

**Table 9.3.2 Assessment of Possible Environmental Impacts (Dam No.2)**

**Dam No. 2 Lowland Model Development Project**

Probable / Potential Impacts	During construction stage	During operation stage	Comments / recommended mitigation measures
1. Soil erosion in and around the construction site	2 a-c-e	-	<ul style="list-style-type: none"> <li>• Soil erosion from fresh cuts and fill of soil will be likely.</li> <li>• Proper handling of cut and fill materials shall be enforced thoroughly.</li> <li>• Restoration of disturbed land shall be done as a part of the construction activities.</li> </ul>
2. Alteration or destruction of the habitat of flora and fauna	3	-	<ul style="list-style-type: none"> <li>• The destruction is considered to be minimal because of the small size of reservoir (40 ha).</li> <li>• No endangered species exist in and around the Project area.</li> </ul>
3. Damage to historic, cultural or aesthetic assets	-	-	<ul style="list-style-type: none"> <li>• No such site exists nearby.</li> </ul>
4. Effects on farm lands, houses / building and infrastructure due to creation of reservoir	2 a-d-f	-	<ul style="list-style-type: none"> <li>• Population in and around the proposed dam and reservoir site will be affected.</li> <li>• Further consultation and negotiation with the affected population is necessary until the implementation of the project.</li> <li>• Proper compensation to the affected population, either in cash or in kind, is a must for their future livelihood.</li> </ul>
5. Alteration or loss of farm land	3	-	<ul style="list-style-type: none"> <li>• Some hectare of farm land will be lost due to the creation of reservoir and the construction of canals and roads.</li> <li>• Consultation with the affected population is necessary to avoid future conflict on land.</li> </ul>
6. Deterioration of water quality	3	3	<ul style="list-style-type: none"> <li>• IPM or proper use of pesticide will be included in the improved farming practices to be introduced through the project implementation. Thus the deterioration of water quality is unlikely or minimal.</li> </ul>
7. Reduction of downstream flows that affect downstream ecology and users of water	-	3	<ul style="list-style-type: none"> <li>• Catchment area of the dam is small (1.8 km<sup>2</sup>) relative to that of the whole river system</li> </ul>
8. Increase of downstream flows (drainage water from farms) affecting communities	-	3	<ul style="list-style-type: none"> <li>• Unlikely</li> </ul>
9. Conflicts over inequalities in water distribution throughout service area	-	3	<ul style="list-style-type: none"> <li>• Proper water management by irrigation service association could minimize such conflict.</li> </ul>
10. Increased incidence of water-related diseases	-	3	<ul style="list-style-type: none"> <li>• None or minimal.</li> </ul>
11. Increase of construction-related employment opportunity	5 a-c	-	<ul style="list-style-type: none"> <li>• The construction works will provide temporary job opportunity to the villagers nearby.</li> </ul>
12. Increase of crop production (which results in the increase of farm income)	-	4 a-d	<ul style="list-style-type: none"> <li>• The biggest positive effect of the project.</li> <li>• This will lead to higher living standard of the population.</li> </ul>
13. Increase of agricultural-related employment opportunity	-	4 b-d	<ul style="list-style-type: none"> <li>• Employment opportunity in marketing of inputs and outputs, processing, etc. will be increased substantially.</li> </ul>

Remarks

- | Significance of impact      |
|-----------------------------|
| 1. Significant (negative)   |
| 2. Moderate (negative)      |
| 3. Insignificant (negative) |
| 4. Significant (positive)   |
| 5. Moderate (positive)      |
| 6. Insignificant (positive) |

- | Characteristics of impact |
|---------------------------|
| a. Direct                 |
| b. Indirect               |
| c. Short term             |
| d. Long term              |
| e. Reversible             |
| f. Irreversible           |

The features of impacts are indicated as follow:

- 1 meaning that the impact would be significant (negative), direct, short term, and reversible.
- a-c-e
- 4 meaning that the impact would be significant (positive), direct, long term, and reversible.
- a-d-e

The characteristics of insignificant impacts are not indicated.

**THE FEASIBILITY STUDY ON  
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***FIGURES***

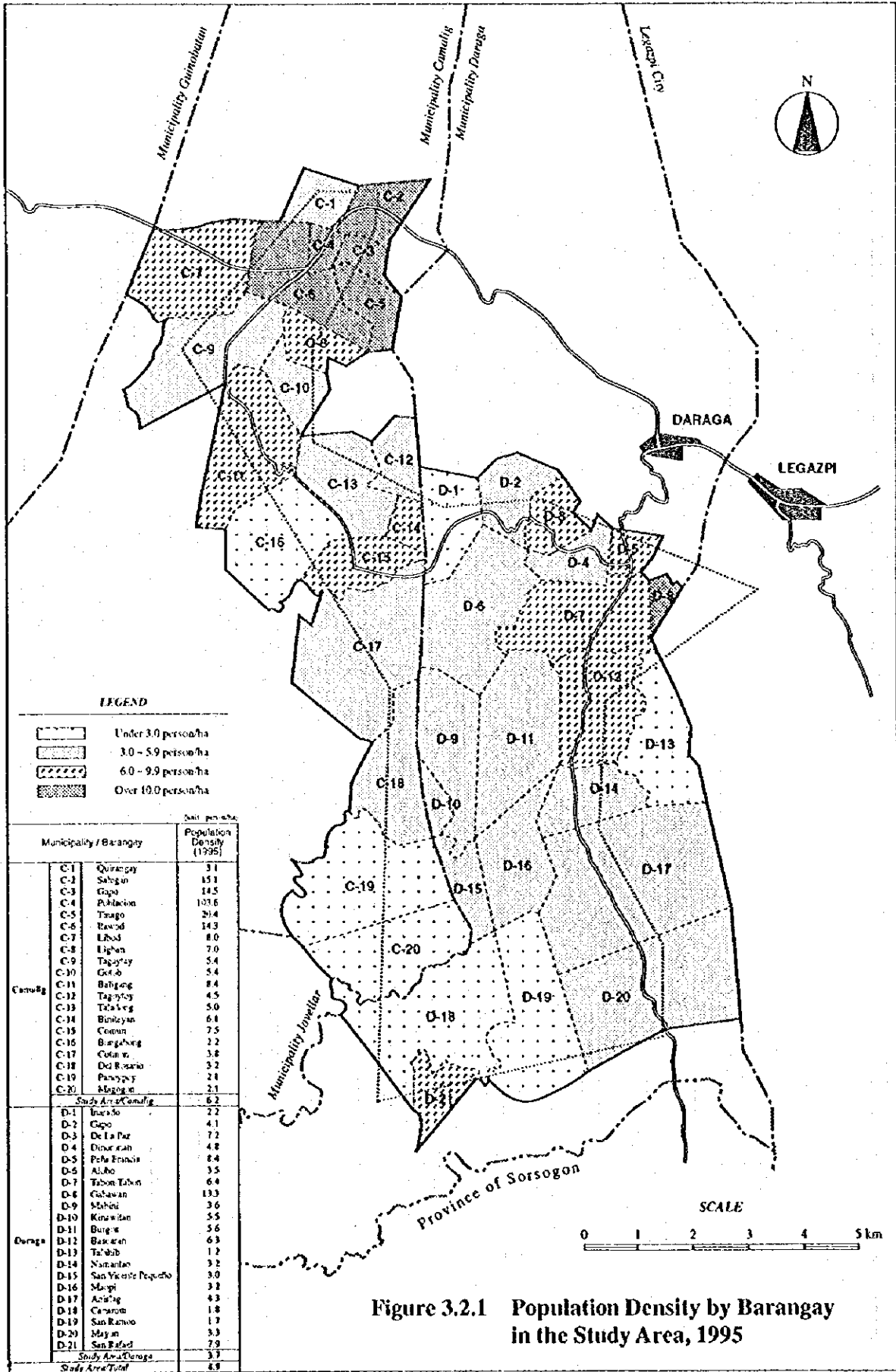


Figure 3.2.1 Population Density by Barangay in the Study Area, 1995

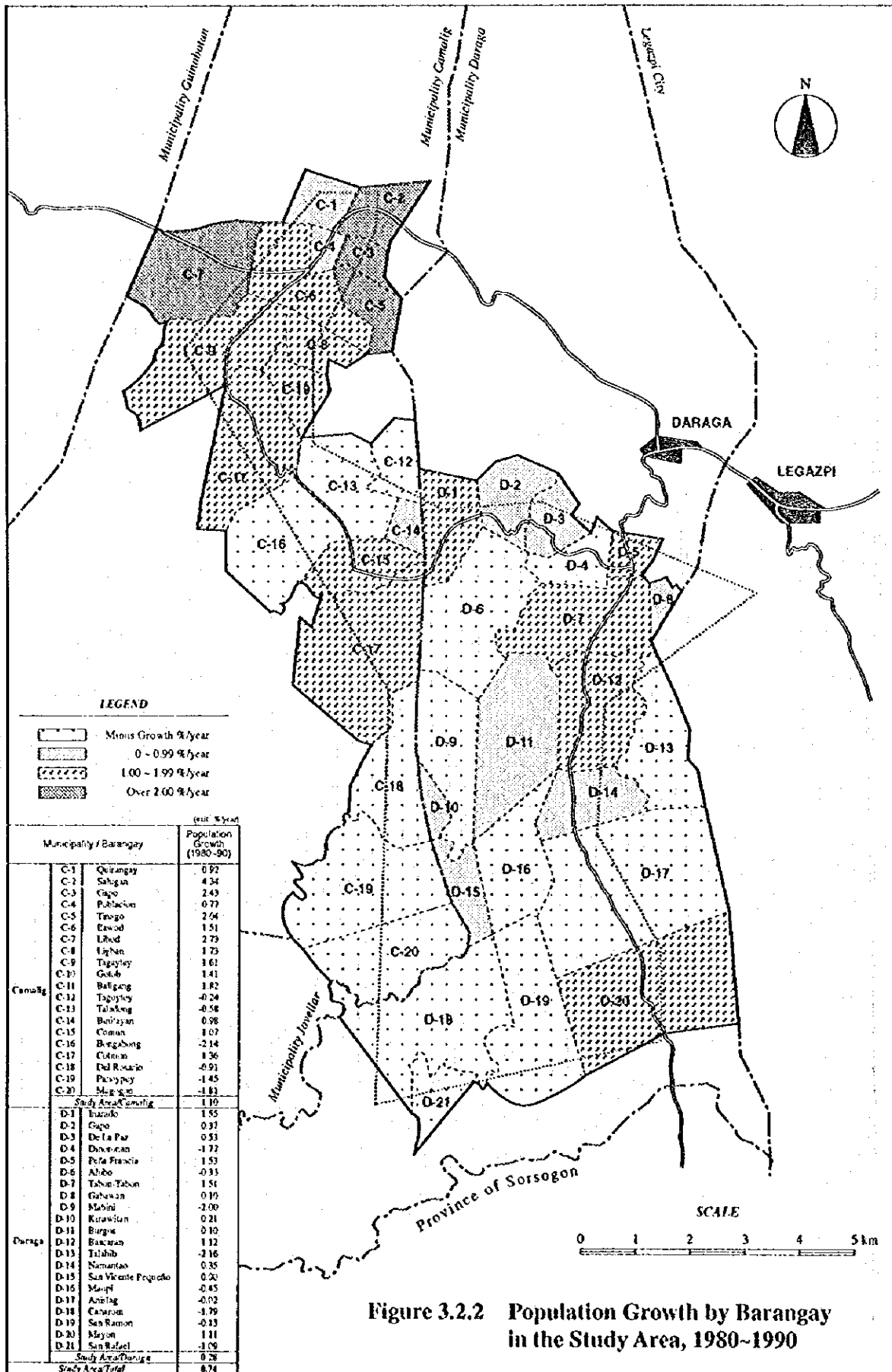


Figure 3.2.2 Population Growth by Barangay in the Study Area, 1980-1990

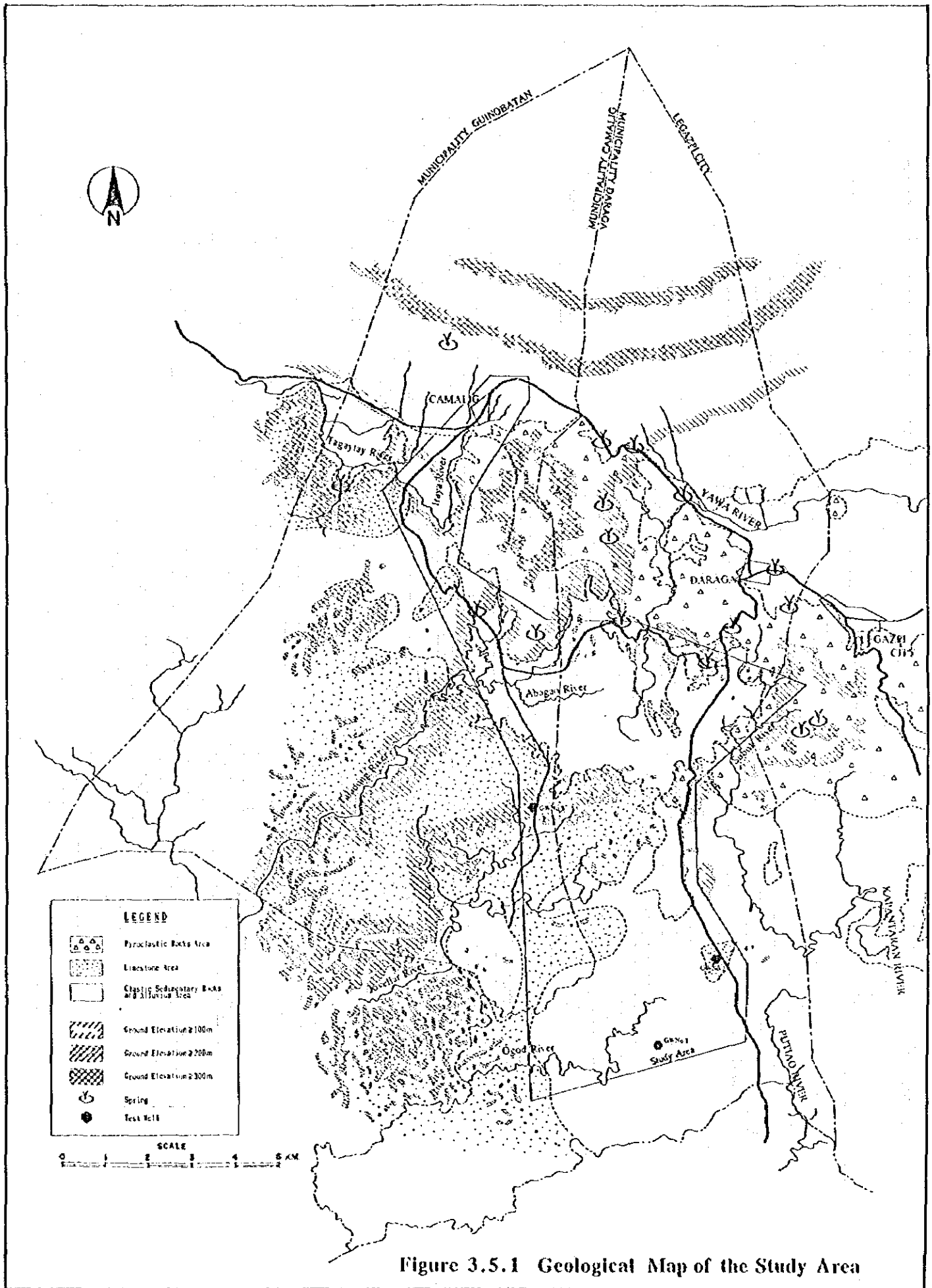


Figure 3.5.1 Geological Map of the Study Area

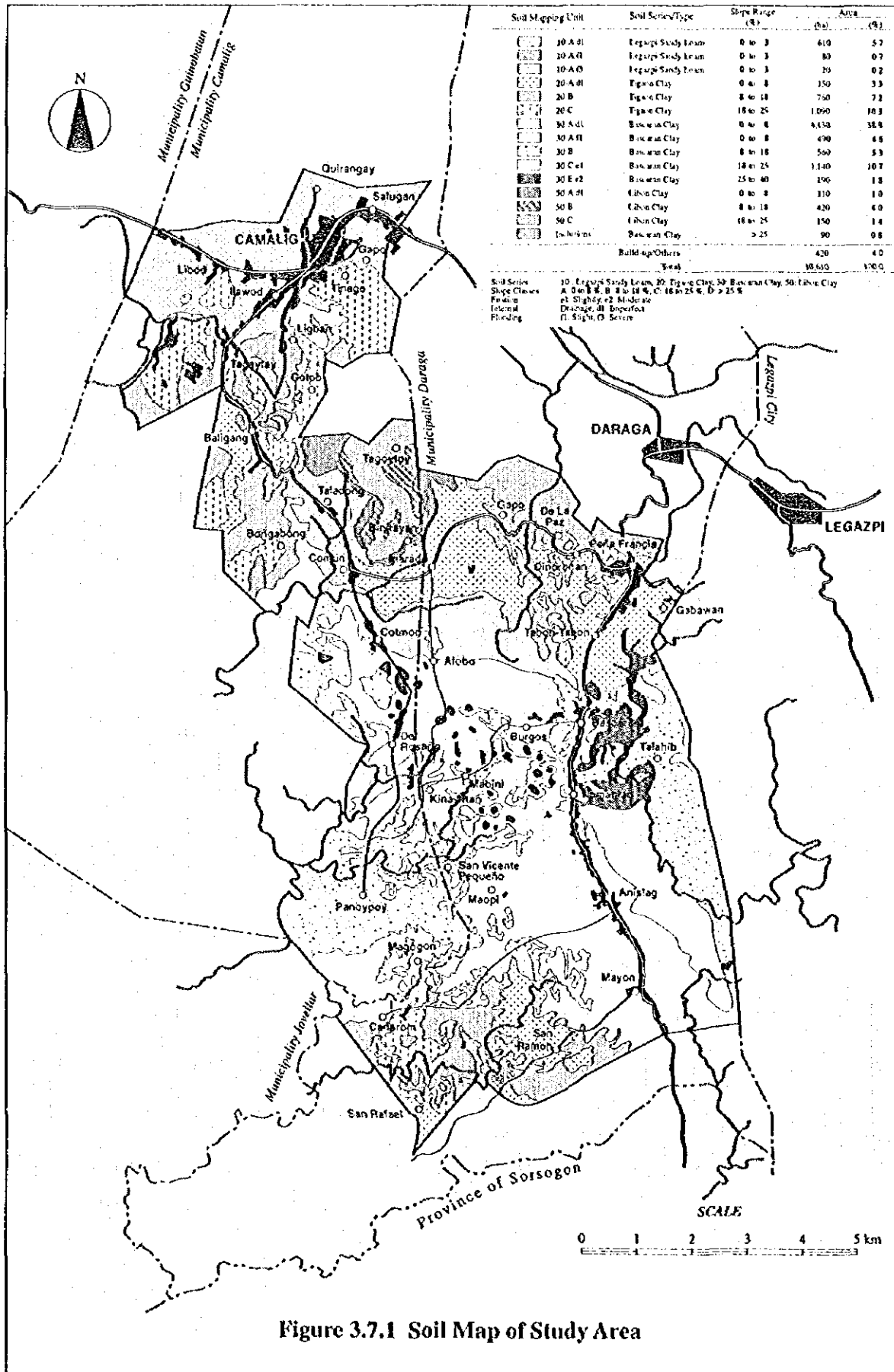
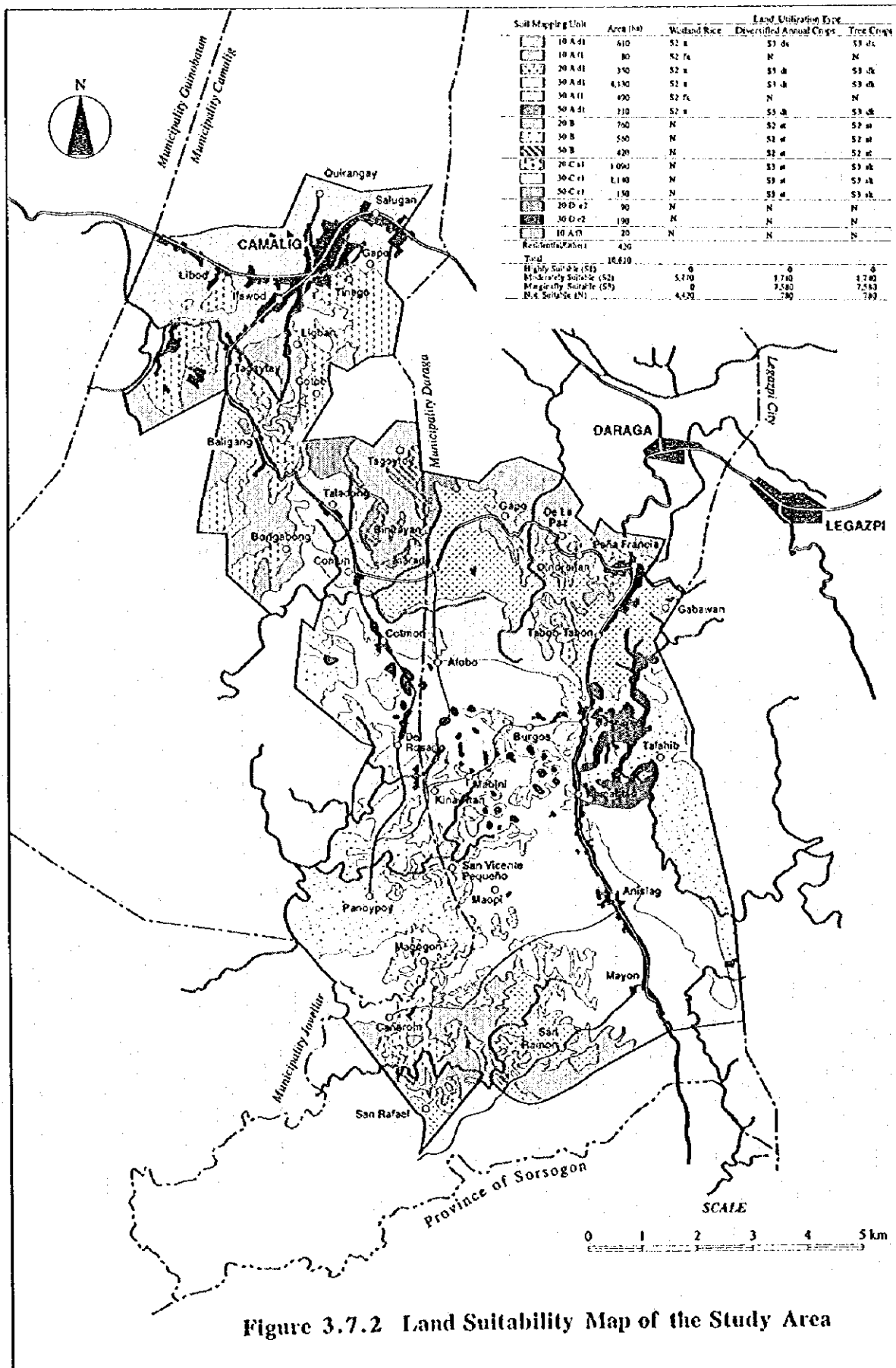


Figure 3.7.1 Soil Map of Study Area



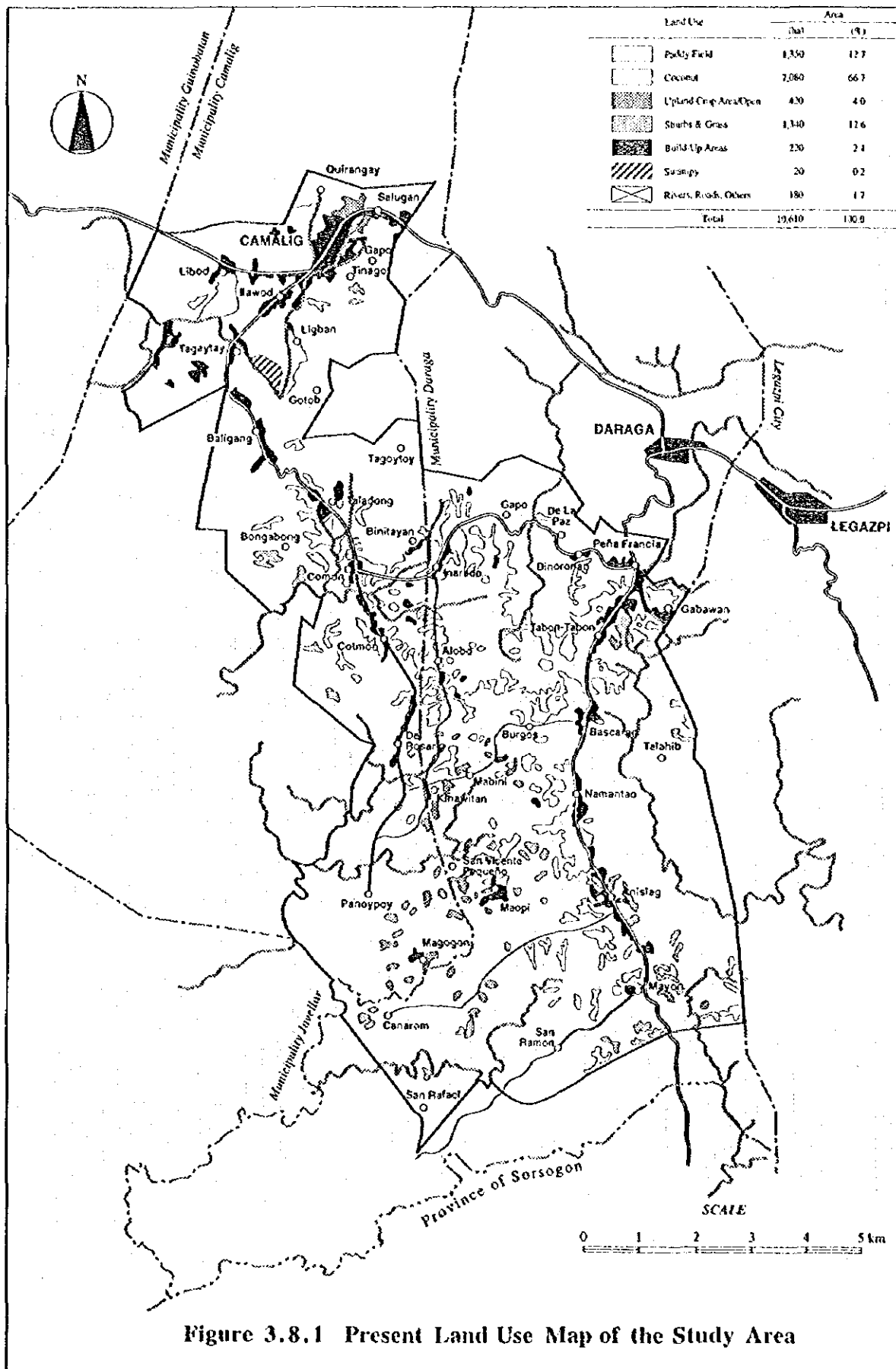


Figure 3.8.1 Present Land Use Map of the Study Area



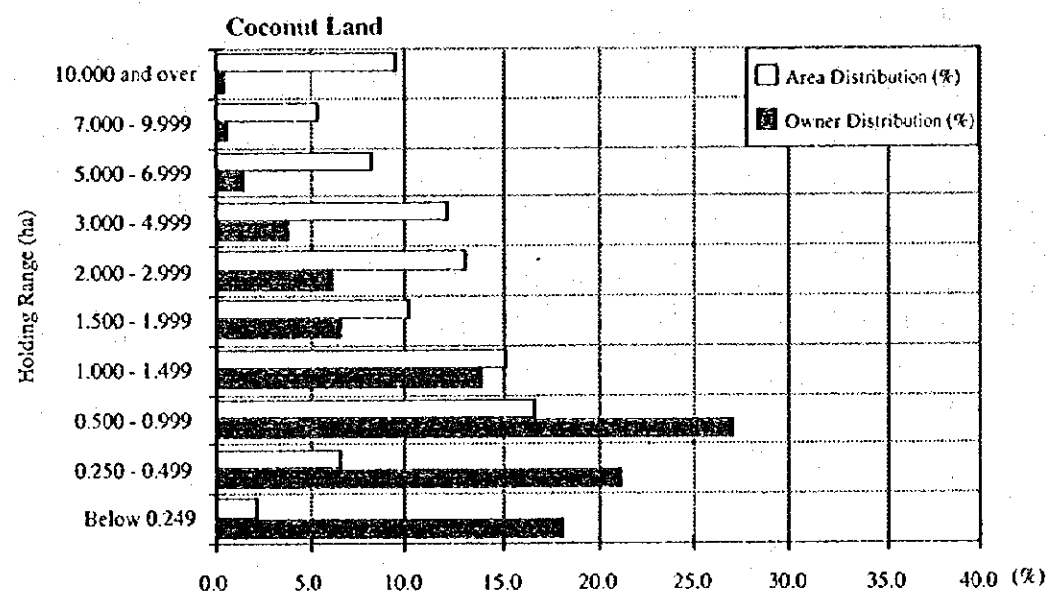
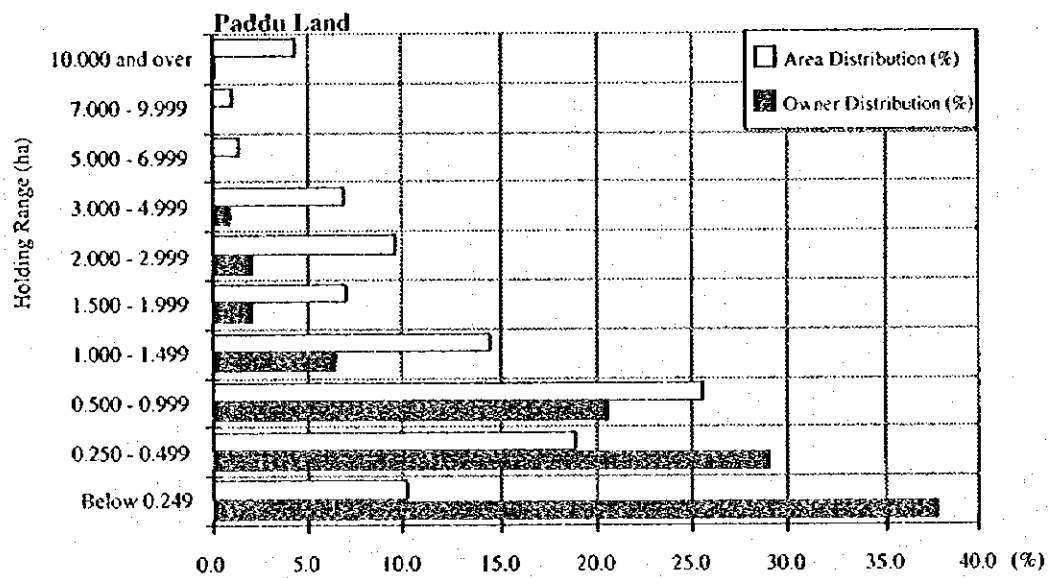
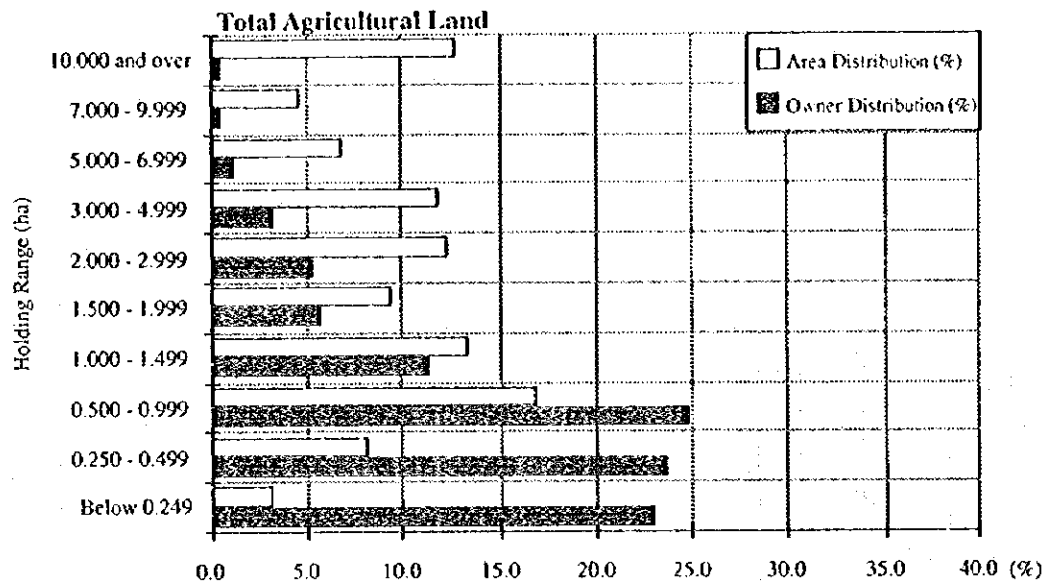
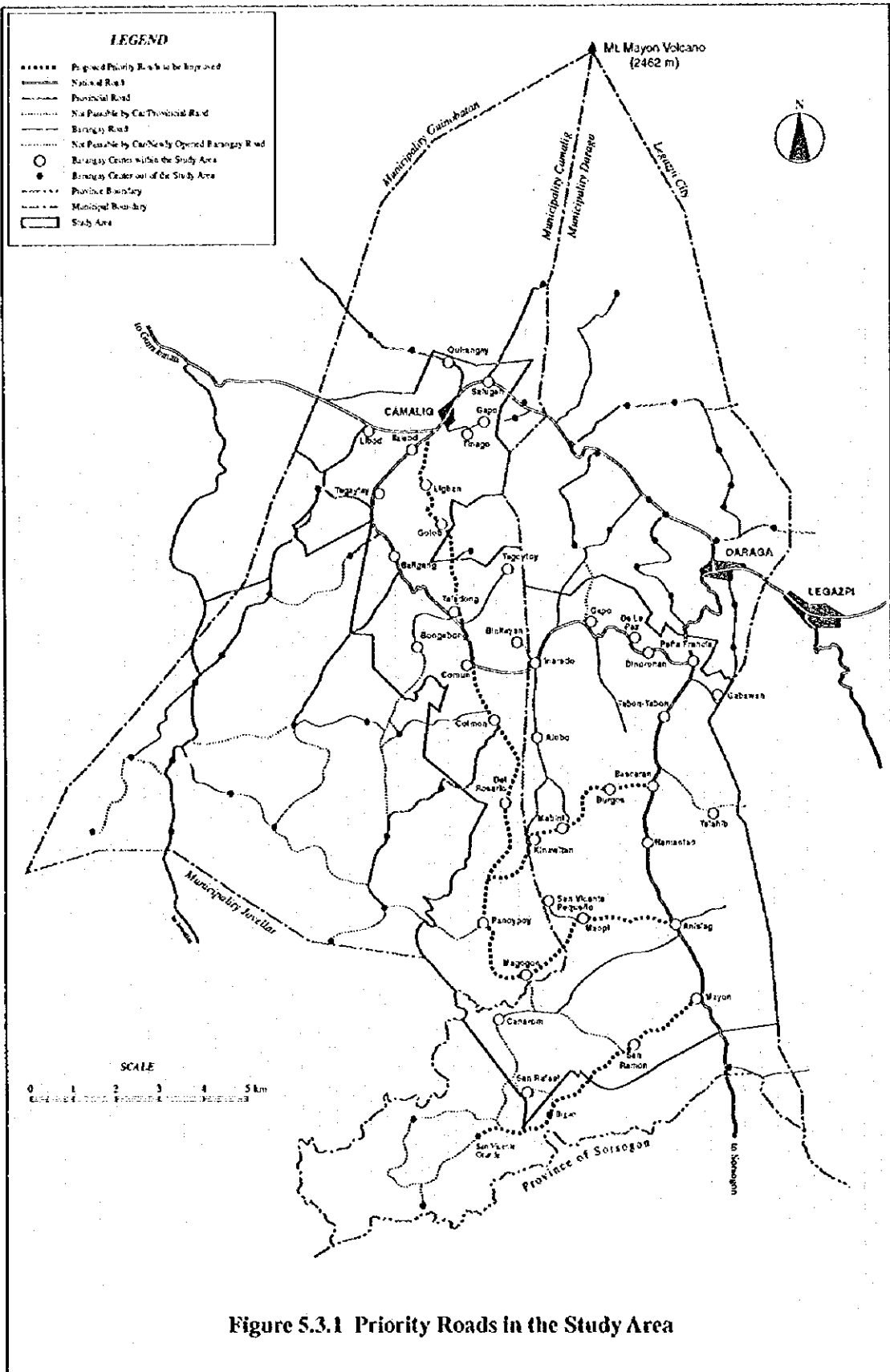
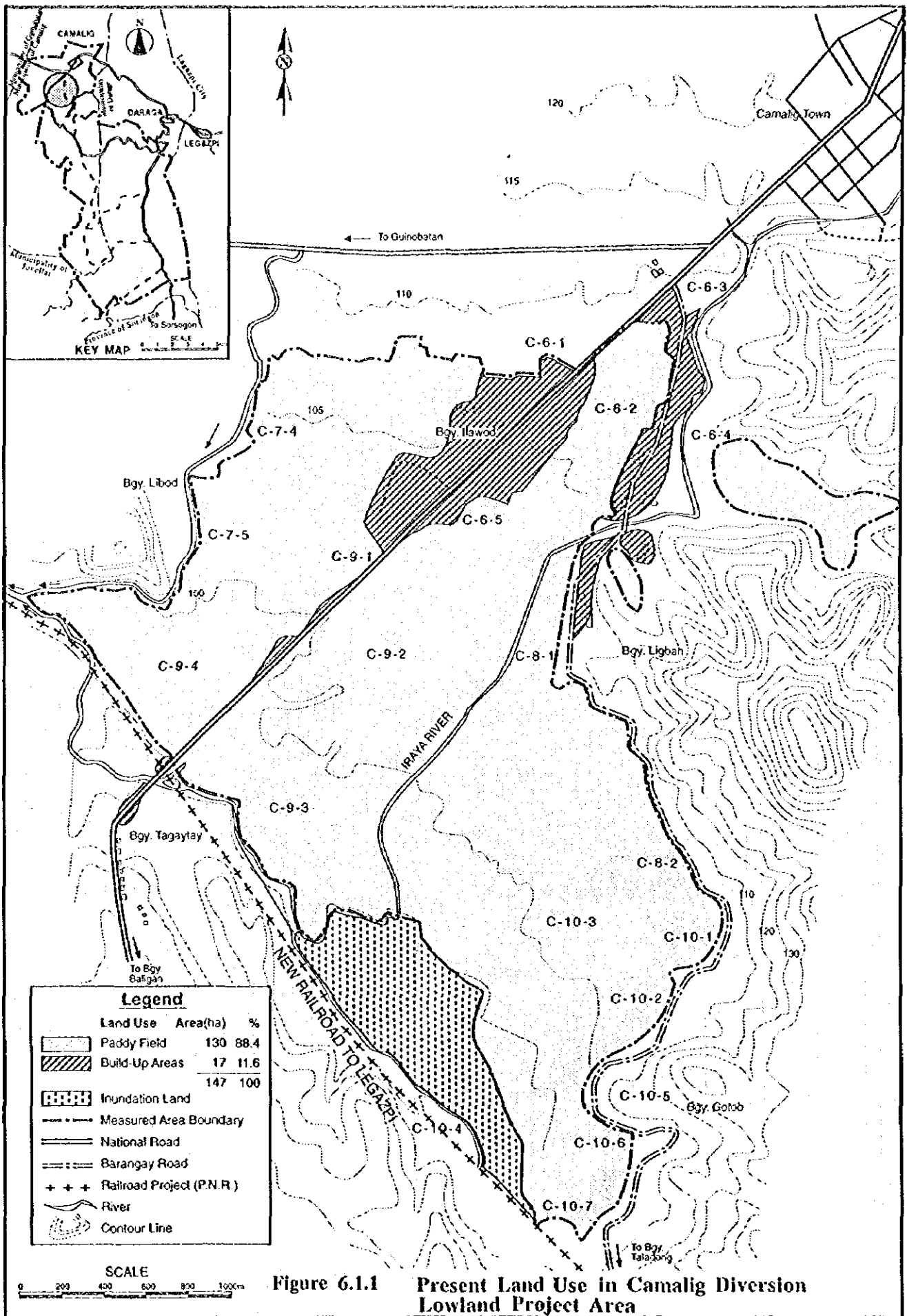
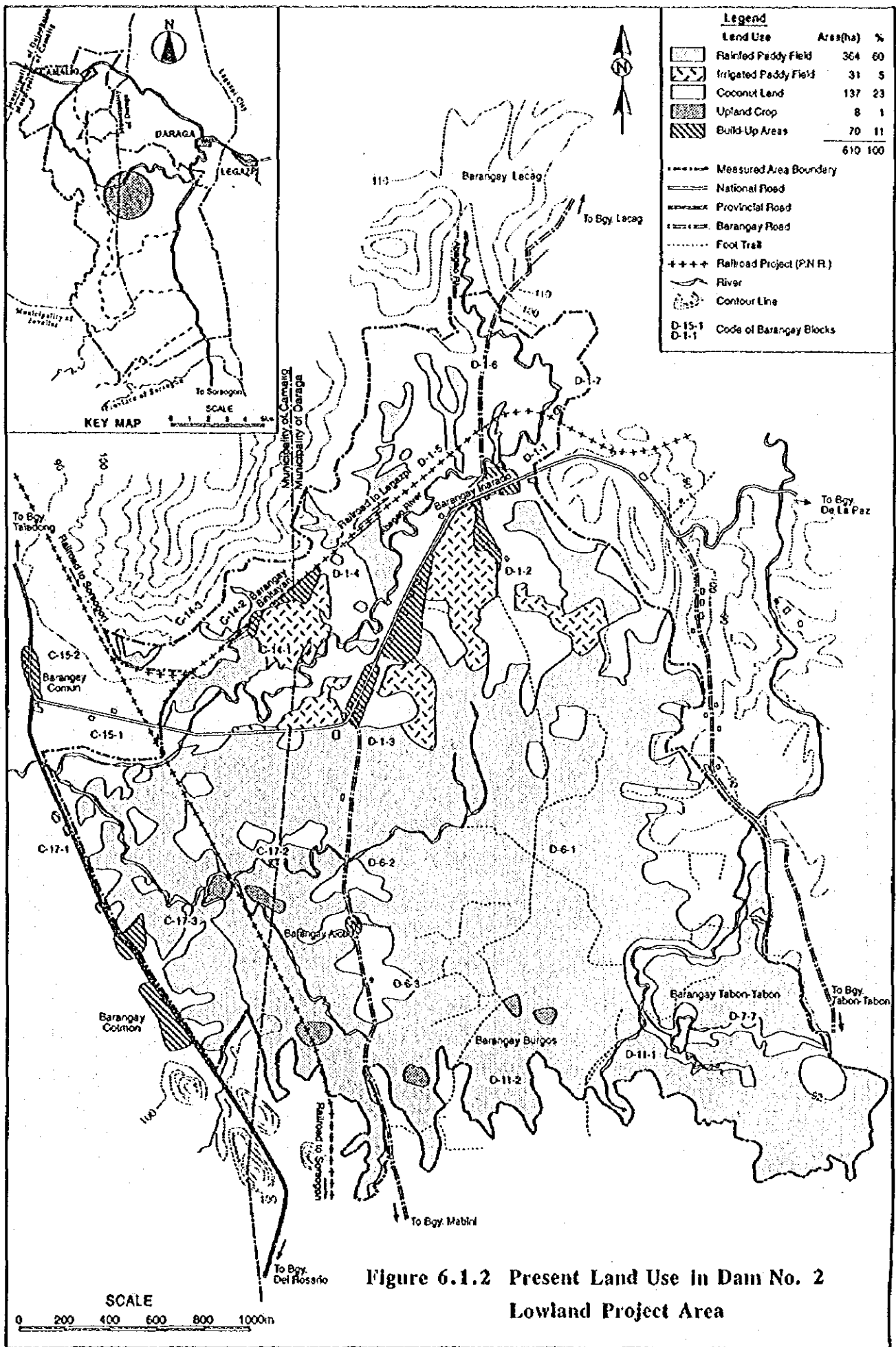


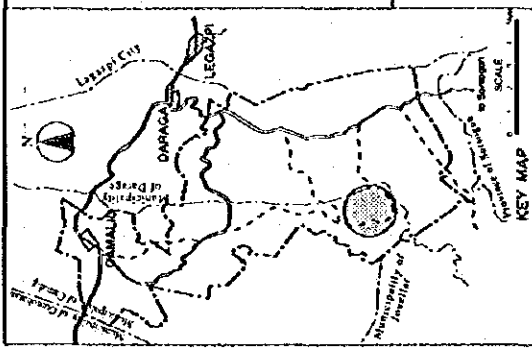
Fig. 3.8.2 Agricultural Land Distribution by Holding Scale in the Study Area



**Figure 5.3.1 Priority Roads in the Study Area**







Land Use	Area (ha)	%
Coconut Land	190	79
Upland Crop	17	7
Fallow Land (grass / shrub)	20	9
Rainfed Paddy Field	5	2
Residential, Road, and others	8	3
	240	100

- Legend**
- Coconut Land
  - Upland Crop
  - Fallow Land (grass / shrub)
  - Rainfed Paddy Field
  - Residential, Road, and others
  - Boundary of Model Area
  - Barangay Road
  - Foot Trail
  - Railroad Project (F.N.R.)
  - Contour Line
  - Code of Barangay Block

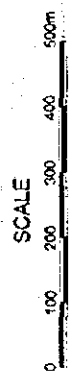
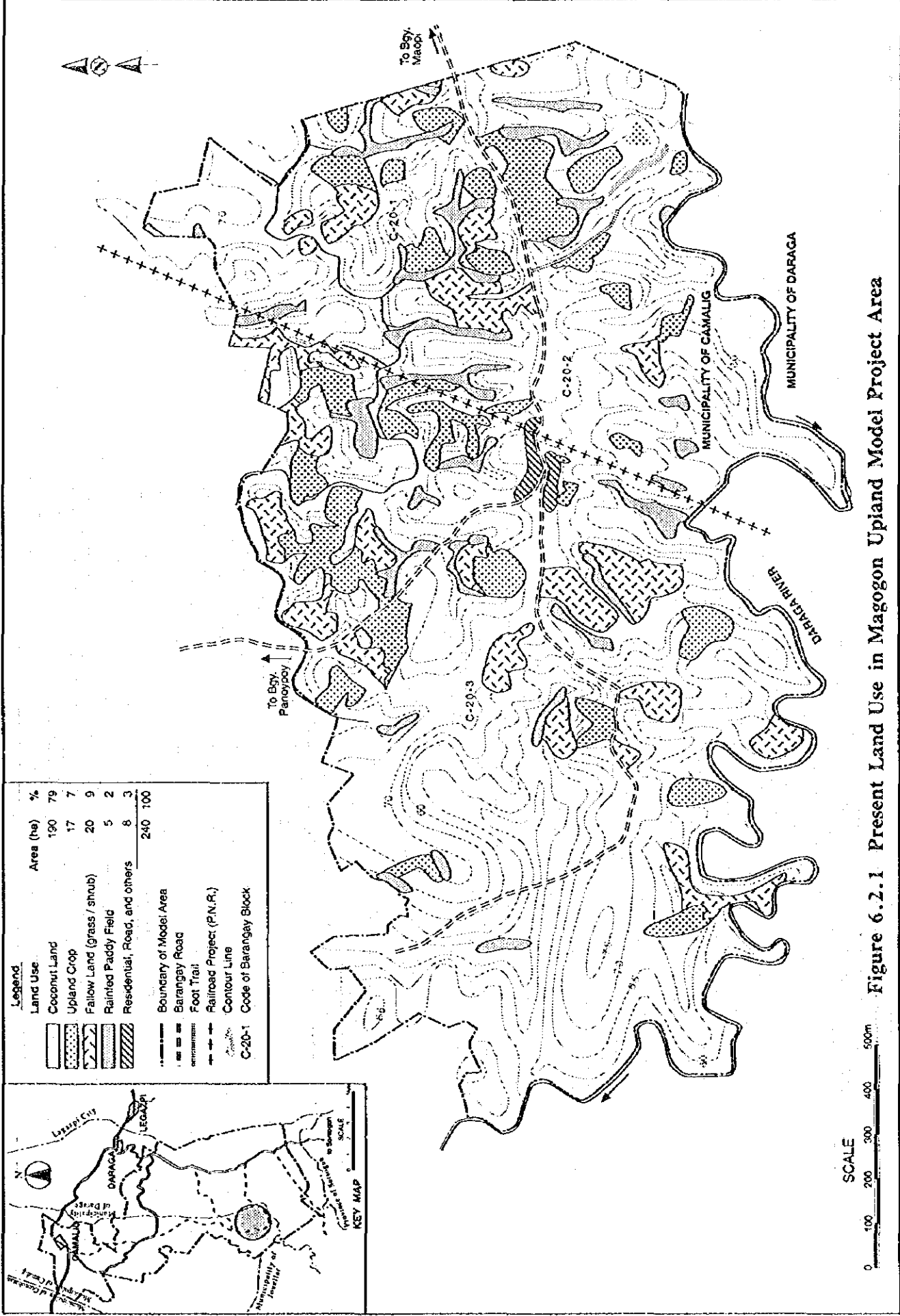


Figure 6.2.1 Present Land Use in Magogon Upland Model Project Area

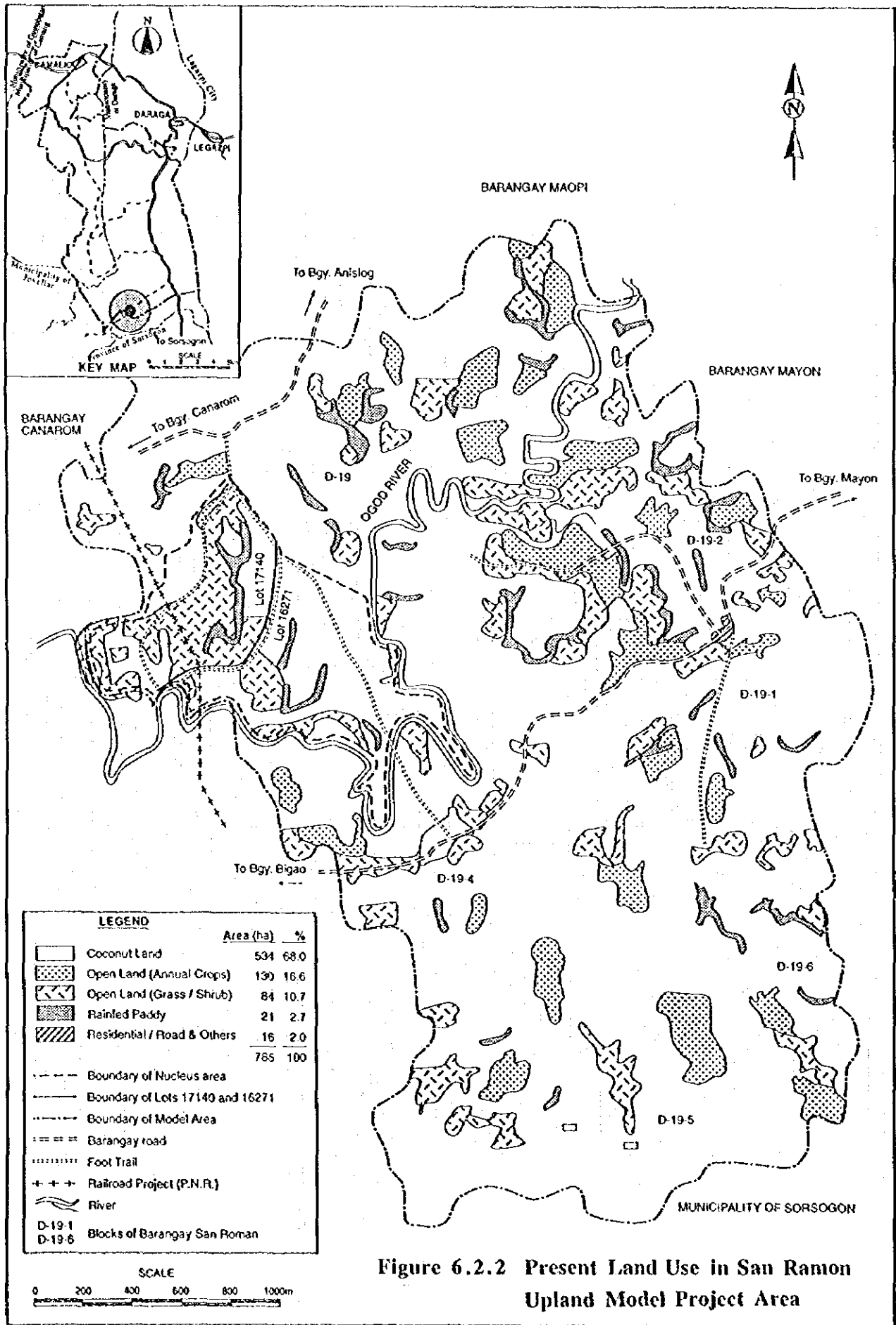


Figure 6.2.2 Present Land Use in San Ramon Upland Model Project Area

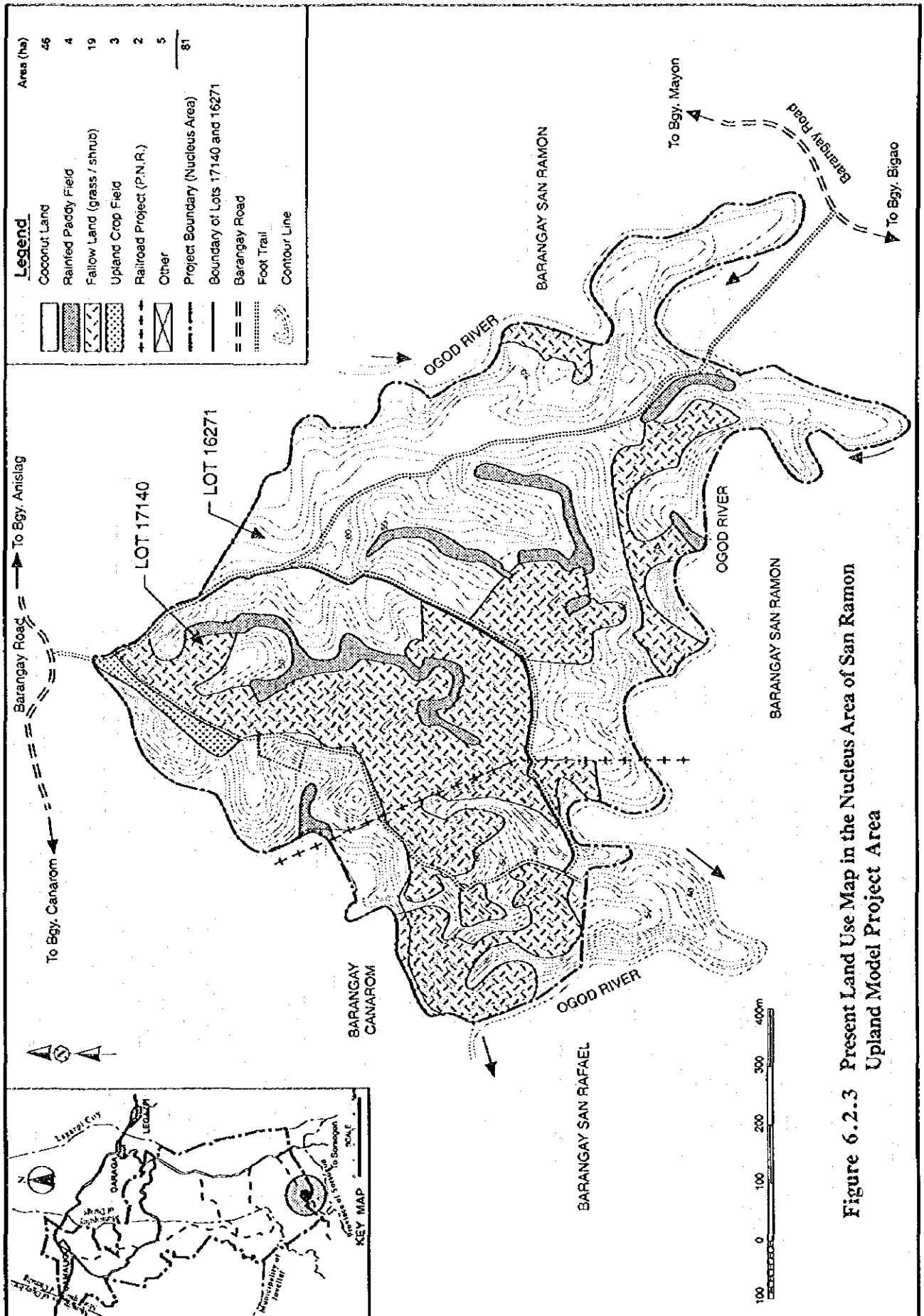


Figure 6.2.3 Present Land Use Map in the Nucleus Area of San Ramon Upland Model Project Area

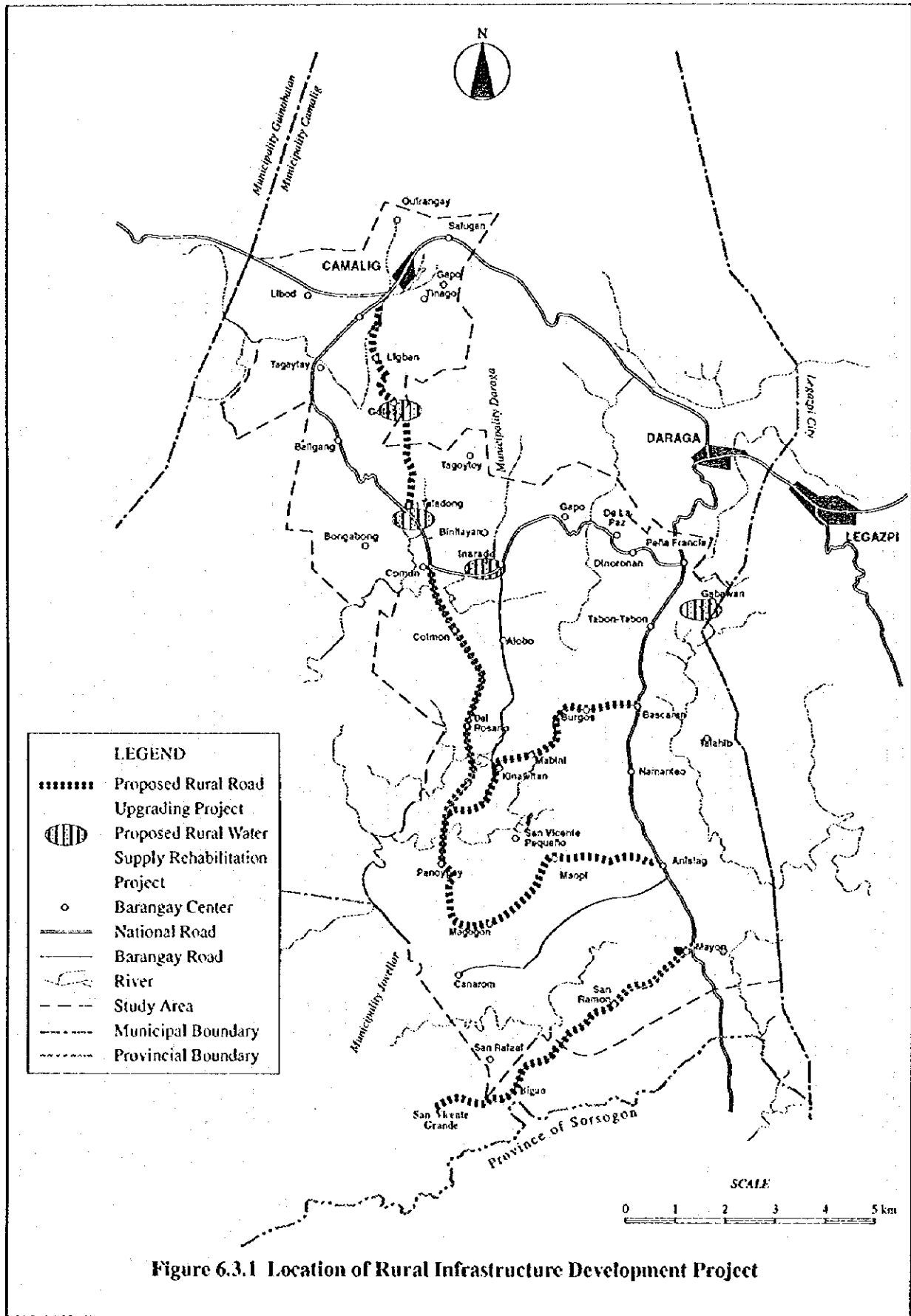


Figure 6.3.1 Location of Rural Infrastructure Development Project



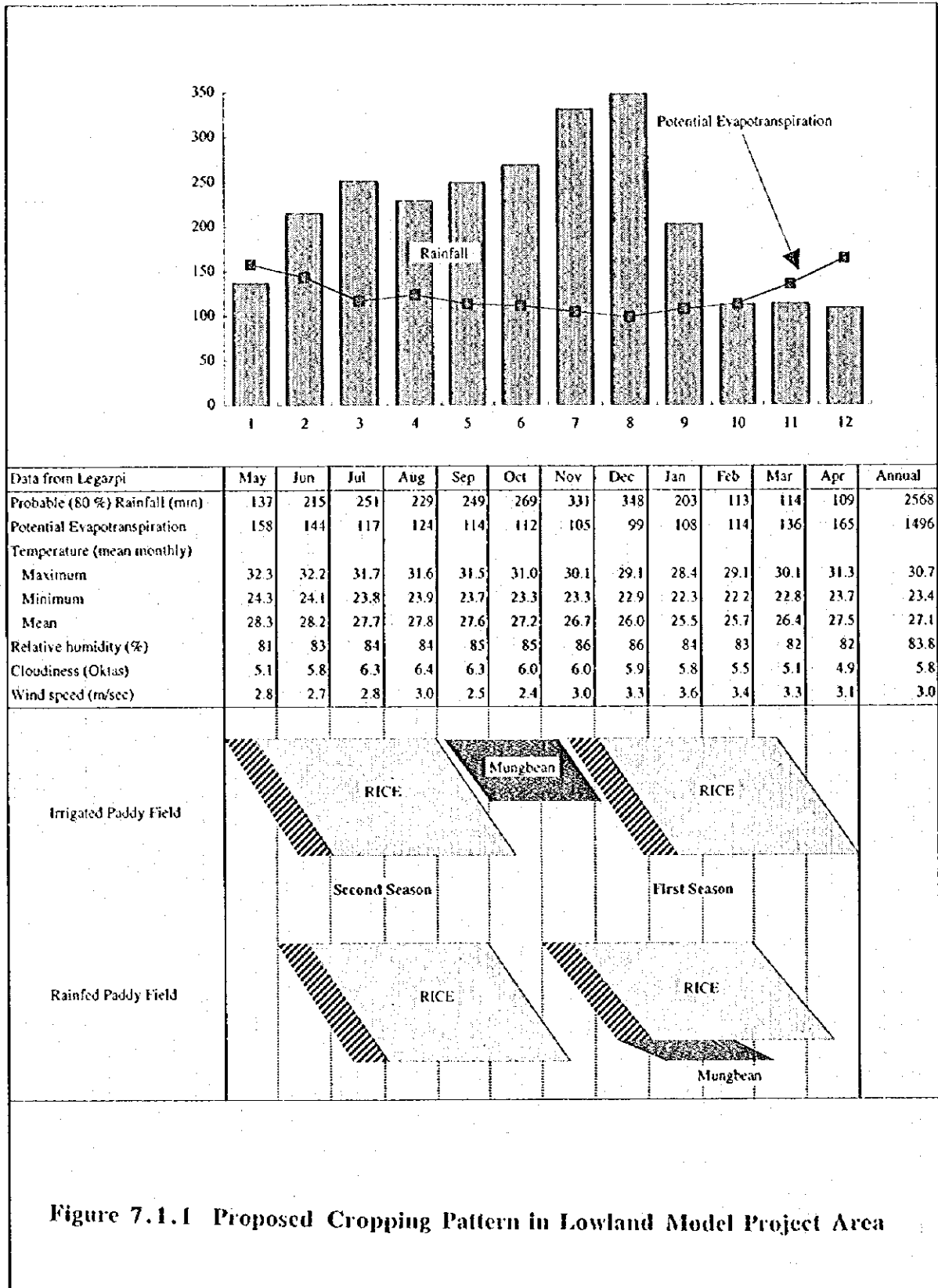


Figure 7.1.1 Proposed Cropping Pattern in Lowland Model Project Area

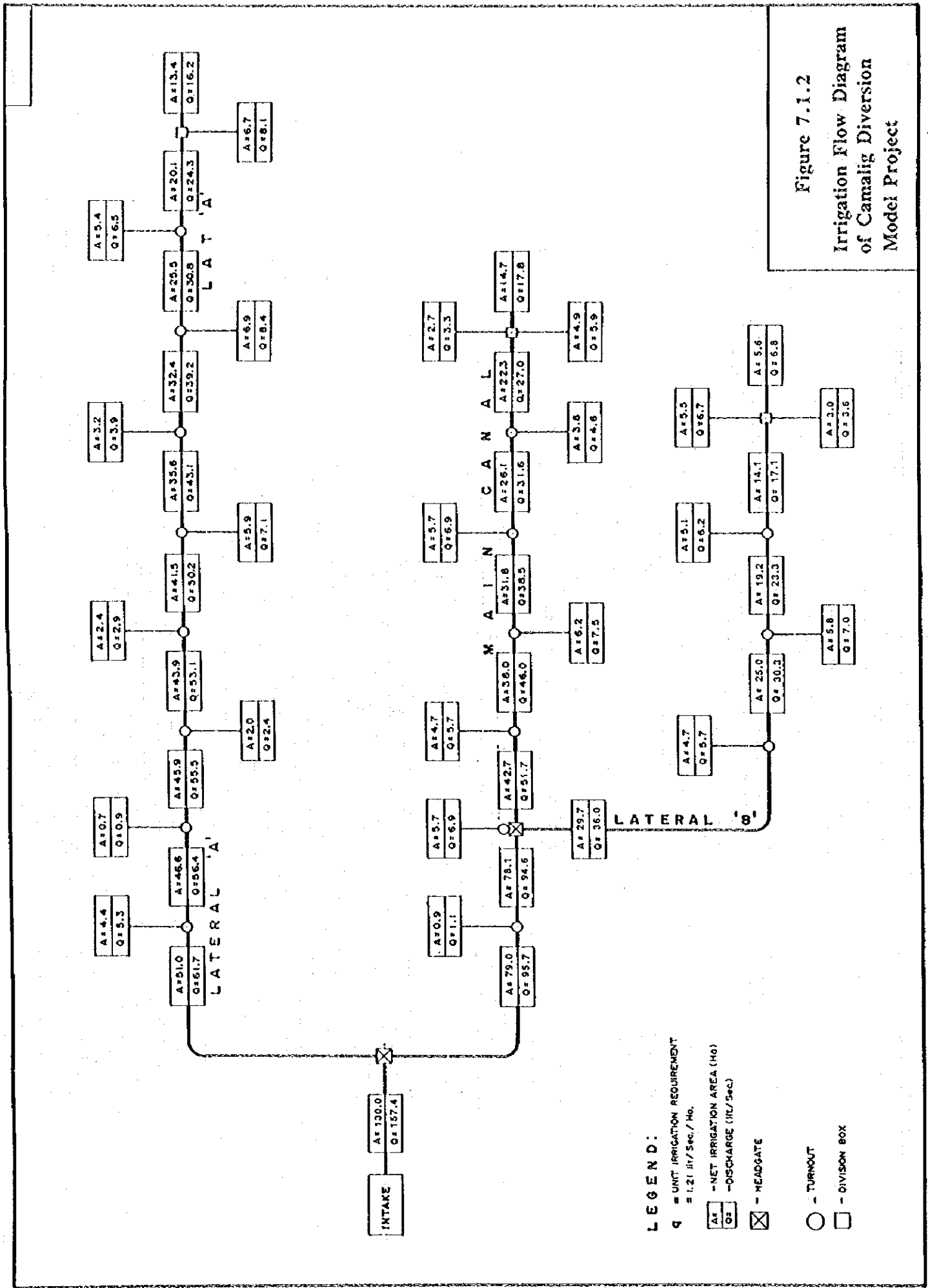


Figure 7.1.2  
Irrigation Flow Diagram  
of Camalig Diversion  
Model Project

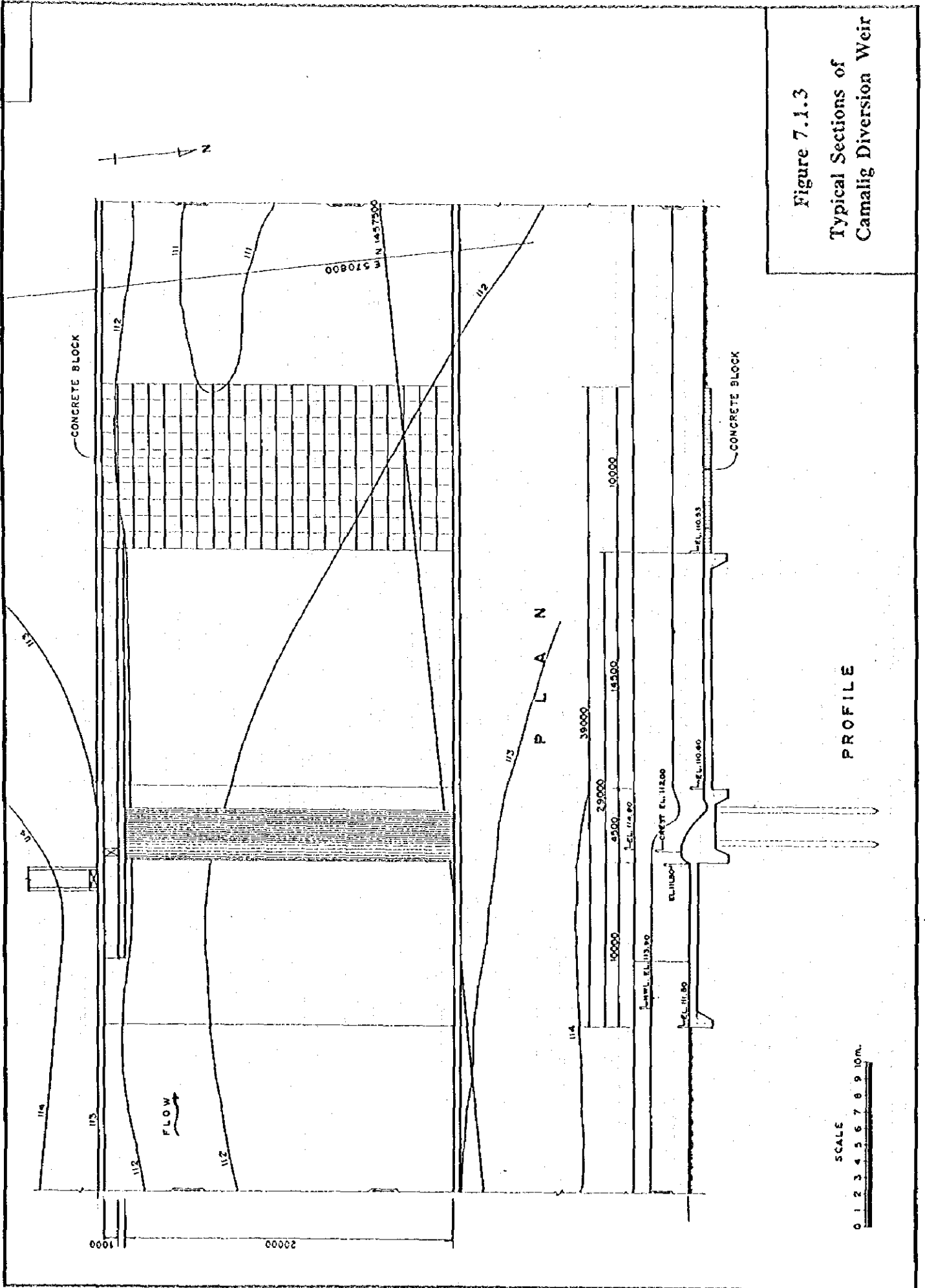
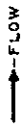


Figure 7.1.3  
 Typical Sections of  
 Camalig Diversion Weir

SCALE  
 0 1 2 3 4 5 6 7 8 9 10m.

**LEGEND:**



**A** = GROSS AREA (Ha.)  
**Q** = DISCHARGE (m<sup>3</sup>/sec.)  
 DRAINAGE REQUIREMENT  
 9.8 LIT./SEC./Ha.  
 125 LIT./SEC./Ha. FOR  
 MOUNTAIN/HILL AREA

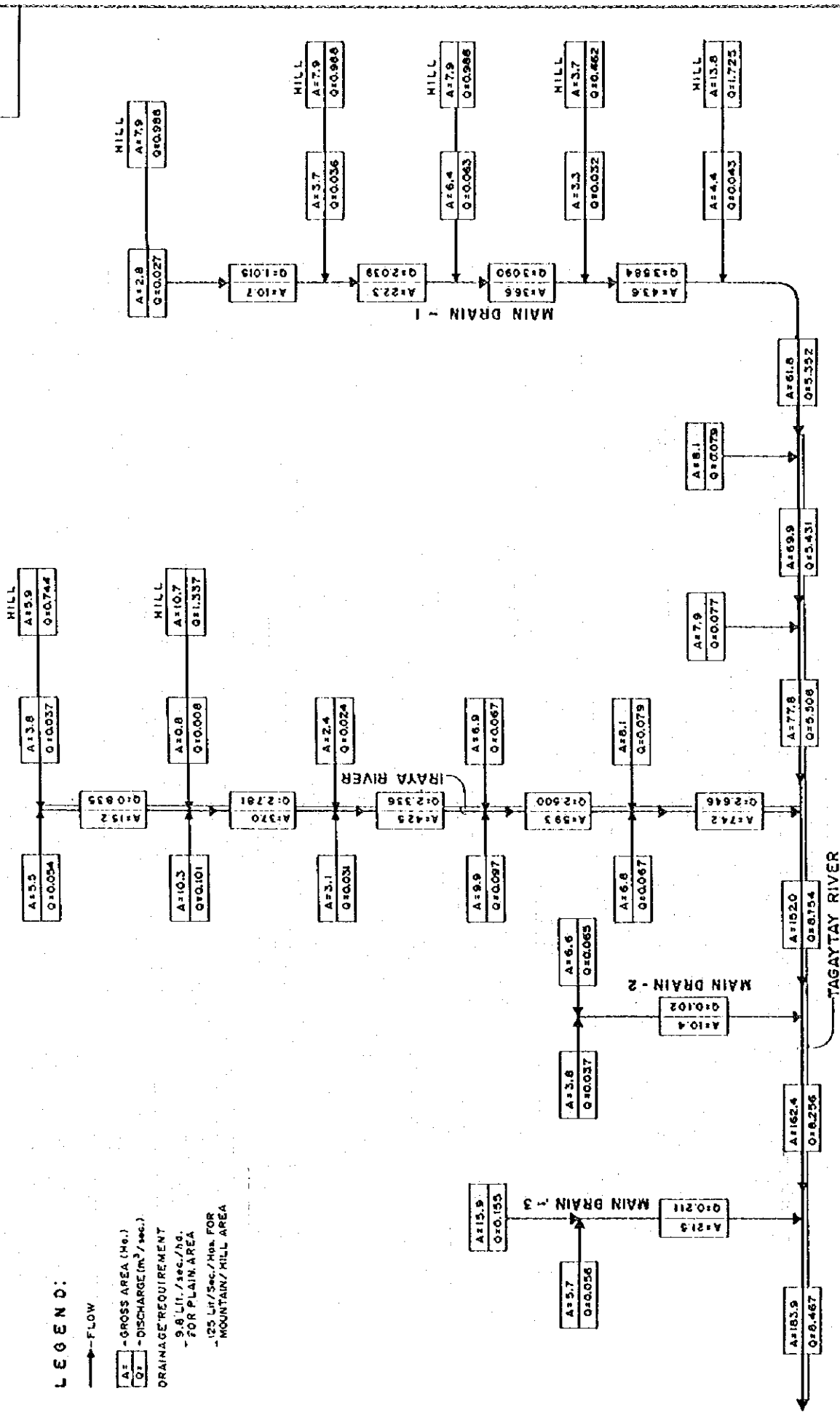
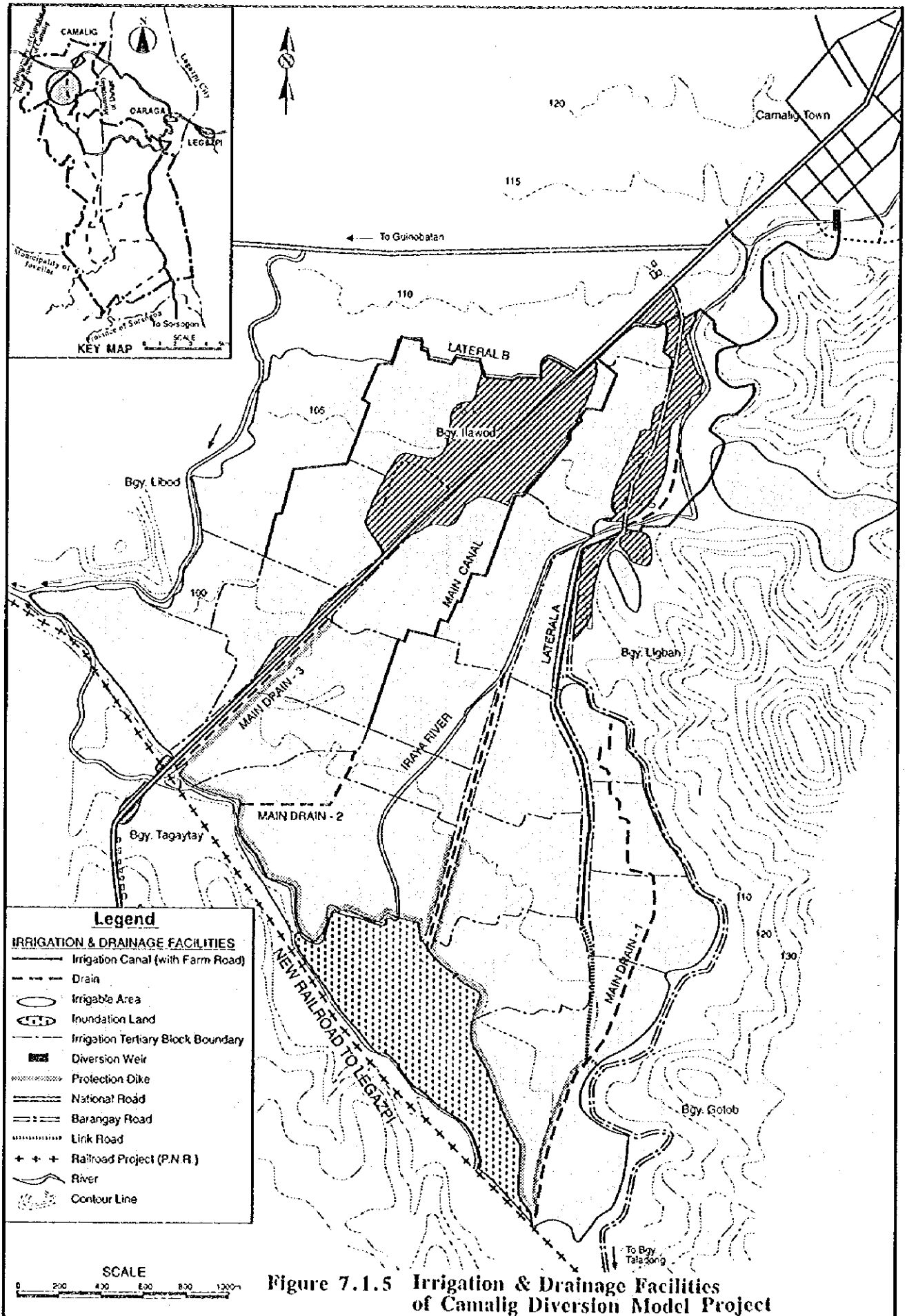


Figure 7.1.4  
Drainage Flow Diagram  
of Camalig Diversion  
Model Project



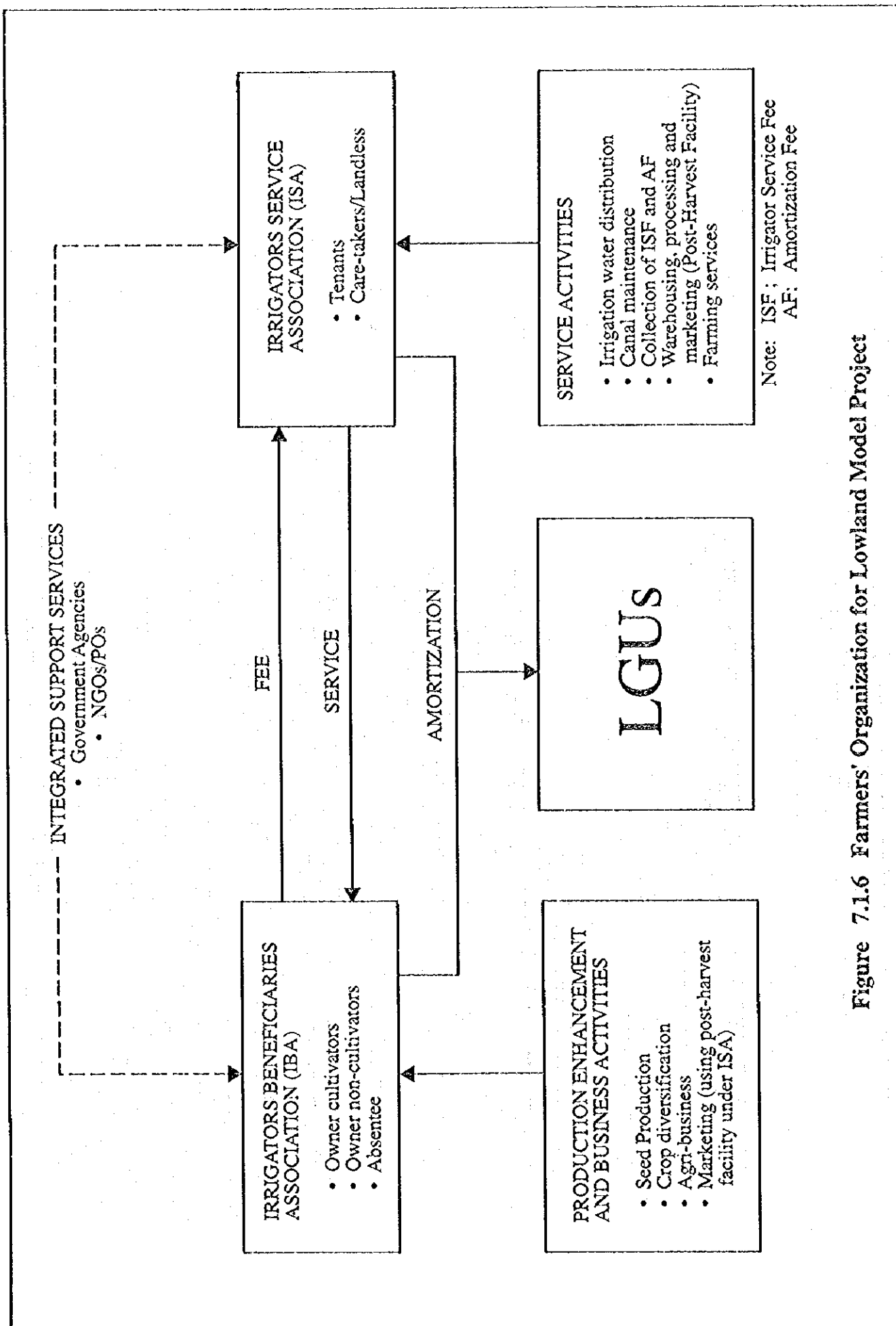


Figure 7.1.6 Farmers' Organization for Lowland Model Project

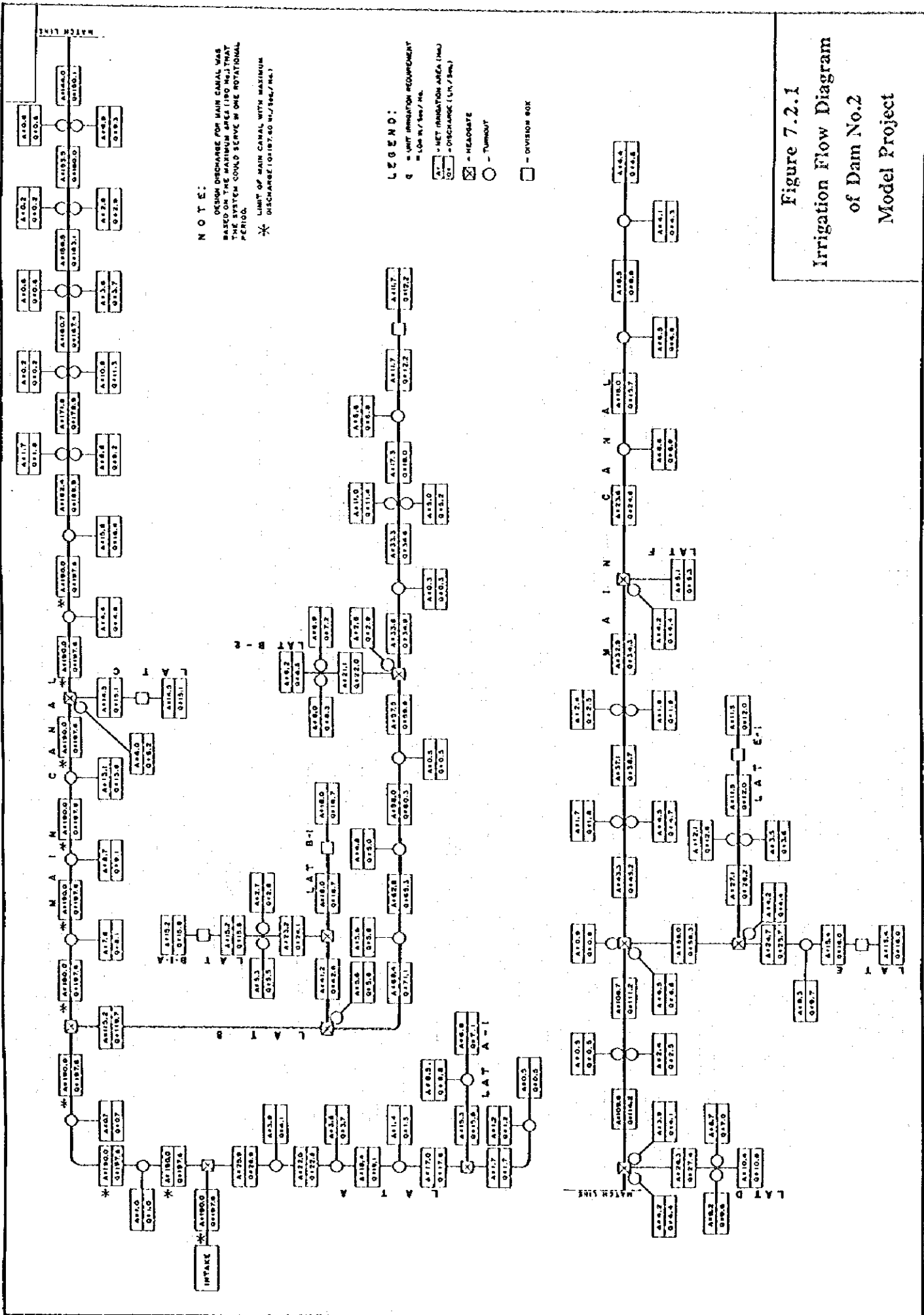


Figure 7.2.1  
Irrigation Flow Diagram  
of Dam No.2  
Model Project

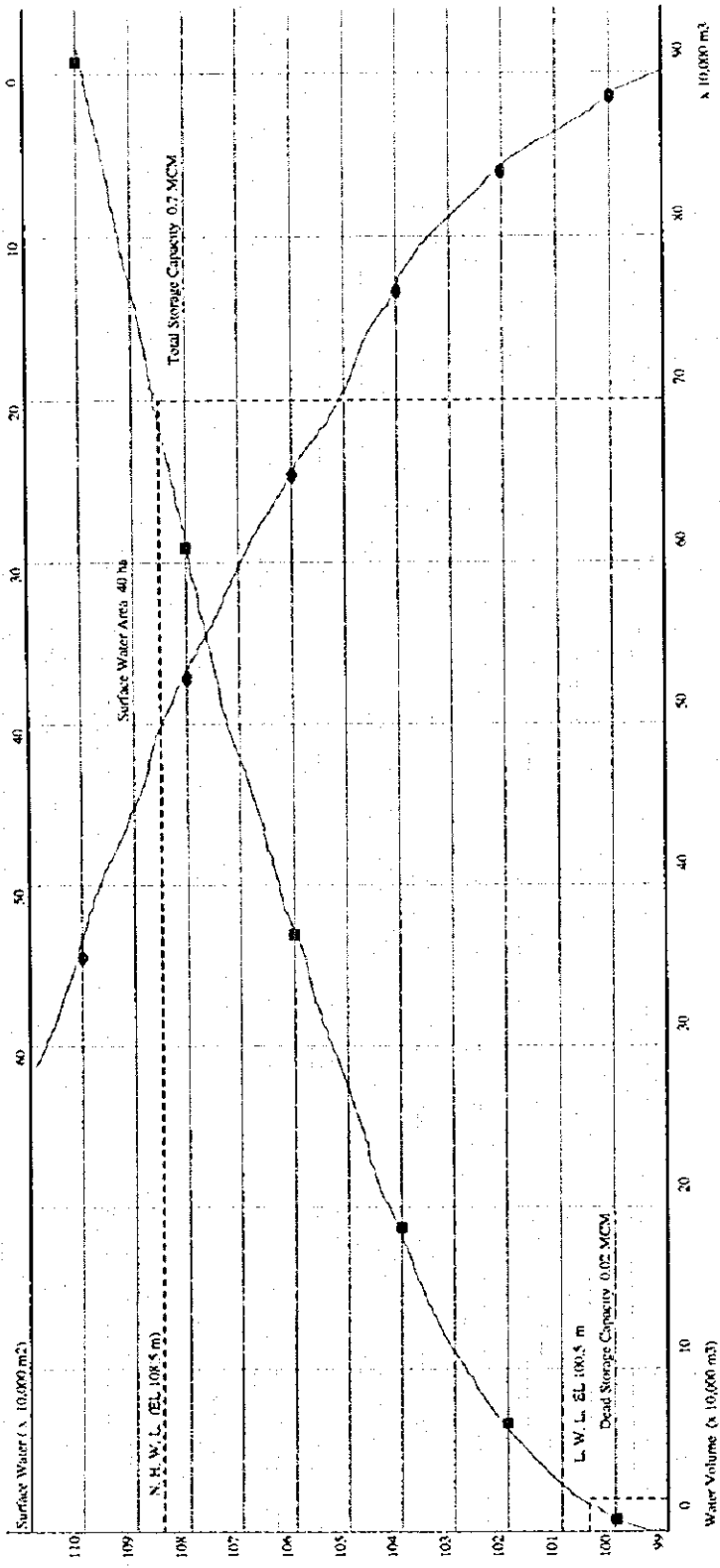
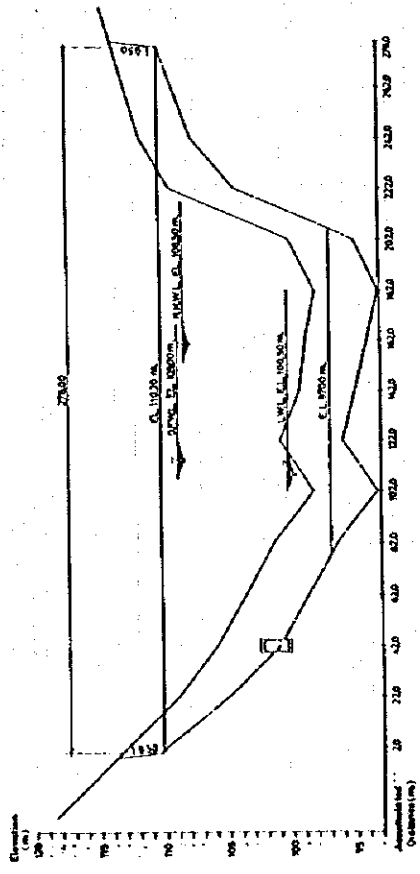
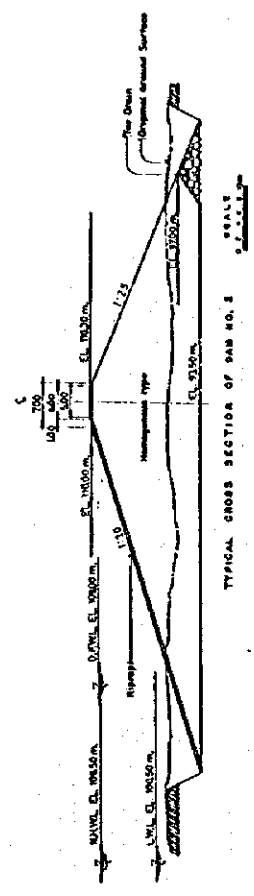
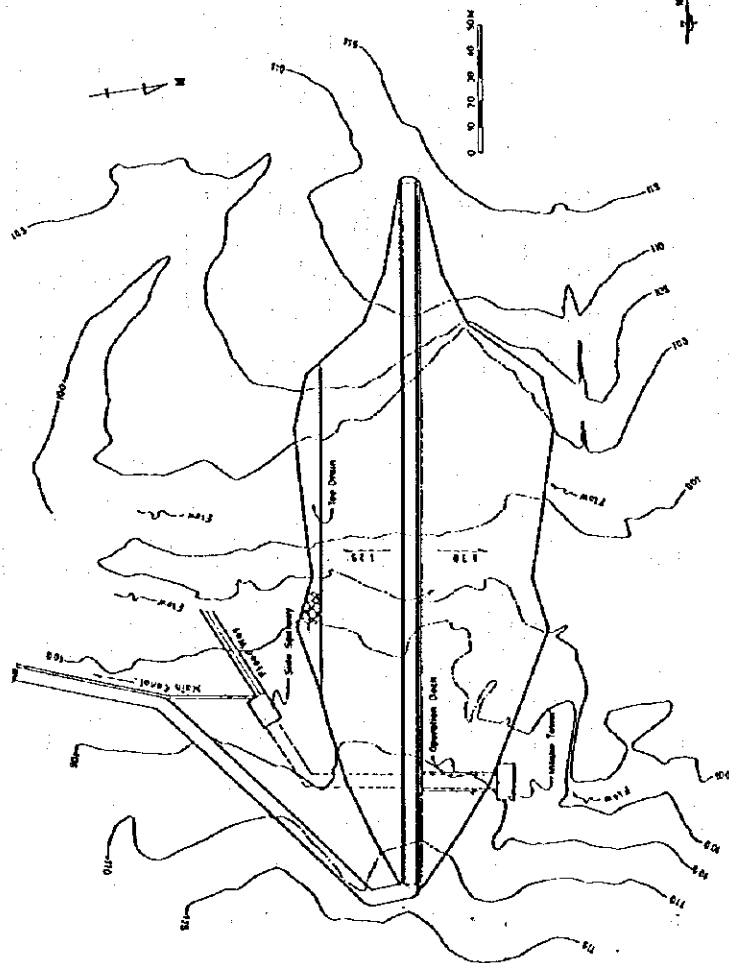


Figure 7.2.2 Reservoir Storage Curve of Dam No.2

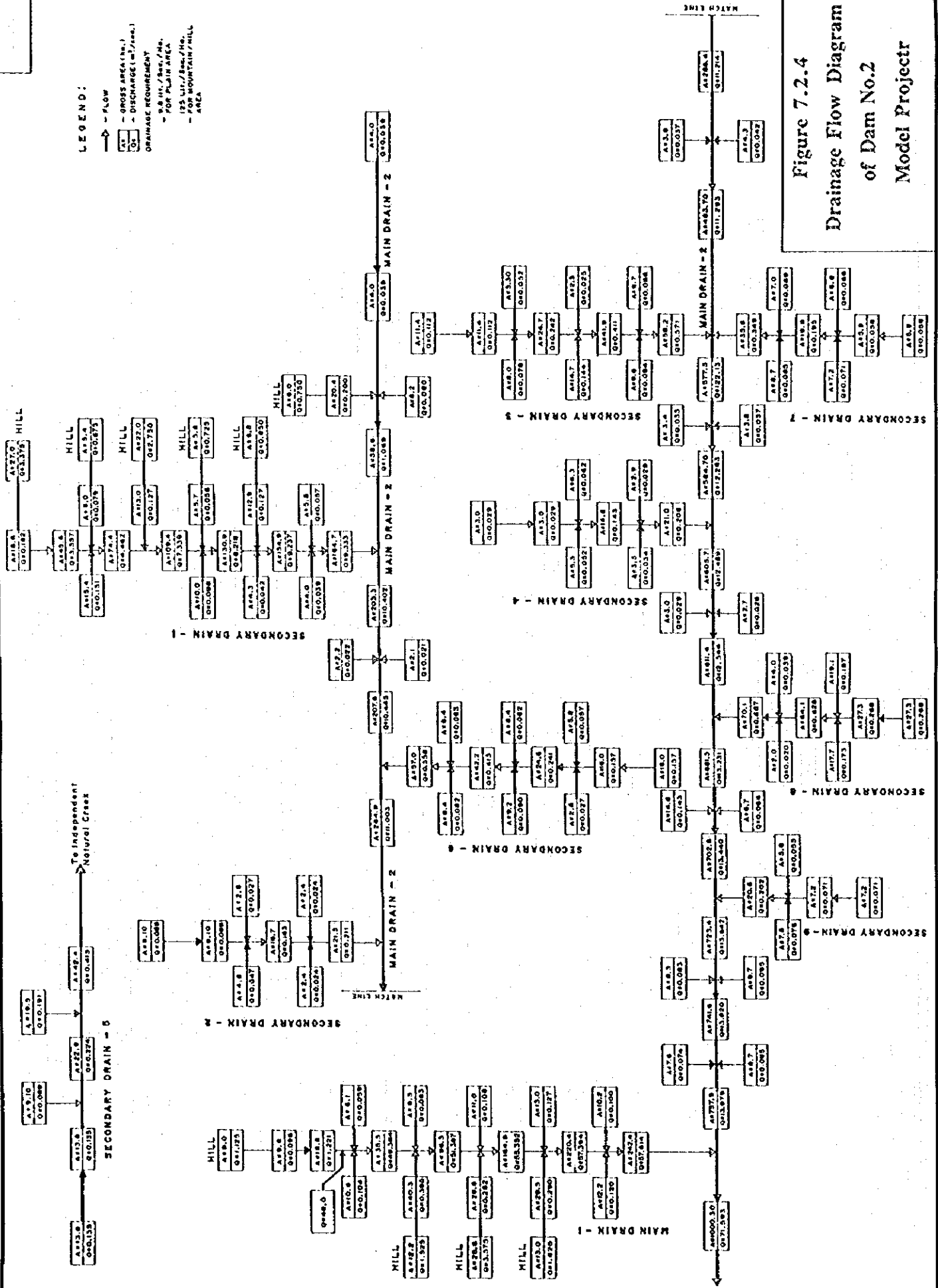


Figure 7.2.3  
 Typical Section of  
 Dam No.2

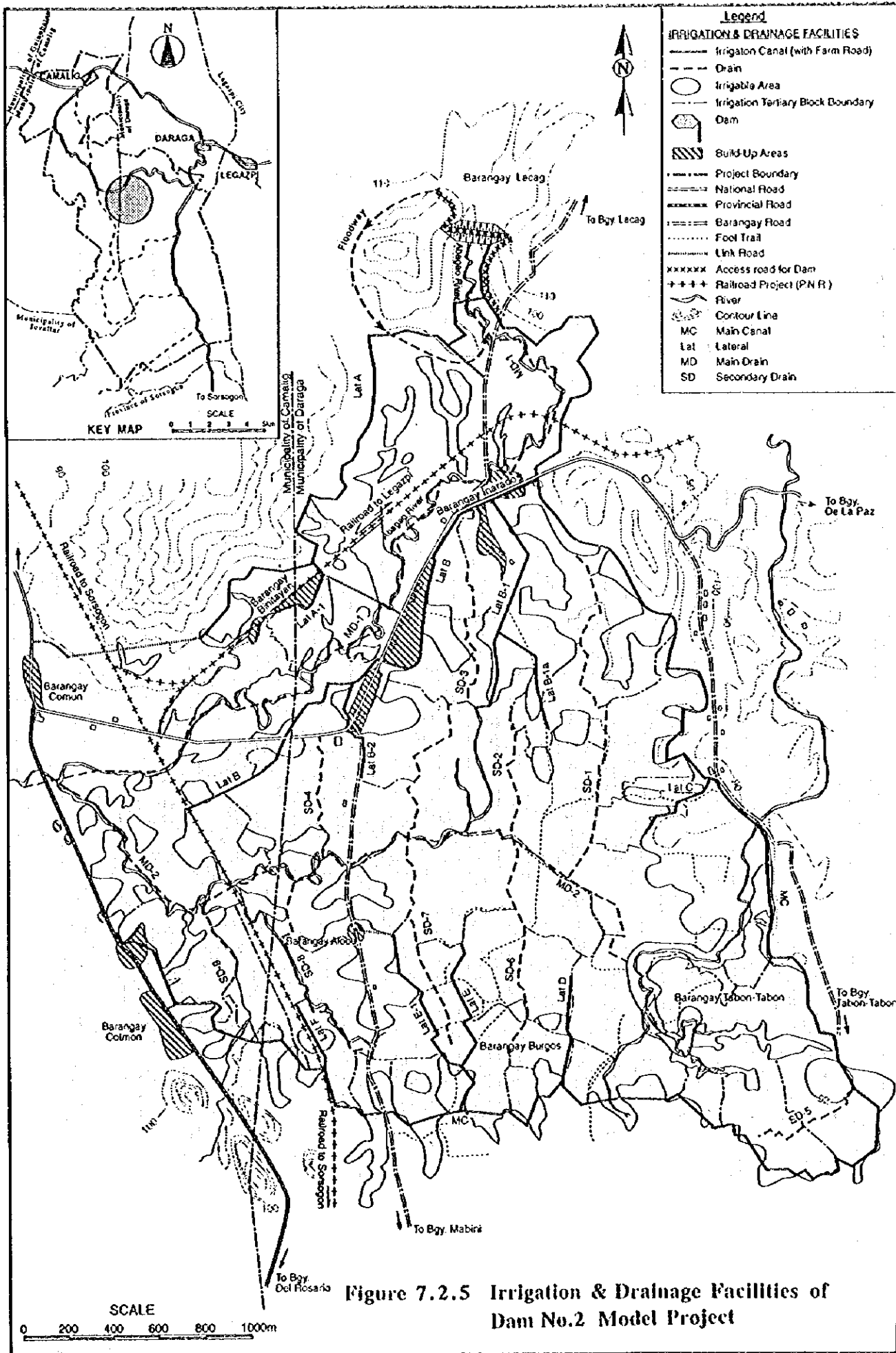


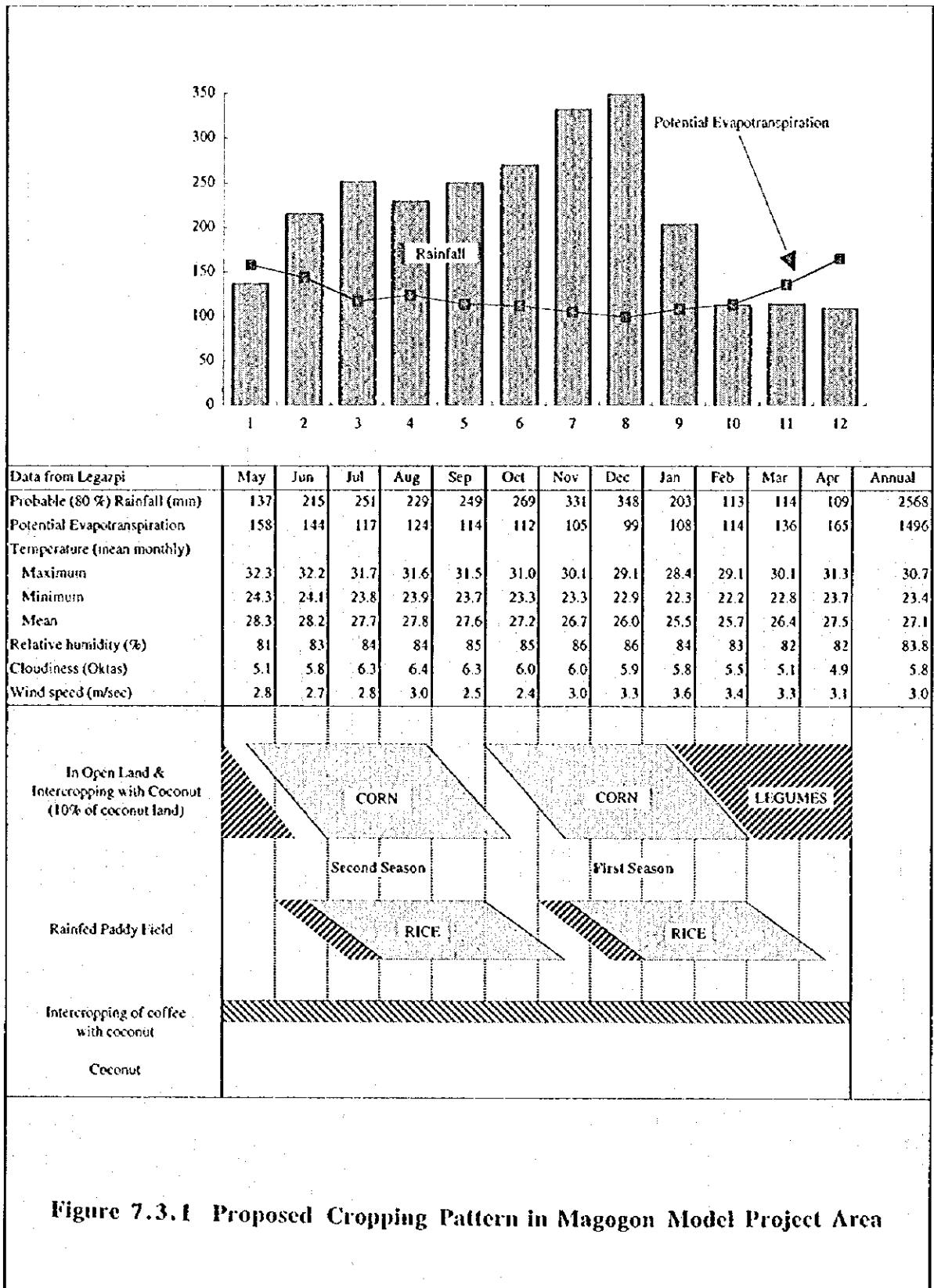
**LEGEND:**

- FLOW
- (with 'A') - CROSS AREA (sq. ft.)
- (with 'Q') - DISCHARGE (cfs/sec.)
- (with 'D') - DRAINAGE REQUIREMENT
- FOR PLAIN AREA
- FOR MOUNTAIN/HILL AREA

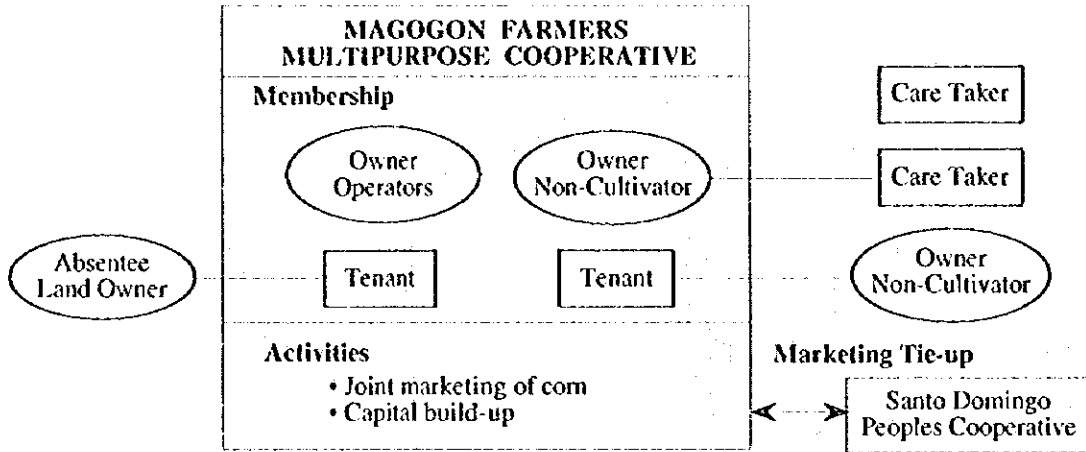


**Figure 7.2.4**  
**Drainage Flow Diagram**  
**of Dam No.2**  
**Model Projectr**

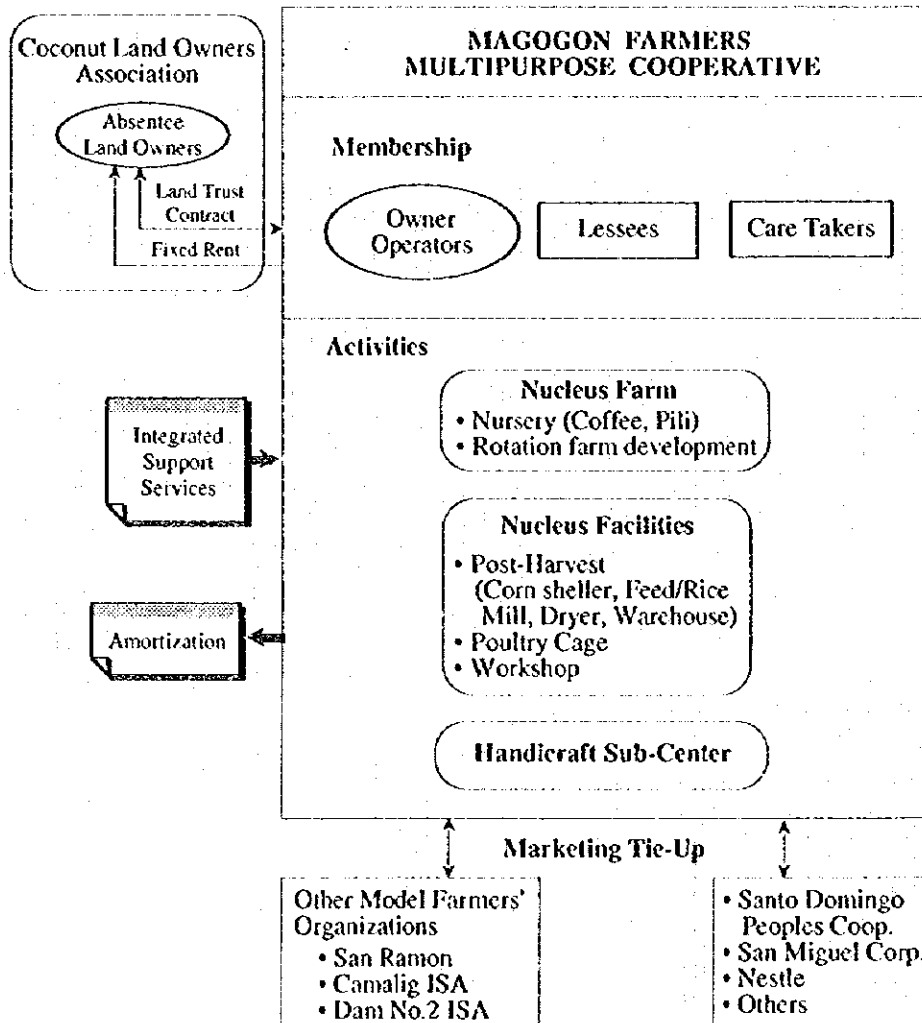




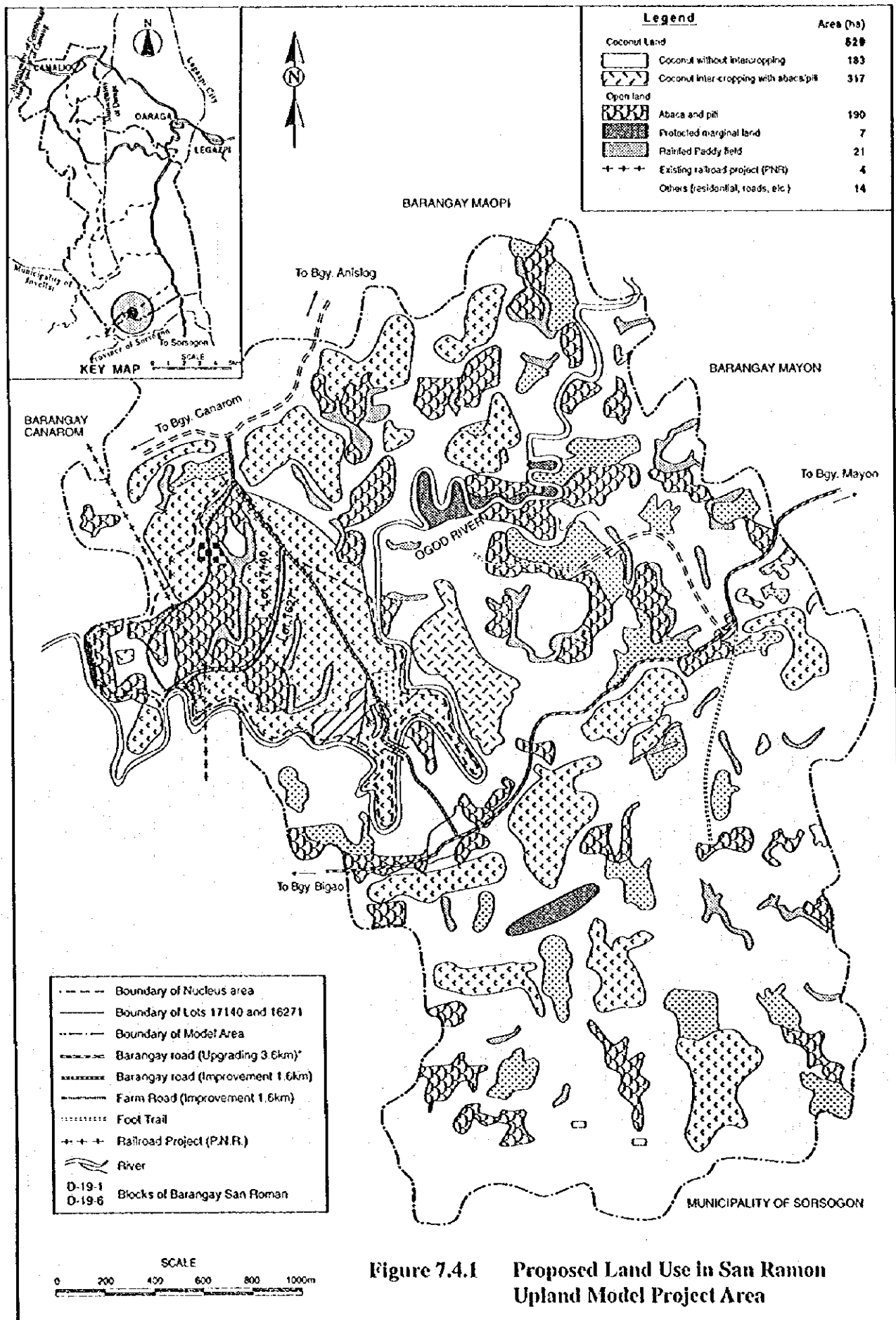
**PRESENT CONDITION**

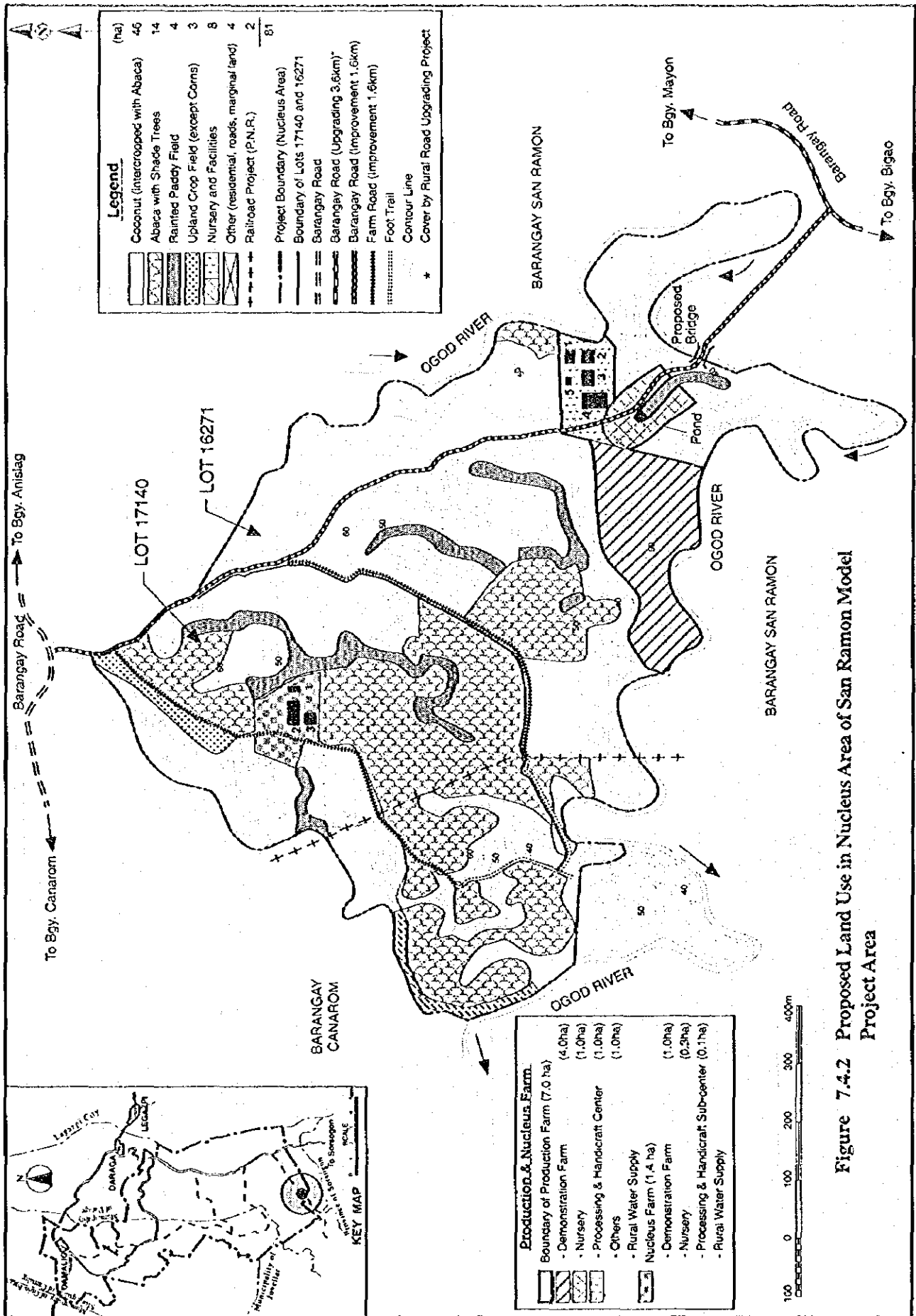


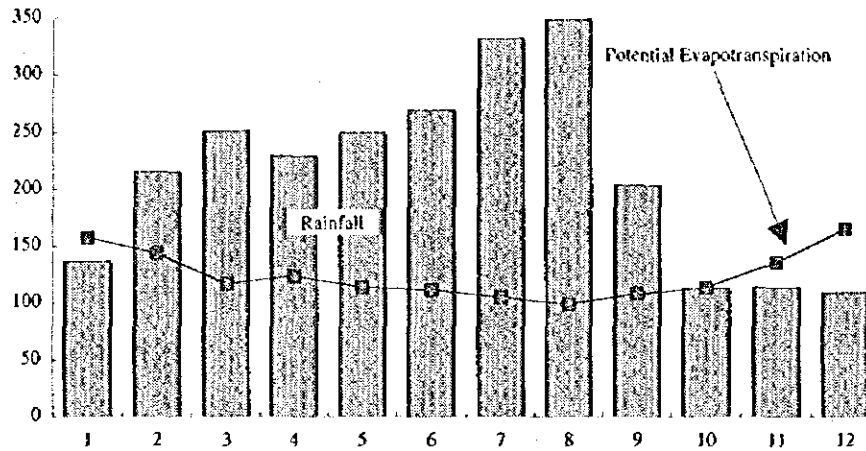
**FUTURE ORGANIZATION AND ACTIVITY**



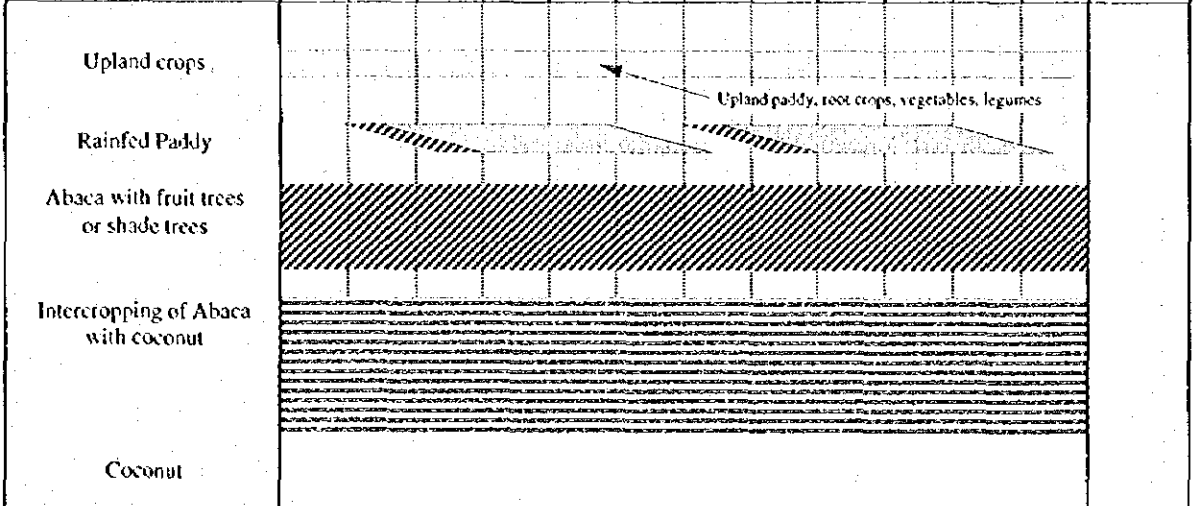
**Figure 7.3.2 Farmer' Organization for Magogon Model Project Area**







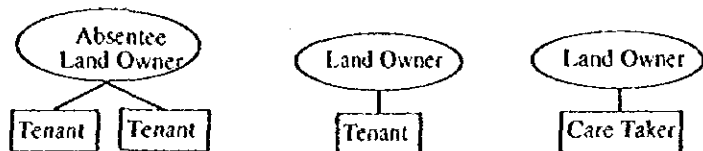
Data from Legazpi	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Annual
Probable (80 %) Rainfall (mm)	137	215	251	229	249	269	331	348	203	113	114	109	2568
Potential Evapotranspiration	158	144	117	124	114	112	105	99	108	114	136	165	1496
Temperature (mean monthly)													
Maximum	32.3	32.2	31.7	31.6	31.5	31.0	30.1	29.1	28.4	29.1	30.1	31.3	30.7
Minimum	24.3	24.1	23.8	23.9	23.7	23.3	23.3	22.9	22.3	22.2	22.8	23.7	23.4
Mean	28.3	28.2	27.7	27.8	27.6	27.2	26.7	26.0	25.5	25.7	26.4	27.5	27.1
Relative humidity (%)	81	83	84	84	85	85	86	86	84	83	82	82	83.8
Cloudiness (Okta)	5.1	5.8	6.3	6.4	6.3	6.0	6.0	5.9	5.8	5.5	5.1	4.9	5.8
Wind speed (m/sec)	2.8	2.7	2.8	3.0	2.5	2.4	3.0	3.3	3.6	3.4	3.3	3.1	3.0



**Figure 7.4.3 Proposed Cropping Pattern in San Ramon Model Project Area**

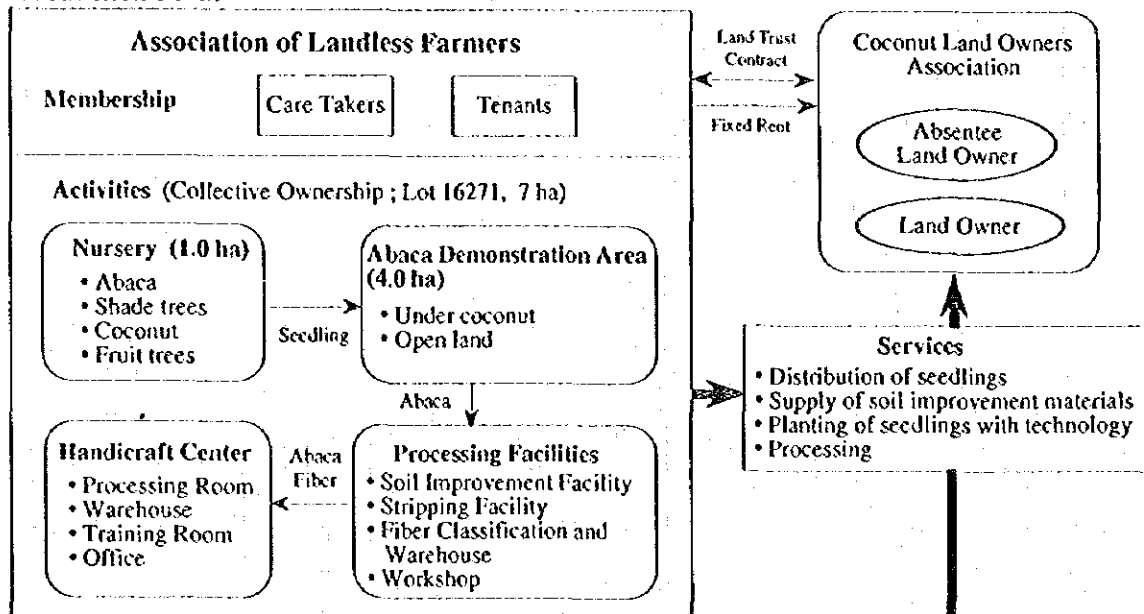


**PRESENT CONDITION**



**FUTURE ORGANIZATION AND ACTIVITY**

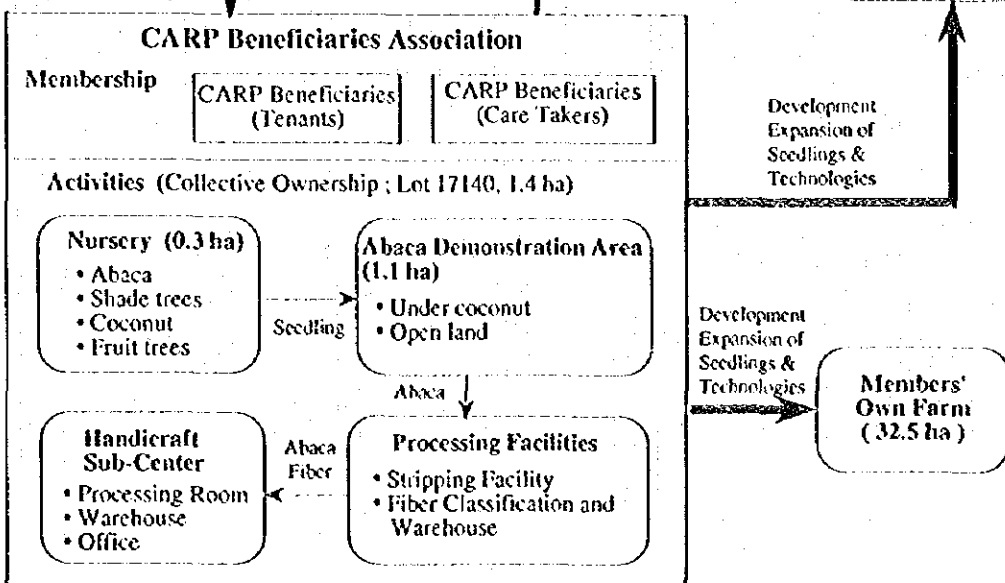
*Production Farm*



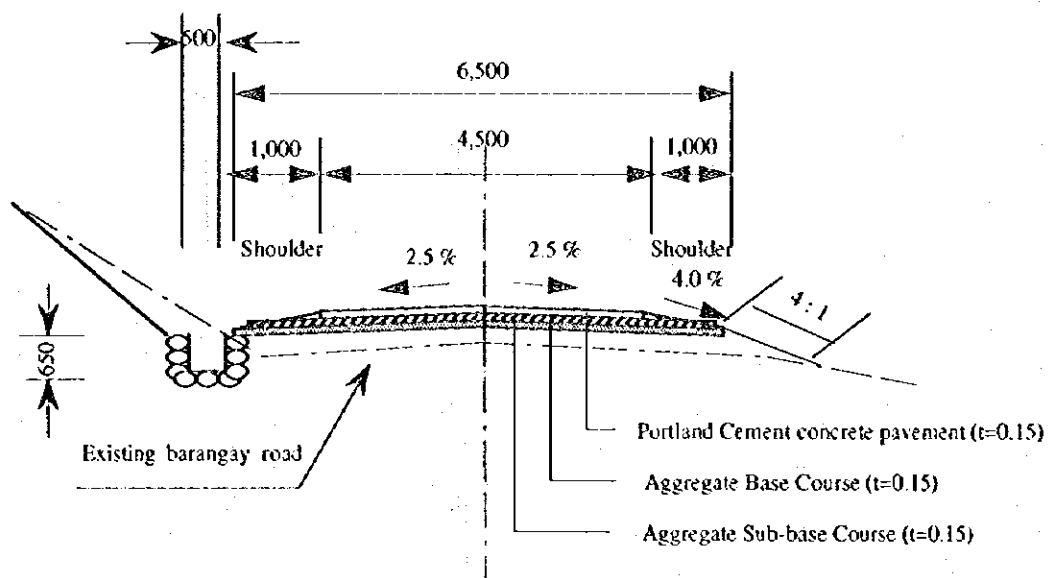
Integrated Support Services

Amorization

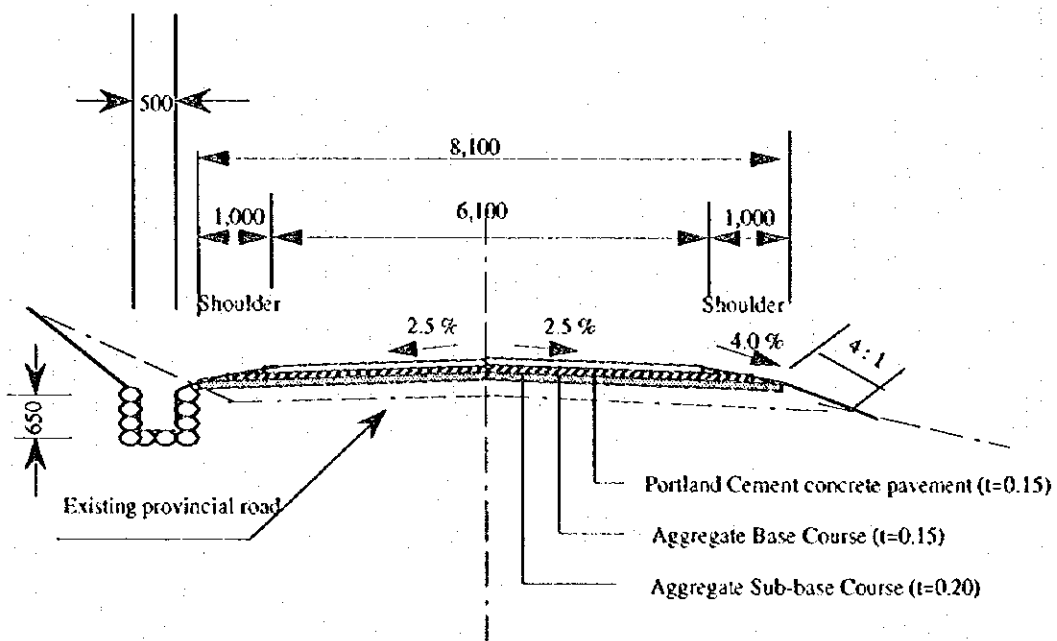
*Nucleus Farm*



**Figure 7.4.4 Farmer' Organization for San Ramon Model Project Area**



Typical Cross Section of Barangay Road Upgrading



Typical Cross Section of Provincial Road Upgrading

Figure 7.5.1 Proposed Roads - Typical Cross Sections

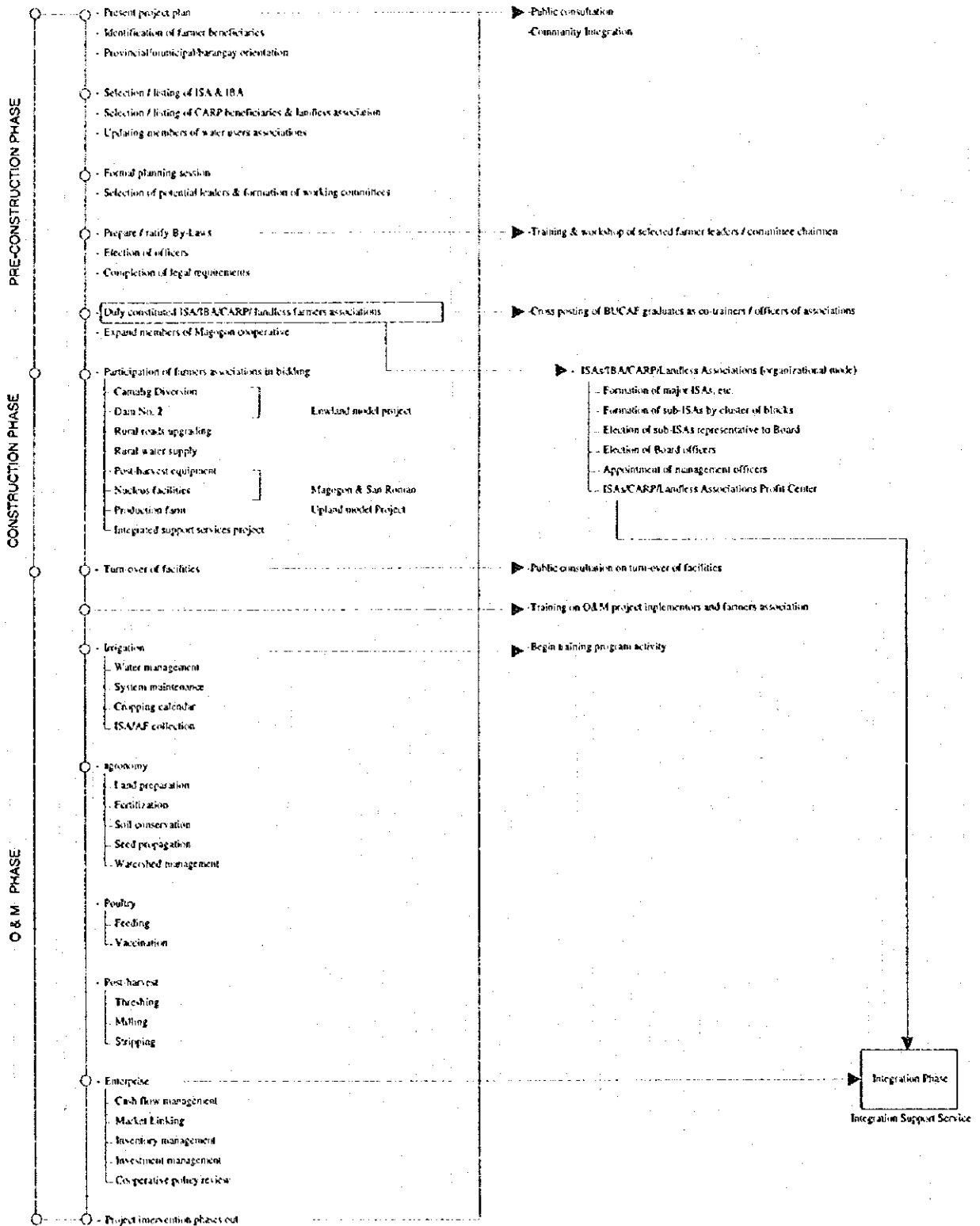


Figure 7.7.1 Participatory Approach in Rural and Farmers' Organization

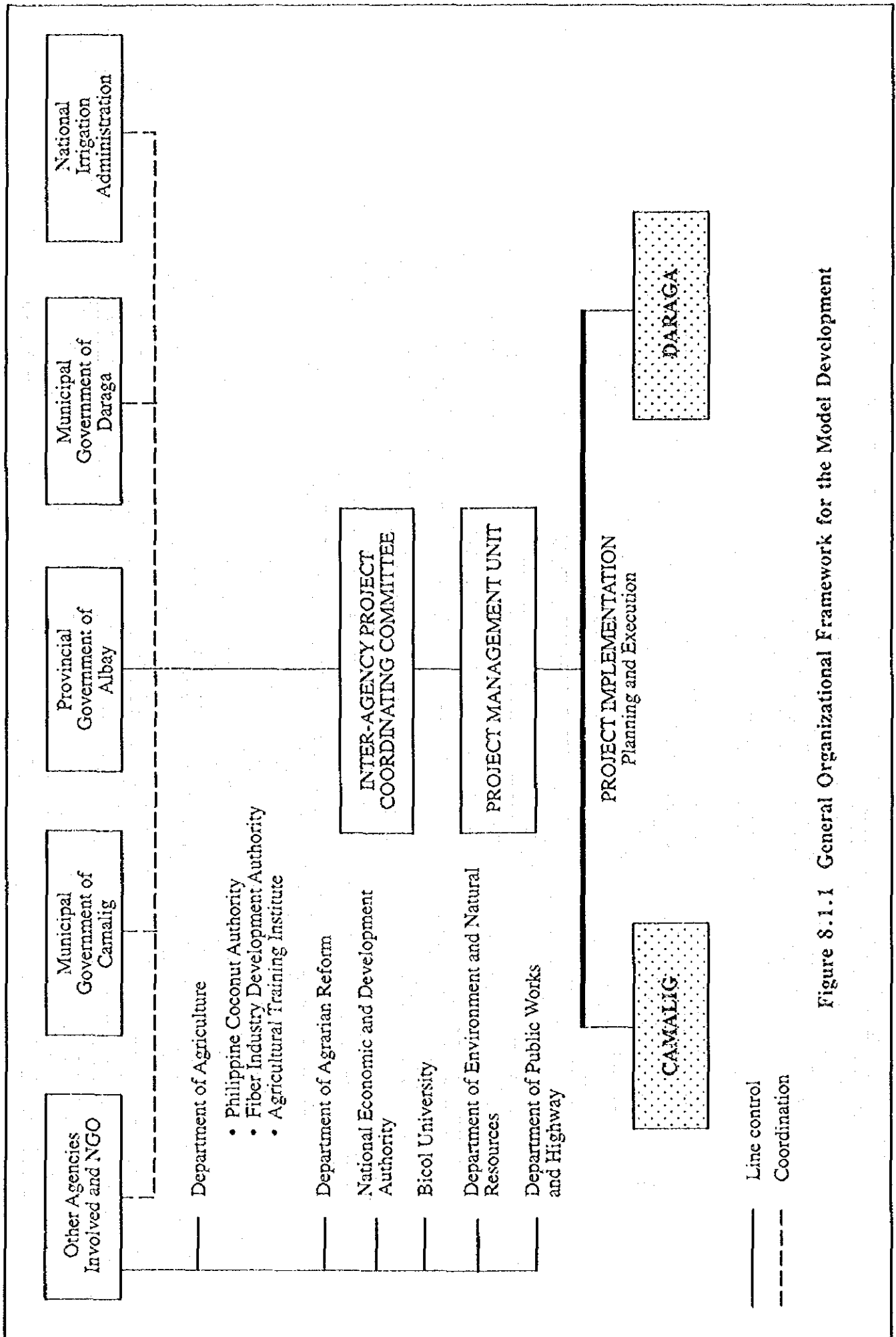


Figure 8.1.1 General Organizational Framework for the Model Development

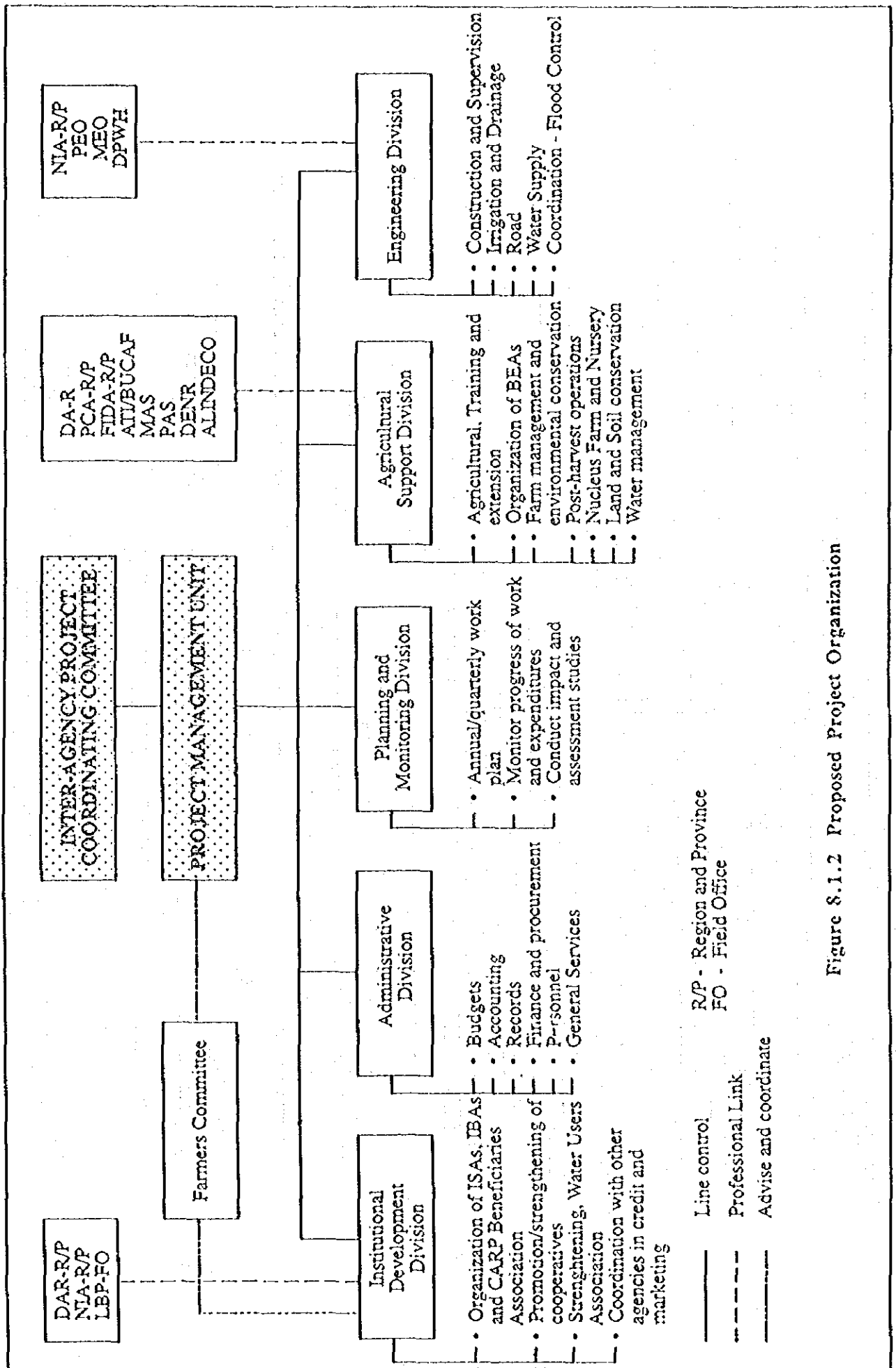


Figure 8.1.2 Proposed Project Organization



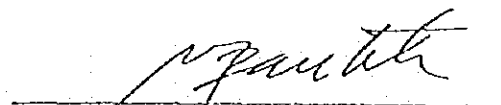
**THE FEASIBILITY STUDY ON  
THE WESTERN LEGAZPI IRRIGATION AND  
RURAL DEVELOPMENT PROJECT IN THE PHILIPPINES**


***ATTACHMENTS***

IMPLEMENTING ARRANGEMENT  
ON  
THE TECHNICAL COOPERATION  
FOR  
THE FEASIBILITY STUDY  
ON  
THE WESTERN LEGAZPI IRRIGATION AND RURAL DEVELOPMENT PROJECT  
IN  
THE REPUBLIC OF THE PHILIPPINES

AGREED UPON  
BETWEEN  
NATIONAL IRRIGATION ADMINISTRATION  
AND  
JAPAN INTERNATIONAL COOPERATION AGENCY

METRO MANILA, 27 MARCH, 1995

  
\_\_\_\_\_  
Mr. APOLONIO V. BAUTISTA  
*Administrator,*  
*National Irrigation Administration*

  
\_\_\_\_\_  
Mr. HIRONOBU YASUMURA  
*Leader,*  
*Preparatory Study Team,*  
*Japan International Cooperation Agency*



## I. INTRODUCTION

In response to the request of the Government of the Republic of the Philippines (hereinafter referred to as "GOP"), the Government of Japan (hereinafter referred to as "GOJ") has decided to conduct the Feasibility Study on the Western Legazpi Irrigation and Rural Development Project in the Republic of the Philippines (hereinafter referred to as "the Study"), and exchanged the Note Verbale with GOP concerning the implementation of the Study

Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of GOJ, shall undertake the Study in accordance with the relevant laws and regulations enforced in Japan.

On the part of GOP, National Irrigation Administration (hereinafter referred to as "NIA"), shall act as the counterpart agency to the Japanese study team and also as the coordinating body in relation with the Department of Agriculture and other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

The present document constitutes the implementing arrangement between JICA and NIA under the above mentioned Note Verbale exchanged between two governments.

## II. OBJECTIVES OF THE STUDY

The objectives of the Study are;

1. to conduct a feasibility study and formulate the irrigation and rural development project on the area west of and adjacent to Legazpi City, the capital of Albay Province, and
2. to carry out technology transfer to the Philippine counterpart personnel in the course of the Study.

## III. STUDY AREA

The Study will be conducted within the mapped area of approximately 6,000ha. However, the final boundary of the Study area will be decided in the course of the Study.

## IV. SCOPE OF THE STUDY

In order to achieve above objectives, the Study will consist of two works and will cover following items:

### I. WORK I

Preparation of a topographic map covering the area of approximately 6,000ha ( See the location map attached as APPENDIX I) at the scale of 1/4,000 based on aerial photography and ground control survey.

## 2. WORK II

### (1) Phase I

- 1) To review other relevant existing projects and studies in the mapped area.
- 2) To collect and review relevant existing data and information and to carry out field survey and investigation in the mapped area on the following items :

#### A. natural condition

- a) meteorology
- b) hydrology
- c) geology
- d) soil
- e) topography
- f) water resources
- g) water quality
- h) environment
- i) volcano-originated influence
- j) others

#### B. social and economic condition

- a) population
- b) household and farmers
- c) employment
- d) regional social-economy and household economy
- e) social infrastructure
- f) social organizations
- g) others

#### C. agriculture

- a) land use
- b) land tenure
- c) cultivation technique
- d) cropping pattern and yield
- e) production
- f) agricultural machinery
- g) water management

- h) livestock and poultry
  - i) others
  - D. agricultural infrastructure
    - a) irrigation and drainage facilities
    - b) farm roads
    - c) others
  - E. rural infrastructure
    - a) rural roads
    - b) water supply
    - c) electricity
    - d) others
  - F. agro-economy
    - a) farmers' economy
    - b) agricultural credit
    - c) processing
    - d) marketing and transportation system
    - e) others
  - G. agricultural supporting system
    - a) farmers' organization
    - b) supporting organization
    - c) extension service organization
    - d) others
  - H. other information related to the Project
    - a) administrative organizations related to the Project
    - b) environmental impacts
    - c) others
- 3) To analyze the collected data and information.
  - 4) To identify potentials, problems and constraints against the development in the mapped area.
  - 5) To decide the final boundary of the Study area where the irrigation and rural development project will be executed.
  - 6) To formulate the basic idea for the irrigation and rural development project in the Study area.



**(2) Phase II**

Based on the results of the Phase I study, the Phase II study will cover the following items;

- 1) Additional field survey, data collection and analysis of ;
  - a. hydrology and meteorology
  - b. geology
  - c. soil classification and land use
  - d. land tenure
  - e. cropping pattern and yield
  - f. water resources
  - g. irrigation and drainage
  - h. socio-economy and farmers' economy
  - i. social and farmers organizations
  - j. environment
  - k. others
- 2) Formulation of irrigation and rural development project in the Study area including ;
  - a. water resources development plan
  - b. water utilization and management plan
  - c. irrigation and drainage development plan
  - d. land use and cropping pattern development plan
  - e. crop diversification and animal husbandry development plan
  - f. post harvest and processing development plan
  - g. marketing and distribution development plan
  - h. extension service development plan
  - i. farmers' organization and supporting service development plan
  - j. rural infrastructure development plan
  - k. agricultural infrastructure development plan
  - l. others
- 3) Preliminary design of major structures
- 4) Preparation of operation and maintenance plan for major structures
- 5) Preparation of implementation schedule
- 6) Preparation of environmental conservation plan
- 7) Estimation of project costs and benefits
- 8) Overall evaluation of the project
- 9) Recommendations

## V. STUDY SCHEDULE

The Study will be carried out in accordance with the attached tentative schedule.  
(APPENDIX II)

## VI. REPORTS

JICA shall prepare and submit the following reports in English to the GOP.

1. Inception Report

Fifteen (15) copies at the commencement of the Study.

2. Progress Report (1)

Fifteen (15) copies at the end of the Phase I field study in the Philippines.

3. Interim Report

Fifteen (15) copies at the commencement of the Phase II field study.

4. Progress Report (2)

Fifteen (15) copies at the end of the Phase II field study in the Philippines.

5. Draft Final Report

Fifteen (15) copies at the end of Phase II study. The GOP shall provide JICA with its comments on the Draft Final Report within one (1) month after receipt of the Draft Final Report.

6. Final Report

Fifty (50) copies within two (2) months after receipt of the GOP's comments on the Draft Final Report.

## VII. UNDERTAKING OF THE GOP

In accordance with the Note Verbale exchanged between GOJ and GOP, GOP shall accord privileges, immunities and other assistance to the Japanese study team and, through the authorities concerned, take necessary measures to facilitate the smooth conduct of the Study.

1. GOP shall be responsible for dealing with claims which may be brought by third parties against the members of the Japanese study team and shall hold them harmless in receipt of claims and liabilities arising in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims or liabilities arise from gross negligence or willful misconduct of the above mentioned members.

2. NIA shall, at its own expense, provide the Japanese study team with the following, if necessary, in cooperation with other agencies concerned ;

- (1) available data and information related to the Study,
- (2) counterpart personnel,
- (3) suitable office space with necessary equipment (telephones, desks, chairs, photocopy machines, etc.) in Municipality of Daraga and Metro Manila,
- (4) necessary number of drivers, and
- (5) credentials or identification cards to the members of the Japanese study team.

3. NIA shall make necessary arrangements with other governmental and non-governmental organizations concerned for the following ;

- (1) to secure the safety of the Japanese study team,
- (2) to permit the members of the Japanese study team to enter, leave and sojourn in the Philippines for the duration of their assignment therein,
- (3) to exempt the members of the Japanese study team from taxes, duties, fees and any other charges on equipment, machinery and other materials brought into the Philippines for the conduct of the Study,
- (4) to exempt the members of the Japanese study team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese study team for their services in connection with the implementation of the Study,
- (5) to provide necessary facilities to the Japanese study team for the remittance as well as utilization of the funds introduced into the Philippines from Japan in connection with the implementation of the Study,
- (6) to secure permission for entry into private properties or restricted areas for the conduct of the Study,
- (7) to secure permission for the Japanese study team to take all data and documents (including photographs and maps) related to the Study out of the Philippines to Japan, and
- (8) to provide medical services as needed. Its expense will be chargeable on the members of the Japanese study team.

#### VIII. UNDERTAKING OF GOJ

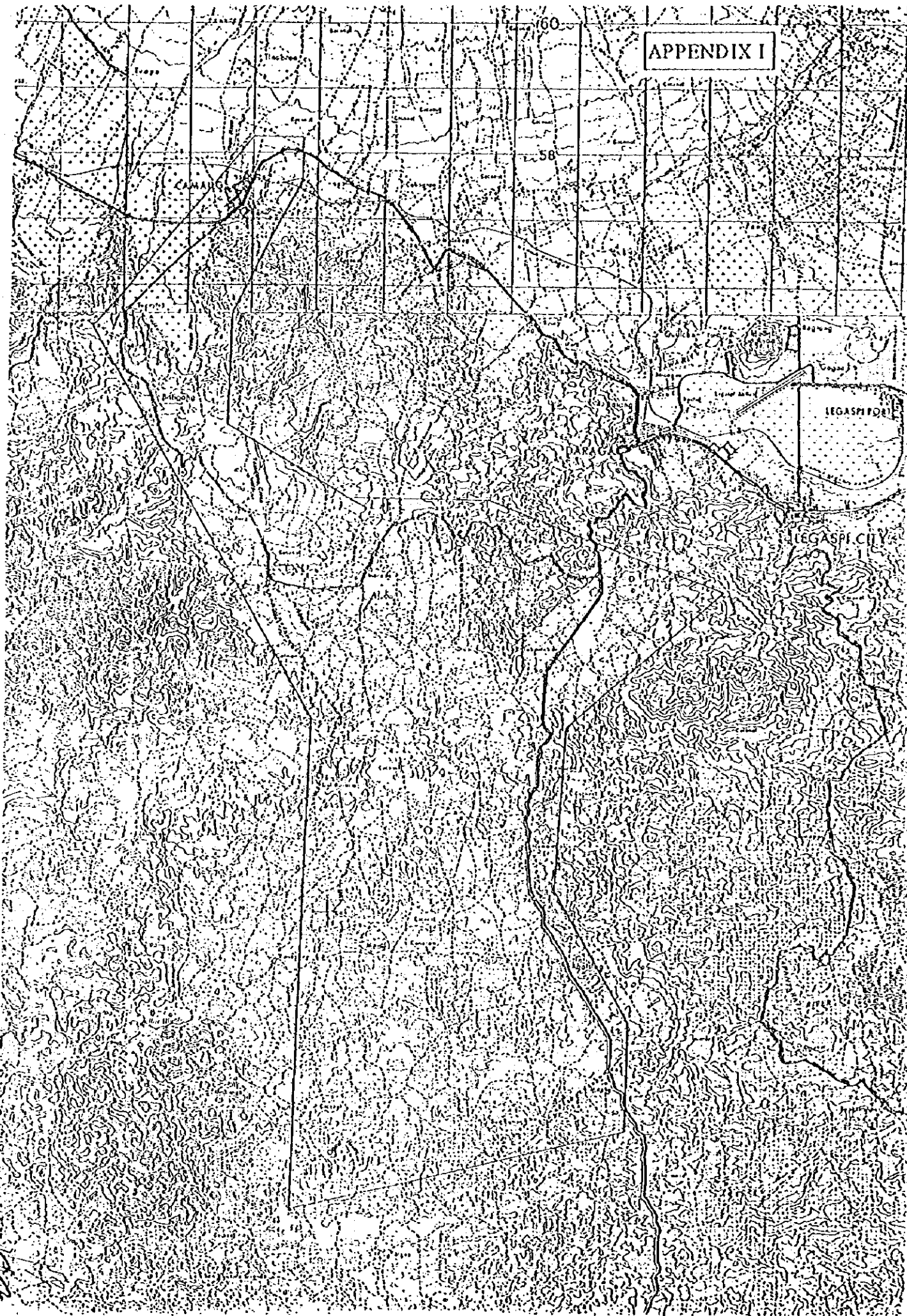
In accordance with the Note Verbale exchanged between GOJ and GOP, GOJ, through JICA, shall take the following measures for the implementation of the Study ;

1. to dispatch, at its own expense, study teams to the Philippines, and
2. to pursue technology transfer to the Philippine counterpart personnel in the course of the Study.

#### IX. CONSULTATION

JICA and NIA shall consult with each other in respect of any matter that may arise from or in connection with the Study.



APPENDIX I



TENTATIVE SCHEDULE

Item	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
WORK I	Aerial Photography																						
	Ground Control Survey																						
	Preparatory Work Mapping, Editing, Drawing																						
WORK II	Work in the Philippines																						
	Work in Japan																						
PHASE		← PHASE I →				← PHASE II →																	
Submission of Reports			△ IC/R		△ P/R(1)		△ IT/R		△ P/R(2)		△ DF/R		△ F/R		△ F/R								

(Remarks) IC/R : Inception Report P/R (1) : Progress Report (1)  
 IT/R : Interim Report P/R (2) : Progress Report (2)  
 DF/R : Draft Final Report F/R : Final Report  
 ◎ Comments on DF/R by the Philippine side

 Work in the Philippines  
 Home Office Work in Japan

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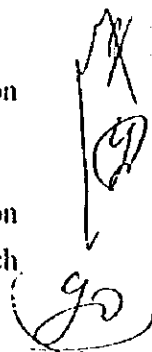
**MINUTES OF THE MEETING  
ON  
THE FEASIBILITY STUDY FOR THE WESTERN LEGASPI  
IRRIGATION AND RURAL DEVELOPMENT PROJECT(WLIRD)**

**DATE** : September 21, 1995  
**TIME** : 9:30 - 10:30 A.M.  
**VENUE** : National Irrigation Administration(NIA)  
NIA Conference Room  
Quezon City, Philippines

**ATTENDANCE:** As listed in Annex 1

**DISCUSSIONS AND AGREEMENTS:**

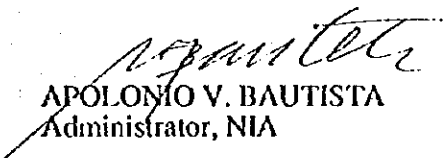
1. The meeting was primarily convened to discuss the inception report of the WLIRD prepared by the JICA Study Team. Final arrangements relative to the conduct of the feasibility study, particularly on administrative support from the NIA were also discussed in the meeting.
2. The Team Leader of the JICA Study Team informed the NIA that two(2) members of the Study Team have already been working in the project site, and these members are working on the topographic and aerial surveys. The other experts will also be deployed in the project site as soon as their respective assignments will commence as provided in the inception report.
3. As regards the inception report, the Team Leader of the JICA Study Team emphasized that the study will not be limited to irrigation development but will cover the broader ambit of rural development. Hence, the study will comprehensively look into the various components that will foster rural development in the project site. Among other things, this will cover the physical, economic, human, social and institutional development as mentioned in the inception report.
4. With reference to the smooth conduct of the study, the Team Leader of the JICA Study Team suggested the need to establish a Steering Committee both at the central and regional levels as the proper venue to resolve policy and operational issues attendant in the preparation of the study.
5. NIA's response and comments on the inception report, including the other suggestion were as follows:
  - a. With respect to the inception report, NIA expressed the view that the inception report is comprehensive and that the basic approach of the study is very much

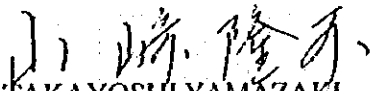
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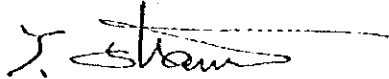
consistent with the national development strategy. Hence, it fully accepted the inception report.

- b. With respect to the establishment of the Steering Committee, NIA felt that this is indeed necessary but suggested that it be based only at the regional level. At the central level, NIA will still coordinate the activities related to the conduct of the study. The JICA Study and Advisory Teams agreed to NIA's recommendation, and as such NIA will immediately set-up the Steering Committee in Region 5. The Steering Committee will be chaired by the Regional Director/Manager of NIA and its members will be multi-sectoral to include the line agencies, local government units(LGUs), academe and NGOs which have administrative influence in the project site.
6. Finally, NIA has assured the JICA Advisory and Study Teams of its commitment to fully support the project in terms of counterpart personnel and other administrative matters(e.g. office space, photocopy machine, telecommunications, etc.) as indicated in the inception report.
7. The Team Leader of the JICA Advisory Team also expressed the view that JICA would like to see the preparation of this project following a participatory approach. In this regard, the process to be adopted becomes very relevant to ensure that the necessary needs of the project, particularly the beneficiaries are appropriately addressed in the study.
8. As regards the participatory approach, NIA felt that this is important and recommended that information campaign about the project should be part and parcel of the study. NIA, further, suggested that public consultations with the various project stakeholders should be done, as a matter of priority, on the direct beneficiaries of the project so that their needs and aspirations are appropriately addressed in the study.
9. The meeting was adjourned at 10:30 A.M.

CONFORME:

  
APOLONIO V. BAUTISTA  
Administrator, NIA

  
TAKAYOSHI YAMAZAKI  
JICA Study Team Leader

  
YUTAKA OHAMA  
JICA Advisory Team Leader

**List of Participants**

**NIA**

Mr. F. BERDIN, Regional Manager  
Mr. E. GACUSAN, Division Manager A  
Mr. A. ARMENTIA, Division Manager  
Mr. R. DELA ROSA, Division Manager A  
Mr. R. RAMIREZ, Principal Engineer A  
Mr. D. SUELLEN, Agricultural Economist  
Mr. J. NAVARRO, Office-In-Charge  
Ms. L MARTIREZ, Senior Engineer A  
Ms. J. ABEJON, Engineer A  
Mr. C. CARLOS, Environmentalist  
Ms. R. ROSARIO, Engineer A  
Mr. N. TSUJI, Team Leader DCIP/JICA

**JICA Advisory Team**

Mr. Y. OHAMA, Team Leader  
Mr. T. WATANABE, Member

**JICA Study Team**

Mr. T. YAMAZAKI, Team Leader  
Mr. S. BAN, Co-Team Leader  
Mr. V. CABEZON, Institutional Expert

**MINUTES OF THE MEETING ON  
FEASIBILITY STUDY OF THE WESTERN LEGAZPI IRRIGATION AND  
RURAL DEVELOPMENT PROJECT (WLIRDP)**

DATE : June 19, 1996

TIME : 9:00 - 10:30 A.M.

VENUE : National Irrigation Administration(NIA)  
NIA Conference Room  
Quezon City, Philippines

ATTENDANCE: As listed in Annex 1

**DISCUSSIONS AND AGREEMENTS:**

1. The meeting was primarily convened to discuss the preliminary findings of the Interim Report of the WLIRDP prepared by the JICA Study Team.
2. It was reported by the JICA Study Team Leader that the Project components will essentially compose of irrigation; rural infrastructure, particularly provincial and barangay roads and Level II water supply facilities; agriculture development comprising of lowland and upland agriculture; and institutional support for farmer beneficiaries and other institutions. The configuration of the irrigation component is basically communal system and only 2 out of 5 identified dam sites having potential irrigable areas of about 320 ha are being recommended for further development. The priority roads for upgrading will be about 33.1 km and Level II water supply facilities will involve 4 barangays covering 15 communal and 66 individual faucets, respectively to benefit a total population of 1,092 households.

In support of the physical infrastructure facilities, 4 Model projects will also be recommended, 2 of which will be for lowland farming and one(1) each for upland corn and upland coconut-based farming systems. Essentially, the Model projects will be the medium for integrating better farming systems and investments in post-harvest facilities together with improved delivery of extension, credit and marketing support. The establishment and strengthening of farmers organization, mainly irrigators association will form part of the institutional component.

3. In general, the Interim Report was accepted by the NIA. The following major issues were raised:


- a) The question on which agency will execute the project was raised in view of the rural development perspective of the project. To resolve this issue, NIA

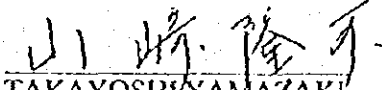
expressed the view that the choice of a lead agency, including the structures and linkages and responsibilities of other agencies in the implementation of the project should be clearly addressed in the Final Study taking into consideration the roles of the concerned local government units(LGUs). While NIA initiated the conduct of this study for the project, it also recognized that it can not consider this as a precedent for executing project components which aptly belong to the ambit of the LGUs. The JICA Study Team noted this suggestion and will appropriately consider an option best suited for implementing the project.

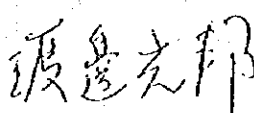
- b) The issue on watershed management and/or environmental protection measures was raised to ensure sustainability of the project. NIA suggested that watershed protection measures regardless of whether or not it is part and parcel of the project should be included in the Final Study. The JICA Study Team noted this suggestion and will consider environmental protection measures relative to preventing siltation and soil erosion insofar as it is within the boundaries of the Study area. It was further stated by the JICA Study Team that soil conservation measures in the form of inter-cropping and contour cultivation will form part of the agricultural development.
- c) The other peripheral issue on the establishment of a pilot demonstration farm in view of crop diversification was also expressed. The JICA Study Team clarified that demonstration farms will be introduced and techniques on better farming systems and introduction of new crops in the uplands have been considered through the Model projects.

4. The meeting was adjourned at 10:30 A.M.

CONFORME:

  
RODOLFO C. UNDAN  
Administrator, NIA

  
TAKAYOSHI YAMAZAKI  
JICA Study Team Leader

  
MITSUKUNI WATANABE  
JICA Advisory Team

## List of Participants

## NIA

Mr. A. ARMENTIA Division Manager A  
 Mr. R. RAMIREZ Principal Engineer A  
 Mr. C. ALANANO Head, Dam and Reservoir Section  
 Mr. M. LANDICHO Head, Hydrology Section  
 Mr. A. BANA Engineer A  
 Mr. A. FORMARAN Senior Engineer A  
 Mr. J. NAVARRO Officer-in-Charge  
 Mr. F. ANTOLIN Head, Economics Section  
 Mr. D. SUELLEN Agro-Economist  
 Mr. Y. SAKAMOTO JICA Expert  
 Mr. T. HOKARI JICA Expert

## JICA Advisory Team

Mr. M. WATANABE Team Leader  
 Mr. T. TANAKA Member

## JICA Study Team

Mr. T. YAMAZAKI Team Leader  
 Mr. Y. FUKASAKA Agro-Economist  
 Mr. L. ROSADO Land-use/Agriculture Expert  
 Mr. S. HAMADA Cost Estimator  
 Mr. V. CABEZON Institutional Expert

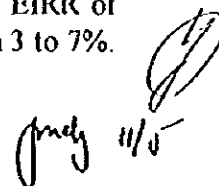
**Minutes of the Meeting  
Draft Final Report  
Western Legaspi Irrigation and Rural Development Project**

Venue : NIA Central Office., Quezon City  
Date : November 4, 1996  
Time : 10:00 - 11:00 AM  
Attendance : See Annex 1

### Highlights

1. The meeting was convened to discuss the major findings, conclusion and recommendations of the feasibility study. The discussion focused on the final configuration of the project, especially on the project cost, implementation and evaluation. It should be emphasized that the salient features of the project's physical and institutional components, project areas, project organization and implementation, and new concepts and ideas of executing the project have already been discussed with the NIA during the presentation of the Progress Report No. 2 held on August 12, 1996. Hence, these were omitted during the meeting.
2. The JICA Study Team informed that the total project cost is estimated at P424 million, 56% of which is the foreign currency cost. The 4 model projects will cost about P288 million of which P215 million will be the cost for the development of 2 lowland model areas with irrigation as a major investment. The balance of P73 million will be for the development of 2 upland model areas. The components on the rural road upgrading and rural water supply have been estimated to cost about P125 million and P1.5 million, respectively. The cost of the integrated support services components has been placed at P9 million. The project will be implemented for a period of 5 years with the Provincial Government of Albay as the over-all lead executing agency. The active participation of the LGU and beneficiaries is one of the main implementation thrusts of the project.
3. The JICA Study Team informed that the project evaluation has been done on the components basis to be able to gauge the viability of the individual component. With the exception of Dam No. 2 lowland model rural development project whose EIRR is below the opportunity cost of capital estimated at 15%, the 3 other model rural development projects can be generally considered economically viable with calculated EIRRs ranging from 20 to 34%. The rural road upgrading is similarly viable with an estimated EIRR of 19%. The rural water supply rehabilitation projects have low EIRRs ranging from 3 to 7%.


  
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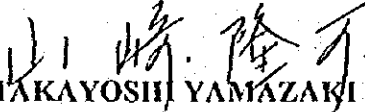
  
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The rural water supply rehabilitation projects have low EIRRs ranging from 3 to 7%. It was explained that the low EIRR for Dam No. 2 lowland model project was influenced by the prohibitive cost of the dam. In the same manner, the low EIRR of the rural water supply was caused by the heavy investment cost against number of beneficiaries.

4. In general, the Draft Report has been accepted in principle by the NIA. The NIA informed that it will endorse the feasibility study report to the Provincial Government of Albay the moment it has received the final report from the JICA. To further strengthen the recommendations on the project, the NIA suggested that an evaluation of the whole project package be made to be able to evaluate its over-all merit. The JICA Study Team noted these suggestions.
5. In preparation for Final Report, the JICA Study Team informed that it expects to receive the NIA's final comments on the Draft Report on or before November 30, 1996.
6. The meeting was adjourned at 11:00 AM.

CONFORME :

  
R RODOLFO C. UNDAN  
Administrator  
National Irrigation Administration

  
TAKAYOSHI YAMAZAKI  
Team Leader  
JICA Study Team

  
KOZO ITO  
JICA Staff  
Headquarter, Tokyo



## ANNEX 1

### List of Attendance

#### National Irrigation Administration

- |                  |                       |
|------------------|-----------------------|
| 1. E. B. PUNZAL  | Department Manager    |
| 2. A.Y. ARMENTIA | Division Manager      |
| 3. R. A. RAMIREZ | Principal Engineer    |
| 4. J. A. NAVARRO | Principal Engineer    |
| 5. C. T. ALANANO | Principal Engineer    |
| 6. M. LANDICHO   | Principal Engineer    |
| 7. F. E. ANTOLIN | Head Economist        |
| 8. D. T. SUELLEN | Supervising Economist |
| 9. C. M. CARLOS  | Environmentalist      |
| 10. W. D. SILVA  | Principal Engineer    |

#### JICA Study Team

- |                  |                      |
|------------------|----------------------|
| 1. T. YAMAZAKI   | Team Leader          |
| 2. S. BAN        | Co-Team Leader       |
| 3. Y. FUKASAKA   | Agro-Economist       |
| 4. V. E. CABEZON | Institutional Expert |

#### JICA

- |                |                                |
|----------------|--------------------------------|
| 1. Y. SAKAMOTO | JICA Expert to NIA             |
| 2. K. ITO      | JICA Staff, Headquarter, Tokyo |

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JICA