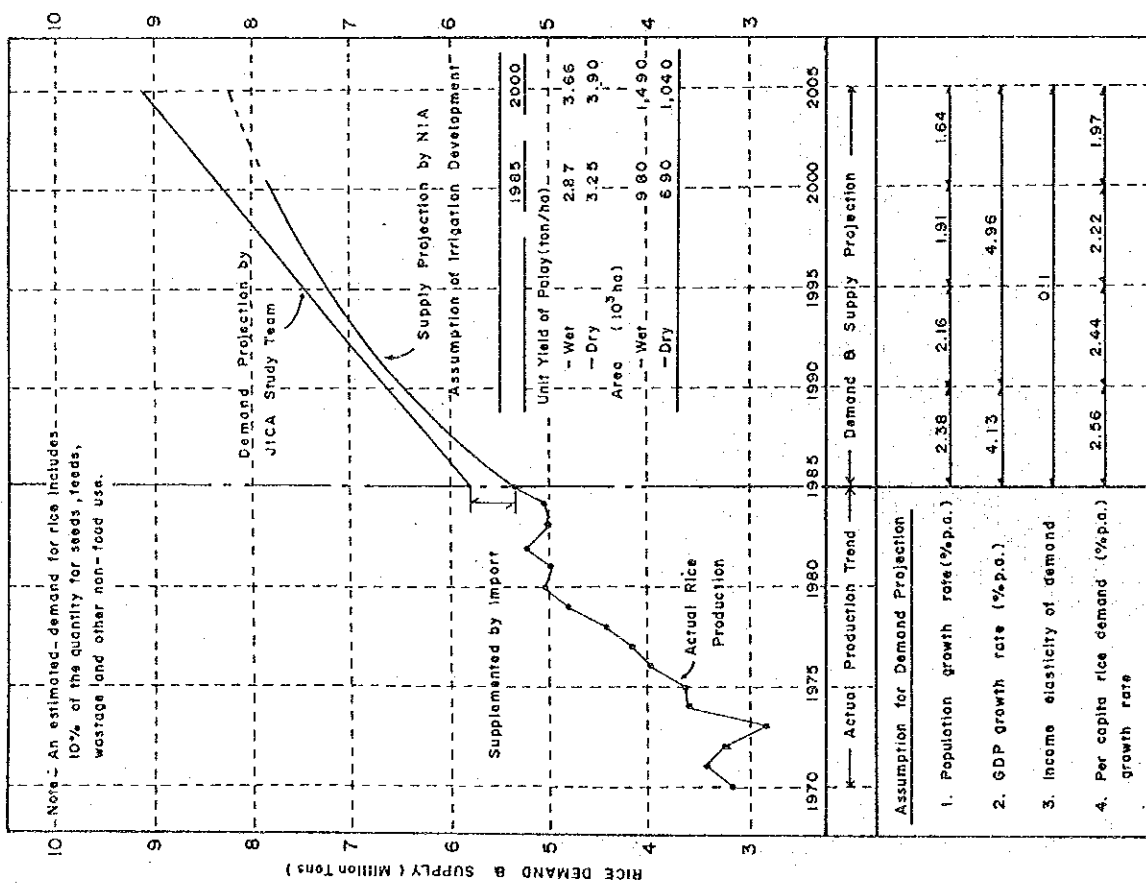
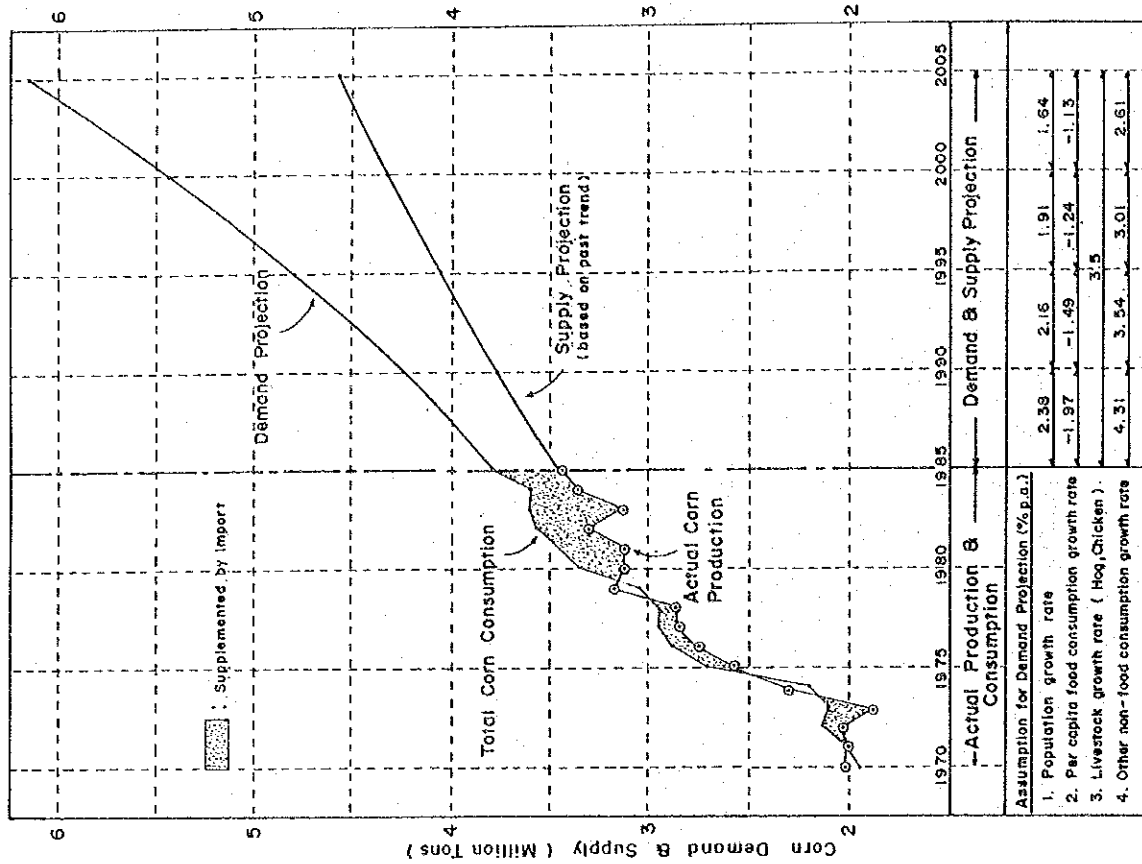


Fig. 6.13 LAND CLASSIFICATION FOR DIVERSIFIED CROPS PRODUCTION



DEMAND AND SUPPLY PROJECTION FOR RICE

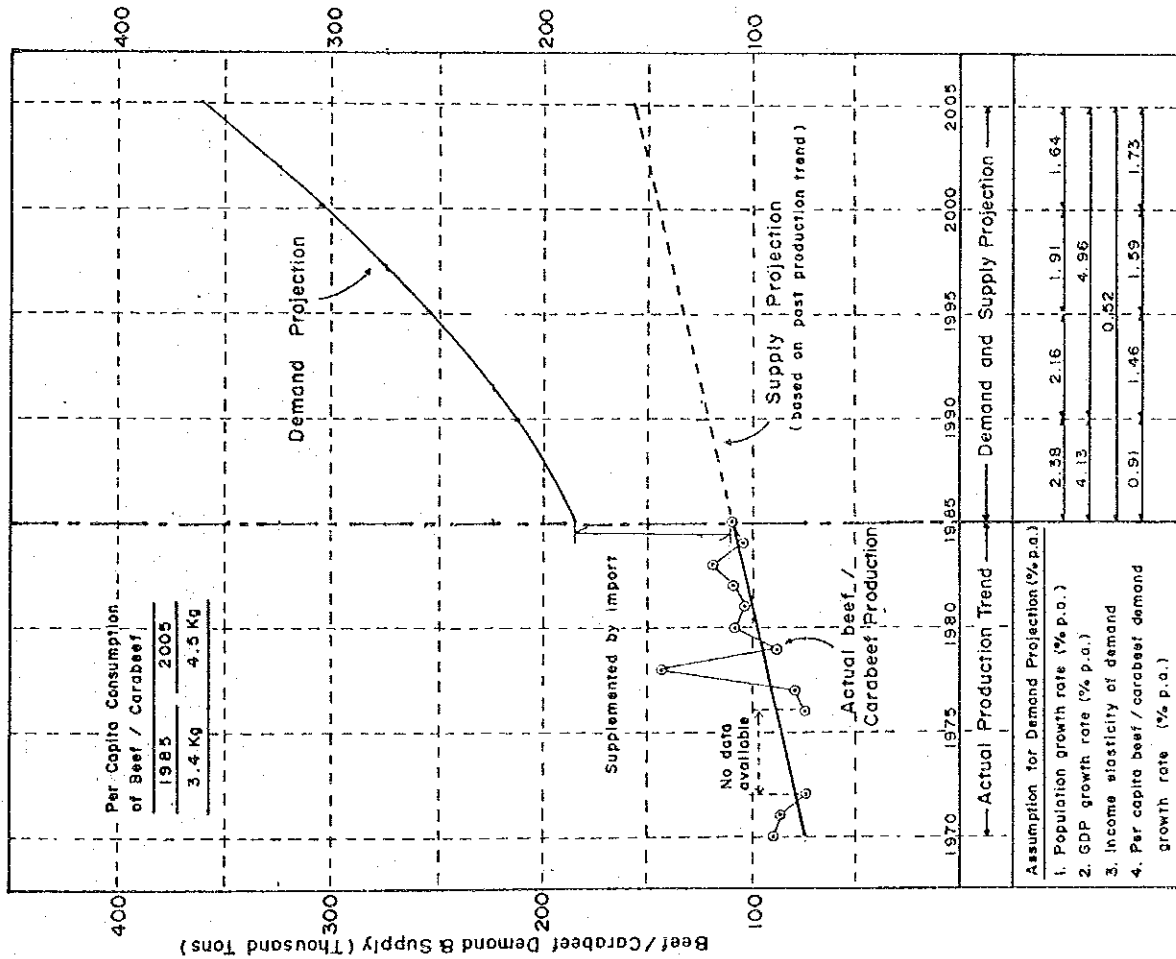


DEMAND AND SUPPLY PROJECTION FOR CORN

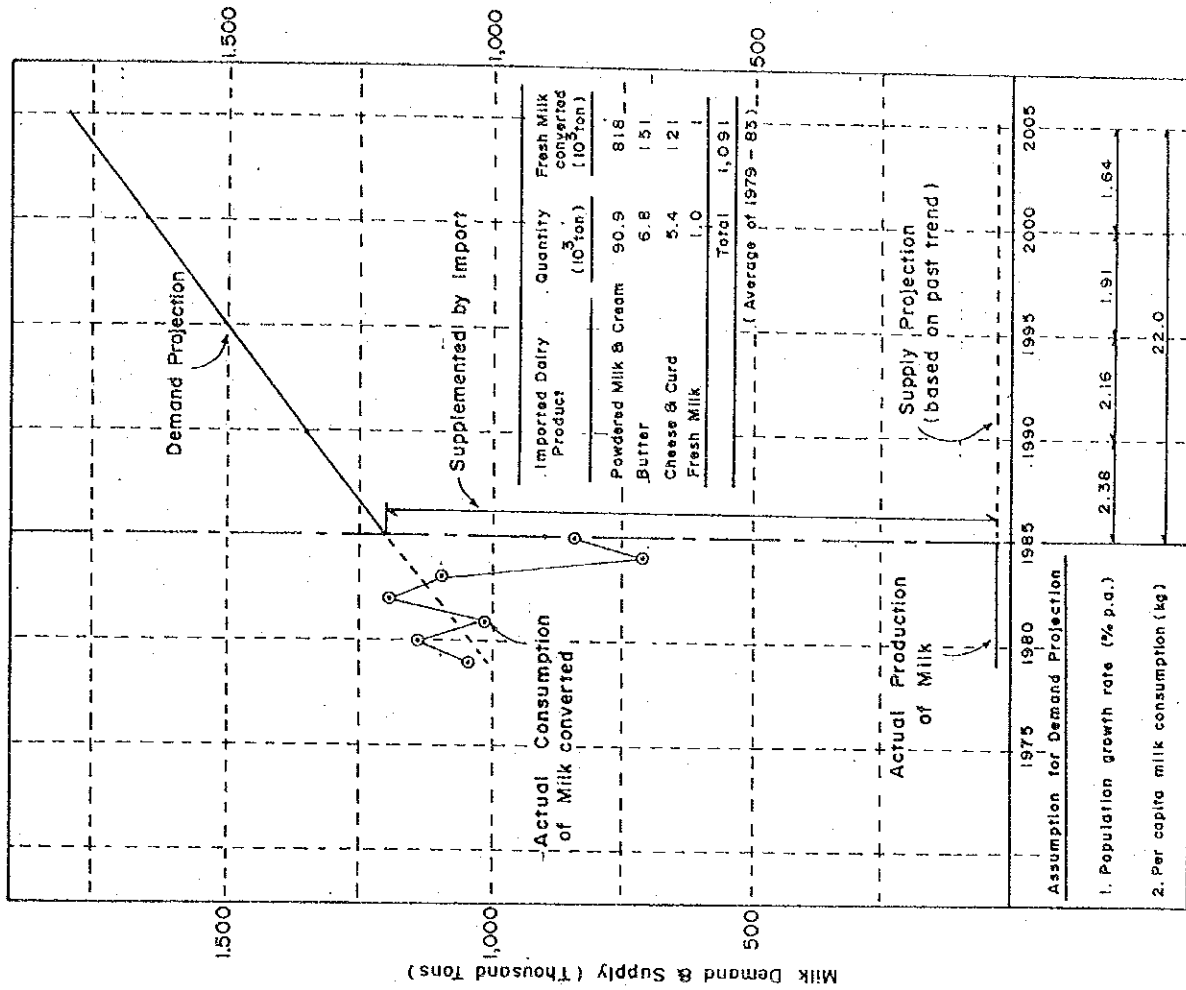
Fig. 6.14 DEMAND AND SUPPLY PROJECTIONS FOR MAJOR AGRICULTURAL COMMODITIES IN THE PHILIPPINES

(to be continued)

(continuation)



DEMAND AND SUPPLY PROJECTION FOR BEEF/CARABEEF



DEMAND AND SUPPLY PROJECTION FOR MILK

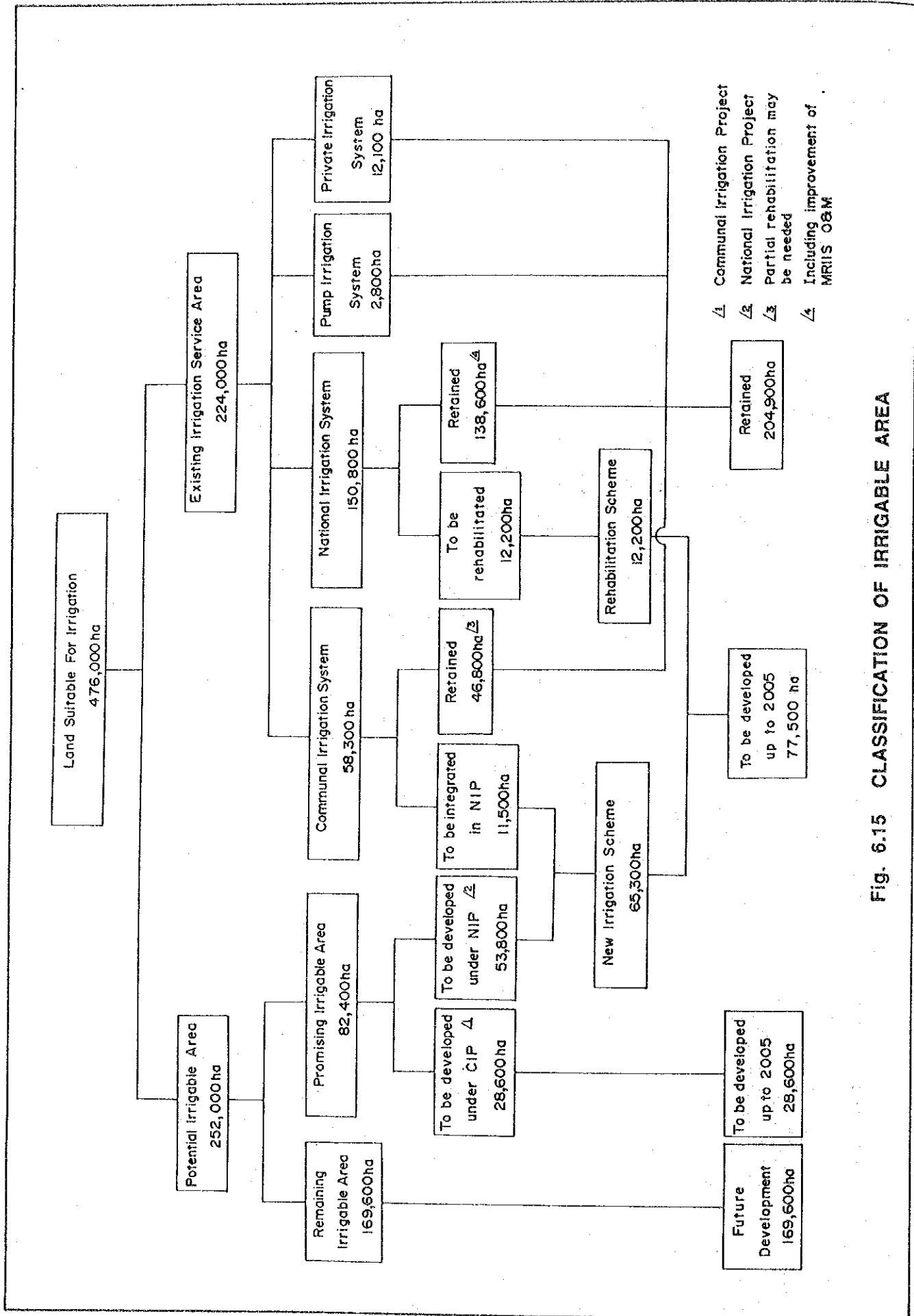


Fig. 6.15 CLASSIFICATION OF IRRIGABLE AREA

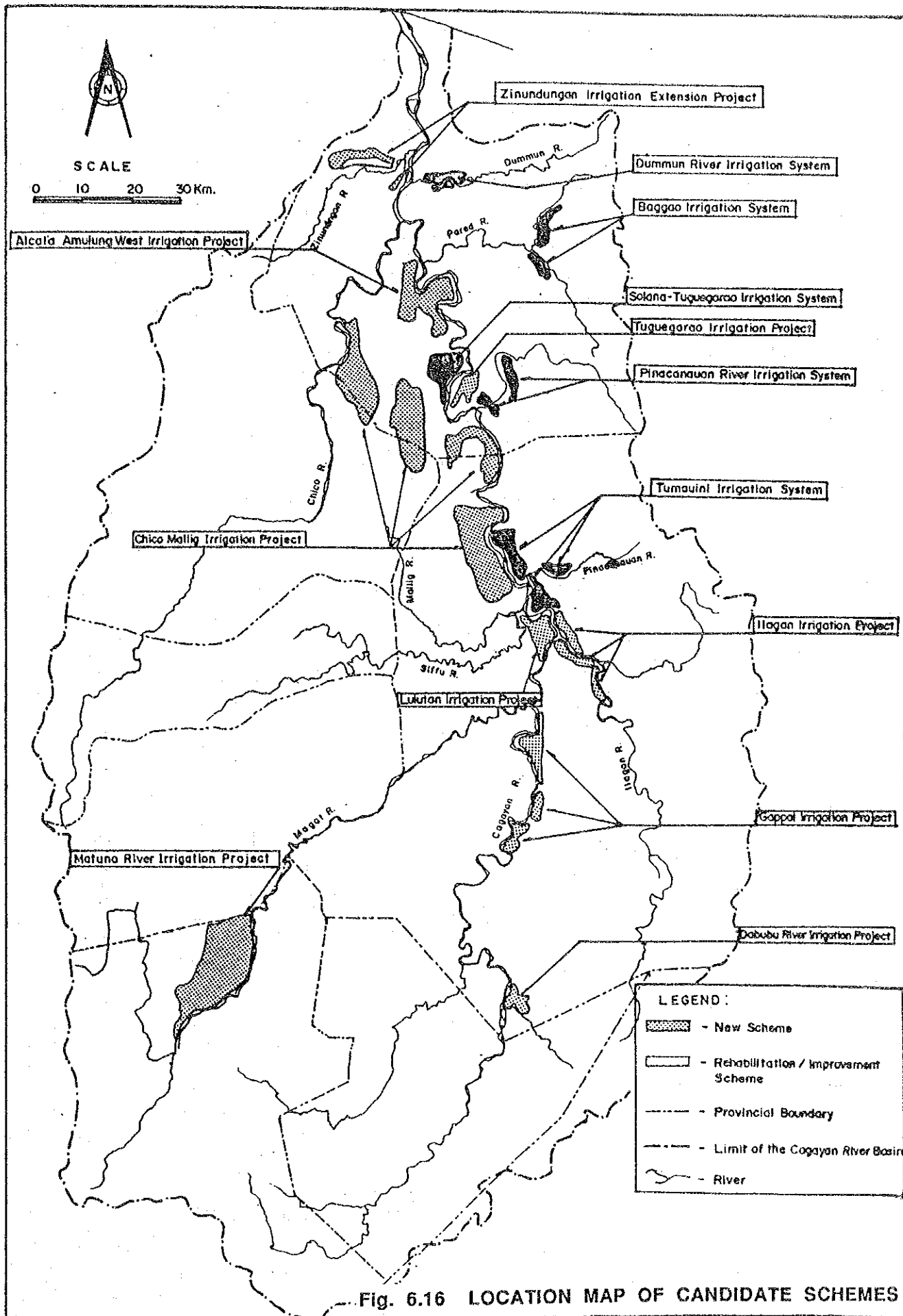


Fig. 6.16 LOCATION MAP OF CANDIDATE SCHEMES

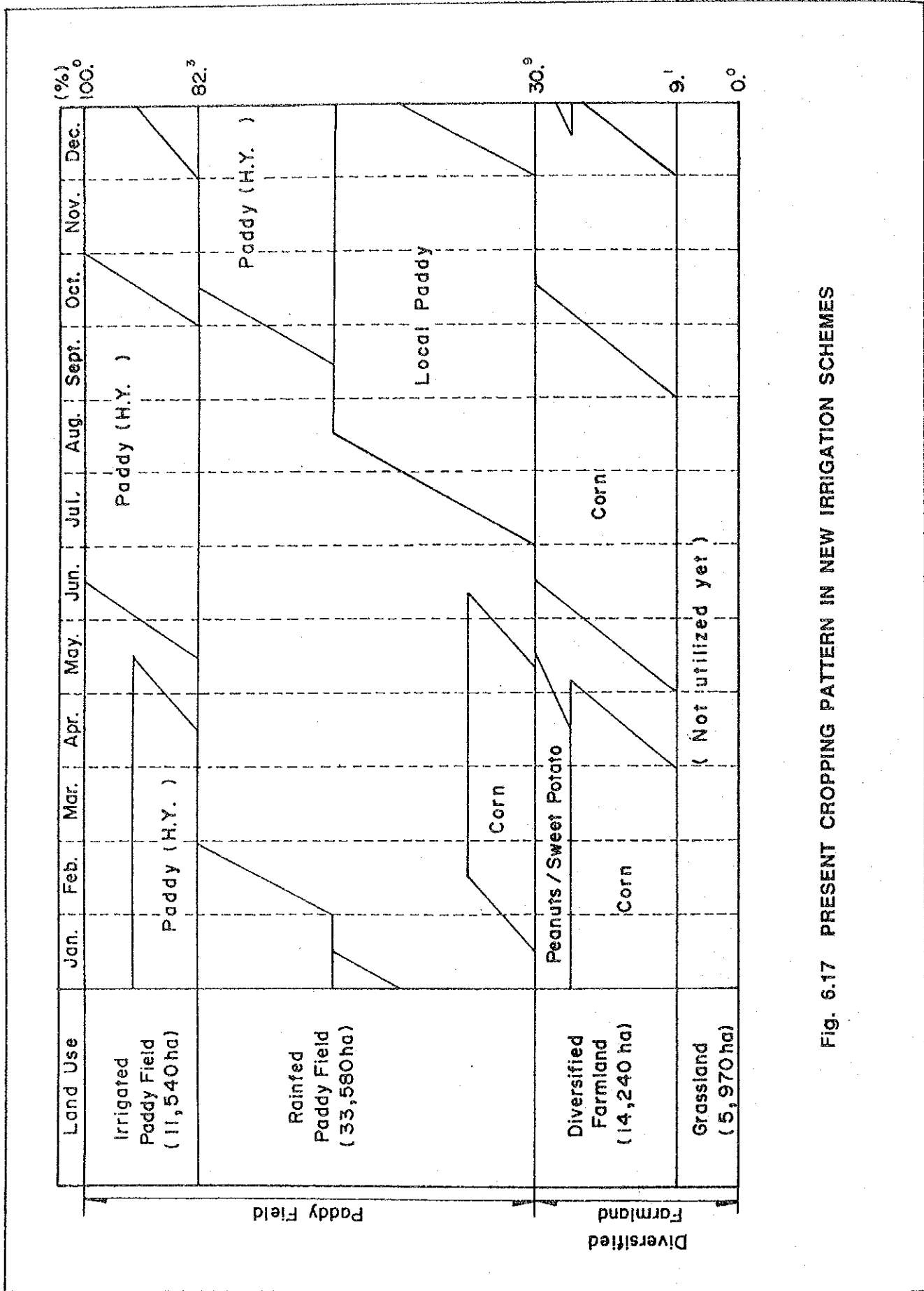


Fig. 6.17 PRESENT CROPPING PATTERN IN NEW IRRIGATION SCHEMES

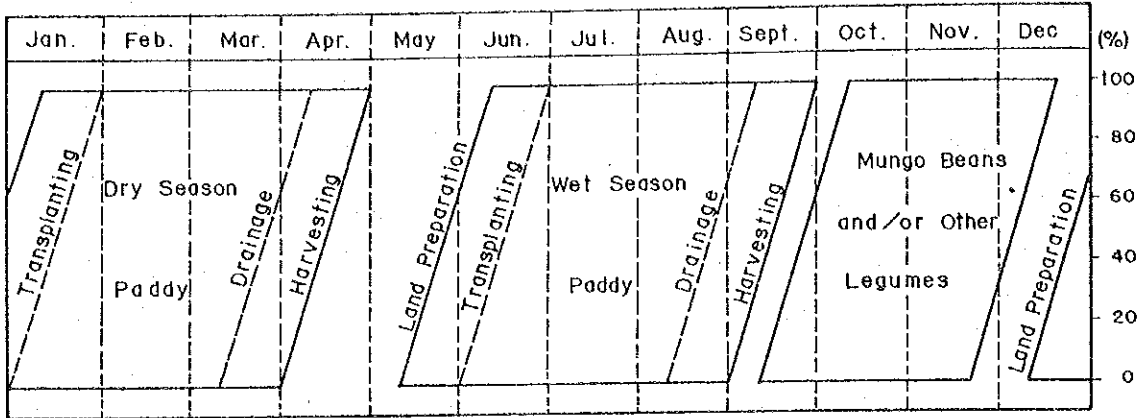


Fig. 6.19 PROPOSED CROPPING PATTERN (A) IN THE PADDY FIELD AREA

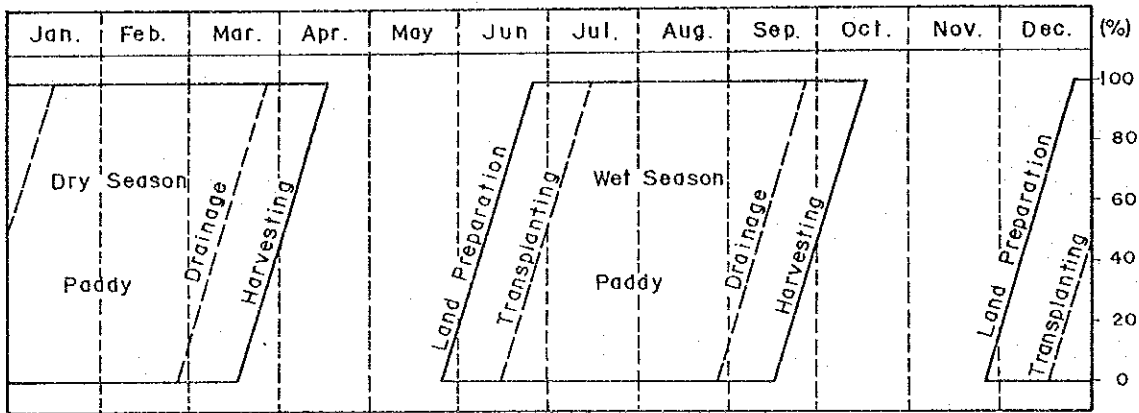


Fig. 6.20 PROPOSED CROPPING PATTERN (B) IN THE PADDY FIELD AREA

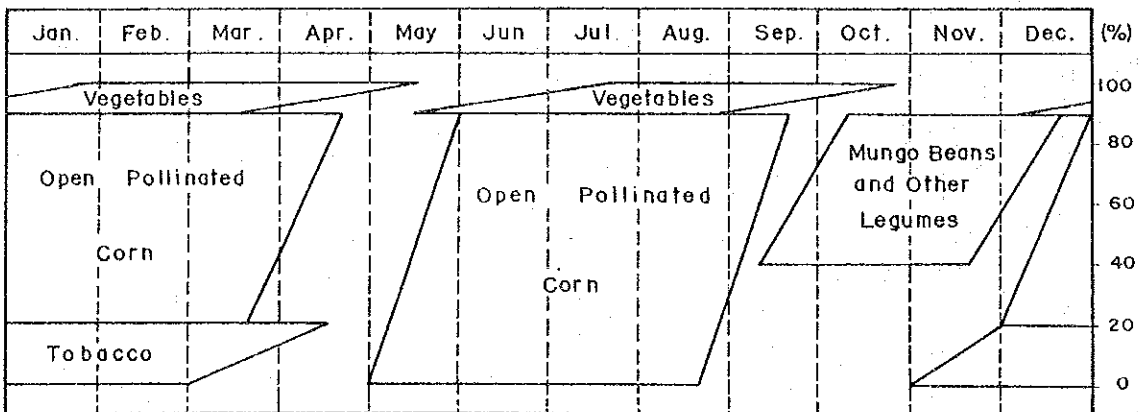


Fig. 6.21 PROPOSED CROPPING PATTERN (C) IN THE DIVERSIFIED CROP AREA

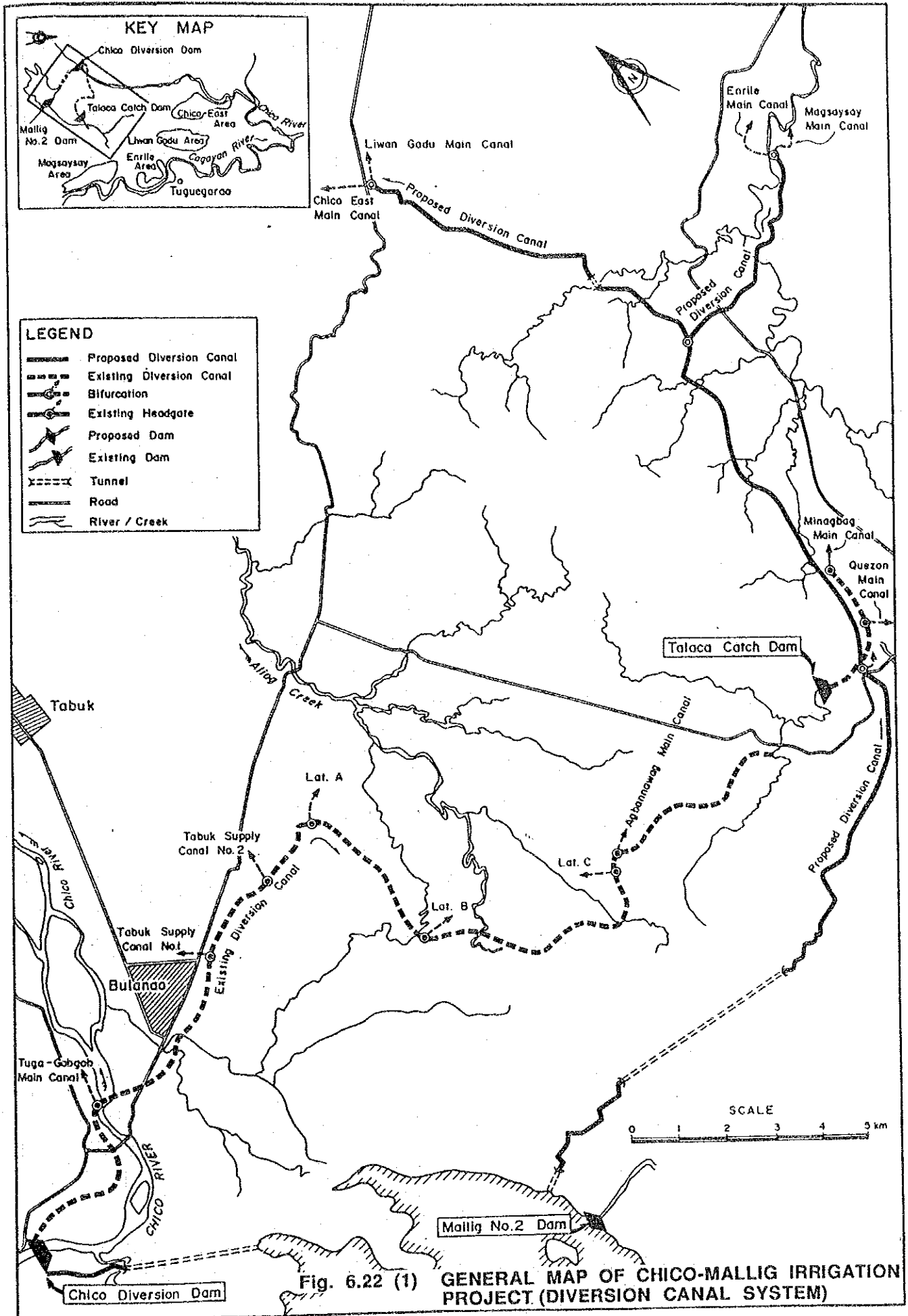
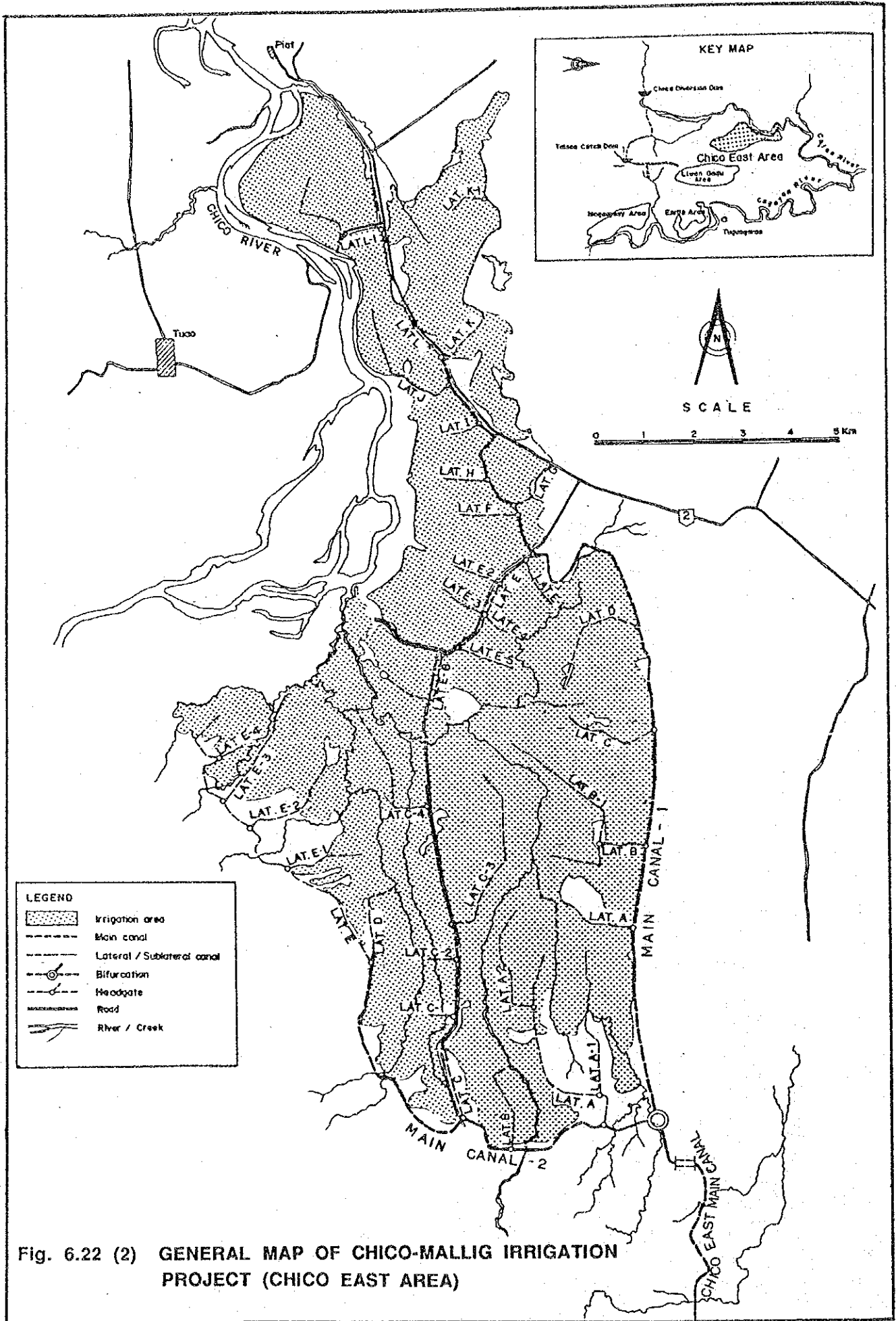


Fig. 6.22 (1)

GENERAL MAP OF CHICO-MALLIG IRRIGATION PROJECT (DIVERSION CANAL SYSTEM)



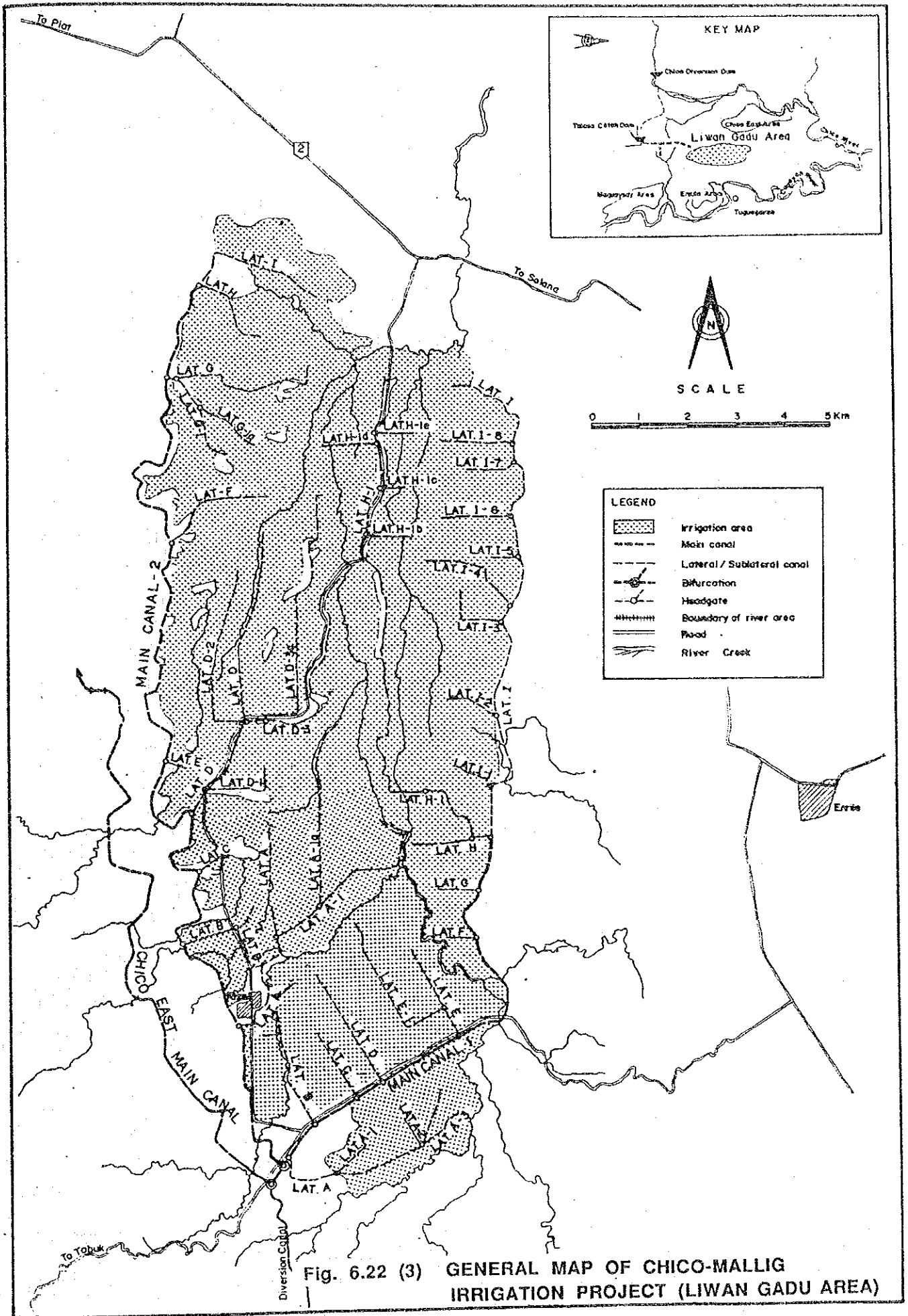
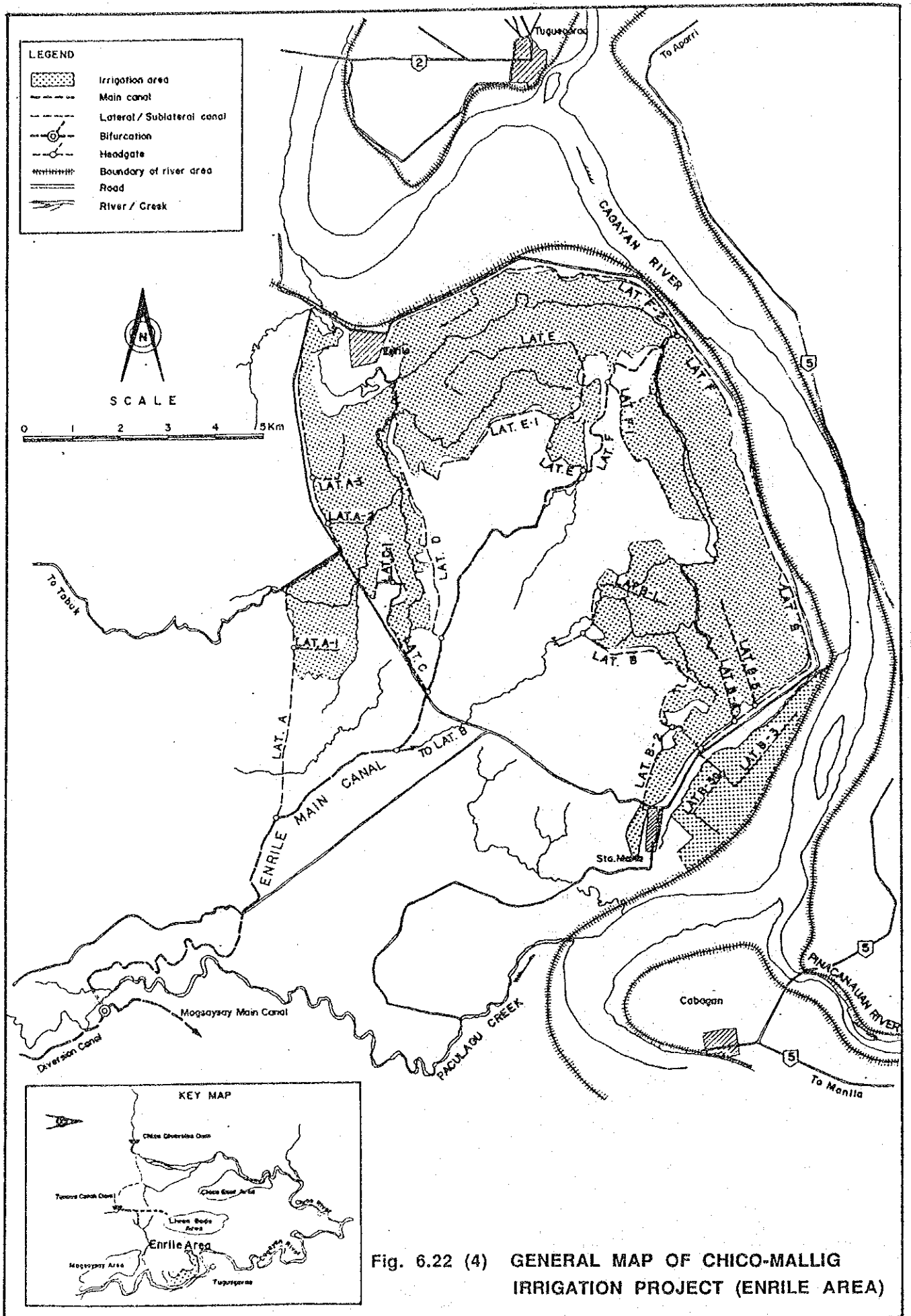


Fig. 6.22 (3) GENERAL MAP OF CHICO-MALLIG IRRIGATION PROJECT (LIWAN GADU AREA)



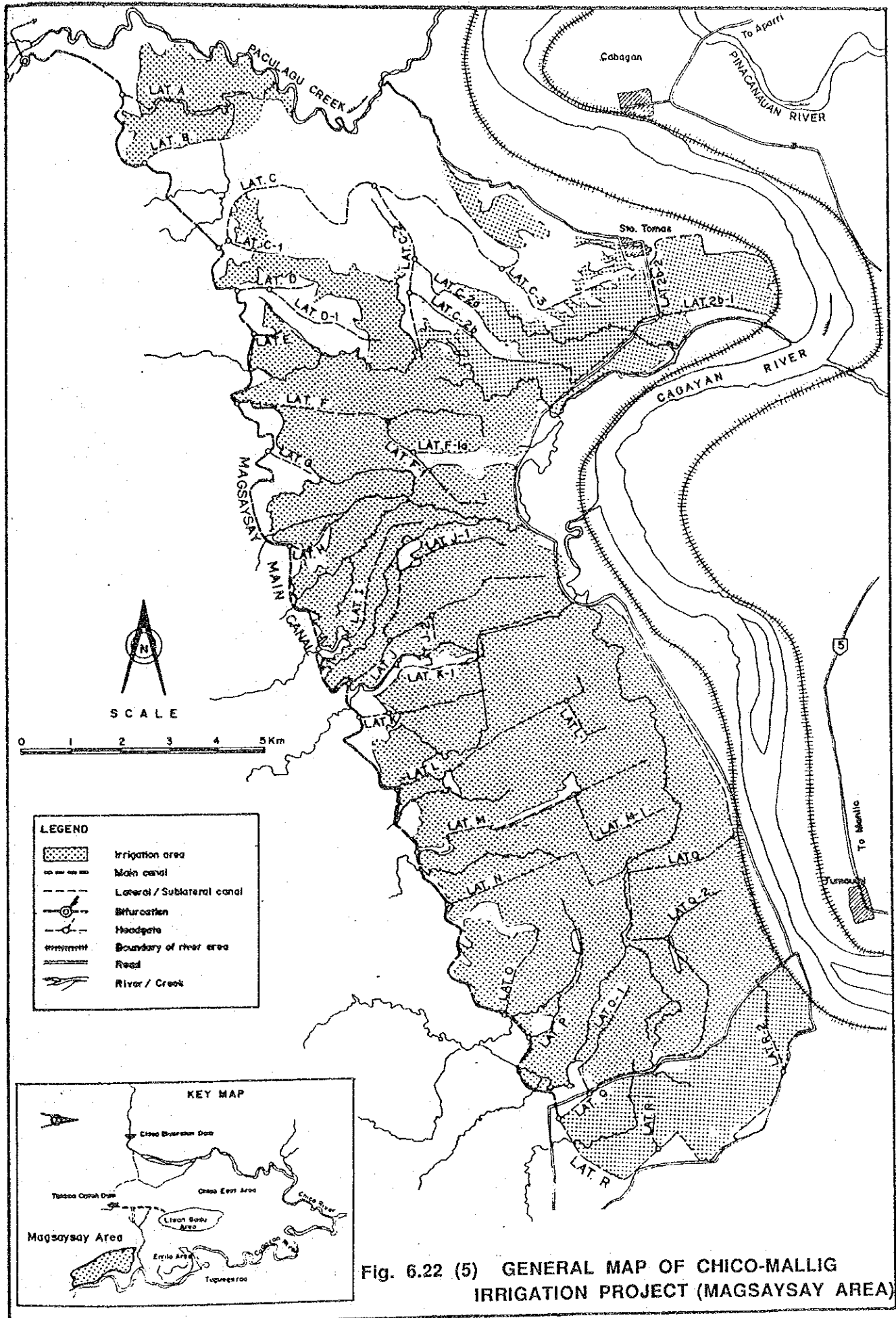


Fig. 6.22 (5) GENERAL MAP OF CHICO-MALLIG IRRIGATION PROJECT (MAGSAYSAY AREA)

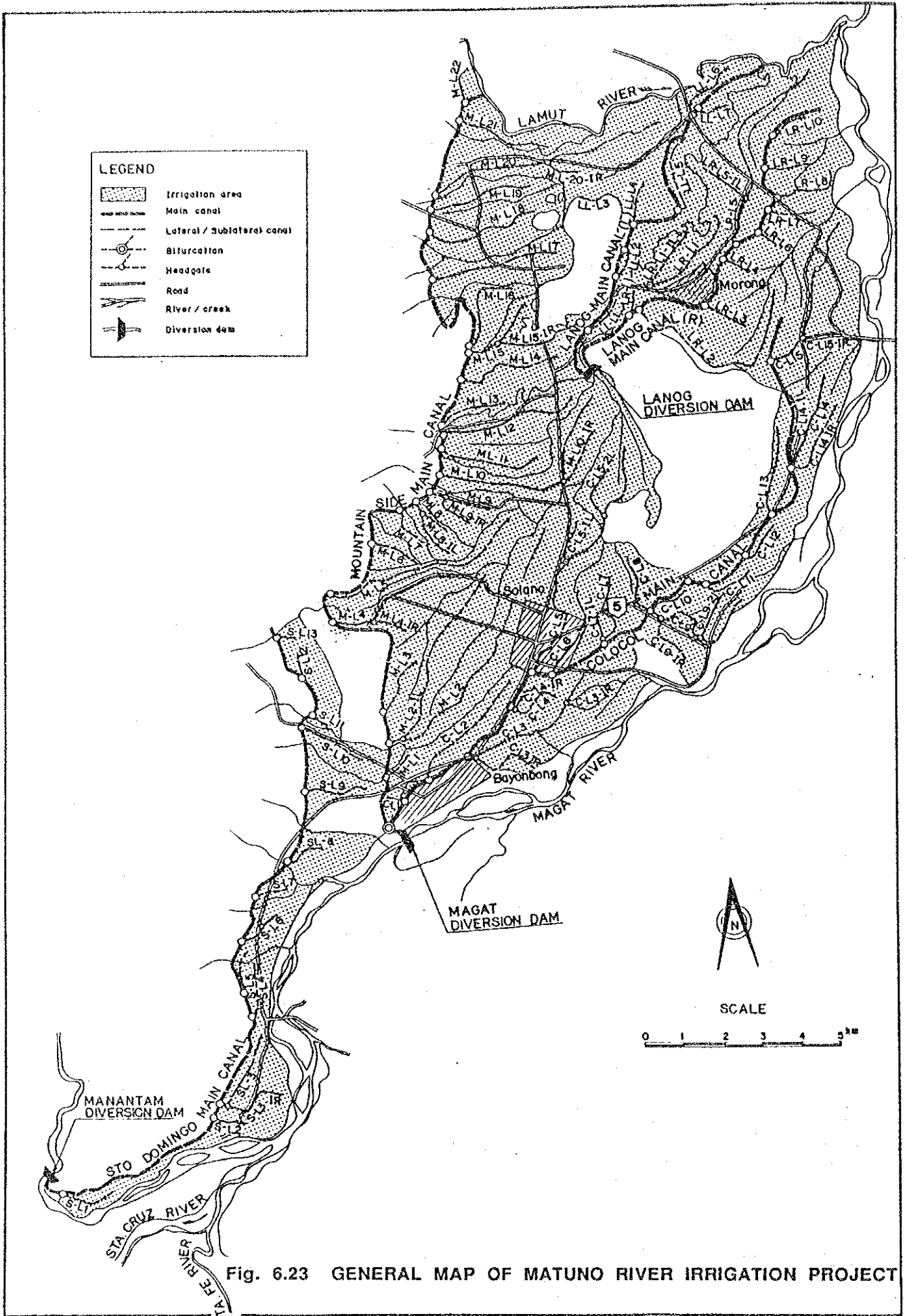


Fig. 6.23 GENERAL MAP OF MATUNO RIVER IRRIGATION PROJECT

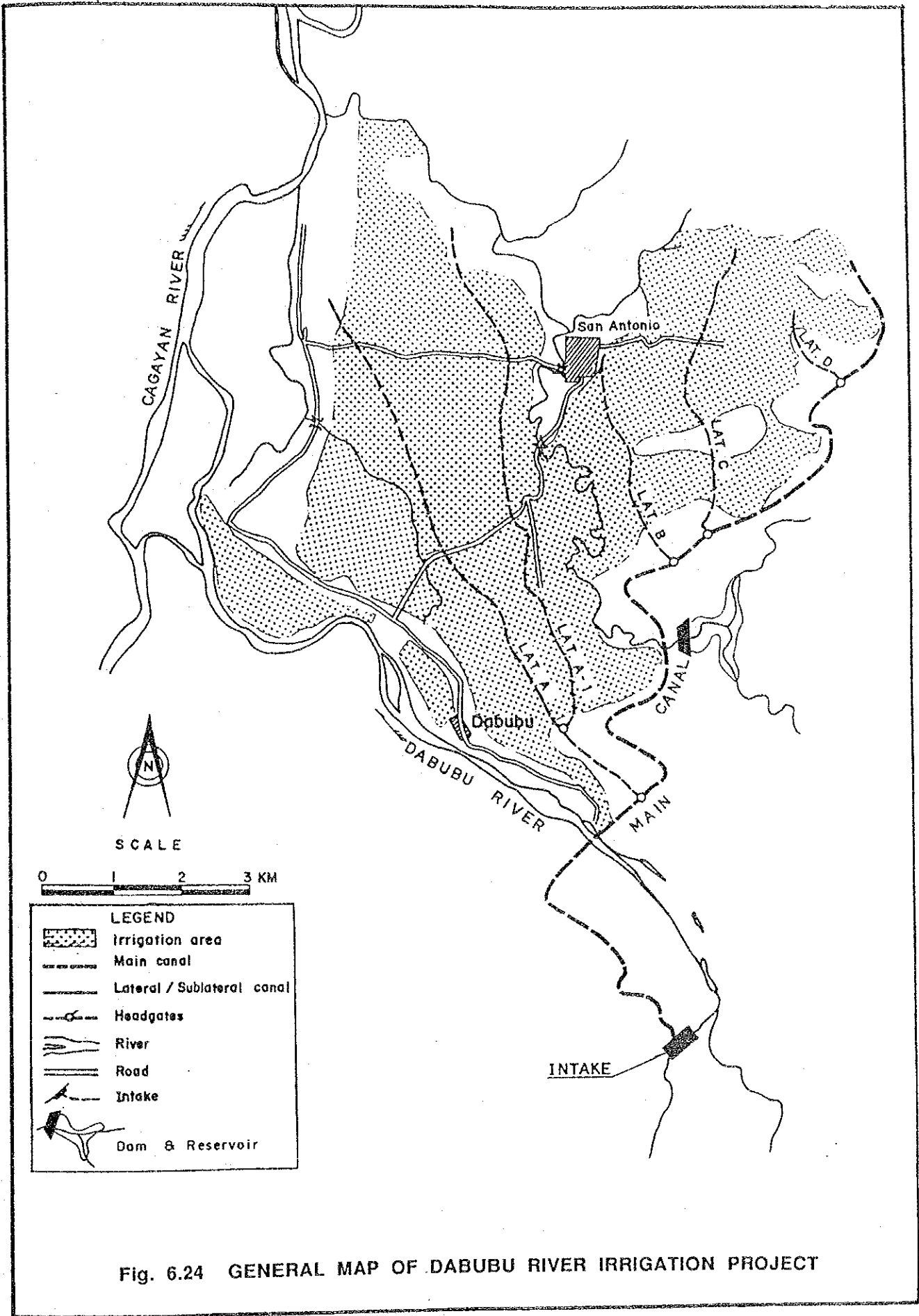
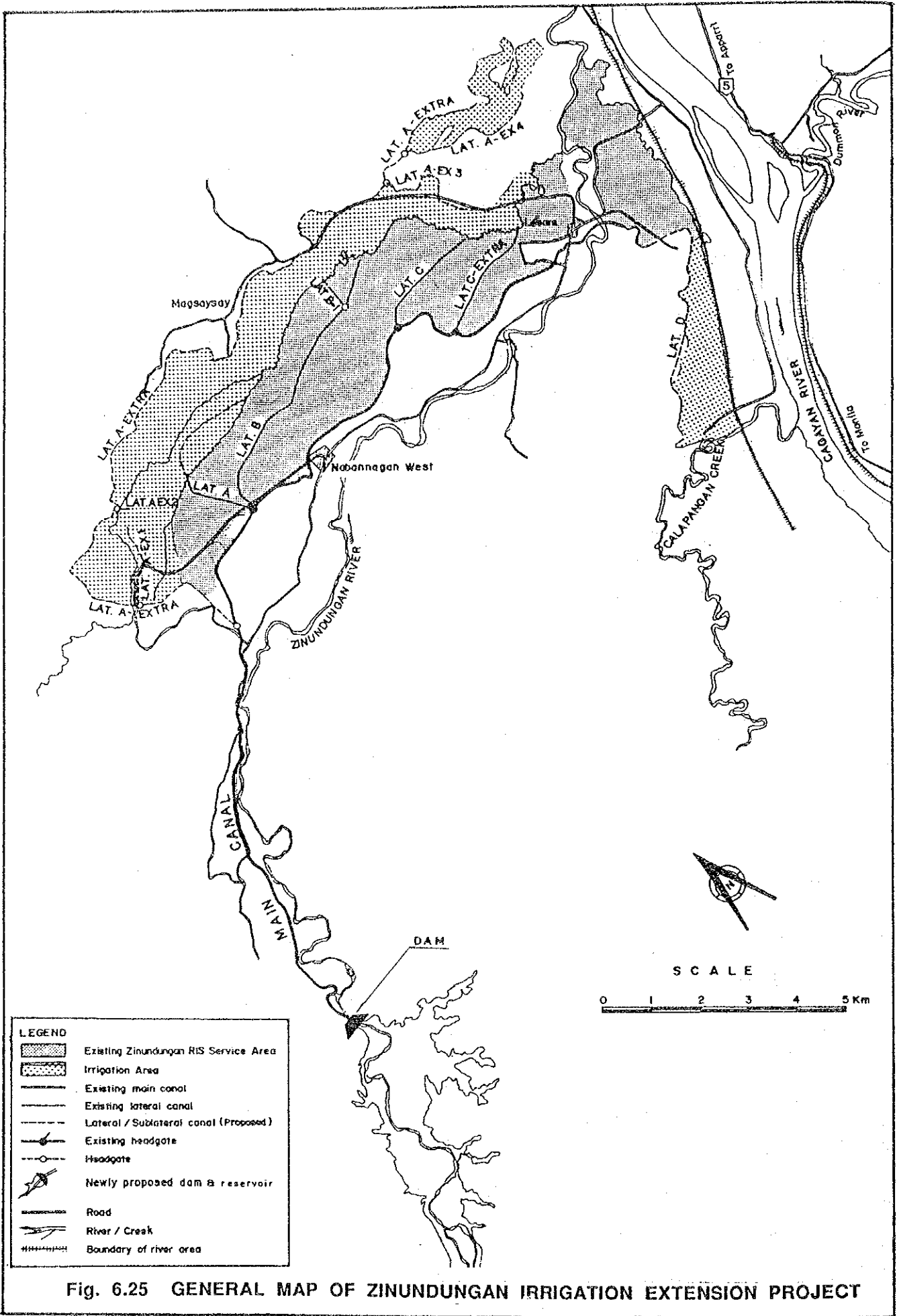


Fig. 6.24 GENERAL MAP OF DABUBU RIVER IRRIGATION PROJECT



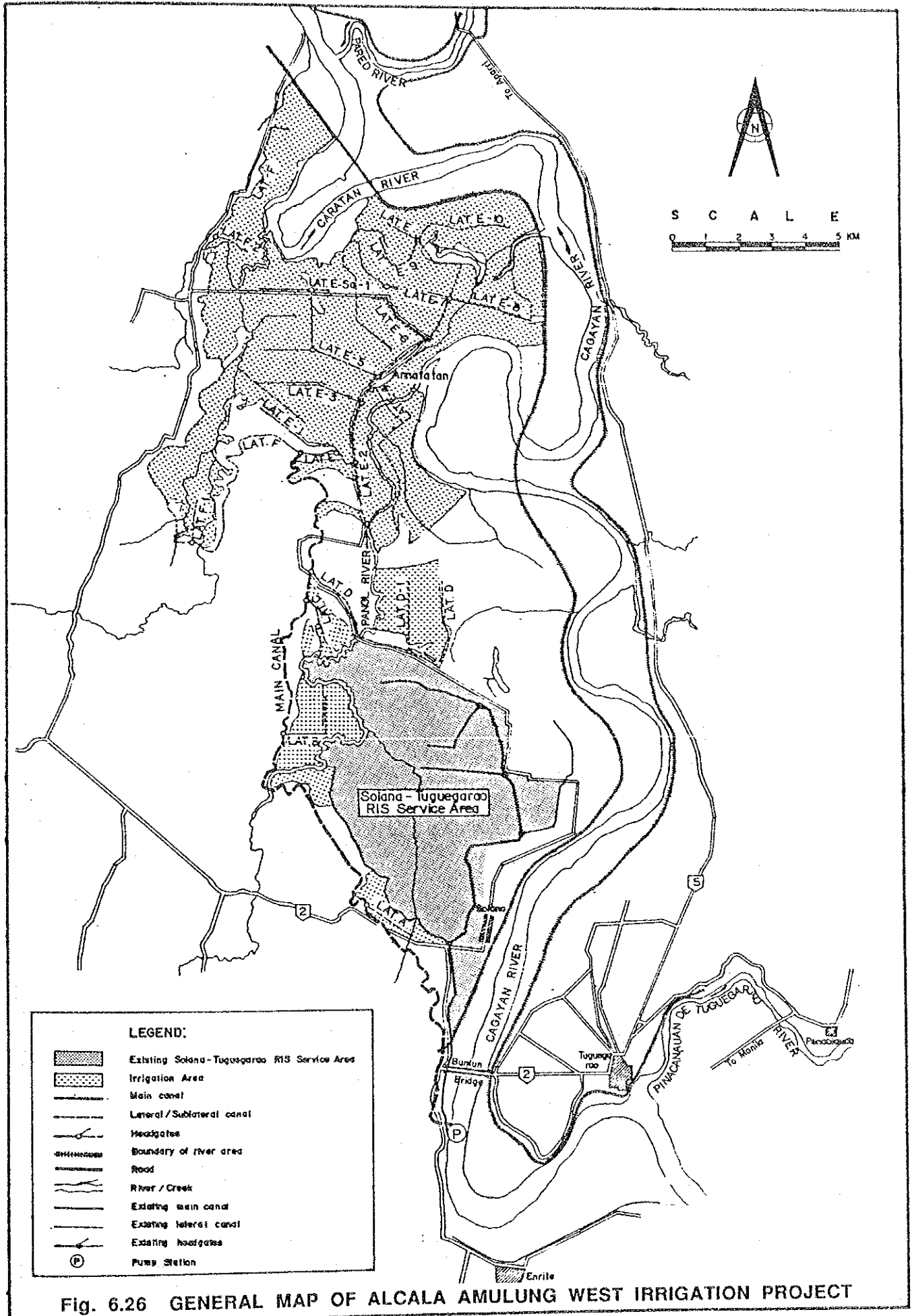
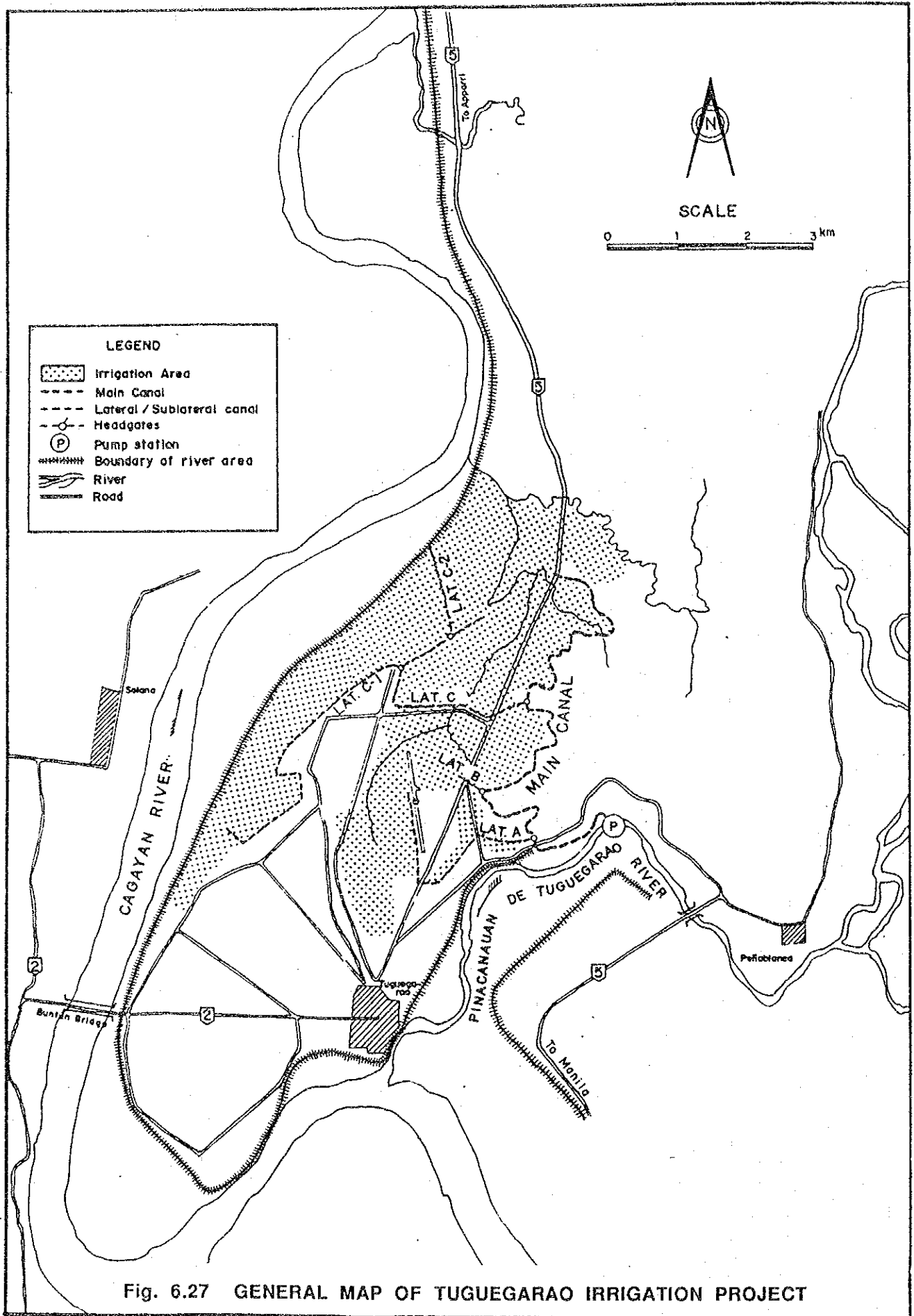


Fig. 6.26 GENERAL MAP OF ALCALA AMULUNG WEST IRRIGATION PROJECT



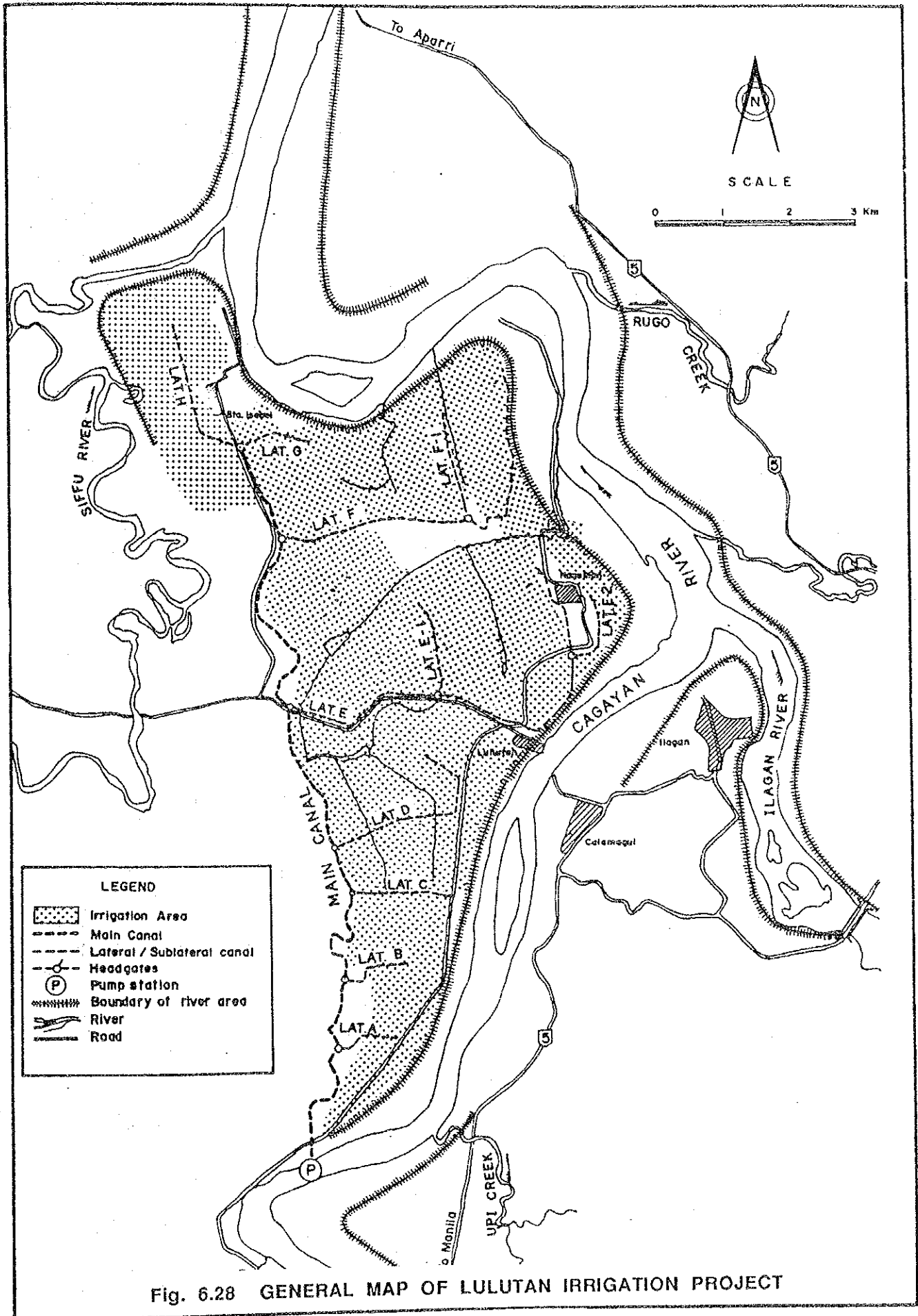
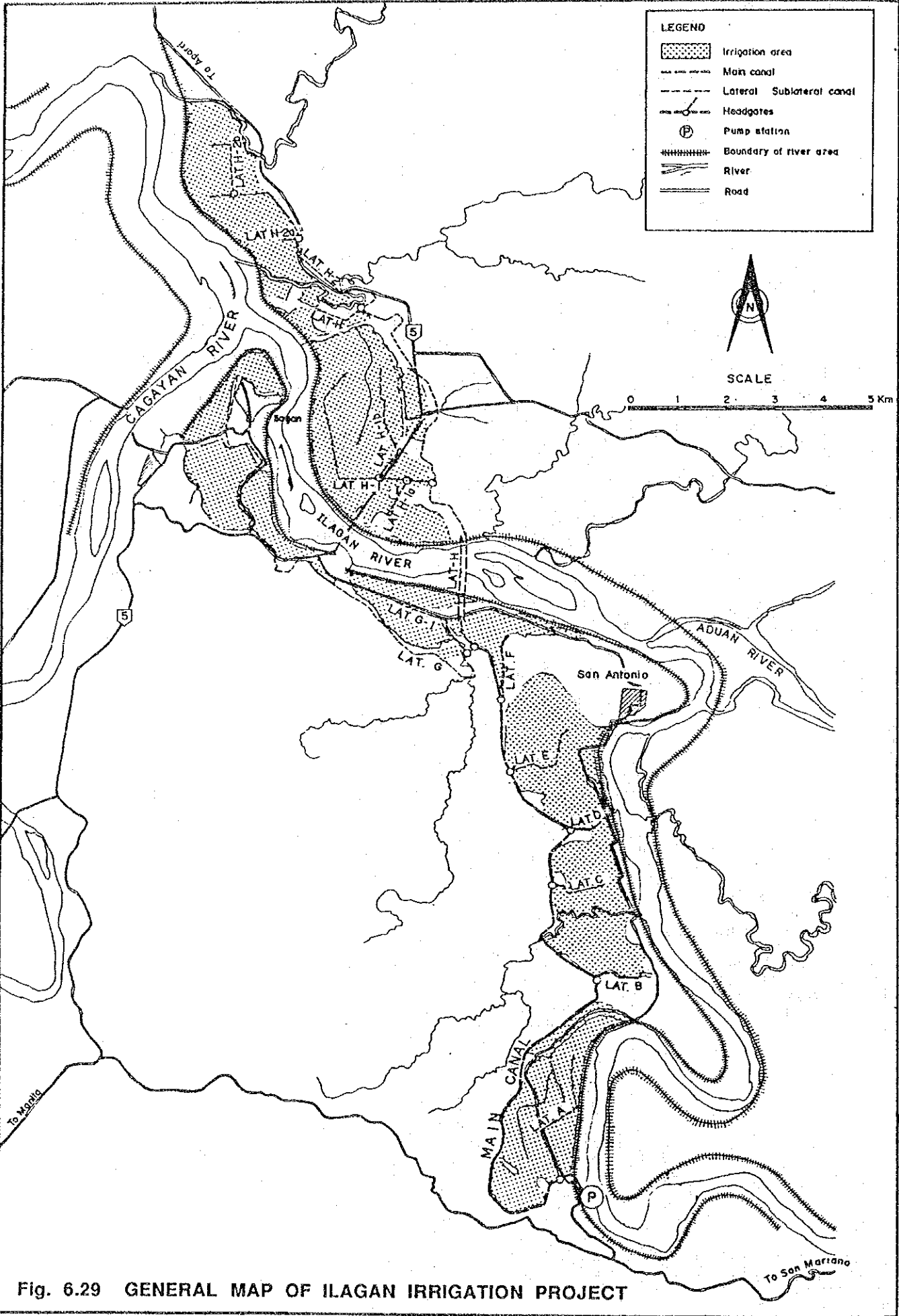


Fig. 6.28 GENERAL MAP OF LULUTAN IRRIGATION PROJECT



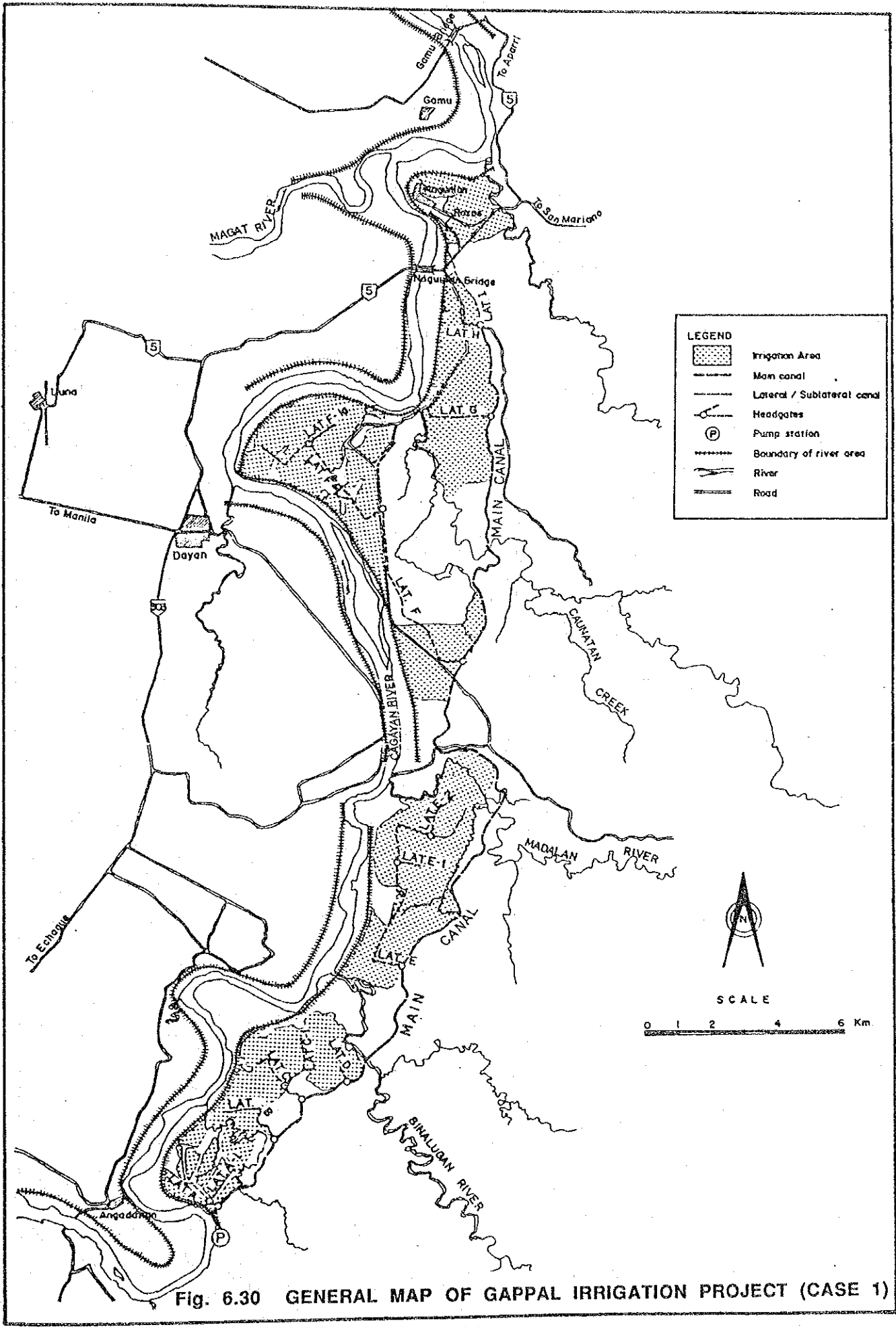
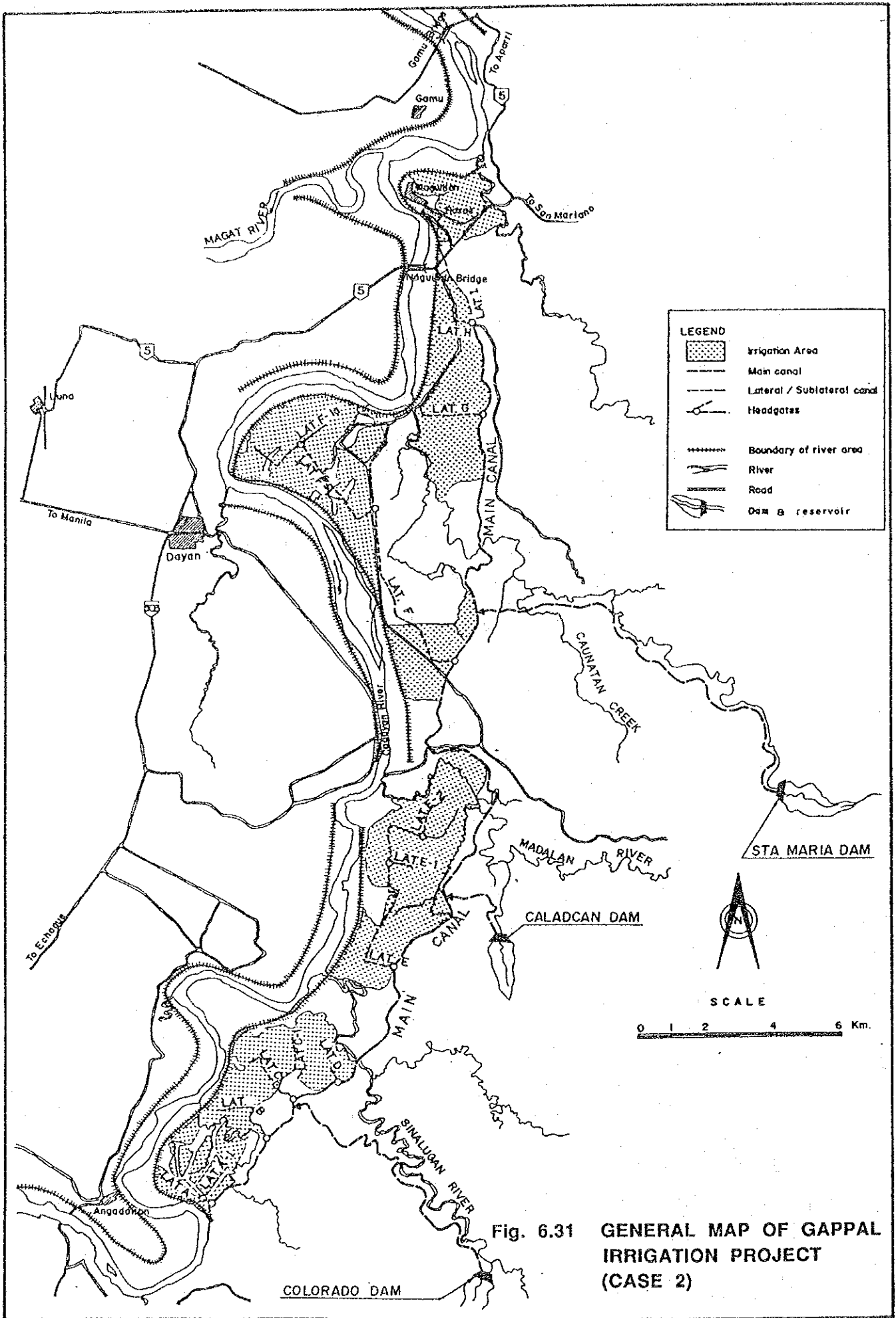


Fig. 6.30 GENERAL MAP OF GAPPAL IRRIGATION PROJECT (CASE 1)



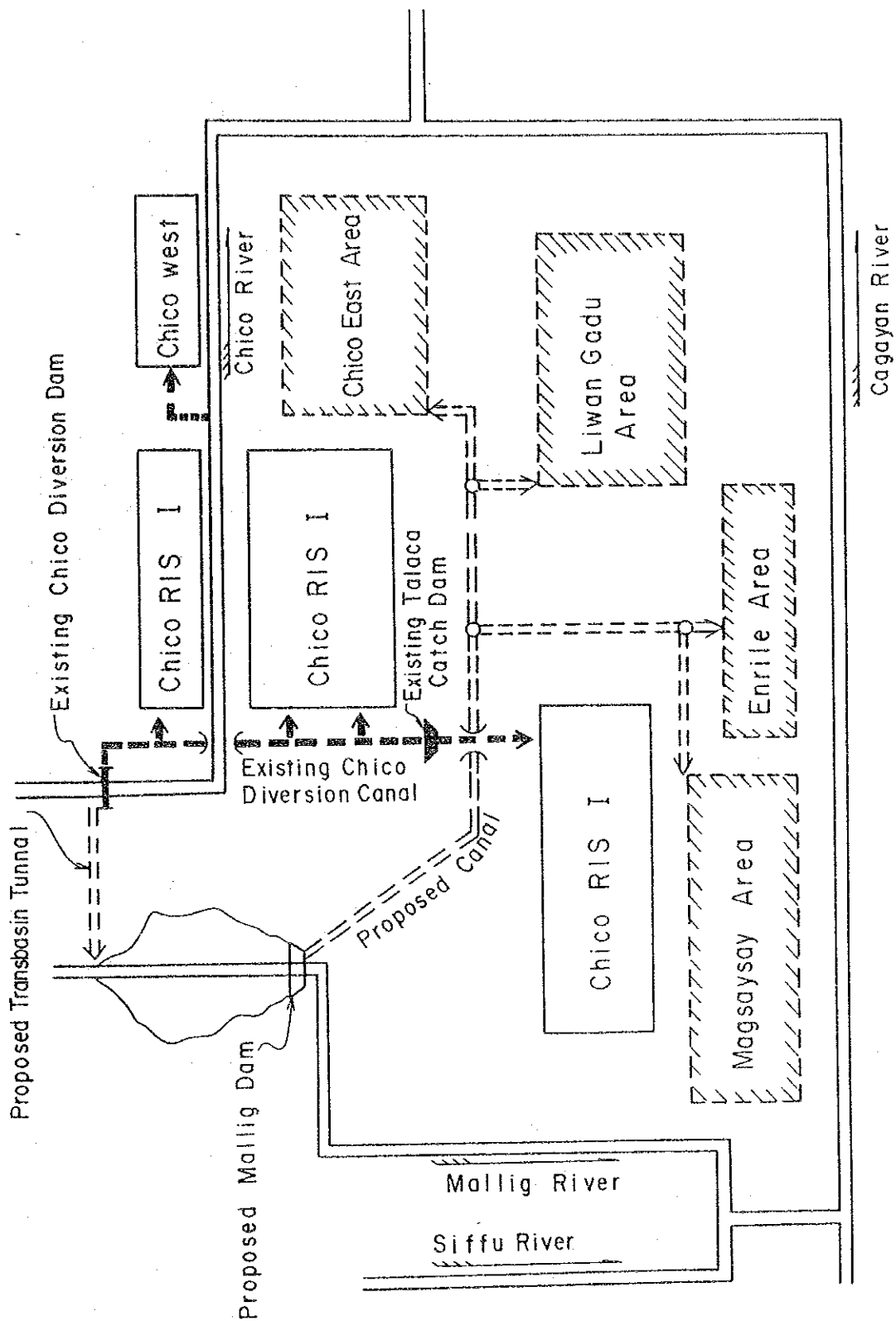


Fig. 6.32 SCHEMATIC LAYOUT OF CHICO-MALLIG IRRIGATION PROJECT

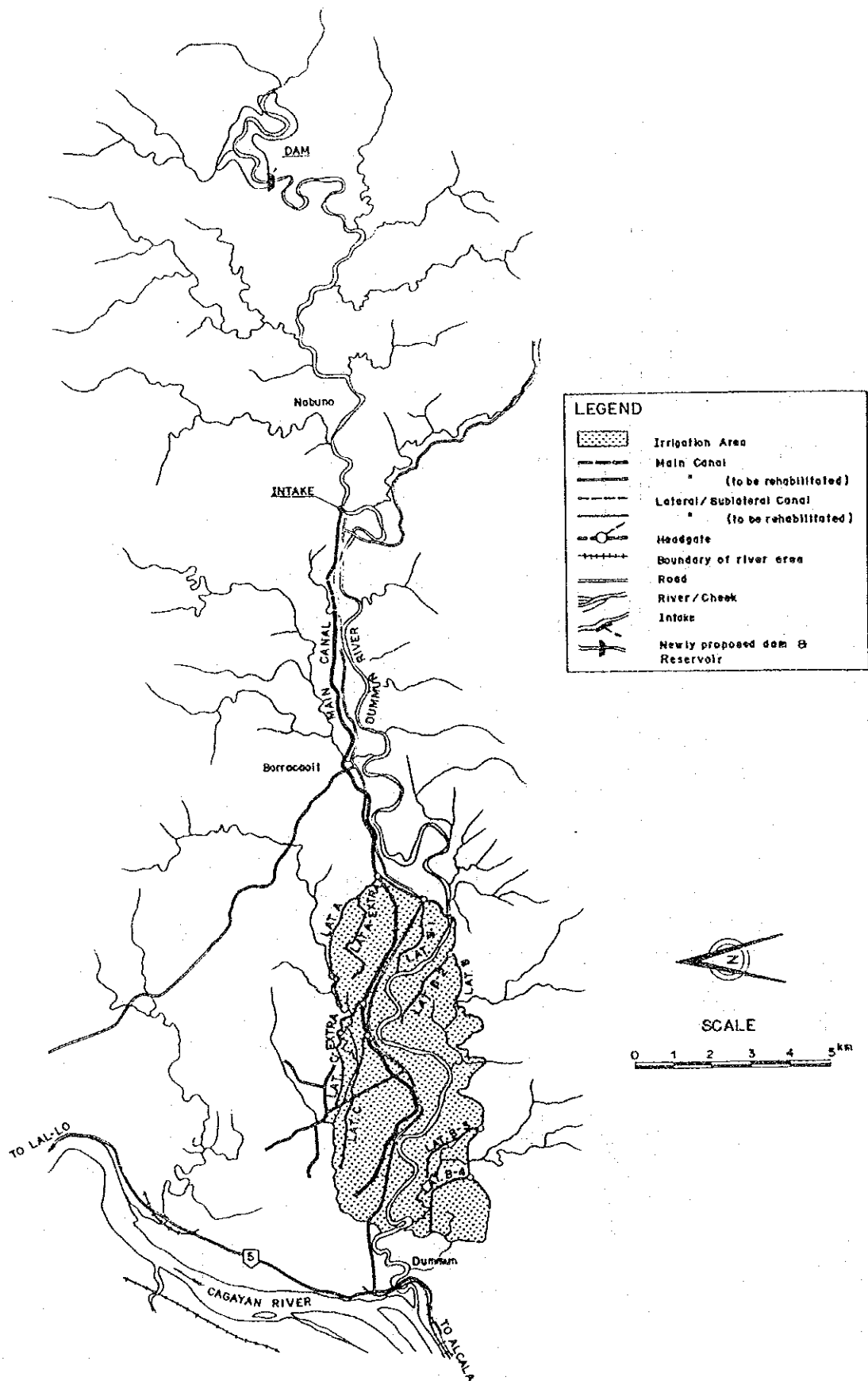


Fig. 6.33 GENERAL MAP OF DUMMUN RIVER IRRIGATION SYSTEM

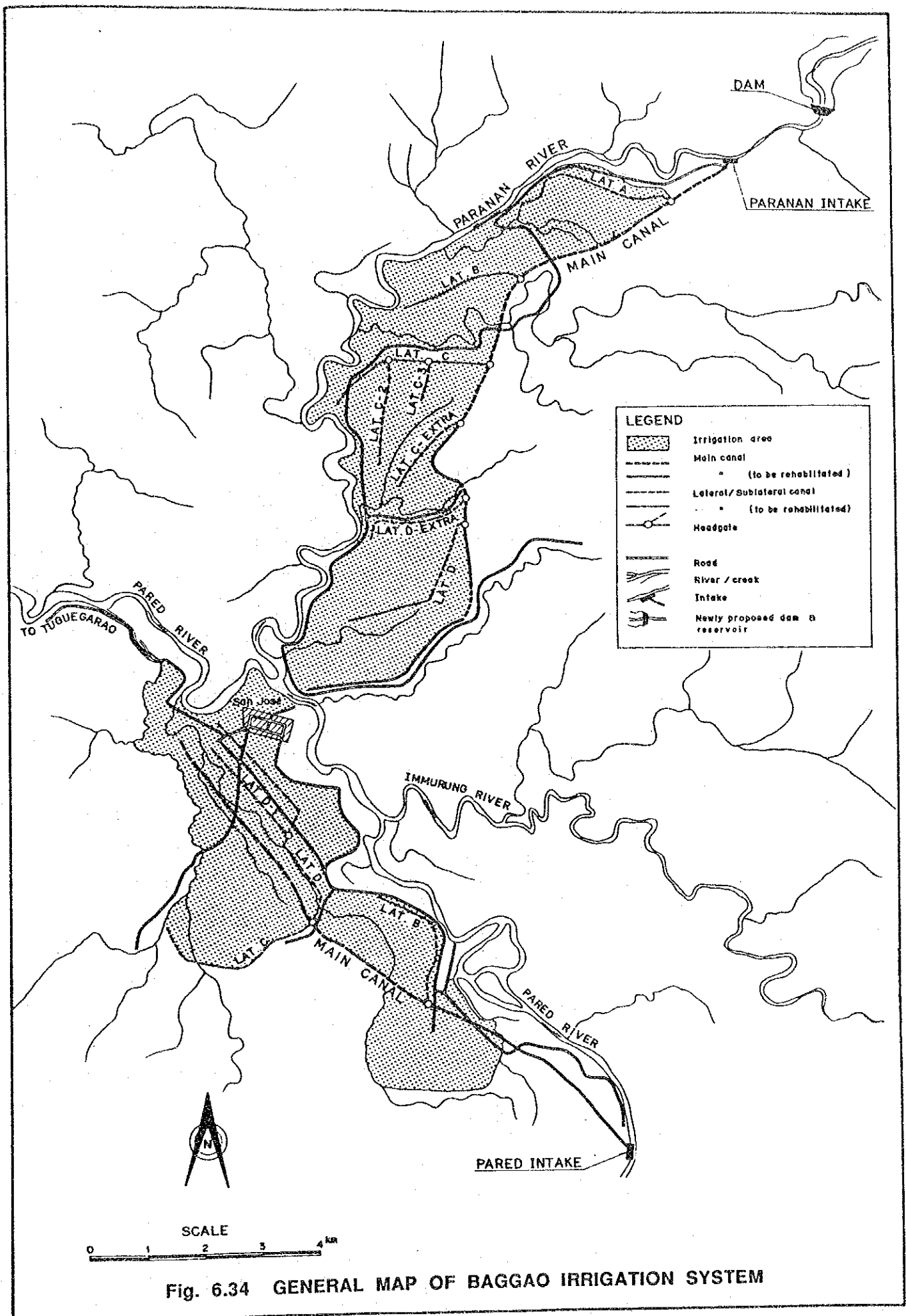


Fig. 6.34 GENERAL MAP OF BAGGAO IRRIGATION SYSTEM

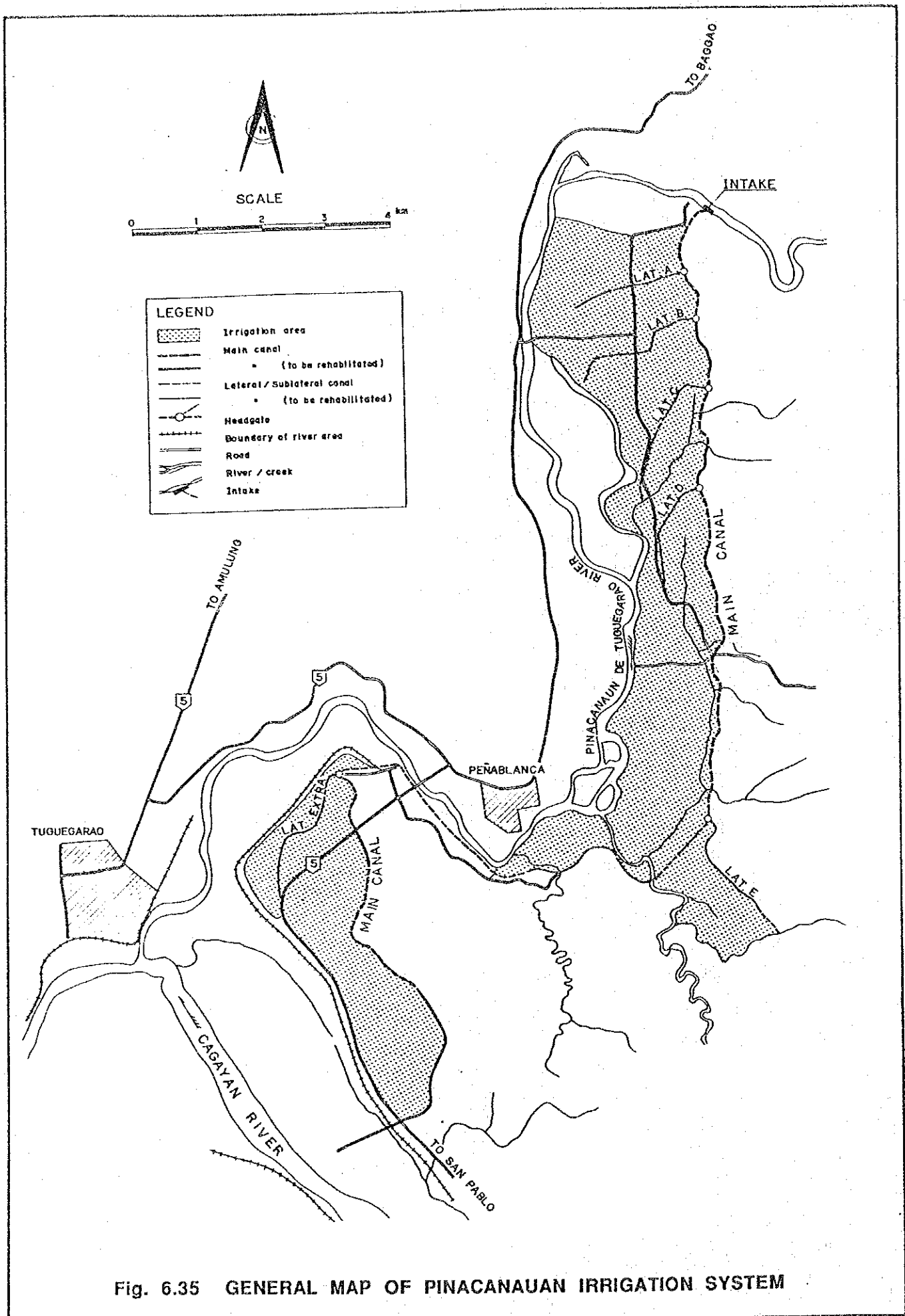


Fig. 6.35 GENERAL MAP OF PINACANAUAN IRRIGATION SYSTEM

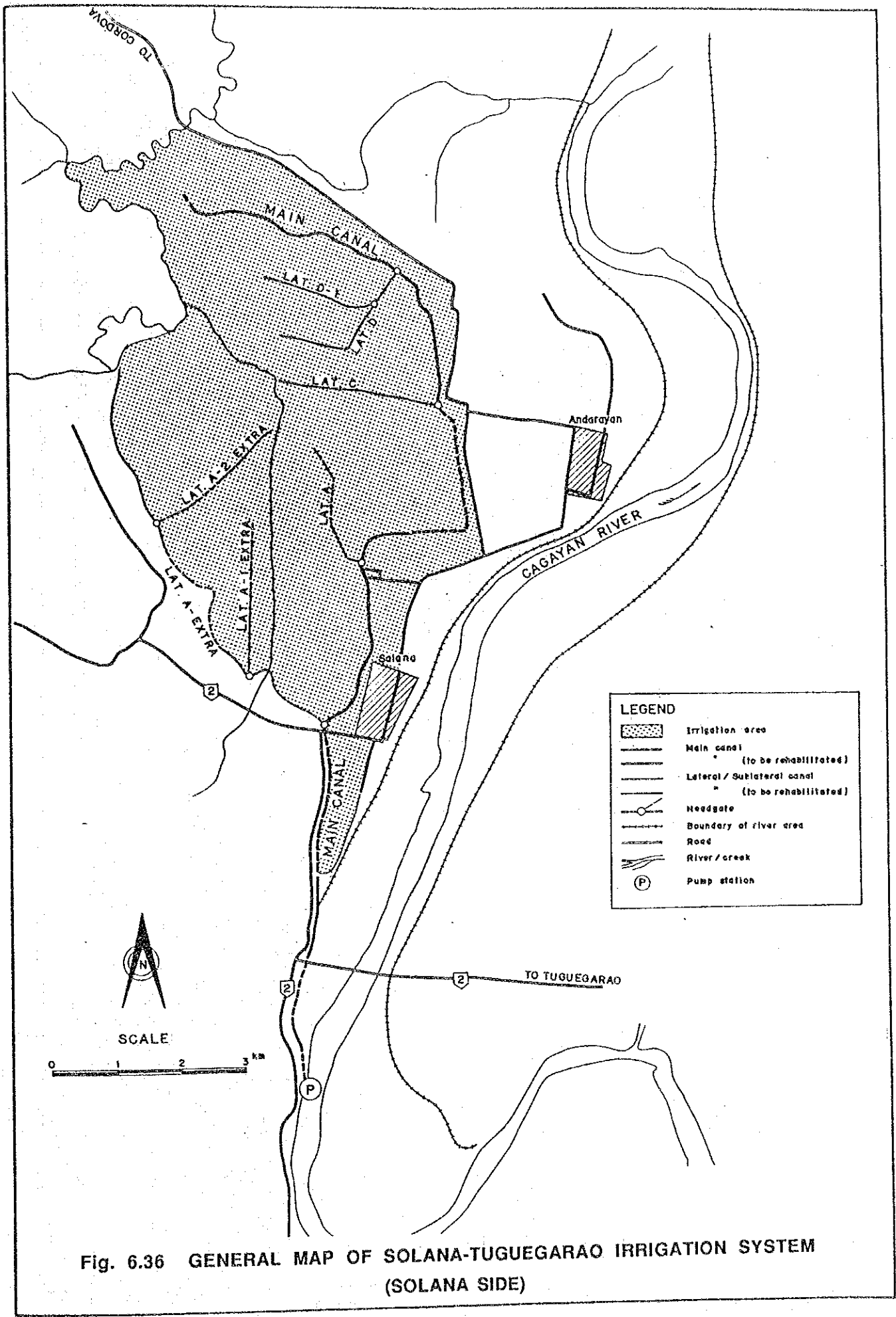


Fig. 6.36 GENERAL MAP OF SOLANA-TUGUEGARAO IRRIGATION SYSTEM (SOLANA SIDE)

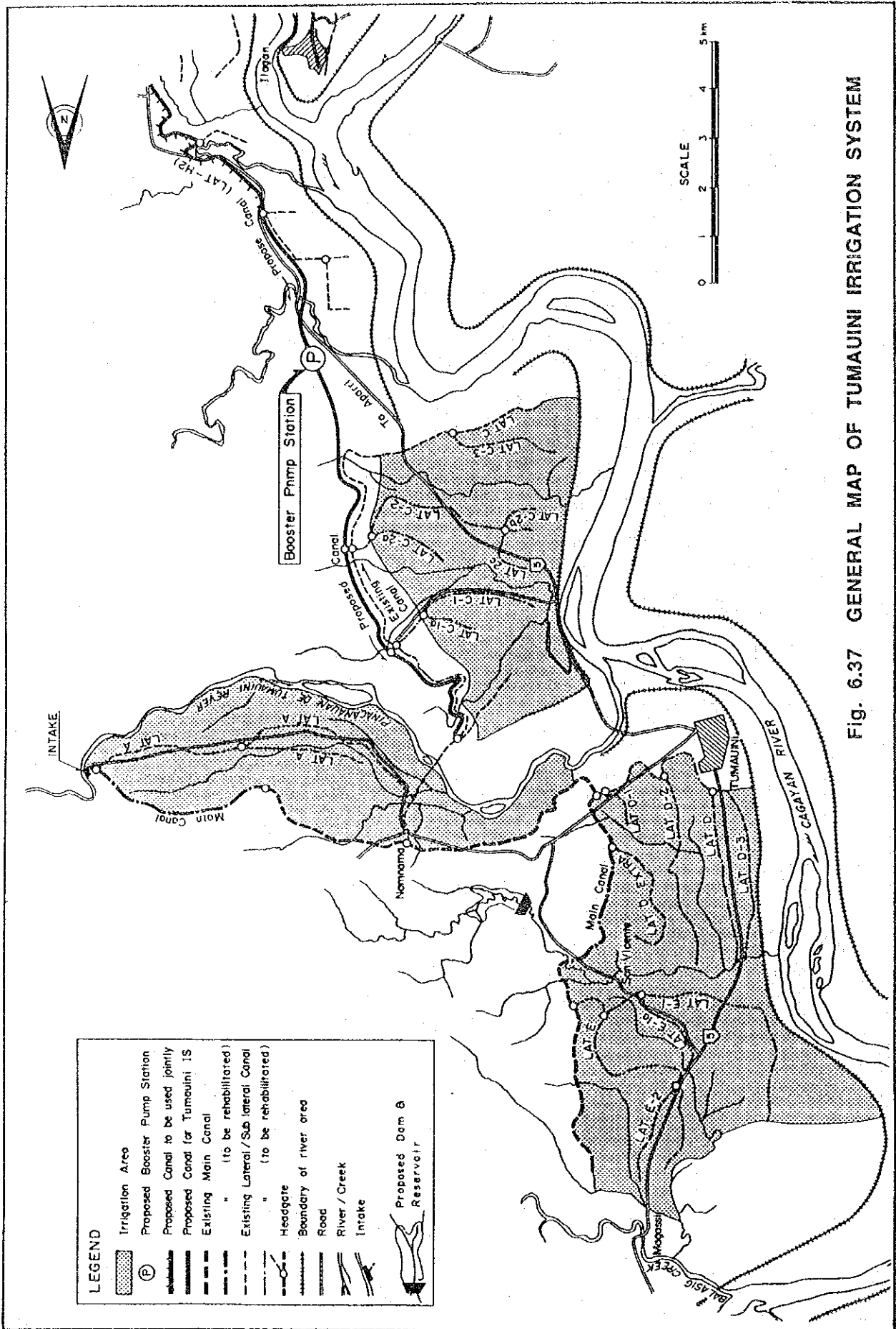


Fig. 6.37 GENERAL MAP OF TUMAUNI IRRIGATION SYSTEM

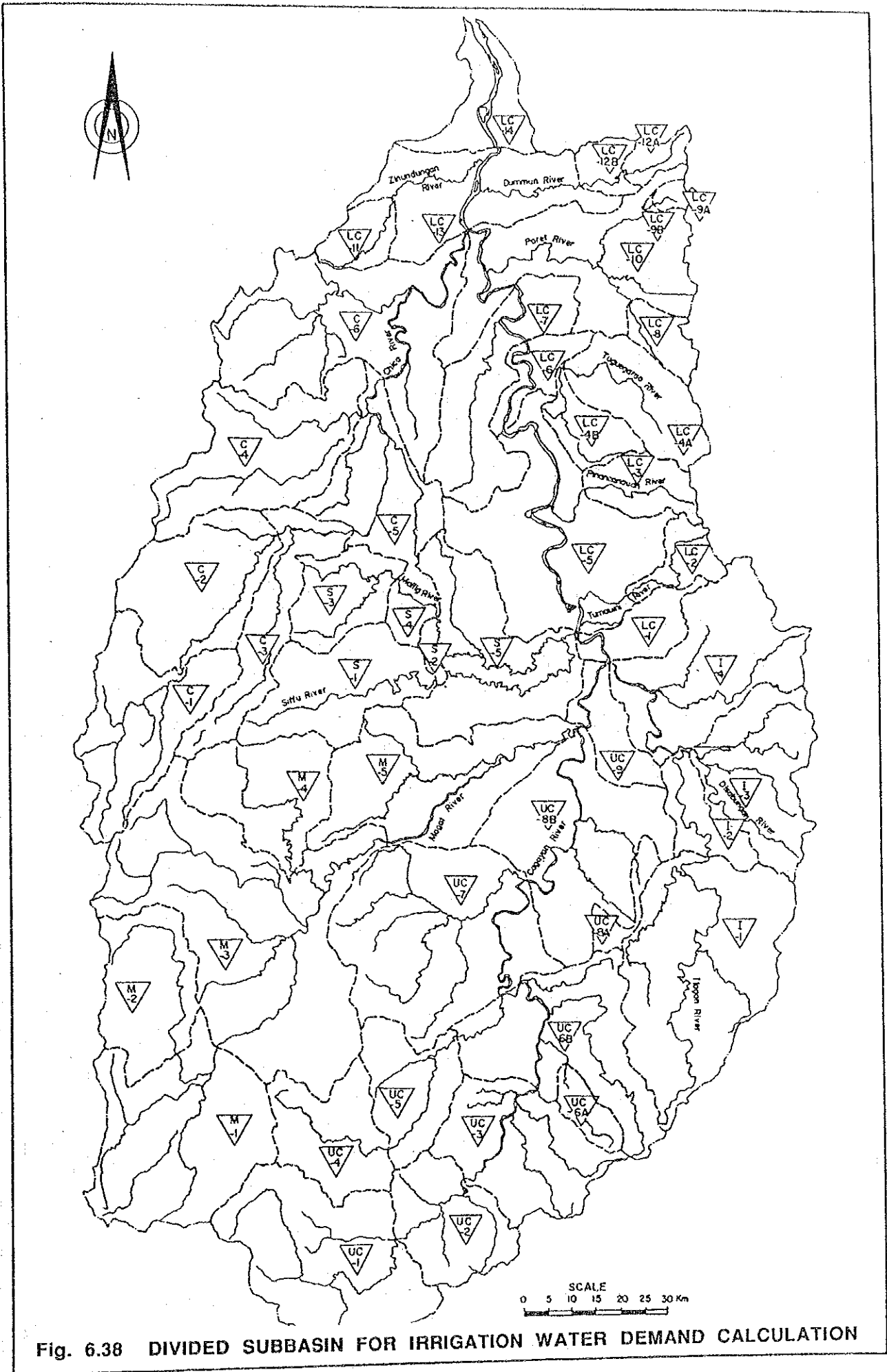


Fig. 6.38 DIVIDED SUBBASIN FOR IRRIGATION WATER DEMAND CALCULATION

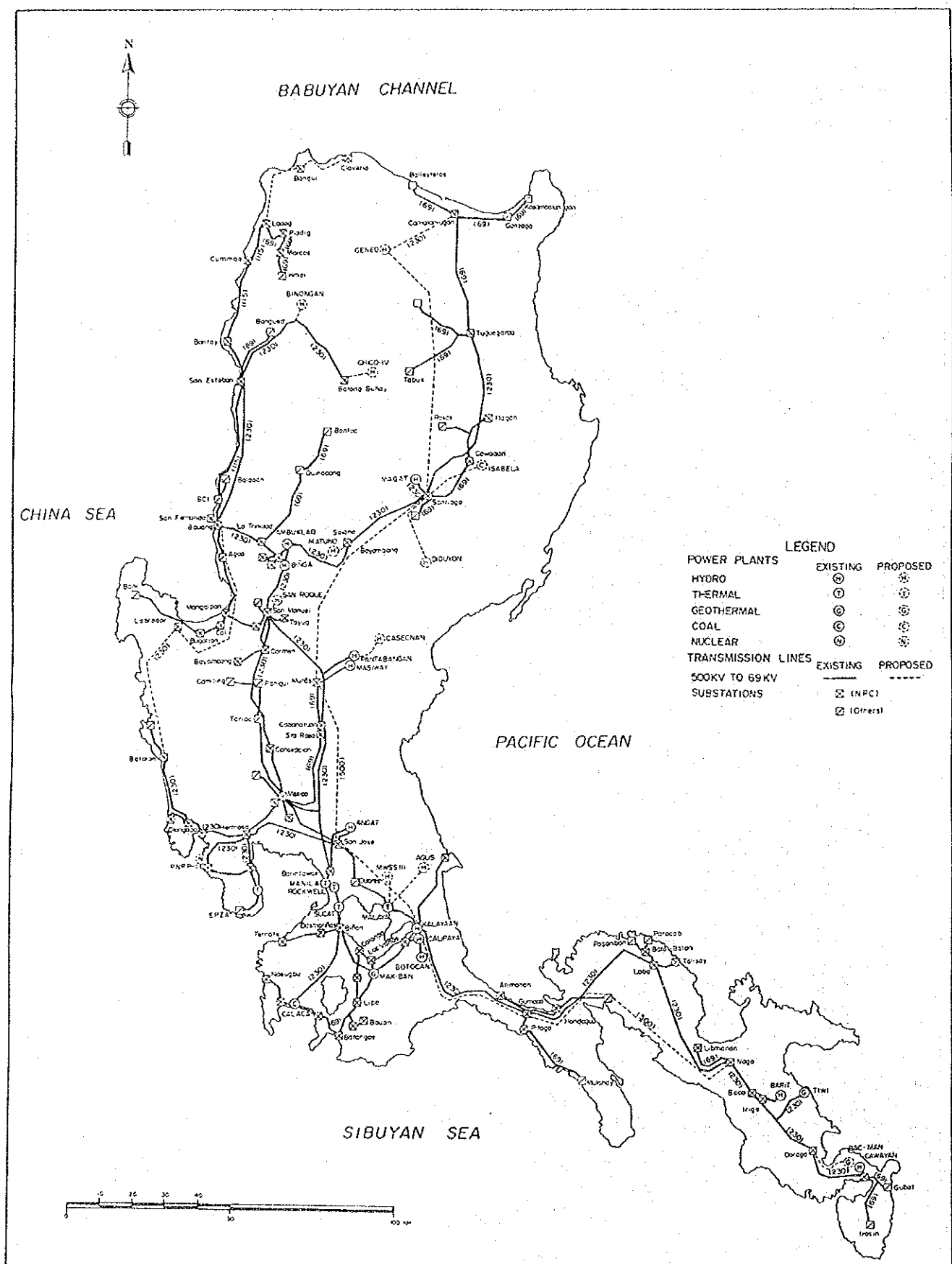


Fig. 7.1 TRANSMISSION LINE SYSTEM IN LUZON GRID

DATE MAY 8, 1986

DAY THURSDAY

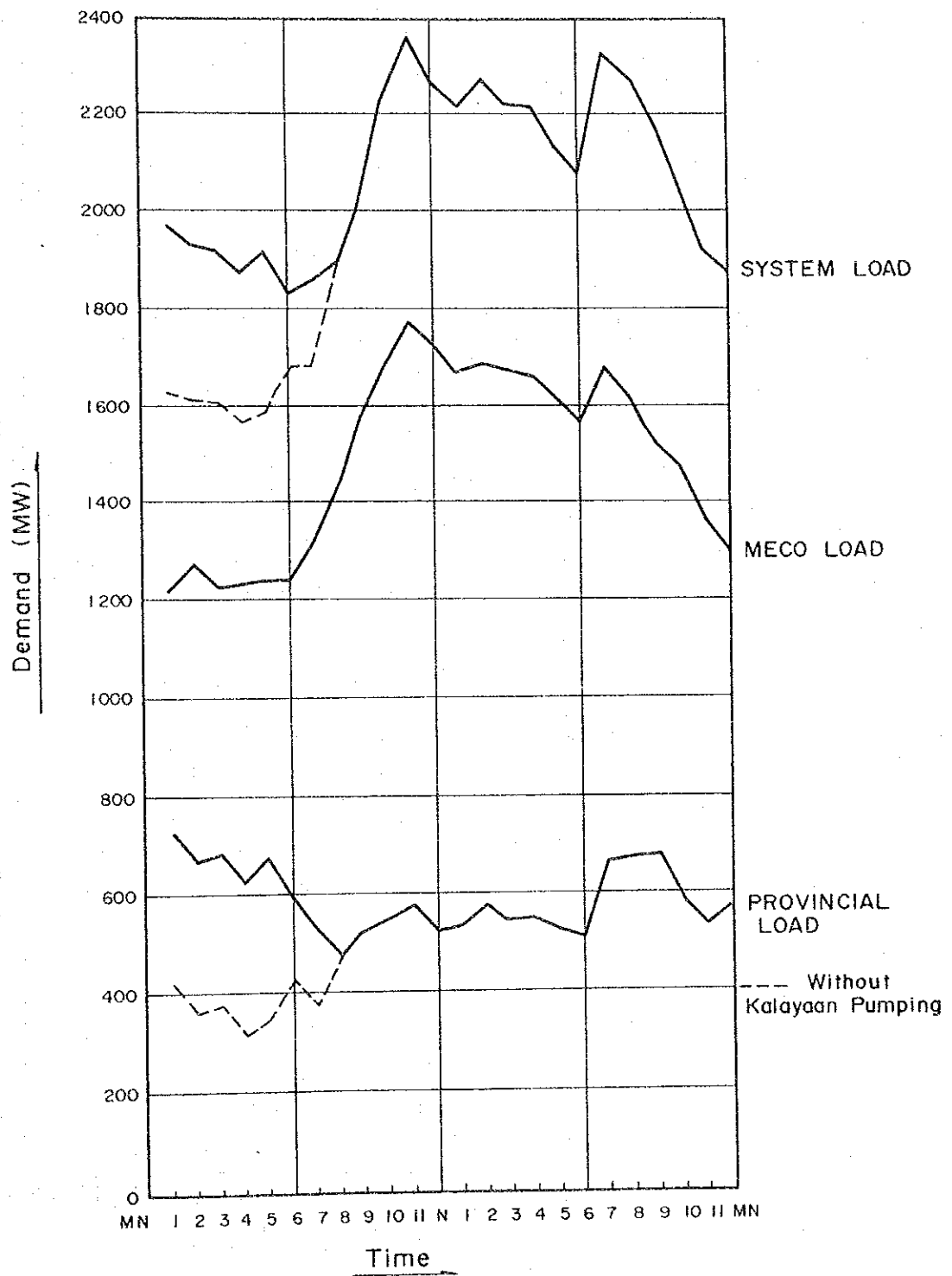


Fig. 7.2 TYPICAL WEEKDAY LOAD CURVE (DRY SEASON 1986)

Daily Load Factor 87.5%

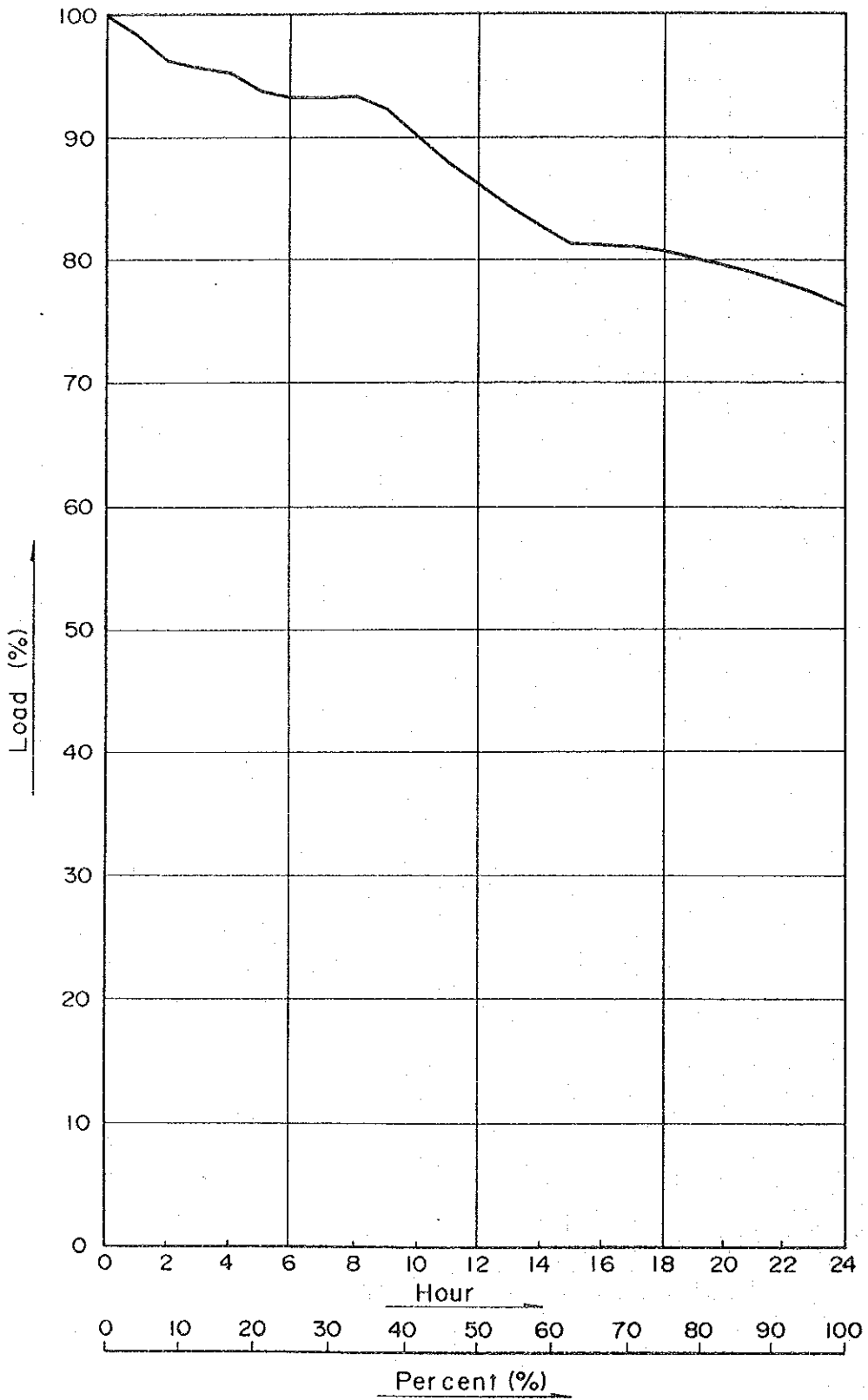


Fig. 7.3 LOAD DURATION CURVE IN LUZON GRID

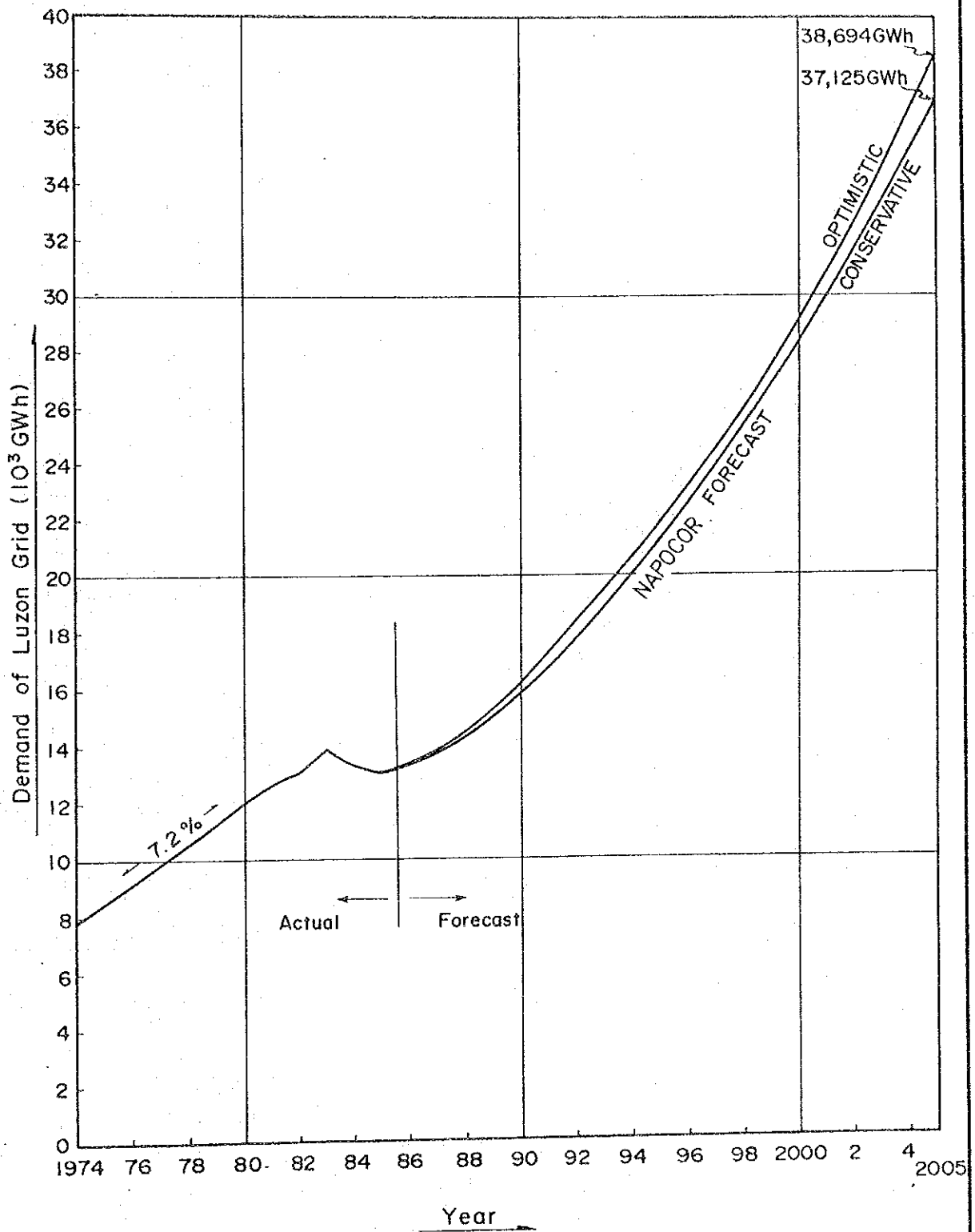


Fig. 7.4 DEMAND FORECAST (NAPOCOR SALES LEVEL)

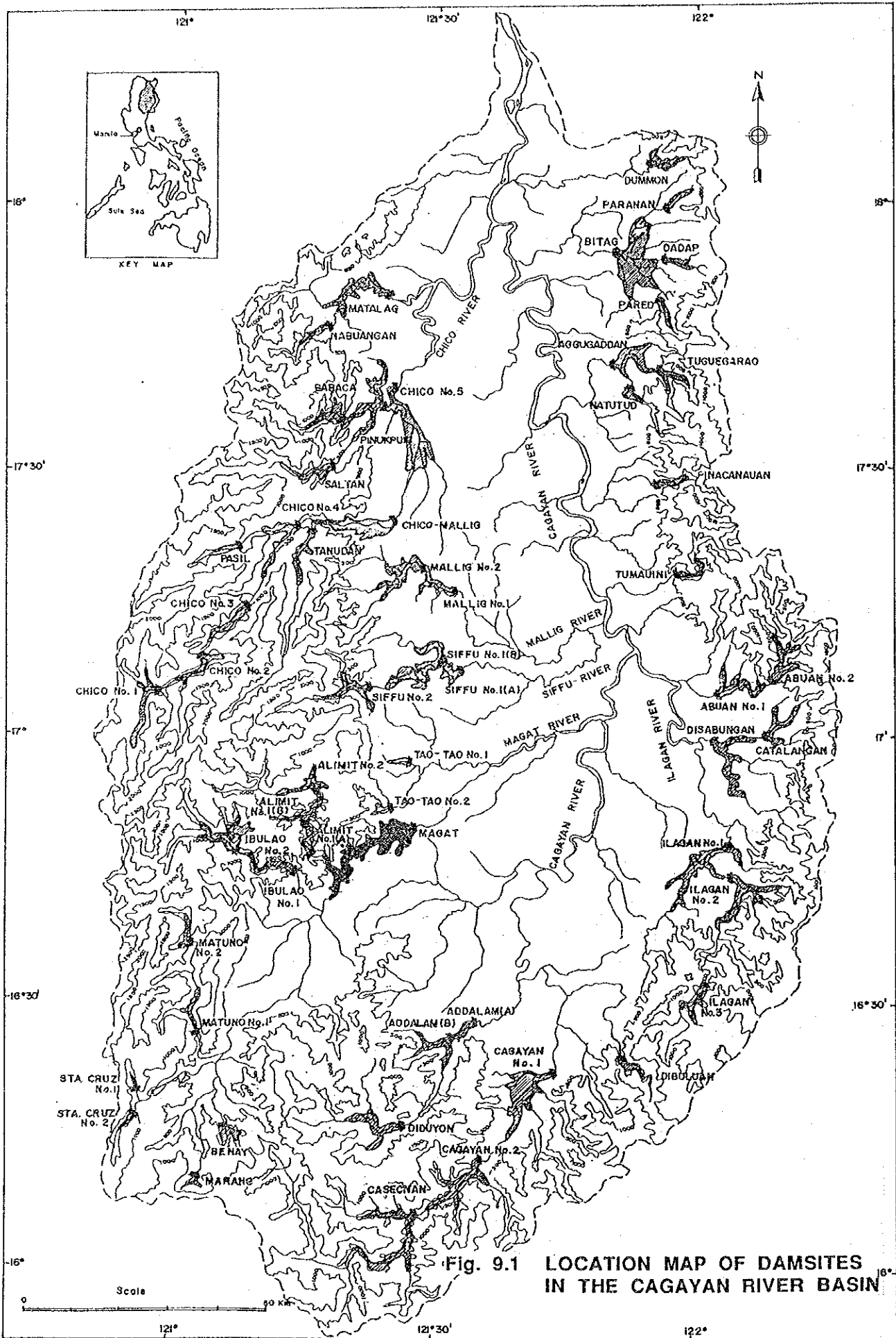


Fig. 9.1 LOCATION MAP OF DAMSITES IN THE CAGAYAN RIVER BASIN

No.	Name of Dam
1	GUISING
2	BULAGAO
3	SAN LUIS
4	ASASSI
5	NABIALAN
6	MAGOGOD
7	MANALO
8	MAROBBOB
9	STA. BARBARA
10	BAYO
11	SAN JUAN
12	LIWAN NORTE
13	KINAMA
14	LIWAN WEST
15	SANTOR
16	MAGLATAC 1
17	MAGLATAC 2
18	MINAGBAG
19	LAGUINDAY
20	BUBUG
21	SAN VICENTE
22	STO. ROSARIO
23	MAUI
24	CARMENCITA
25	MIGUEL
26	MANGGA
27	MALALAO
28	TUROD
29	RANG-AYAN 1
30	RANG-AYAN 2
31	SINAMAR
32	SAN RAFAEL
33	MATUSALEM
34	EDEN
35	MAPAPI
36	MANGCURAM
37	PASA
38	FUYO
39	YEBAN
40	SAN FRANCISCO
41	SONG SONG
42	GUIBANG
43	BAGONG
44	STA. MARIA
45	CALAOGAN
46	BANNAWAG
47	LINGLINGAY
48	COLORADO
49	LOURDES
50	SALVACION
51	SAN FELIPE
52	BACRAOAL
53	SAN SEBASTIAN
54	BELLO
55	FERMIN
56	SAN MARCOS

LEGEND

- = DAMSITES OF SMALL DAM
- = SELECTED DAMSITES IN SCREENING
- △ = POND SITES
- ▲ = SELECTED POND SITES IN SCREENING

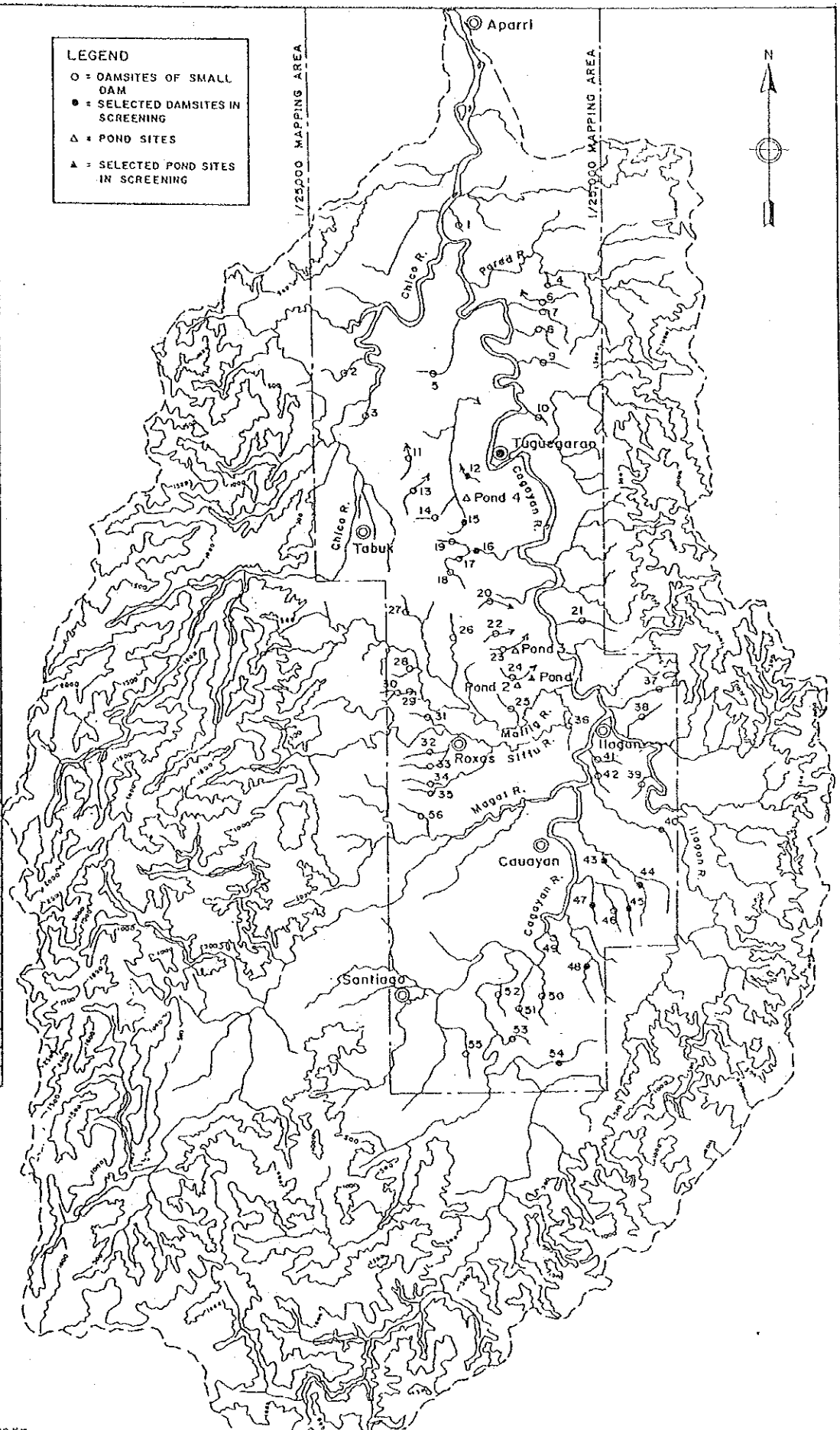


Fig. 9.2 LOCATION MAP OF SMALL DAM AND POND

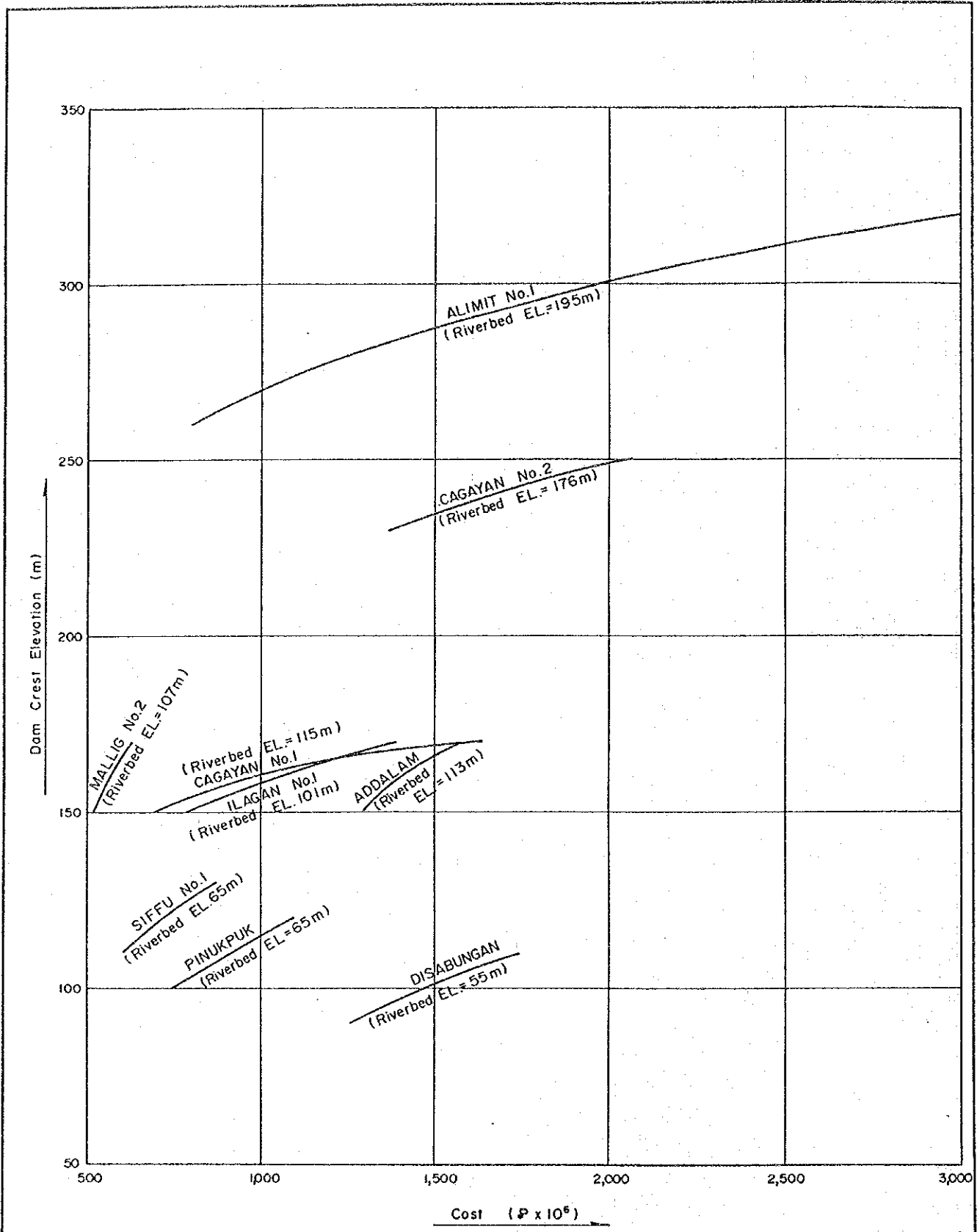


Fig. 9.3 TOTAL CONSTRUCTION COST OF CIVIL WORKS FOR DIVERSION, DAM AND SPILLWAY

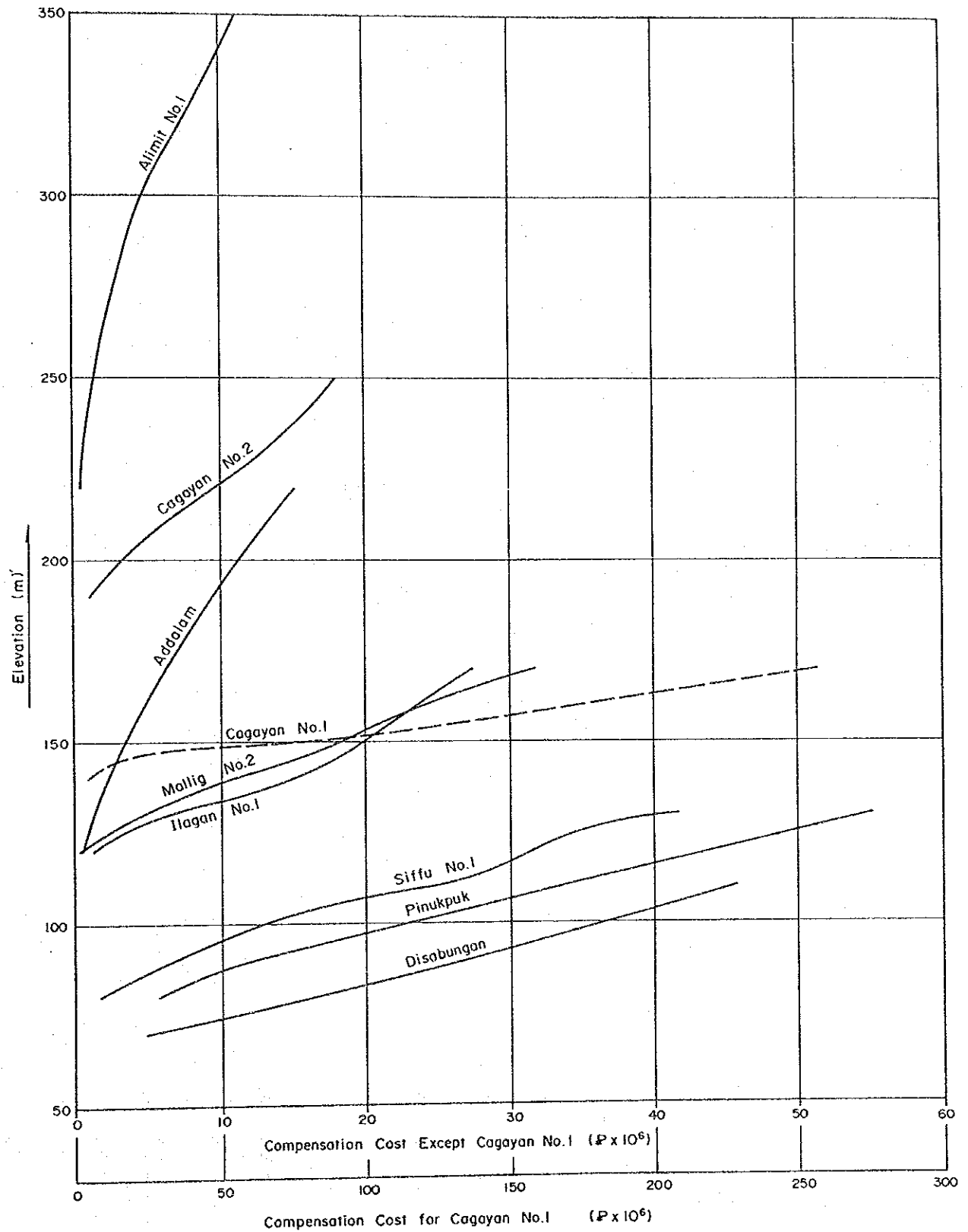
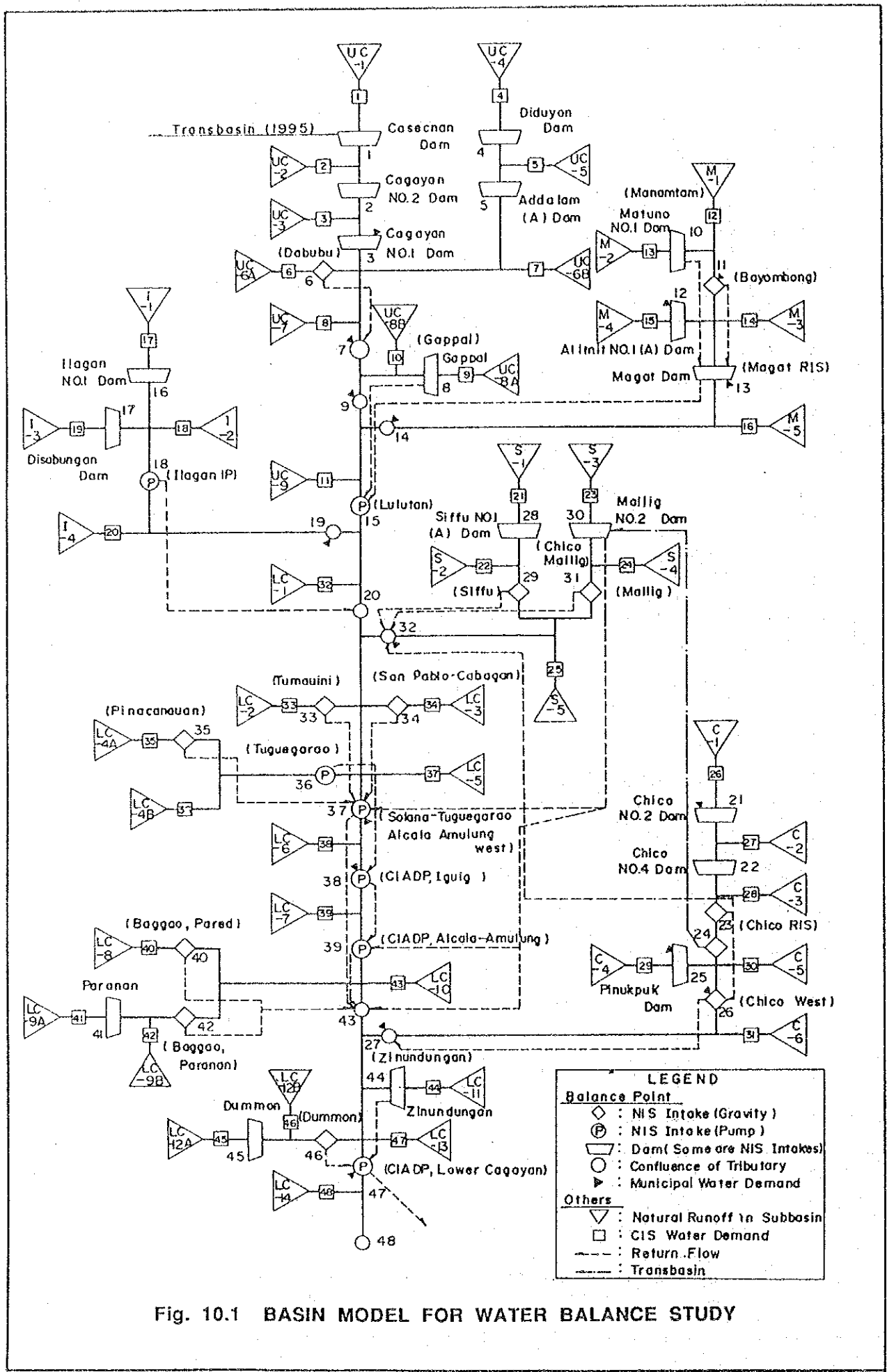
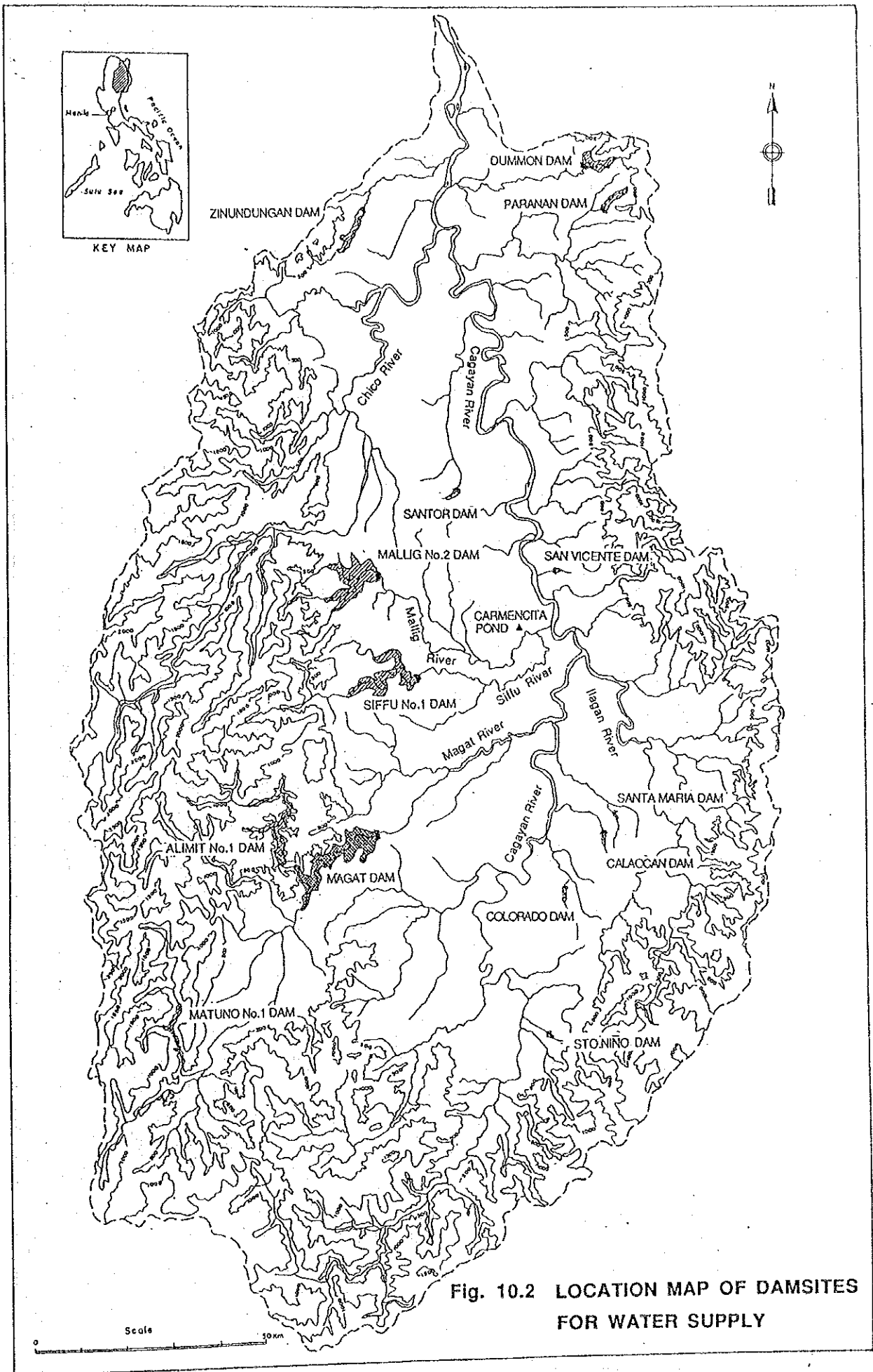


Fig. 9.4 COMPENSATION COST FOR DAM DEVELOPMENT





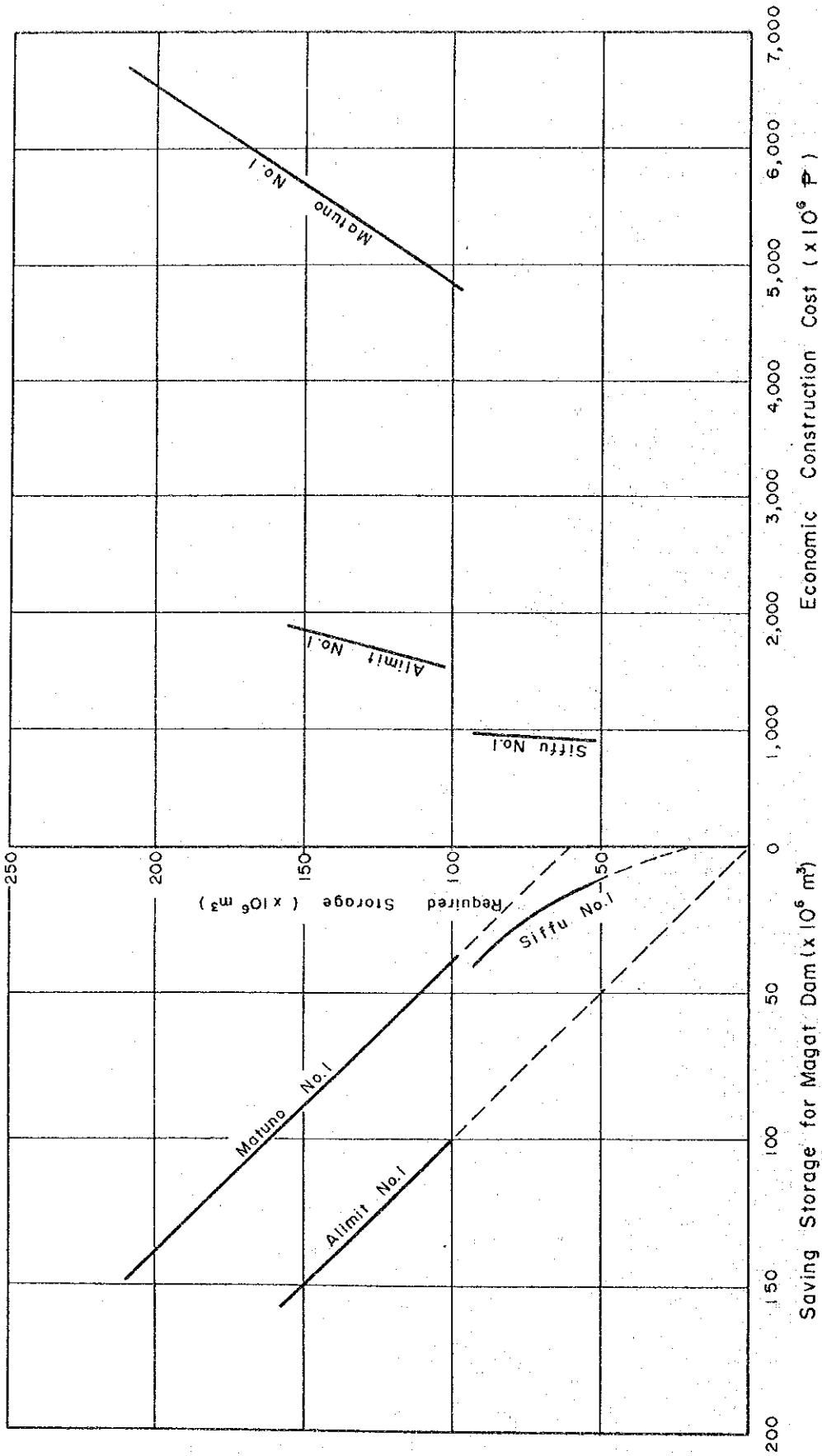


Fig. 11.1 COST ESTIMATE FOR SAVING STORAGE OF MAGAT RESERVOIR

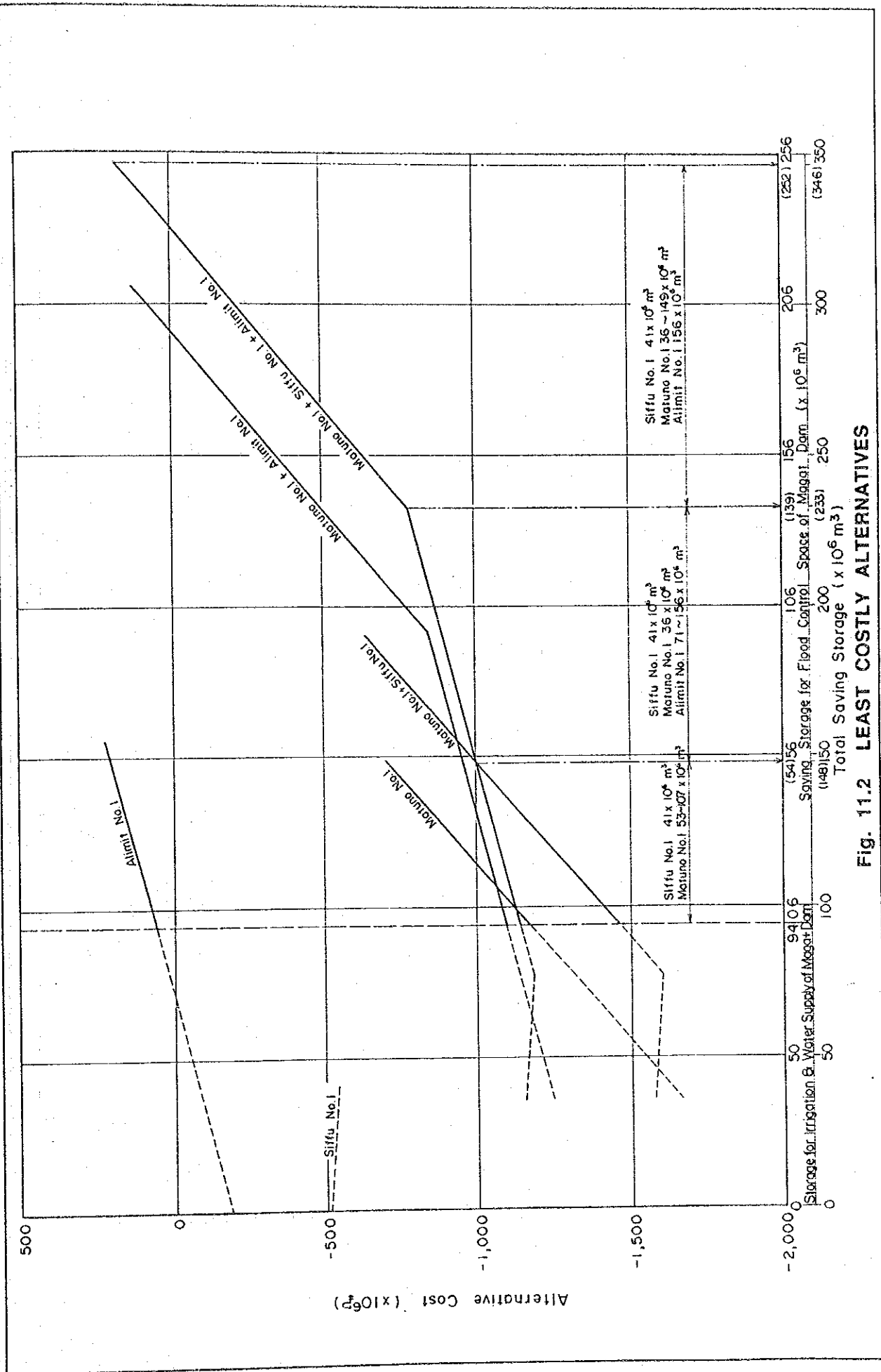


Fig. 11.2 LEAST COSTLY ALTERNATIVES

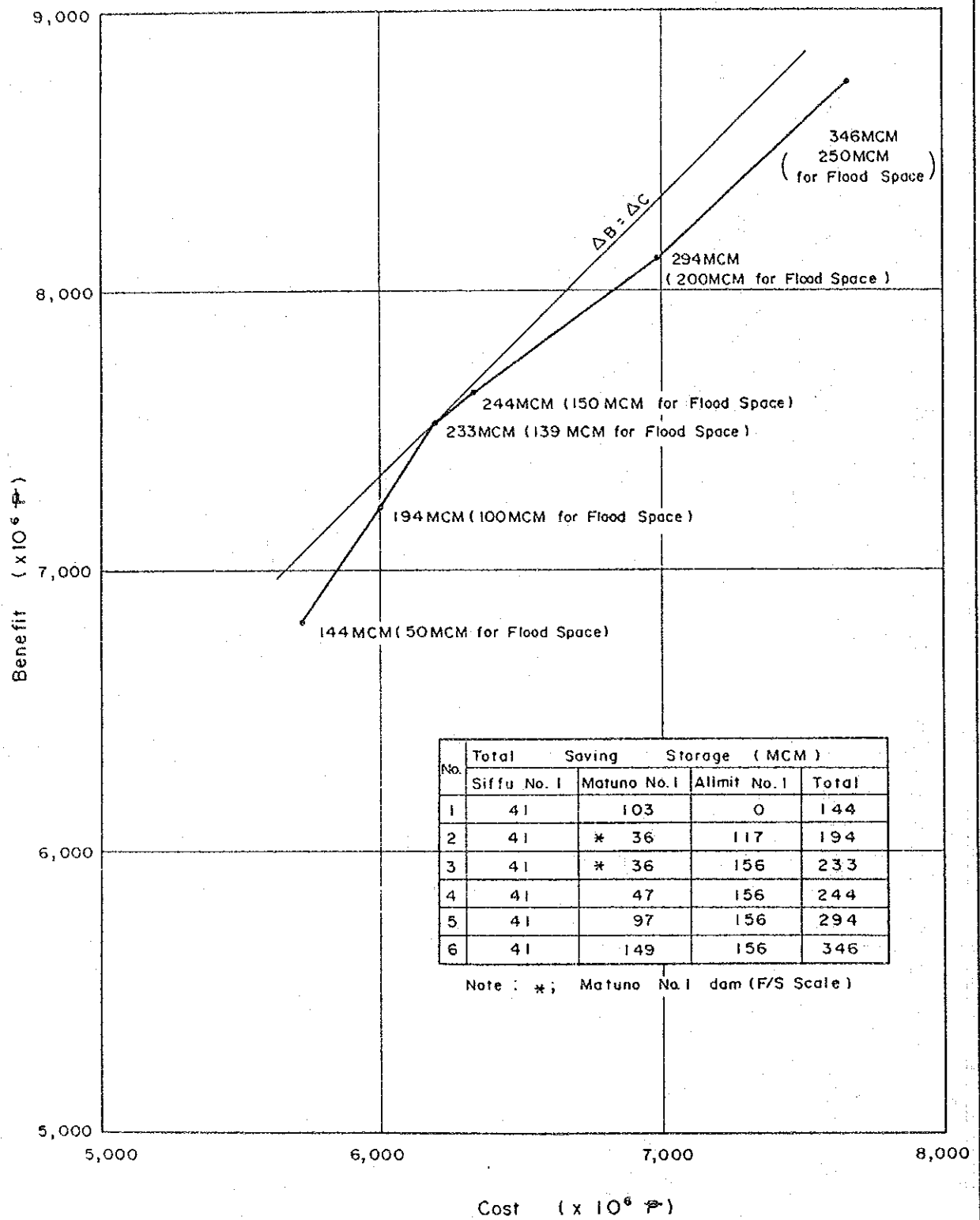


Fig. 11.3 BENEFITS AND COSTS FOR ALTERNATIVE SPACES OF MAGAT RESERVOIR

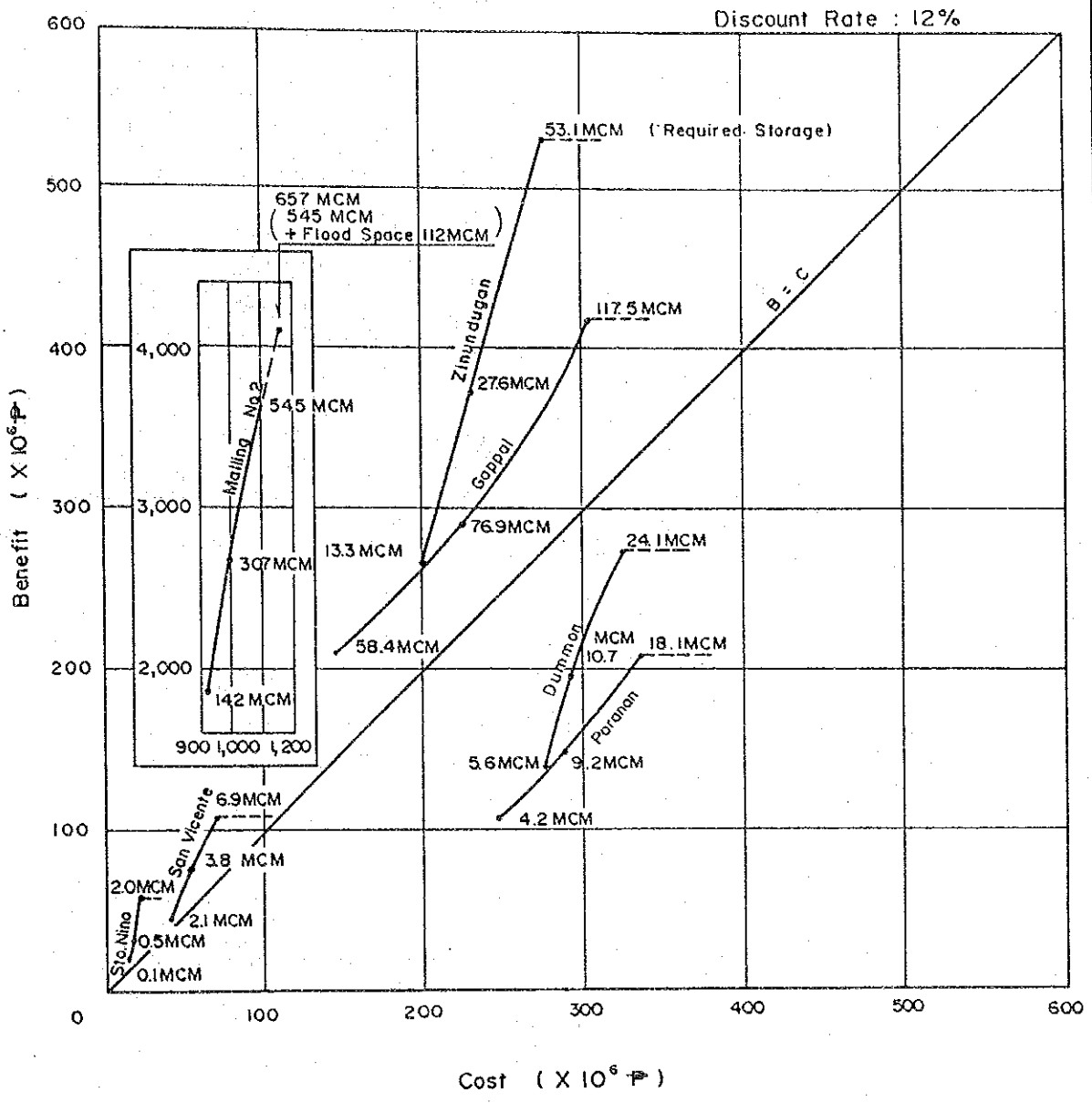


Fig. 11.4 BENEFITS AND COSTS FOR ALTERNATIVE SCALES OF DAM